



RESERVE BANK  
OF AUSTRALIA

The  
Australian Economy  
in the 2000s

# The Australian Economy in the 2000s

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Editors:  
Hugo Gerard  
Jonathan Kearns

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# Introduction

**Hugo Gerard and Jonathan Kearns**

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This is the fourth time the Reserve Bank has held a conference to review the Australian economy over the preceding decade. These decadal reviews provide an opportunity to place the events that have shaped the economy in perspective, consider patterns of structural change, and reflect on the persistent themes through the decade and across successive decades. The 2000s were particularly eventful for both the international and Australian economies. There were: two recessions in many countries; the largest international financial crisis since the Great Depression; the ongoing rapid development of Asia; asset booms and busts; and Australia experienced the longest sustained increase in commodity prices and the terms of trade in the nation's history.

The Australian economy entered the 2000s in a healthy state. While the 1990s had its ups and downs, the papers at the Bank's Conference in 2000 provided a generally positive report on the economy. The strong economic growth, decline in unemployment, increase in productivity, and the resilience to the Asian financial crisis were generally attributed to the process of economic reform. Financial market reform was also seen to be having a positive effect on the economy after earlier concerns that it had produced little benefit, and the introduction of inflation targeting in the early 1990s meant that inflation was lower and more stable. The size of the current account deficit also continued to receive attention at the 2000 Conference, although most commentators had generally become more sanguine about the deficit over time.

A decade on, some themes are familiar from previous reviews, but others have changed. The Australian economy once again performed well over the past decade. There was strong employment growth, with the unemployment rate declining further, strong income growth, low inflation and general macroeconomic stability. Many themes in this volume continue those of previous reviews, such as the important role of international shocks, changes in the labour market and the key role of the finance sector. However, one marked difference to the volume reviewing the 1990s is the emphasis now given to the role of China in shaping developments in Australia. Another is the discussion of productivity, with productivity growth in the 2000s significantly below the strong growth in the 1990s that was attributed to economic reforms. The focus on the current account deficit has also lessened with greater recognition that it largely reflects a high investment rate rather than major distortions in the economy.

As noted, international factors have remained important to the Australian economy, but the key drivers have changed. The most significant external influence in the 2000s was the ongoing economic development of Asia. Over the decade, the average growth rate in Asia was faster than expected, but was, in fact, not that different than in the 1990s; average annual growth in China increased only marginally to just over 10 per cent, while growth in India and the rest of Asia increased slightly to be around 7 per cent. Yet this strong and sustained growth, particularly in China and India, which contrasted with the episodes of contraction in many of the advanced

countries, saw the share of global output from non-Japan Asia increase from around 10 per cent at the start of the decade to around 17 per cent by the end. Beyond their larger share of global output, China and other Asian nations became more connected and influential in the global economy, as Yiping Huang and Bijun Wang outline in their conference paper. Asian economies became an integral part of supply chains, and in doing so contributed to subdued increases in the prices of manufactured goods around the world. In addition, they became large exporters of capital when the share of their income devoted to domestic investment declined.

Without doubt Asia's largest influence on the Australian economy was the region's growing demand for commodities. Over the century up to the early 2000s, Australia faced a trend decline in the terms of trade as commodity prices fell relative to the price of manufactured goods. From the middle of the 2000s that changed markedly, with the relative price of most commodities increasing, with particularly sharp increases in the prices of iron ore and coal, resulting from Chinese demand for steel. By the end of the decade, China was producing close to half the global output of steel, and coal and iron ore constituted around one-third of the value of Australia's exports, up from one-tenth earlier in the decade.

Ellis Connolly and David Orsmond, in their paper summarising the mining sector's turnaround, highlight the magnitude of the changes that have taken place. Their paper, and the one by Jonathan Kearns and Phil Lowe, draw out some of the broader implications for the Australian economy, including the significant flow-on effects for employment in related industries. The mining boom has also brought about a big increase in investment given the sector is highly capital intensive, with a further substantial increase in investment planned. Another consequence of the rising terms of trade has been that the Australian dollar has appreciated substantially, to 30-year highs. In doing so, it has prompted the reallocation of resources within the economy.

In contrast to the positive external influence from Asia during the 2000s, Australia was subject to significant negative shocks from developed economies, with many of these countries experiencing a recession at each end of the decade. The first of these came with the collapse of the tech bubble. This turned out to be a relatively mild recession, both in depth and breadth, with fewer OECD countries experiencing a decline in economic activity than in the recessions in each of the three preceding decades. Globally, economic growth quickly rebounded with the so-called 'great moderation' continuing to see low macroeconomic volatility.

Financial markets generally also displayed low volatility during these middle years of the decade, and so risk premia on many assets declined. Along with ongoing financial innovation, this set up an environment in which the risks that precipitated the global financial crisis could grow. In the end, it was excesses in the US housing market that triggered the first stages of the financial crisis in money and debt markets in mid 2007. The intricate connections through the financial system, both across countries and within countries, saw those shocks amplified and transmitted to banking systems and equity markets. The intensification of the crisis in September 2008 led to a sharp contraction in economic activity. In contrast to the experience in the early 2000s, the late 2000s recession was widespread and deep and has consequently been termed the 'great recession'.<sup>1</sup> In their paper at the Conference, Tamim Bayoumi and Trung Bui consider how the shocks were

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1 For example, only two OECD countries, Australia and Poland, avoided a sustained contraction in GDP with year-ended GDP growth turning negative in all others. Further, G7 GDP fell by almost 6 per cent and global GDP fell whereas it had not in previous recessions.

transmitted across countries during the late 2000s and conclude that financial links played a much larger role than trade links. In her discussion, however, Kathryn Dominguez highlights the collapse in trade of durable goods as an important propagation mechanism during the crisis.

The global financial crisis had a direct effect on the real Australian economy through the downturn in international economic activity, although the impact was smaller than in most other countries. A number of factors contributed to this, including the substantial fiscal and monetary stimulus, the strength of the Chinese economy and the rebound in commodity prices, the flexibility of the Australian economy and in particular the exchange rate, and the strong financial system.

There were a number of possible explanations for the good performance of the financial sector canvassed during the Conference. The quality and attentiveness of financial regulation and supervision in Australia was seen to have been important, along with the lessons learned from earlier financial shocks (notably the failure of insurer HIH in 2001 and the banking difficulties in the early 1990s). This contributed to the Australian banks' healthy balance sheets heading into the crisis. The very limited holdings of risky securities was also influenced by the profitable lending opportunities in the domestic market, and banks' marginal source of funding being wholesale markets, so providing a disincentive to invest in newly developed, highly structured securities. Notwithstanding the solid position of the sector, and in particular the core financial institutions, some small financial firms failed, while some markets were particularly affected, such as the virtual cessation of the issuance of securitised assets, as Kevin Davis describes in his paper. The supporting role that policy played was also no doubt important. The government guarantee arrangements for deposits and banks' wholesale funding, which were introduced after other countries offered guarantees, and the Reserve Bank's enhanced provision of liquidity were both important to the good outcome for the financial sector.

The boom in the housing sector in the early part of the 2000s was another important development in the decade. During the first four years of the 2000s dwelling prices increased by around 70 per cent while housing credit increased by over 90 per cent. Through this period policy-makers, including the Reserve Bank, expressed concern about elements of excess in the housing market. From 2004, house price growth abated, with little net change in prices relative to income over the remainder of the decade, while credit growth gradually slowed.

The rapid growth in house prices brought housing affordability to the fore as a substantial social and policy issue, as Judith Yates emphasises in her paper. The increase in the availability of credit, and the reduction in nominal interest rates which eased initial payment burdens, were recognised as significant factors in increasing housing demand and prices in the late 1990s and early 2000s. However, there were concerns expressed during the Conference that housing supply in the latter part of the 2000s was not sufficiently responsive given prices remained high by many metrics and, if anything, the growth of supply had slowed relative to estimates of underlying demand.

As in the two previous review conferences, the labour market remained a central theme. The labour market paper at the 1990 Conference described a centralised labour market under the 'Accord'. This contrasted starkly with the paper a decade later that reviewed the move to a more flexible labour market. Further changes in labour market regulation in the past decade are discussed by Jeff Borland at this Conference. Overall, the performance of the labour market was



very positive in the 2000s. The unemployment rate averaged 5½ per cent and fell as low as 4 per cent, both outcomes not experienced since the 1970s.

The strong growth in employment was widespread with participation rates for most segments of the labour force, and the employment-to-population ratio, increasing. One notable change in the economy, as Judith Sloan notes in her comments, was that the adjustment in the two downturns in the decade largely came through a reduction in average hours per worker, rather than a decline in the number of employed persons as in previous decades. This meant that the costs of the downturns were more evenly spread across the workforce, which is a beneficial form of risk sharing.

While average employment growth was stronger in the 2000s than in the 1990s, growth in output slowed, with the implication being that measured labour productivity growth also slowed from the strong growth in the 1990s. Once the capital deepening from strong investment during the 2000s is taken into account, the level of multifactor productivity is estimated to have been broadly unchanged over the decade. Several papers and discussions touch on this weak performance of productivity, and in his paper providing a thorough review of the topic, Saul Eslake discusses several possible explanations. Sharp declines in productivity were recorded in the mining and utilities sectors, at least in part reflecting special factors. In mining, the increase in investment – much of which is yet to be fully operational – and the extraction of lower-quality deposits which are profitable at high prices, contributed to the decline. In utilities, the increase in investment to enhance the reliability of provision (such as desalination plants for supplying water during droughts and greater peak-load capacity in electricity distribution) was thought to have contributed to weak productivity. Generally benign economic conditions were also conjectured to have reduced the incentive for firms to innovate and improve their efficiency. The strong growth in employment also brought into the workforce people who, at least initially, had relatively low productivity. However, in his comments, John Quiggin argues that the decline in productivity was illusory, reflecting lower work intensity, just as he had argued that the increase in productivity in the 1990s reflected increased work intensity. Overall, the magnitude of the decline in productivity growth remained a puzzle, and there was a general sense that it added to the impetus for further reforms to promote competition and innovation.

Many of the central themes in the assessment of the Australian economy over the past decade will likely be relevant in the 2010s, but new themes are also likely to arise. No doubt international economic conditions will continue to be an important driver of the domestic economy. Indeed, at the Conference it was international shocks that were seen to pose the major risks for the Australian economy. The need for fiscal consolidation in the North Atlantic economies presents a significant challenge for these countries and the global economy. Further, Australia's trading relationships have become more concentrated, both in terms of trading partners (with Asia) and exports (key commodities). While this connection to a region with high potential growth and a need for natural resources brings many opportunities, it also poses challenges. Over the next decade, Asia will undergo structural change as it adjusts to being a larger share of the global economy, individuals become more affluent, and its financial sector and other markets become more developed. Past experience in other countries suggests such structural change does not always occur smoothly.

Commodity prices will again be a key factor in shaping the Australian economy over the next decade, and at the Conference there were a range of opinions about the prospects for commodity prices. Most participants agreed that Asia would continue to grow strongly, even if this growth may temporarily be disrupted by an external crisis or even one generated in the region. However, there was more uncertainty as to what Asian growth would mean for commodity prices. One view had it that with large numbers of people in Asia yet to experience substantial economic development, the demand for commodities could continue to record strong growth. Alternatively, there was conjecture that the large resource investments would result in a significant increase in supply, just as the growth in commodity demand slows with more moderate – and less resource-intensive – growth in Asia. A sharp decline in relative commodity prices would be a significant shock for the Australian economy, reducing incomes and budget revenue as Chris Richardson notes. The larger share of mining in the economy may also contribute to greater volatility in economic growth, and the Government's fiscal position, due to the greater cyclicity of demand for resources and the slower response of supply than in other industries. One response to the uncertainty over future commodity prices is to have higher saving to smooth the economic impact of possible future price declines.

Productivity growth was once again an important focus at the Conference. In 2000 the focus was the significant increase in productivity growth, while at this Conference it was an attempt to explain the slowdown. One thing is clear, if the standard of living is to continue to increase as it has in previous decades, a pick-up in the rate of productivity growth will be required over the years ahead.

An enduring theme at these decadal review conferences has been the benefits of flexibility in the Australian economy. Flexibility, including the floating exchange rate and adjustment of average hours worked, has made the economy more resilient to shocks over the past two decades. Given the uncertainty facing the global economy, this flexibility will again be an important aspect of the Australian economy's ability to prosper over the decade. In introducing the volume for the Conference in 2000, David Gruen noted that the economic landscape had changed considerably over the previous decade. That would seem no less true over the past decade. The only constant, it would seem, is change.



# From the Asian Miracle to an Asian Century? Economic Transformation in the 2000s and Prospects for the 2010s

Yiping Huang and Bijun Wang\*

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## Abstract

Asian economies went through significant transformation during the 2000s. They became part of global supply chains, major global commodity consumers and large capital exporters, and were also deeply involved in regional co-operation initiatives. These factors contributed to global disinflation in manufactured goods prices, abundant global liquidity and strong growth in commodity-exporting economies including Australia. In the coming decade, Asian economies are likely to continue their ascendancy, albeit at a slower pace, which should eventually decouple Asia from the advanced economies. With increasing domestic cost pressures, Asia may also become a new source of global inflation. Asia's exports of capital to advanced economies may shrink as the region rebalances and outflows should focus more on portfolio investment and foreign direct investment (FDI). In the coming decade, a potential crisis in a major Asian economy such as China could trigger the next global recession.

## 1. Introduction

In September 1993, the World Bank launched a landmark report entitled *The East Asian Miracle* (World Bank 1993). The report discussed the relationship between public policy and rapid economic growth in the so-called High Performing Asian Economies (HPAEs).<sup>1</sup> Despite wide diversity in natural resources, culture and political institutions, these HPAEs also shared some common features in their public policy, including limited price distortion and careful policy interventions. But even then the Asian miracle story was controversial. Krugman (1994), for instance, argued that Asian growth was not sustainable since it was mainly driven by increasing inputs and not improving productivity.

The onset of the 1997–1998 Asian financial crisis brought many of the Asian economies to their knees: currencies depreciated; financial markets melted down; investment declined; and growth collapsed in almost all HPAEs. Even the Chinese and Indian economies, despite being relatively more isolated from the rest of the region at that time, suffered a significant growth slowdown. The Asian financial crisis was triggered by the withdrawal of foreign capital from the region. However,

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<sup>1</sup> The World Bank study identified eight Asian economies as the HPAEs, including Japan, Hong Kong, Korea, Singapore, Taiwan, Indonesia, Malaysia and Thailand (World Bank 1993).

excessive borrowing, overheating economies and declining investment returns in previous years had already laid the foundations for the financial disasters.

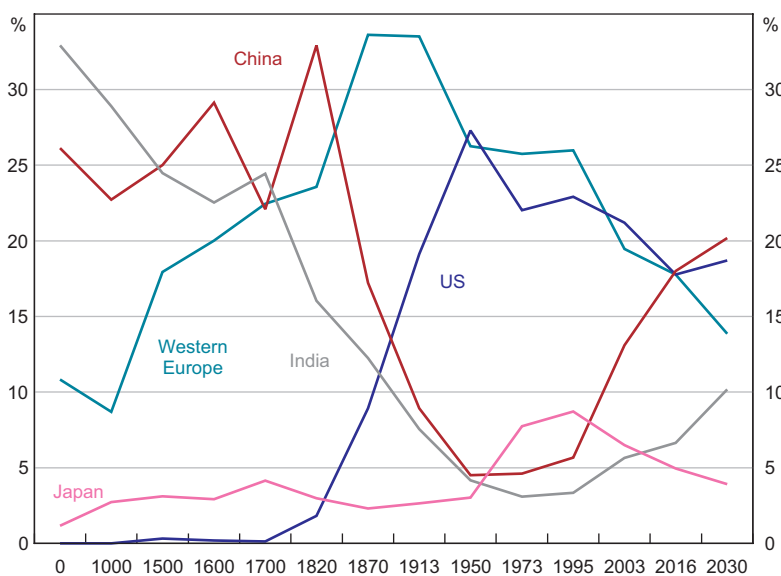
As a result of the emergence of China and India – two countries not included in the HPAEs by the World Bank in the 1993 report – the story of the Asian miracle did not end there. In fact, Asian economies have contributed around half of the world's economic growth during the past decade. In 1999 and 2000, most crisis-affected economies managed a quick turnaround and between 2002 and 2007, Hong Kong, Indonesia, Korea, Malaysia, the Philippines, Singapore and Thailand all achieved average annual GDP growth above 5 per cent. Meanwhile, China and India achieved average annual GDP growth of 10.5 per cent and 7.3 per cent, respectively, during that period.

The recent global financial crisis (GFC) has accelerated the shift of global economic gravity toward Asia and probably reinforced the prediction of a new Asian century (Drysdale and Armstrong 2010). When the world economy suffered negative GDP growth in 2009, growth in both the Chinese and Indian economies stayed above 9 per cent and although many regional small open economies, especially Hong Kong, Malaysia, Singapore and Thailand, also experienced negative growth that year, the magnitudes were smaller than in 1998.

Measured in purchasing power parity (PPP) terms, GDP in emerging Asia was already greater than either the United States or the EU in 2009. According to International Monetary Fund (IMF) forecasts, in 2016 China is likely to take over the United States to become the largest economy in the world. Even conservative estimates suggest that the emerging Asian economies will be equivalent to those of Europe or North America in terms of their share of global production in the coming decade (Maddison 2006; Garnaut 2007). If such trends continue, Asia could account for more than half of the world economy by the middle of the century.

As shown in Figure 1, this would not be new for the global economy. For more than a thousand years before the industrial revolution, the combined share of China and India in the world economy was routinely greater than 50 per cent. Their importance declined significantly during the past two hundred years, as the western economies advanced more rapidly. Of course, the re-emergence of the two giants would not simply be a repeat of history. China and India will likely assert influences on the world economy that they never have before. This conclusion, however, is dependent on the important assumption that Asian growth is sustainable, which to date remains an open question.

The Asian financial crisis and the GFC were about 10 years apart from each other and between them Asian economies experienced a number of changes. Many of the changes were initially triggered by developments during the Asian financial crisis or subsequent policy responses. For instance, when foreign capital left the region, many Asian economies suffered from a balance of payments crisis. Following this, most countries introduced new measures to restrict external borrowing, especially short-term borrowing, and to accumulate foreign exchange reserves.

**Figure 1: Shares of Major Economies in World GDP**

Note: Based on purchasing power parity (PPP) valuation of country GDP

Sources: International Monetary Fund (IMF), *World Economic Outlook* database, April 2011; Maddison (2006)

The purpose of this paper is to examine the key transformations of the Asian economies during the first decade of the 21st century. This provides the basis for an assessment of the challenges facing these economies in the decade ahead and for drawing important implications for the rest of the world, including Australia. We will focus on the three most fundamental changes to the Asian economies during the past decade: (1) the vertically integrated supply chains across the region and increasingly important role of the Asian economies as commodity consumers; (2) the emergence of large current account surpluses, accumulation of gigantic foreign exchange reserves and massive capital exports from the region; and (3) important steps in promoting regional co-operation, such as free trade agreements (FTAs) and the Chiang Mai Initiative (CMI), despite these having only achieved very little so far.

These changes have already had an important impact on the rest of the world. Asian demand, particularly Chinese demand, has been identified as the key driver behind the so-called super-cycle of global commodity markets. Asian capital exports have contributed to low interest rates around the world, and were sometimes blamed for excessive borrowing and asset bubbles in developed economies, especially the United States. In the meantime, Asia still faces important challenges in the decade ahead: Can Asian growth continue? Might Asian demand for commodities moderate? Will Asia be able to substantially reduce its current account surplus? Should Asia continue with its regional co-operation or focus more on global initiatives?

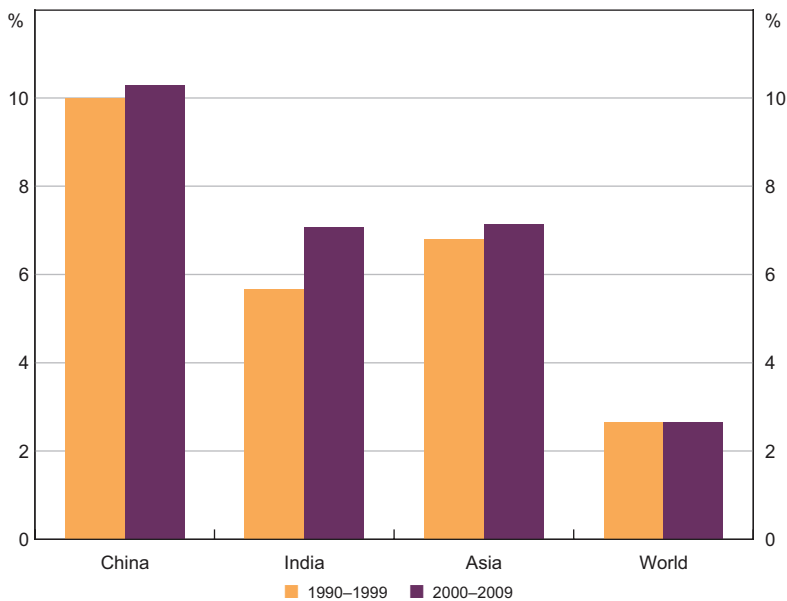
The remainder of the paper is organised as follows. Section 2 assesses the formation of regional supply chains and emergence of important commodity consumers in the Asian region. Section 3 examines changes in Asia's external accounts and its capital flows. Section 4 outlines the key

policy initiatives on regional co-operation. Finally, Section 5 discusses the new challenges facing the regional economy and tries to draw some implications for the rest of the world, including Australia.

## 2. Integrated Supply Chains and Dominant Commodity Consumers

During the past decade, GDP growth in most Asian economies continued at a steady pace. Growth in China and India showed clear trends of acceleration, at least until the GFC. Japan's growth performance also improved from the last decade of the 20th century, although it came from a very low base. Growth of the Asian economies as a whole picked up slightly during the 2000s from the previous decade, while growth in the world economy as a whole stayed almost unchanged (Figure 2).

**Figure 2: Average Annual GDP Growth in Asia and the World**



Note: Asia refers to eastern, southern and south-eastern Asia

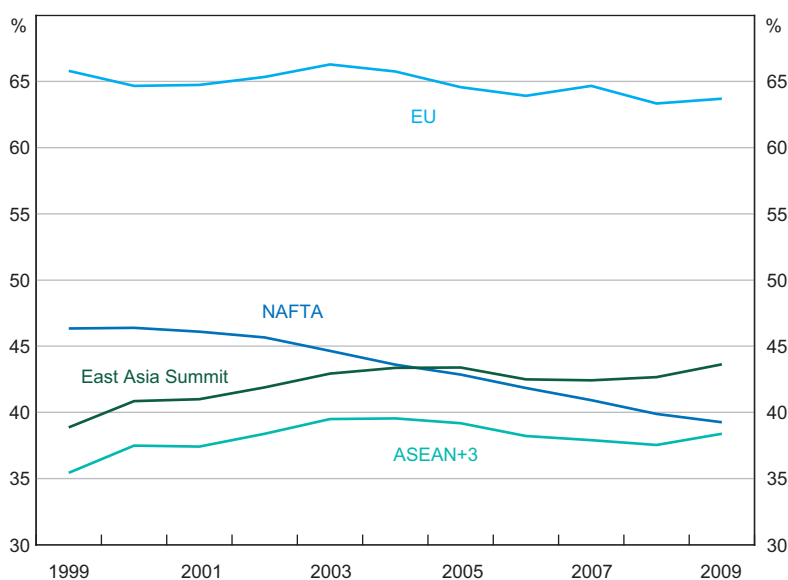
Source: authors' calculations based on data sourced from the UNCTAD (United Nations Conference on Trade and Development) database

There were some fundamental changes in Asia's industrial structure and regional division of labour over the past decade. The Asian economies were once described as 'flying geese', with Japan as the head, the newly industrialised economies (NIEs) (Hong Kong, Korea, Singapore and Taiwan) in the middle and the other countries in the region (Indonesia, Malaysia and Thailand) at the tail (Ahearne *et al* 2006). But this pattern started to change during the past decade when China entered the game after its World Trade Organization (WTO) accession at the end of 2001. FDI into China grew dramatically, especially in the electronics and heavy industry sectors. Many regional

producers started to move their final stages of production to China but kept production of more sophisticated parts and components in the rest of the region. This was the beginning of the vertical integration of supply chains, of which China became the central hub. Such a production network enables each process to be located in the most cost-effective economy (Kawai and Wignaraja 2011).

As a result, China's exports to the developed world skyrocketed, as did Chinese imports from the rest of the region. This was the beginning of the shifting supply chain across the region, which was facilitated by market-driven forces of cross-border trade, FDI and financial flows (Kawai 2007). The shifting supply chain and growing regional interdependence are clearly illustrated by the increasing share of intra-regional trade in Asia. While globally the EU is still the most integrated region (Figure 3), in Asia, intra-regional trade has been gaining importance since the Asian financial crisis. The share of intra-regional trade in the ASEAN+3 economies increased from 33 per cent in 1998 to 38 per cent in 2009, while for the EAS (East Asia Summit) region the share rose from 37 per cent to 44 per cent.<sup>2</sup>

**Figure 3: Intra-regional Trade Shares of Selected World Regions**



Source: authors' calculations based on data sourced from the UNCTAD database

The supply chain story is at least partially confirmed by Asia's growing share in China's total imports, which increased from 38 per cent in 1998 to 42 per cent in 2009 (Table 1). But this increase was probably not all about intermediate goods, as China is also an importer of large volumes of consumer goods (Park and Shin 2009) and in 2009, China became the world's largest market for luxury goods. However, the consumer goods story is probably better reflected in the Indian story.

<sup>2</sup> ASEAN+3 comprises the ten ASEAN (Association of Southeast Asian Nations) countries, plus China, Japan and Korea. The EAS region includes ASEAN+3 plus Australia, India and New Zealand.



**Table 1: Share of China and India Total Imports by Selected Regions**  
Per cent

Period	China			India		
	US	EU	Asia	US	EU	Asia
1995–1996	11.9	15.5	34.6	9.8	32.8	20.1
1997	11.5	13.6	37.3	9.4	29.0	20.3
1998	12.0	14.9	37.9	9.1	26.9	23.8
1999–2007	8.9	13.1	43.6	8.2	24.5	29.3
2008	7.2	11.7	42.5	7.1	15.6	32.1
2009	7.7	12.7	41.9	6.8	15.8	33.7

Note: Asia refers to eastern, southern and south-eastern Asia

Source: authors' calculations based on data sourced from the UNCTAD database

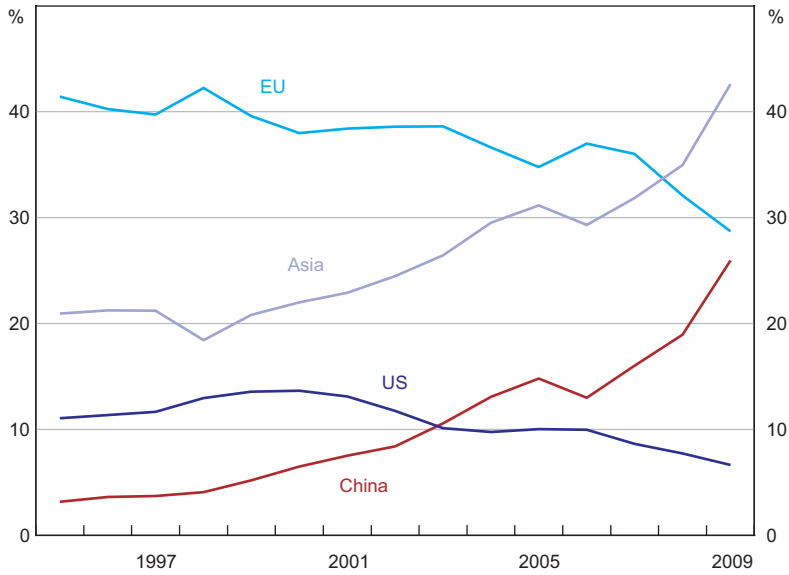
The supply chain story means that China is currently a derived source of demand rather than an independent source of demand for the region, and intra-regional trade still relies heavily on extra-regional final demand (ADB 2007; Athukorala 2008, 2010; Athukorala and Yamashita 2009). This fact has two important implications. Firstly, the so-called Sino–US trade imbalance is actually an Asia–US trade imbalance, while China only acts as a pivotal final assembly centre in the production process. Secondly, it is premature to make the argument that Asia has decoupled from the United States.

Asia and particularly China have become the most important commodity users in the world due to rapid industrialisation and urbanisation. Today, China accounts for an average of 30 per cent of global commodity consumption and more than 50 per cent of worldwide consumption of iron ore, cement and coal.

For ores and metals, for instance, Asia has been a larger importer than the EU since 2008. In 2009, Asia's share of global imports of ores and metals was 42.6 per cent, while for the EU and the United States the shares were 28.7 per cent and 6.6 per cent, respectively (Figure 4). In Asia, China was the largest importer, followed by Japan and Korea. The pattern looks very similar for the non-ferrous metals market. While Asia's share had been on the rise and the EU's share had been on the decline, they were at similar levels in 2009 at around 34 per cent.

The 'China factor' is more striking for Australia (Figure 5). China's share of ores and metals imports from Australia has increased dramatically, from 13.3 per cent in 2000 to 55.1 per cent in 2009. Accordingly, the share of EU and, in particular, US imports from Australia has been declining. China, Japan and Korea jointly accounted for nearly 80 per cent of Australian exports of ores and metals. In the case of non-ferrous metals, Japan had been the largest importer from Australia until 2008. In 2009, China's share jumped to 27.2 per cent, up from 10.6 per cent in 2008, partly as a result of the GFC.

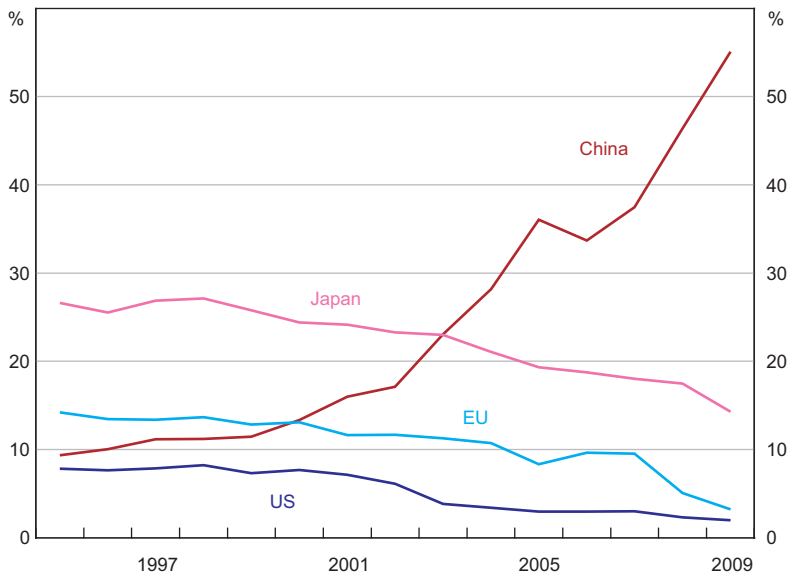
**Figure 4: Shares of Global Ores and Metals Imports by Selected Regions**



Note: Asia refers to eastern, southern and south-eastern Asia

Source: authors' calculations based on data from the UNCTAD database

**Figure 5: Shares of Ores and Metals Imports from Australia**



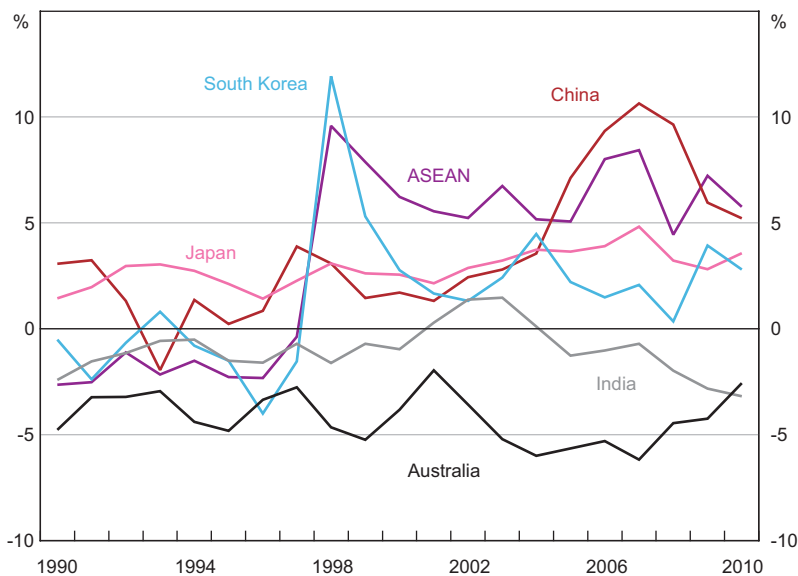
Source: authors' calculations based on data from the UNCTAD database

### 3. Large External Surpluses and Major Capital Exporters

Before the Asian financial crisis, most emerging Asian economies were capital importers, evidenced by widespread current account deficits in the mid 1990s. During much of the past decade, however, most Asian economies' current accounts remained in surplus, implying significant capital exporting (Adams and Park 2009). In fact, Asian economies, especially China and Japan, were an important part of the growing global imbalances during the years leading up to the GFC.

As can be seen in Figure 6, there were some differences in the trajectories of the current accounts among Asian economies. The ASEAN economies and Korea saw dramatic turns from deficits to surplus around the Asian financial crisis.<sup>3</sup> Japan maintained a current account surplus throughout the period 1990 to 2010, averaging 2.8 per cent of GDP, while Australia had a consistent deficit, around 4.2 per cent of GDP. China's current account fluctuated between deficit and surplus in the 1990s but its surplus grew sharply after 2003. India had a current account deficit in most years, which increased recently.

**Figure 6: Current Account Balances**  
Per cent of GDP



Source: IMF, *World Economic Outlook* database, April 2011

The turnaround in Asia's current account positions was mainly a result of the Asian financial crisis. Many Asian economies suffered from the Asian financial crisis for the following reasons: (1) massive borrowing from the international capital markets before the crisis; (2) over-investment and bubbles in certain parts of the economy or certain markets such as the chaebols in Korea and real estate in Thailand; (3) current account deficits implying significant pressure for currency depreciation; and (4) generally small amounts of foreign reserves that were insufficient to defend Asia's currencies. In

<sup>3</sup> The current account surplus in Malaysia has been expanding since 2002, whereas for Vietnam, its current account has returned to deficit.

the wake of the Asian financial crisis, Asian policy-makers made special efforts to support export growth, promote current account surpluses and accumulate foreign exchange reserves.

In fact, the first change to occur was the collapse of investment in much of Asia (Table 2). China was an exception, where the rate of investment rose, but with the increase in savings being even greater, China's current account surplus also increased. Investment rates also increased in India and Vietnam, both of which, however, had current account deficits during the past decade.

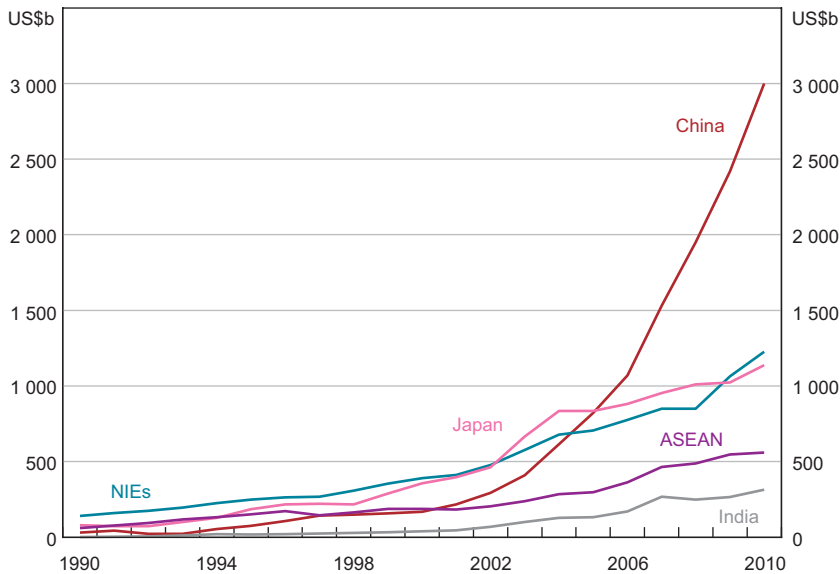
**Table 2: Investment Rates of Selected Economies**  
Per cent of GDP

	1990 –1996	1997	1998	1999 –2007	2008	2009
Vietnam	18.1	28.3	29.1	34.2	39.7	38.1
Indonesia	39.3	39.1	25.4	23.5	27.8	31.0
Malaysia	38.8	43.0	26.7	22.9	19.3	14.5
Philippines	22.8	24.8	20.3	17.2	15.3	14.7
Thailand	41.2	33.7	20.5	25.5	29.1	21.2
Hong Kong	29.4	34.0	28.9	23.1	20.4	21.3
South Korea	37.5	35.5	25.0	29.6	31.2	25.9
Singapore	34.2	37.2	30.0	23.9	30.2	26.4
Taiwan	25.8	25.1	26.0	22.3	22.4	17.7
Australia	24.1	23.9	26.0	26.4	29.5	27.9
China	39.8	38.0	37.1	39.7	44.1	48.2
India	23.8	24.6	23.3	28.8	34.9	37.0
Japan	30.1	28.3	26.3	23.9	23.6	20.2

Source: authors' calculations based on data from IMF, *World Economic Outlook* database, April 2011

Accompanying the widening current account surpluses in Asia was the rapid accumulation of foreign exchange reserves. Asia's foreign reserves totalled US\$878 billion before the Asian financial crisis but reached US\$6.2 trillion after the GFC (Figure 7). China's foreign reserves increased from about US\$100 billion in 1996 to US\$3 trillion at the end of 2010. India's reserves also saw significant growth, increasing from US\$20.8 billion to US\$314 billion during the same period.

Therefore the Asian region has become a major exporter of capital. But its outflows mainly take the form of debts and securities in advanced economies. For instance, about 67 per cent of China's total international assets during the period 2004–2010 were held in the form of international reserves, while only 6 per cent and 10 per cent, respectively, were in form of FDI and portfolio investment. Intra-regional portfolio investment flows are typically extremely low (Kawai 2007). Of China's total foreign reserves, about 70 per cent was in US dollar-denominated assets. China and Japan are among the world's largest investors in the US Treasury bond market.

**Figure 7: Asia's Foreign Exchange Reserves**

Source: UNCTAD database

While Asia's transition to being a key exporter of capital was related to the policy choices following the Asian financial crisis, this development was somewhat odd as developing economies would be expected to import, rather than export, capital. In that sense, the experience of India and Vietnam is more normal. It is therefore uncertain whether or not Asia's capital exports, which helped to hold down the cost of capital in the global market during the past decade, will continue at current levels.

Another issue related to Asia's capital outflows was the dominance of the US Treasury market as a destination of funds. While in the past this choice was understandable since the Treasury market was probably the safest investment, its return is very low. Taking China as an example, currently its total international assets are roughly double its total international liabilities. But the total returns on assets and liabilities are almost equal, meaning that the investment return on its assets was only half that of its liabilities. More importantly, the safety of such investments has also become a key concern.

These factors led to the set-up of a number of sovereign wealth funds (SWFs) around the region during the past decade. Singapore, with Temasek Holdings and the Government of Singapore Investment Corporation (GIC), was a pioneer in this area. Korea and China established their own SWFs, Korea Investment Corporation (KIC) in 2005 and China Investment Corporation (CIC) in 2007, respectively. Despite the relatively small amounts, these SWFs began to impact Asia's capital exports by becoming involved in not only portfolio investment but also FDI through mergers and acquisitions (UNCTAD 2008 ; Park and Estrada 2009).

Another development was efforts to encourage more outward FDI. In the past, outward FDI was mainly a phenomenon of advanced economies (Huang and Wang 2011), with developing

economies tending to be on the recipient side of such investments. This traditional pattern started to shift gradually when China commenced economic reform in the late 1970s and Hong Kong, Korea and Taiwan, still developing economies at that time, began to gradually relocate their labour-intensive manufacturing factories to the Chinese mainland.

In fact, more than half of outward FDI from developing economies since the 2000s has been from Chinese-speaking regions; China, Hong Kong and Taiwan (see Table 3). In the 1980s, Latin America was a more influential outward FDI player, with Brazil alone accounting for 44 per cent of outward FDI from developing economies. But its share has declined to less than 6 per cent during the past decade. In comparison, China's share is on the rise, with outward FDI flows from China increasing from US\$2.85 billion in 2003 to US\$56.53 billion in 2009 and its share in the stock of outward FDI from developing economies rising from 3.5 to 8.5 per cent during the same period.

**Table 3: Shares of Outward FDI Stock from Developing Economies**  
Per cent

	1981 –1989	1990 –1999	2000 –2003	2004 –2008	2009
<b>Asia</b>					
China	1.2	4.6	3.8	4.5	8.5
Hong Kong	3.2	24.3	39.4	36.9	31.0
India	0.1	0.1	0.4	1.5	2.9
Malaysia	0.8	1.3	1.3	2.0	2.8
Philippines	0.3	0.3	0.2	0.2	0.2
Singapore	1.4	7.7	8.6	9.2	7.9
South Korea	0.6	2.8	2.6	3.2	4.3
Taiwan	16.5	14.3	8.4	7.5	6.7
Thailand	0.1	0.5	0.3	0.4	0.6
<b>Latin America</b>					
Argentina	6.7	3.4	2.4	1.5	1.1
Brazil	44.4	16.0	6.0	6.2	5.9
Chile	0.1	0.7	1.4	1.5	1.5
Colombia	0.3	0.3	0.4	0.5	0.6
Mexico	2.2	1.4	1.4	2.0	2.0
<b>Africa</b>					
Egypt	0.1	0.1	0.1	0.1	0.2
South Africa	10.5	7.2	2.8	2.8	2.4

Source: authors' calculations based on data sourced from the UNCTAD database

## 4. Trade, Financial and Macroeconomic Co-operation

A major trend during the past decade, which was relatively less successful, was policy co-operation among Asian countries. Economic liberalisation in Asia has been going on for decades, with the distinct feature being unilateral reform. Individual economies decided on their own liberalisation programs regardless of other countries' policy choices. This approach has generally been effective, evidenced by the region's unusual growth performance in the past.

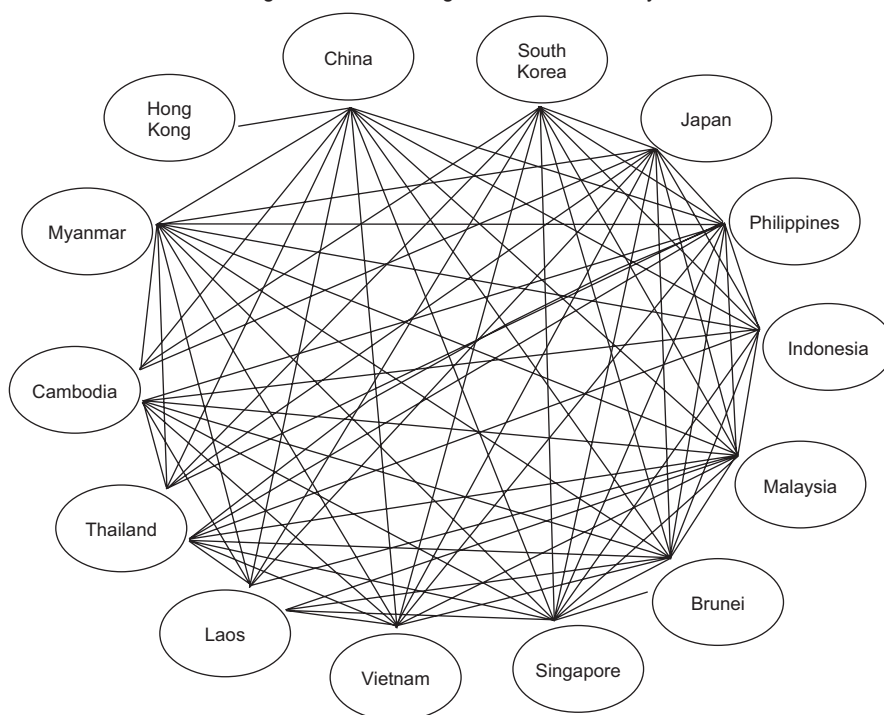
After the Asian financial crisis, however, there was an important change in this unilateral approach and policy-makers made efforts to promote regional co-operation. We think two factors were important in driving this change. The first was deeper integration in the region and possibly even stronger competition among the regional economies. The second was the problems revealed by the Asian financial crisis: individual economies were normally not strong enough to protect themselves and global financial institutions such as the IMF were not seen as reliable.

One area of significant progress during the past decade was the formation of FTAs. The number of bilateral FTAs grew exponentially after the Asia-Pacific Economic Cooperation (APEC) multilateral liberalisation approach failed and led to the so-called 'noodle bowl syndrome' (Baldwin 2008) (Figure 8). The surge of FTAs among the ASEAN+1 economies reflected a domino effect. ASEAN dialogue partners that did not have a FTA with ASEAN would try to sign one to avoid unfavourable economic and diplomatic conditions relative to those dialogue partners that had already signed a FTA (Hamanaka 2010; Ravenhill 2010).<sup>4</sup> From 2000 to August 2010, the number of concluded FTAs in east Asia increased from only 3 to 61, of which 47 are currently in effect. Another 79 FTAs are either under negotiation or proposed. In fact, Asia is ahead of the Americas in terms of FTAs per country – on average Asia has 3.8 concluded FTAs per country compared with 2.9 in the Americas (Kawai and Wignaraja 2011).

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4 ASEAN has ten dialogue partners: Australia, Canada, China, EU, India, Japan, Korea, New Zealand, Russia and the United States.

**Figure 8: Asia's FTA Noodle Bowl Syndrome**  
FTAs signed and under negotiation as at January 2006



Source: Baldwin (2008)

More important changes, however, took place in financial areas. One proposal, made by Japan in the wake of the Asian financial crisis, was to establish a US\$100 billion Asian Monetary Fund (AMF). This proposal had the purpose of at least partially replacing the role of the IMF. While the proposal got support from ASEAN economies and Korea, it was rejected by the United States, China and the IMF and the idea was immediately killed. But with suggestions to establish a European Monetary Fund emerging the proposal might be revived again in the region.

A more concrete step for regional liquidity arrangements was the CMI. It was launched at a meeting of ASEAN+3 finance ministers in May 2000 in Chiang Mai, Thailand. At the core of the CMI was a series of bilateral swap arrangements (BSAs),<sup>5</sup> providing liquidity to Asian countries in case of a possible currency crisis in the future (Table 4). This constituted a *de facto* AMF but avoided the political difficulties in establishing a formal institution, which might have encountered United States opposition (Bowles 2002).

<sup>5</sup> The CMI also included a wide package of financial co-operation measures, including policy dialogue; capital flow monitoring; international financial institutions reform; bond market initiatives; and regional bond funds for the future.



**Table 4: Bilateral Currency Swap Arrangements in Asia**

As at April 2009, US\$ billion

From:	To:	China	Japan	Indonesia	Malaysia	Philippines	Singapore	South Korea	Thailand	Total
China			3.0 <sup>(a)</sup>	4.0	1.5	2.0 <sup>(a)</sup>	na	4.0 <sup>(a)</sup>	2.0	16.5
Japan		3.0 <sup>(a)</sup>		12.0	1.0 <sup>(b)</sup>	6.0	3.0	13.0 <sup>(c)</sup>	6.0	44.0
Indonesia		na	na		na	na	na	2.0	na	2.0
Malaysia		na	na	na		na	na	1.5	na	1.5
Philippines		na	0.5	na	na		na	2.0	na	2.5
Singapore		na	1.0	na	na	na		na	na	1.0
South Korea		4.0 <sup>(a)</sup>	8.0 <sup>(c)</sup>	2.0	1.5	2.0	na		1.0	18.5
Thailand		na	3.0	na	na	na	na	1.0		4.0
<b>Total</b>		<b>7.0</b>	<b>15.5</b>	<b>18.0</b>	<b>4.0</b>	<b>10.0</b>	<b>3.0</b>	<b>23.5</b>	<b>9.0</b>	<b>90.0</b>

Notes: The table does not include the ASEAN Swap Arrangement (ASA), which totals US\$2 billion.

(a) The agreements are in local currencies and the amounts are US dollar equivalents.

(b) There is also a US\$2.5 billion commitment (made on 18 August 1999) under the New Miyazawa Initiative.

(c) Japan-South Korea BSA includes both US dollar swaps (US\$10 billion from Japan to South Korea and US\$5 billion from South Korea to Japan) and local currency swaps (US\$3 billion equivalent each from Japan to South Korea and from South Korea to Japan). The yen-won BSA was raised from US\$3 billion to US\$20 billion equivalent in December 2008 until the end of April 2009, which was later extended to the end of October 2009.

Source: Ministry of Finance Japan website

To develop regional capital markets, an Asian Bond Fund (ABF) was created by the Executives' Meeting of East Asia-Pacific Central Banks (EMEAP) in June 2003. The Asian Bond Fund 1 (ABF1) pooled US\$1 billion of foreign reserves from the eleven central banks<sup>6</sup> and invested in US dollar bonds issued by eight EMEAP<sup>7</sup> sovereign and quasi-sovereign borrowers. To promote development of the local currency bond market in Asia, the second fund, the Asian Bond Fund 2 (ABF2) was launched in June 2006. Not only did the size of funds increase to US\$2 billion, but compared with ABF1, ABF2 was invested in local-currency-denominated sovereign and quasi-sovereign bonds (Fan, Wang and Huang 2010).

During the GFC, Asian countries further institutionalised regional financial co-operation. The idea of multilateral swap arrangements was first articulated in the ASEAN+3 finance ministers meeting in Istanbul in 2005 but progress was slow since it was not a high priority then. The GFC acted as a catalyst on the form of CMI multilateralisation (CMIM) in May 2009. Key features of CMIM include: (1) Japan and the People's Republic of China (PRC) each contribute 32 per cent of the total US\$120 billion fund, with Hong Kong contributing 3.5 per cent as part of the PRC's share;<sup>8</sup> (2) CMIM is still under IMF link, but the linked proportion is subject to review.<sup>9</sup> The progress, from a bilateral network CMI to a common institution CMIM, is a significant change in regional politics, particularly if the ASEAN+3 economies were to implement common decision-making fully (Henning 2011).

These regional liquidity arrangements and regional capital market developments in the wake of the Asian financial crisis are yet to bear fruit. None of the BSAs through CMI have been activated, not even during the GFC, and most of the accumulated surplus capital still flows to western countries. This is partly because the size of both ABF1 and ABF2 are too small and because there are major challenges that arise from the lack of required infrastructure, such as a credit rating and settlement systems, and the difficulty in determining the denomination of the proposed Asian basket currency bonds (McKibbin and Chanthapun 2009).

Finally, after the Asian financial crisis, economists and policy-makers started to work on potential currency integration. The importance of this was further highlighted by the risks associated with the US dollar being the dominant reserve currency, such as potential conflicts between national economic policy objectives and global reserve currency responsibility. This was an example of the Triffin dilemma, in which the widening of the US current account deficit conflicted with global investors' long-term confidence in the US dollar as a reserve asset.

Over the years, global central banks were diversifying their reserve investments away from the US dollar. The share of US dollar assets in total foreign exchange reserves declined from 71 per cent in 1999 to 62.2 per cent in 2009 (Table 5). The decline was even more profound among emerging and developing economies. Meanwhile, the share of euro assets in total reserves increased by almost 10 percentage points, from 17.9 per cent to 27.3 per cent.

6 Including the Reserve Bank of Australia, People's Bank of China, Hong Kong Monetary Authority, Bank Indonesia, Bank of Japan, the Bank of Korea, Bank Negara Malaysia, Reserve Bank of New Zealand, Bangko Sentral ng Pilipinas, Monetary Authority of Singapore and Bank of Thailand.

7 The three EMEAP countries in which the ABF1 (and also ABF2) will not invest are Australia, Japan and New Zealand.

8 The other shares were: Korea (16 per cent); Indonesia, Malaysia, Singapore and Thailand (4 per cent each); those of the remaining six south-east Asian members sum to 4 per cent. Overall, the three north-east Asian countries contributed 80 per cent and the ten ASEAN countries contributed 20 per cent.

9 Reducing the IMF-linked proportion depends on the development of a robust regional surveillance mechanism and the finance ministers committing to establishing an 'independent surveillance unit'.

**Table 5: Currency Shares in Total Identified Foreign Exchange Reserves**  
Per cent

	1999	2002	2005	2008	2009
<b>All countries</b>					
US dollar	71.0	67.1	66.9	64.1	62.2
Euro	17.9	23.8	24.0	26.4	27.3
Japanese yen	6.4	4.4	3.6	3.1	3.0
Pound sterling	2.9	2.8	3.6	4.0	4.3
Swiss franc	0.2	0.4	0.1	0.1	0.1
Other currencies	1.6	1.6	1.7	2.2	3.1
<b>Emerging and developing economies</b>					
US dollar	74.2	68.6	62.7	60.7	58.5
Euro	17.5	25.3	29.2	30.0	30.1
Japanese yen	3.9	1.7	1.5	1.9	1.8
Pound sterling	2.6	2.8	5.1	5.4	5.9
Swiss franc	0.5	0.1	0.1	0.1	0.0
Other currencies	1.4	1.5	1.5	1.9	3.6

Source: IMF, *Annual Report 2010*

Balance of payment risks revealed by the Asian financial crisis and potential dollar problems highlighted by the GFC prompted economists to explore the appropriateness and rationale for Asia to form an optimal currency area (Alesina and Barro 2002; Barro and Lee 2009; McKibbin and Chanthapun 2009). Ogawa and Shimizu (2005, 2006) proposed to create an Asian Monetary Unit (AMU) as a weighted average of 13 east Asian currencies (ASEAN+3). At the same time, the Asian Development Bank (ADB) also planned to create an Asia Currency Unit (ACU), which was similar to the precursor to the euro, the European Currency Unit (ECU). To date, this idea has not gone very far even in policy discussion.

## 5. Prospects for Asia in the Coming Decade

What is going to happen in the coming decade? Much of the answer to this question depends on the sustainability of growth in the region. More importantly, many Asian economies are at important turning points in their development, in terms of both industrial structure and economic rebalancing. Therefore, some new trends may emerge.

### 5.1 Sustainability of Asian growth

The first issue we need to settle is the question of growth sustainability. The Japanese economy has been stagnating for almost two decades, although its income level is already among the highest in the world. Growth in the NIEs has been moderating as they quickly approach the economic frontier, but they will most likely be able to continue steady expansion in the coming

decade. Perhaps there are some uncertainties surrounding the growth prospects of China, India and south-east Asia.

For the past three decades, China has been the most successful economy in the region, maintaining an average annual GDP growth rate of 10 per cent. Alongside this economic miracle, risks have also increased significantly, including over-investment, high reliance on commodity consumption, large current account surpluses, low resource efficiency and income inequality. In other words, the current growth model is 'uncoordinated, unbalanced, inefficient and unsustainable' to use the phrase of Premier Wen. Since 2003, the Government has been making serious efforts to rebalance the economy and to improve the quality of growth. Most of the efforts, however, have failed so far. The 12th Five-Year Plan again highlighted the importance of transforming the pattern of economic development.

Whether or not the new Five-Year Plan will be successful depends on reform of the incentive structure for both the Government and companies. The performance assessment system for government officials needs to be improved by de-emphasising GDP growth. But this may require a certain degree of political reform. More importantly, the Government needs to remove the widespread distortions in the factor markets in order to correct the incentives for producers, investors and exporters. Some of these changes are already on the way, evidenced by rapid increases in wages, adjustments of resource prices and the expected introduction of market-based interest rates. If these reforms are implemented smoothly, then Chinese growth is likely to slow but be of higher quality and more sustainable.

Economic growth in India has been accelerating for the past decade or two, with its growth potential rising from around 7 per cent to 9 per cent currently. Given India's relatively low income level, it may grow even faster in the coming decades. India's biggest challenge, however, is how to let the general public, especially unskilled workers, benefit from economic growth. While India's rapid growth has been mainly service- and large machinery-orientated, it remains a serious challenge for it to develop labour-intensive manufacturing industries. So far, India has failed to do so despite its overall growth success. This may be related to a number of obstacles, including rigid labour laws, high manufacturing tax burdens and backward infrastructure. While it does not seem a problem for the Indian economy to keep growing at 7 per cent, more rapid and sustainable growth probably requires the participation of unskilled workers.

South-east Asian economies still suffer from the consequences of the collapse in investment during the Asian financial crisis. Today, investment rates in these economies are, on average, 10 percentage points lower than their pre-Asian financial crisis levels. The governments of these countries have been trying for more than 10 years to raise investment rates without much success. More importantly, the economies of Malaysia and Thailand are quickly approaching middle-income levels. It is perhaps an even greater challenge for these economies to overcome the 'middle-income trap' by, for example, improving innovation capability, upgrading industrial structure or reducing income inequality.

Our general assessment is that Asian economies will probably be able to maintain strong economic growth. Growth potential should moderate in the coming decade with the exception of India and a few other south Asian economies, but this would still see Asian economies growing faster than the rest of the world and Asia's share of global GDP consequently rising.

## 5.2 Economic structural rebalancing

Global economic forums, such as the IMF and the G-20, have placed great emphasis on global rebalancing following the GFC. These organisations are even considering indicative requirements of external imbalances, such as current account surpluses or deficits that are larger than 4 per cent of GDP. For Asia, this could require a number of countries, particularly China and Japan, to further reduce their current account surpluses.

Rebalancing is consistent with the region's aim of achieving balanced, inclusive and sustained growth. Most Asian economies had large current account deficits in the mid 1990s, which led to concerns about currency depreciation and eventually caused the withdrawal of foreign capital from the region. Therefore, perceived difficulties servicing the current account deficits were closely related to the outbreak of the Asian financial crisis. During the past decade, most countries shifted to large current account surpluses. While a surplus contributes to GDP growth, it often becomes a source of trade tensions with trading partners, especially for large countries like China and Japan.

For most Asian economies, large current account surpluses are, at least partly, policy driven. After all, it is abnormal for low- and middle-income countries to export large volumes of capital. But how to go about rebalancing the economy remains a controversial issue for countries in Asia. Many Asian currencies have become much more flexible in the post-Asian financial crisis period, most clearly the Korean won, Indian rupee and Indonesian rupiah. Other currencies remain more inflexible, especially the Chinese renminbi, Malaysian ringgit, Taiwan dollar and Vietnamese dong. It would be ideal to fully utilise the exchange rate mechanism for external sector adjustment but so far Asian policy-makers remain cautious.

Perhaps the Chinese experience provides a good example. Since 2006 when the Government announced the 11th Five-Year Plan, China has been pursuing three separate objectives for its international economic policy: gradual appreciation of the currency; balance of the external accounts; and slower accumulation of foreign reserves. Unfortunately these policy objectives are contradictory among themselves. In the end, the only objective achieved was probably the gradual appreciation of the currency. External surpluses grew larger in the following years and foreign currency reserves surged.

The Chinese Government has placed so much emphasis on the currency because it was directly linked to exports, job creation and GDP growth. In the Chinese world of macroeconomic policy, the Government intends to achieve three key objectives: supporting growth; controlling inflation; and rebalancing the economy. Whenever there is a trade-off, however, the policy-makers always put growth and inflation ahead of rebalancing.

But this begs the question of what policy strategy China is likely to adopt to rebalance its economy. We expect to see a historical change in China's external economic policies in the coming years. In a Mundell-Fleming trilemma, a country can only achieve two of the three international economic policy objectives: free capital flows; a stable exchange rate; and independent monetary policy. With a rigid exchange rate and loose capital controls, China's monetary policy becomes increasingly challenging, illustrated by hot money inflows and difficulties managing liquidity conditions. While a gradual appreciation is probably better in terms of providing time for the real

sector to adjust, the problem is that it encourages expectations for future currency appreciation and induces more hot money flows.

Chinese policy-makers may shift toward a freely floating exchange rate regime and even basic convertibility under the capital account, but it is likely to be a gradual process taking three to five years. The first step would be for the central bank to stop intervening in the foreign exchange market. The currency may appreciate at first, but only after that initial realignment would two-way fluctuation become possible. The Government could also use a stabilisation fund to prevent excessive exchange rate volatility. In the meantime, the authorities could also move to give up the remaining restrictions on FDI and cross-border debt financing. Restrictions on cross-border portfolio investment may continue in the initial period, but quotas for Qualified Foreign Institutional Investors (QFII) and Qualified Domestic Institutional Investors (QDII) could be significantly increased and their terms significantly eased.

If all these happen alongside domestic structural reforms, we are likely to see a significant reduction in the current account surplus in China and across the region. In the near term, however, we probably should not expect all countries in emerging Asia to run current account deficits, as policy adjustments may well be gradual in most countries.

### 5.3 Progress of regional integration

Asia has made important progress in designing and implementing regional co-operation mechanisms, from FTAs to the CMLs; however, real achievements have been limited. This may be because regional co-operation will take much longer to bear fruit. It may also be because political commitments to regional co-operation are still weak or lacking. ASEAN countries have been more advanced in economic integration, especially realising free trade between themselves, but any integration of the ASEAN economies without involving other large economies such as China, India or Japan is unlikely to be a significant event globally. Bringing together China, India and Japan, however, will be extremely difficult.

One of the key factors promoting active search for regional co-operation mechanisms was the region's feeling of being left out. The IMF's role during the Asian financial crisis was widely criticised in the region for being too slow and then too rigid in terms of policy conditionality. North America formed the North American Free Trade Agreement (NAFTA) and Western Europe had the European Union and then the euro area. Asian leaders felt the strong need to create something of their own for Asia. But the initiatives were either not creative enough or not large enough to have an impact. The pooled foreign reserves were not utilised during the GFC due to their link to the IMF conditionality requirements and the bond funds did not have a material impact on regional bond market development.

An important change after the GFC was the elevation of the G-20 summit, which includes a number of Asian countries such as China, India, Indonesia, Japan and Korea, for managing global economic affairs. While global liberalisation and regional integration are not exact substitutes for each other, the G-20 is likely to absorb more time and energy of the key Asian policy-makers.

Asian economies are likely to continue to integrate among themselves and may become an important global economic block. If we make a simple extrapolation of the IMF PPP-based GDP

data, by the end the second decade of the 21st century, Asia's share of global GDP will be close to 40 per cent. This share would be greater than double that of the United States and the EU. Perhaps that is the time when we should expect true 'decoupling' of the Asian economies from the United States.

While regional policy co-ordination might be difficult, market forces could continue to drive economic integration in the region. This would happen in the areas of trade, investment and finance. For instance, some experts have been pushing for the creation of an Asian currency. This idea has not been well accepted across the region, given the wide divergence of countries in terms of economic development, culture, political institutions and different macroeconomic cycles.

But if currency integration is beneficial then it could happen even without political co-ordination among different countries. We summarise currency integration in today's world into two types: we call one the dollar model and the other the euro model. The euro model, in which countries adopt a common currency and many experts in Asia are promoting, is based on political commitment and requires individual countries to surrender their monetary sovereignty. The dollar model, in which countries link their currency to a major global currency, is based on market forces, without explicit agreement between governments. For instance, east Asia used to be a dollar block – this was a unilateral decision made by Asian governments.

The same could happen again in Asia, although it is unclear yet which currency would stand out. Some argue that the renminbi could be a potential candidate to join the US dollar and euro to be one of three global reserve currencies. Of course, this is dependent on many forthcoming reforms in China, including exchange rate flexibility, capital account convertibility, central banking and possibly even political reforms. According to Ito (2010), however, there is already a *de facto* renminbi block forming in Asia, as currently the renminbi is already at par with the dollar in Asia's exchange rate decisions (Table 6).

**Table 6: Estimated Currency Basket Weights for Asian Currencies**

	US dollar	Euro	Japanese yen	Chinese renminbi
Indian rupee	0.56	0.12	-0.01	0.33
Indonesian rupiah	0.47	0.08	-0.01	0.46
Malaysian ringgit	0.45	0.15	-0.03	0.43
Philippine peso	0.73	0.16	-0.04	0.14
Singapore dollar	0.25	0.29	-0.03	0.49
South Korean won	0.48	0.48	-0.24	0.28
Thailand baht	0.49	0.13	0.01	0.37
Vietnamese dong	1.04	0.00	0.00	-0.03

Source: Ito (2010)

## 6. Concluding Remarks

Asian economies have changed significantly during the past decade. Ten years ago, Asian economies were mainly low-cost exporters of labour-intensive products. Today, they are a part of integrated supply chains across the region and the most dominant consumers of global commodities. Ten years ago, Asian economies ran current account deficits, faced pressure for currency depreciation and imported capital. Today, most of them have large current account surpluses, probably undervalued currencies and massive capital exports. Ten years ago, Asian economies opted for a unilateral approach in economic liberalisation. Today, they focus much more on regional co-operation in areas of trade, finance and macroeconomic policies.

All these changes have had a significant impact on the world economy. Asia has been a key driver of the super-cycle of the global commodity market, which was a direct contributor to strong growth of the Australian economy. Asian economies were also important players in determining global liquidity conditions and costs of capital. Some even blamed Asia for causing the sub-prime crisis in the United States by supplying too much liquidity to the world market. While there were many policy initiatives trying to promote regional co-operation, there was little concrete achievement in terms of real economic impact.

Asian economies are at an important juncture in terms of economic development and structural reform. China faces an important task of transforming its economic development pattern, without which its growth trajectory may be disrupted. Some south-east Asian economies are faced with 'middle-income traps', while at the same time trying very hard to revive investment. Most regional economies have to accommodate the rebalancing agenda adopted by the G-20.

These and other events will likely lead to some important changes in Asia's economic trends. First, by 2020, Asian economies will account for 40 per cent of world GDP measured in PPP terms and will not only be prominent producers but also major consumers of finished goods. Conditional on successful implementation of the needed structural reforms, Asian economies are likely to be able to continue their steady expansion, although their pace of growth might moderate further, with the possible exception of India. This might eventually decouple the Asian economies from the advanced economies.

Second, Asia's demand for commodities will probably remain strong, but the pace of growth should slow somewhat. There are still very strong fundamentals supporting commodity consumption in Asia, driven by continued industrialisation and urbanisation across the region. Alongside the moderation of economic growth across the region, investment growth may also slow, particularly in China. More importantly, as China strives to transform its economic structure, the resource intensity of its economic activities may decline over time.

Third, capital outflows from Asia may shrink in the coming years but may concentrate more in cross-border portfolio investment and FDI. Following worldwide rebalancing efforts, Asia is likely to make gradual progress in reducing its current account surpluses in most countries. This will probably be done through currency appreciation and other structural reforms. Asia as a whole will probably remain a surplus region but the magnitude could be much smaller. Foreign assets will likely be held more by the private sector, rather than as foreign exchange reserves.



Fourth, with rising costs at home, China and India could become a new source of global inflationary pressures in the coming decade. China and India were key contributors to global disinflationary pressures in the past, due to the rapid shift to extremely low-cost production locations from relatively high-cost locations. Even though there are countries with even lower costs, they may not be big enough to replace China or India.

Fifth, while Asian countries will probably continue to push ahead with regional integration efforts, we are sceptical about real progress outside of trade and FDI. Also, many of the initiatives in the areas of finance and macroeconomic policy involve economic sovereignty and require political commitment. Historical and institutional differences among the regional economies mean that this cannot be achieved quickly. It is possible, however, that Asian leaders will now re-emphasise the global framework, especially since key players are part of the G-20 process. In addition, some market-driven processes may also move ahead, such as voluntary currency integration.

Finally, if Asian policy-makers struggle with the structural issues, it might be difficult to completely avoid a crisis in the coming decade, which could start off the world's next recession. The experiences of Asian economies during the GFC suggested that they had made little progress in limiting financial and macroeconomic risks. While Chinese policy-makers used fiscal and monetary policies to boost economic growth during the GFC, these policies have backfired in terms of high inflation, high local government debts and possibly large non-performing loans. Further, it is almost impossible for the Chinese Government to repeat what it did during the GFC. It is quite possible that Asia or China will experience a new financial crisis in the coming decade or two.

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# Discussion

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## 1. Mark Thirlwell\*

Yiping Huang and Bijun Wang have written an interesting paper looking at how the past decade has transformed the Asian economies and speculating as to what further changes the next 10 years might bring. Starting with the past decade, the authors concentrate on what they see as three of the most fundamental changes:

1. the rise of vertically integrated supply chains across the region and the associated role of regional demand in driving a commodity super-cycle;
2. the emergence of large current account surpluses, the accumulation of huge stocks of foreign exchange reserves and the consequent rise of Asia as a major capital exporter; and
3. important but nevertheless strictly limited progress with formal regional integration efforts.

Turning to what the next 10 years might bring, Huang and Wang focus in particular on the sustainability of the region's – and especially China's – growth performance, and reach the plausible judgment that growth in the years ahead may turn out to be slower but of a higher quality. They also canvass a range of other issues, including the prospects for ongoing structural change, further steps towards the liberalisation of China's exchange rate regime, the mixed prospects for further regional integration and the possibility that the next major international economic crisis will originate in Asia.

Their paper covers a lot of ground and it's hard to disagree with many of the judgments they make. Of course, much else has happened over the same period and it is easy enough to think of a range of other developments which might have squeezed onto their list in the absence of constraints on time and space. To take just another three examples, they could also have discussed:

1. the continued rapid pace of urbanisation across the region, which is currently seeing Asia add some 44 million people to the urban population each year; in China alone the urbanisation rate has risen from 36 per cent in 2000 to 47 per cent in 2010 in what has been a major contributor to resource demand;<sup>1</sup>
2. the ongoing demographic transition, with much of east Asia in particular now in the process of leaving the demographic sweet spot behind, with some projections suggesting, for example, that the working-age population in China and South Korea will peak around 2015;<sup>2</sup> and
3. the significant changes in regional poverty levels and in income distribution, including the emergence of that marketers' dream, the new Asian middle class, alongside concerns regarding growing inequality.<sup>3</sup>

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\* Lowy Institute for International Policy.

1 See Asian Development Bank (2008).

2 See, for example, Bloom and Finlay (2009).

3 See Kharas (2010) and Sharma, Inchauste and Feng (2011).

It also seems entirely appropriate that a conference looking at the Australian economy in the 2000s should open with a paper covering developments in the Asian region.

Over the past decade, Australia's ties with Asia in general, with east Asia in particular, and with China most of all, have deepened significantly. As the global centre of economic activity has moved to the east, and closer to Australia, so the gravitational pull of the Asian region on Australia's economic fortunes has increased.<sup>4</sup> So, for example, while east Asia already accounted for around 45 per cent of total (goods and services) Australian trade flows by value in 2000, by 2010 that share had increased by about 10 percentage points.<sup>5</sup> More specifically, while China only accounted for less than 6 per cent of total Australian trade in 2000, by 2010 that figure had jumped to more than 19 per cent. Granted, the investment relationship with the region has lagged well behind the trading one, although even here, by the end of the decade Chinese investment into Australia's resource sector had started to expand appreciably. Meanwhile, developments in the Chinese economy have become increasingly important drivers of market sentiment and hence of asset prices, including the share market and the exchange rate. Perhaps most dramatically of all, over the past decade China's voracious appetite for resources has helped power Australia's terms of trade to record highs and so reshaped the pattern of national comparative advantage.<sup>6</sup>

In order to understand many of the key forces that have helped shape the Australian economy over the past decade, and which are widely expected to do the same over the next decade, it does therefore seem to make an awful lot of sense to start off by thinking about developments in, and prospects for, the Asian region.

That said, however, from the perspective of tracking movements in goods, services and capital, it seems reasonable to ask whether a focus on a strictly geographical 'Asia' makes as much sense as other ways of cutting the data. Where geographical definitions map neatly on to political and economic institutions – say in the case of the European Union, or maybe the euro area – then perhaps adopting this kind of geographical shorthand makes sense. But in a region where this is not so, there is a case for using, say, network analysis to map actually existing economic flows and relationships to provide a different framework.

Alternatively, there is a plausible case – particularly but certainly not entirely from an Australian perspective – that the most important developments over the past decade have been not so much about Asia overall as about China. As is well known, over this period China has become the world's largest exporter, second largest importer, second largest manufacturer and largest single source of global savings. According to a recent International Monetary Fund (IMF) stocktake, for example, in 2000 China was the first or second largest trading partner of just 13 countries, which between them accounted for about 15 per cent of global GDP; now it holds the same position with 78 countries accounting for 55 per cent of global GDP. From a network perspective, China is now the world's most 'central' trader and has a growing, systemic importance.<sup>7</sup> While China's main interaction with the rest of the world economy is through trade flows, financial linkages

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4 See Quah (2011).

5 See Thirlwell (2011).

6 While demand from emerging markets has played a key role in driving the resources boom, it has not been the only factor at work, with other factors in play including easy US monetary policy. See, for example, Cagliarini and McKibbin (2009).

7 See International Monetary Fund (2011).

are also on the rise. And as noted above, China's importance to the Australian economy has risen markedly over the past decade.

The huge increase in China's relative size over the past decade certainly dominates any simple accounting of regional economic trends: between 2000 and 2010 China's share of regional GDP has increased by much more than 10 percentage points, regardless of whether output is measured using purchasing power parity or US dollar exchange rates.<sup>8</sup> That's been mirrored by an equally sharp decline in the share of Japan, while there have been only comparatively minor changes in the shares of the other economies. Similarly, a look at the value of world merchandise trade in 2010 shows that the value of, for example, Indian trade is just 18 per cent of that of China's and even Japan's trade is a little less than half of China's by value.<sup>9</sup>

In other words, while the paper does a good job in keeping its focus broader than that of one economy, there's also a case to be made that one economy is where much of the key action has been found.

Sticking with a China-centric perspective for a moment, one interesting way of thinking about the past decade is as one which has seen the Chinese development model deliver strong growth and rapid structural change but which has also, perhaps, pushed that model close to its limits: the hefty percentage point increase in the ratio of investment to GDP and the parallel squeeze on the private consumption ratio over the past 10 years are both suggestive of limits now either rapidly approaching or already reached. This is recognised in the paper, which makes the sensible judgment that the future rebalancing of the Chinese economy will see somewhat slower, but also more sustainable and higher-quality, growth. While that may well turn out to be right, growth transitions can be far from smooth and a sharper, more discontinuous, adjustment would seem to be a significant risk. That said, as the figure of (failed) past consensus forecasts of Chinese growth slowdowns reproduced in Connolly and Orsmond (this volume) makes clear, betting against the policy-makers in Beijing has so far been a losing proposition.

Finally, the changing nature of the external environment within which both the Chinese model and the Asian development story have unfolded is another potentially fruitful issue to consider.

For example, the paper rightly emphasises the central role played by the growth of regional production chains over the past decade. It follows that one important question is the extent to which the current configuration of regional production reflects the circumstances of the past decade or so: strong US consumption demand; open rich country markets; particular multinational corporation growth strategies; a specific configuration of energy and transport costs; and so forth. Given that the current decade is already seeing substantial changes to many of these variables, the way in which the current regional growth model adapts to these new circumstances will be critical.<sup>10</sup>

Also, there have been significant changes in the global institutional arrangements within which the region operates. The rise of the G-20 has arguably been the most important of these from a

8 Based on calculations comprising China, India, Japan, the ASEAN-5 (Indonesia, Malaysia, Philippines, Thailand and Vietnam) and the four NIEs (Hong Kong SAR, Singapore, South Korea and Taiwan) using the IMF *World Economic Outlook* database.

9 Values calculated from World Trade Organization statistical database.

10 See the discussion in Yusuf and Nabeshima (2010).

regional perspective, but the ongoing failure to conclude the Doha Round of world trade talks and the strictly limited progress with IMF reform (the Europeans have once again managed to maintain their grip on the leadership of the Fund despite all of the changes in the international distribution of economic weight) are also noteworthy. Similarly, the growing strains apparent in the euro area experiment may also have significant demonstration effects on future regional integration initiatives.

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## 2. General Discussion

The initial discussion centred on the Chinese growth model and, in particular, China's exchange rate regime – seen as a key weakness of the growth model. It was suggested that the undervalued yuan was generating inflationary pressures in China, with sterilisation doing little to offset this. Furthermore, the undervalued currency was seen by one participant as a key determinant of global inflationary pressures. During the latter part of the 2000s, high energy and food price inflation had been accompanied by rising manufacturing prices (unlike the first half of the decade where manufacturing prices were falling), feeding into higher inflation in the United States and Europe. Another participant, however, suggested that greater technological progress and enhanced productivity in China would work to offset increasing cost pressures in the economy.

The discussion then turned to the next phase of China's economic development, transitioning from the current high growth model to a more sustainable development pattern along the lines

of that experienced by other major economies. Key questions raised by participants included how the transition will take place and whether it can play out without causing substantial dislocation for the economy. Participants thought that a substantial realignment of the real exchange was necessary to match the dramatic shift in economic weight towards the region in the past decade. It was also mentioned that distortions in factor markets (capital, labour and land markets) will need to be removed in order to facilitate the transition of the Chinese growth model. One participant thought that there were already signs of this occurring, noting that income inequality had improved somewhat, regional development was becoming more balanced (helping to increase consumption) and real wages have been increasing. Further helping the rebalancing phase, a number of forces working to reduce China's saving rate were highlighted by another participant, including: lower real interest rates making saving less attractive; the improving social welfare system; and demographic shifts (with demographics to become a challenge from the middle of the decade, when the dependency ratio starts rising – Japan's experience was mentioned here).

The possibility of a slowdown or even a financial crisis in China was also a topic of substantial discussion. Rapid urbanisation (an 'urbanisation avalanche') and overheating in the residential construction industry was seen by one participant as a potential risk in China, and the likely trigger for any domestically generated crisis. There was also a discussion on the appropriate ordering of financial reforms – should domestic financial liberalisation precede exchange rate liberalisation? It was mentioned that while the reforms taking place to push domestic financial liberalisation were a good thing (e.g. opening up capital markets would impose discipline on banks), there was a risk that if markets were opened up too much and too soon it could lead to a financial crisis (although it was mentioned that a 'mild' financial crisis could actually lead to reforms and a stronger financial system in the medium term). Related to this, one participant asked how difficult it would be for China to repeat the fiscal stimulus seen during the global financial crisis if there was a sharp downturn. In response, it was suggested that Chinese authorities would probably still respond rather than letting growth slow significantly.

Finally, one participant argued that, based on technological convergence grounds, we should expect to see the growth rate in China slow at some point. Another participant also thought that the strong growth in China, driven by capital deepening, was in line with an exogenous growth model where an economy is a long way from equilibrium.





# Apocalypse Then: The Evolution of the North Atlantic Economy and the Global Crisis

Tamim Bayoumi and Trung Bui\*

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## 1. Introduction

The financial crisis that struck the global economy in late 2008 had its origins in excesses in the US housing market. Its reverberations, however, were felt around the world and nowhere more keenly than in Western Europe. Indeed, in many ways they are still being felt as problems in the periphery of the euro area continue to mire Western Europe in financial volatility. This paper seeks to explain these developments by taking a wider historical view of the evolution over recent decades of the North Atlantic economy, comprising North America and Western Europe. We will argue that while trade links were in relative stasis, increasing financial ties coming from a combination of greater competition and divergent regulatory policies created a uniquely close financial relationship between these two parts of the world, and that this link was a crucial conduit in siphoning US shocks into global ones (see IMF (2011)).

The next section of this paper lays some groundwork by tracing the evolution of trade and financial links across the North Atlantic, and discusses the forces that drove increasing close financial ties. This is followed by an examination of empirical evidence on global growth spillovers across the North Atlantic and between its three major components – the United States, the euro area and the United Kingdom – with a particular focus on how our understanding of these spillovers has been changed by the crisis, and how these results can be mapped into macroeconomic model simulations, with an emphasis on how to model financial linkages.

## 2. The Evolution of North Atlantic Trade and Financial Links

When macroeconomists think about economic ties across regions, they naturally gravitate to trade. Direct transfers of goods and services across economies are the most visible way in which real economic developments in one region affect another. There are complications, of course. In particular, the evolution of sophisticated cross-border supply chains in intermediate goods means that it is no longer possible to simply look at bilateral trade between, say, the United States and Germany. While these issues are most pertinent in Asia, they have become increasingly so in North America – given the North American Free Trade Agreement (NAFTA) between the United States, Canada and Mexico – and Europe – given the fillip to integration produced by reintegration of

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\* The views expressed in this paper are those of the authors and do not necessarily reflect those of the International Monetary Fund (IMF) or IMF policy. Many thanks to Francis Vitek for helpful comments and support, which hugely improved the paper and to Kathryn Dominguez (our discussant) and other members of the Conference for key insights.

Eastern and Western Europe after the fall of the Berlin wall, the single market and the introduction of the euro.

Even given these developments within North America and Western Europe, however, the overall impression from data on trade across the North Atlantic is one of stasis. Figure A1 shows heat maps of trade links between the United States and the rest of the world from 1980, 1990, 2000 and 2010. Bilateral exports and imports are reported as a ratio of recipient country GDP. The United States is chosen as the centre of focus as it remains the hub of the North American trade system (see Riad and Saborowski (2011)). In the absence of a similarly dominant hub in Europe, it is probably the best node from which to analyse the North Atlantic trade system. These heat maps indicate significant changes in US trade over time, but the centre of this dynamism is not with Western Europe. Rather, it is within North America and with Asia. By contrast with these evolving relationships, the trade across the North Atlantic seems to be relatively fixed.

Figure A2 shows equivalent results for Germany, the centre of the euro area export hub. Again, these heat maps vividly illustrate the importance of growing supply chains in Western and, in particular, Eastern Europe as a driver of trade dynamics. But they do not change the basic conclusion of the lack of dynamism in the North Atlantic trade system since 1980.

It is possible, of course, that this appearance of lack of change misses more subtle linkages through supply chains. Accordingly, Figures A3 and A4 repeat the exercise, but looking only at manufacturing trade and taking into account the full web of international trade links using the methodology discussed in Vidon (2011).<sup>1</sup> Briefly, the full matrix of bilateral exports across countries in terms of recipient GDP is calculated as matrix  $X$ . Now, if demand in country A falls, this in turn implies a fall in exports from (say) country B to country A and hence a fall in demand in country B. The impact of this fall in demand in country B will then be propagated across its trading partners. It is easy to show that if you assume a fixed global elasticity of demand for exports of  $\alpha$ , then the impact is simply  $(1 - \alpha X)^{-1}$  (in Figures A3 and A4 this elasticity is assumed to be unity). As can be seen in the figures, adding supply chains has little impact on the basic story – North Atlantic trade remains in relative stasis.

The story with regard to financial links both in terms of asset holdings and in terms of banking ties, however, is dramatically different and much more dynamic. Starting with asset holdings, Figures A5–A7 show heat maps similar to those in Figure A1, except that they measure stocks of US holdings of foreign bonds, stocks of foreign holdings of US bonds, and the net position, respectively, all as a per cent of foreign GDP. Again, the United States is placed at the centre of the analysis, but in this case because of data availability. These data on bilateral asset holdings come from the US Treasury International Capital System (TIC) database. No equivalently long historical data of bilateral asset holdings is available for Western Europe (or, for that matter, anywhere else) – although more recently the International Monetary Fund's (IMF) Coordinated Portfolio Investment Survey provides data across a wider set of countries but with more limited coverage (e.g. official holdings are not included). We start the heat maps in 1994, the earliest date for which reasonably generalised data are available, and report also for 2001, 2007 (the eve of the crisis), and 2009.

As can be seen from Figure A5, US holdings of foreign bonds has risen over time, with this increase focused on Western Europe or, more accurately, the financial centres of the United Kingdom,

<sup>1</sup> Due to data availability, we chose the Group of Twenty and some major emerging market countries for the years 1995, 2000, 2007 and 2009. The full list of countries is available upon request from the authors.

the Netherlands, and, more recently, Ireland. A similar deepening of financial ties can be seen over time in foreign holdings of US bonds, but this is geographically much more generalised, encompassing major emerging market holders of international reserves such as China, Russia, Brazil and Middle East oil exporters, as well as Western European financial centres (Figure A6). Indeed, it is the emerging markets that are often major net lenders to the United States (Figure A7).

Importantly, however, holdings of US assets by Western European financial centres were much more focused on private bonds than were those of the rest of the world. The TIC data allow a further division between bilateral holdings of US government bonds, agencies (essentially, holdings of the quasi-public bonds of Freddie Mac and Fannie Mae, which were often assumed to contain an implicit government guarantee), and private bonds. Figure A8 shows the evolution of foreign holdings of corporate bonds using the same format as that for overall bonds shown in Figure A6. The unique dynamic evolution of the link between the United States and financial centres in Western Europe is now clear; this is the region of the world that developed deep holdings of a wide variety of US bonds, rather than simply buying Treasuries as reserve managers looked for a store of value.

Bilateral equity holdings were also much deeper between the United States and Western Europe. Figures A9 and A10 show the evolution of cross-border holdings of US and foreign equities, again from the TIC database, in the same format as the previous four figures. Again, Western European financial centres stand out.

We now turn to another aspect of financial linkages, namely cross-border asset holdings across banks. These data come from the Bank for International Settlements (BIS), and are only available from 1999 and even then the coverage is limited. Therefore, Figures A11–A13 show the evolution of these ties only for 1999, 2007 (pre-crisis), 2008 and 2009. The inclusion of 2008 and 2009 is because there is an important break in the series for US banking claims on other countries at the end of 2008. Prior to this date, only US commercial banks were included in the survey. After this date, US investment banks were included. This is important as US investment banks (which were confusingly counted as non-banks for regulatory purposes and were funding exclusively in wholesale markets) became an increasingly important force in the US banking system. Assets of broker-dealers (a good approximation of US investment banks available in the US Flow of Funds Accounts database) rose over time from less than 3 per cent of commercial bank assets in 1980 to around 30 per cent in 2007, on the eve of the global financial crisis. It then halved after the collapse of Lehman Brothers to 15 per cent currently as wholesale funding came under pressure.

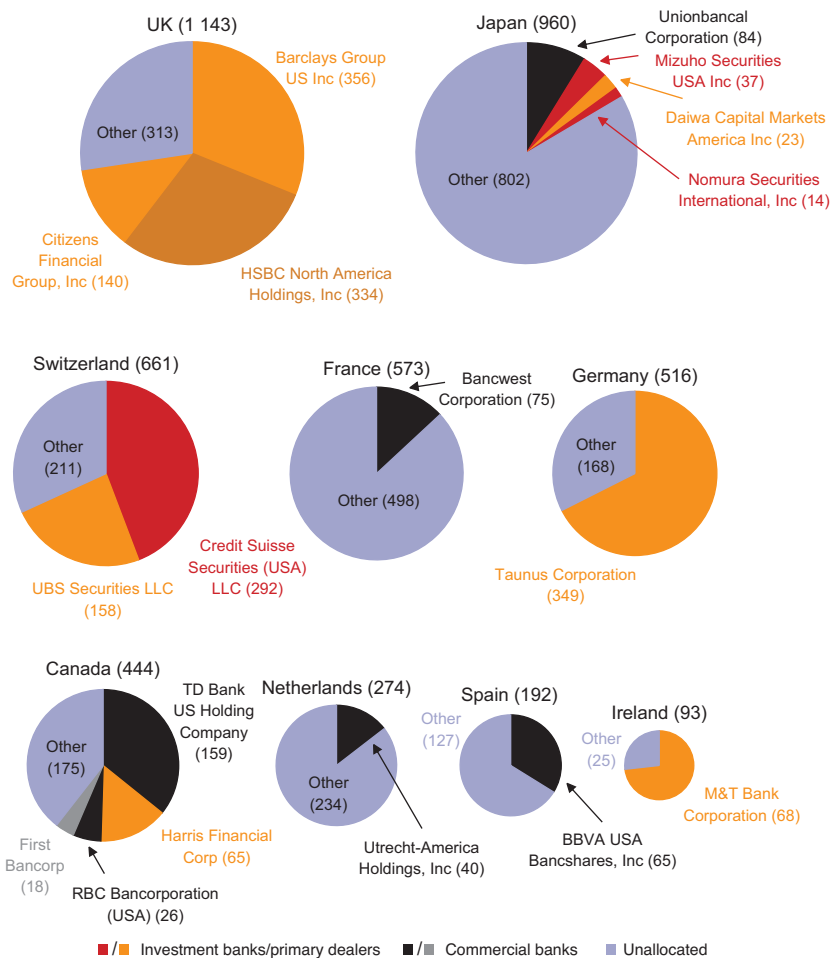
Starting with US claims on foreign banking systems, the story coming from Figure A11 is one of close initial links with Western European financial centres that grew over time, given a further boost by the addition of US investment banks into the data in 2009. Outside of North America and a few small countries with particular links to the United States, this is a Western European trend, not a global one. Turning to foreign banking systems' claims on US banks (Figure A12), Western Europe again stands out, but in this case the story is more generalised. These US claims had always been relatively large – particularly for UK banks – but increased significantly over time and faster than those of other banking systems that had strong links, such as that of Canada. Hence, the boom of the 2000s amplified an existing close link.<sup>2</sup> What is also striking, however, is the lopsided

2 Some discussions of US–Western European bank ties emphasise the uniqueness of the 2000s boom (McGuire and von Peter 2009), including the purchase of US securitised bonds by Western European banks. While agreeing that this development was important, a longer perspective suggests it was more evolution than revolution. See also Alessandri and Haldane (2009).

nature of the ties. Western European banks are much more involved in the US banking system than US banks are in the Western European one (a feature that is also true of Canada and Japan) (Figure A13).

In addition, the nature of these links is quite different from those of other banking systems (see also Bhatia (2011)). As can be seen in Figure 1, the current heavy involvement of the UK, Swiss, German and Irish banks in the United States reflects ownership of US investment banking operations. For Canada and Japan, by contrast, the links are mainly from commercial banking (this is also true for France and the Netherlands, but here there is a catch as the investment banking operations of these banks are run out of London, rather than New York). Relevant data shows that branches of commercial banks are widely spread across the United States, while investment banks generally have a single office in New York, Connecticut, or (for regulatory reasons) Utah.

**Figure 1: Claims on US Banking System**  
On a BIS ultimate risk basis, US\$ billion



Notes: By name of foreign-owned large bank holding company or primary dealer; values in brackets are in US\$ billion

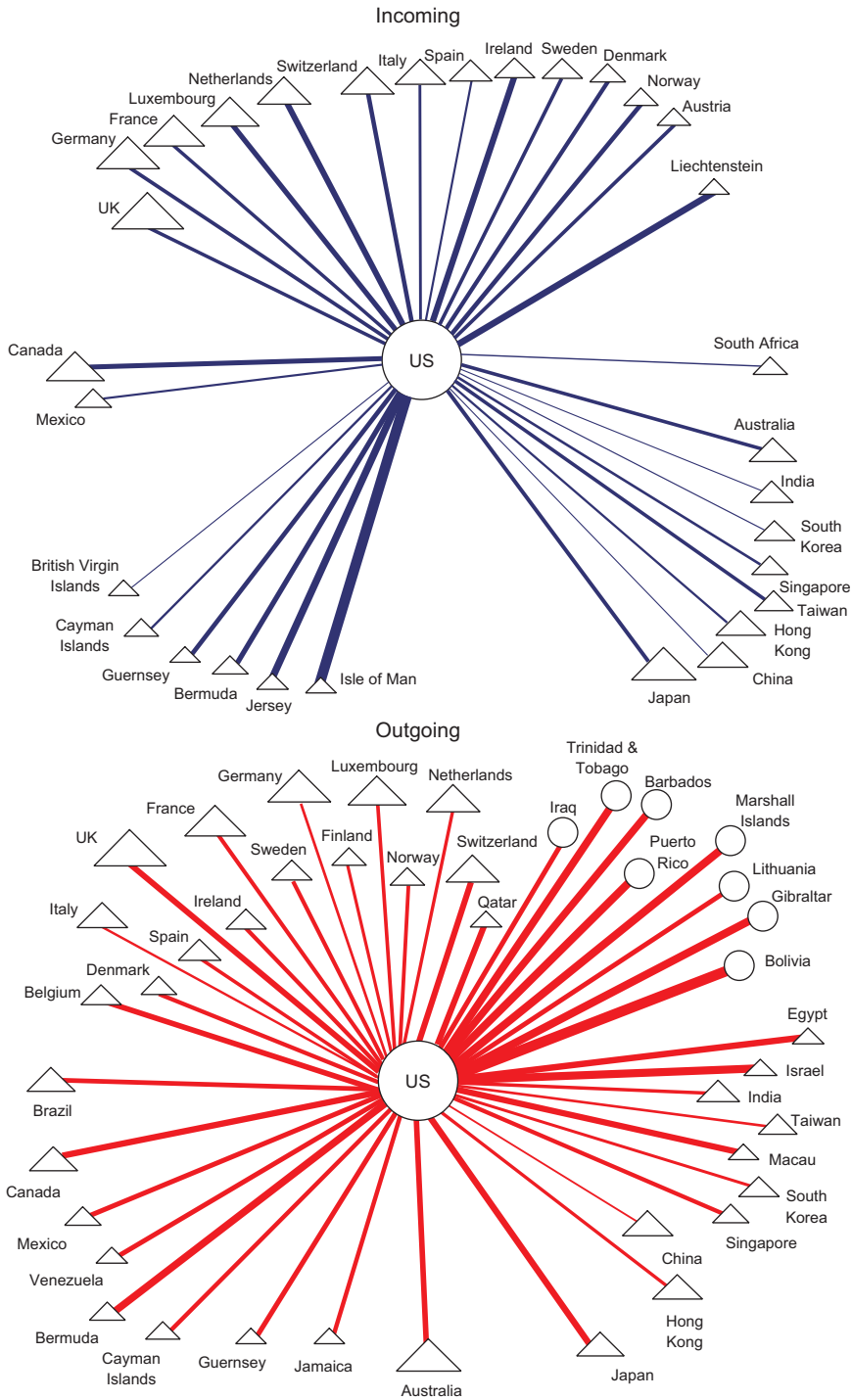
Sources: BIS; Board of Governors of the Federal Reserve System

Finally, Figure 2 shows the importance of US (often short-term) liquidity provided by non-banks for Western Europe (see also IMF (2010)). It shows flows of global funds (investment funds, pension funds, money market mutual funds, etc) in and out of the United States. As can be seen, major flows go to Western European onshore financial centres, such as the United Kingdom and Switzerland, and offshore centres, such as Luxembourg, where the complex plumbing of modern financial engineering is accomplished.

Putting these data from a variety of sources together shows a Western European banking system that has steadily become more dependent on US dollar wholesale funding. This growing dependence comes out in different ways in the three sets of data. Most obviously, the BIS banking data illustrate increasing US asset holdings over time in a way that is significantly different from other regions. Microeconomic bank data show that this involves major investment banking operations in Northern Europe, which then act (together with US-owned investment banks and money market mutual funds) as a conduit for US dollar wholesale funding to the rest of the region. The TIC data show that this development was accompanied by increasing commingling of private sector bonds and assets that are needed for short-term funding operations such as repo operations. Finally, the funds data underline the importance of flows of US dollar liquidity in and out of European onshore and offshore financial centres, confirming the existence of sophisticated, modern funding techniques across the North Atlantic.

The reason that North Atlantic financial links evolved in this unique manner reflects the confluence of three underlying forces. On the North American side of the equation was the global dominance of US financial markets. On the Western European side was the push for an integrated financial system combined with the introduction of the euro. Finally, financial arbitrage within and across these two regions helps explain how these developments became as commingled as they did. The result was a North Atlantic financial system that functioned smoothly through the boom of the early 2000s, but generated massive spillovers to European banks and – in part via this mechanism – to the rest of the world over the crisis as counterparty risk ended the availability of ready US dollar wholesale funding.

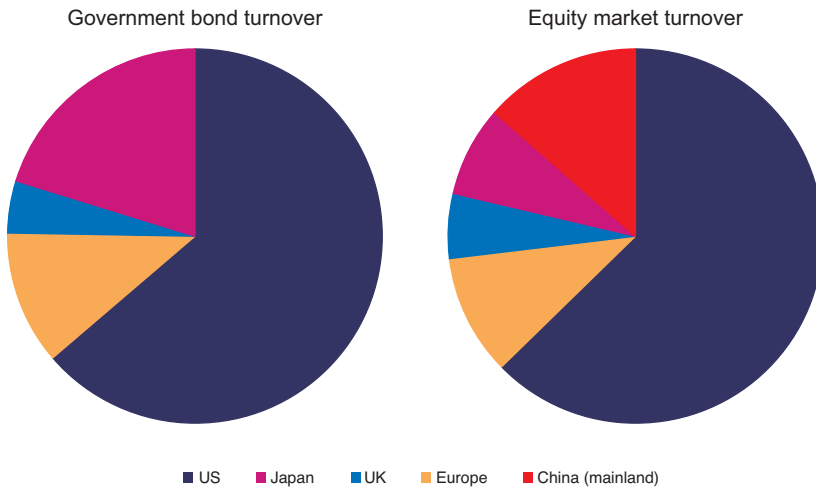
**Figure 2: Fund Flows Into and Out of the US**



Notes: Triangles denote connectivity; thickness of lines denote high relative share of funds invested in the US/coming from the US  
Sources: IMF; Thomson Reuters

The dominance of US markets is the better understood part of the equation. That US markets are globally dominant is clear from the bellwether status of the benchmarks – the yield on the 10-year Treasury note and the price of the S&P 500 stock index. For example, European bond and stock markets typically jump when US ones open. At first glance this is slightly surprising, as the value of US and European bond and equity markets are quite similar. The superior information content of the US market, however, comes out in turnover and prices. As can be seen in Figure 3, US bond and equity markets have many times the turnover of any European market – including that of the UK. This is reflected in the more sophisticated market structure; lower transaction costs, larger derivatives markets and, above all, greater analysis and research. As to price information, several studies have found that European markets respond to US data releases much more than vice versa.<sup>3</sup> Similarly, vector autoregressions (VARs) using weekly prices that endogenously measure contemporaneous causation across international markets find that US bond yields and equity prices drive UK and euro area equivalents much more than the other way round (Neely 2010; Bui 2011; Yue and Shen 2011).

**Figure 3: Turnover in the Systemic Government Bond and Equity Markets**  
2009



Notes: For government bond turnover, Europe refers to France, Germany, Italy and Spain; for equity market turnover, Europe refers to the euro area

Sources: Federal Reserve Bank of New York; IMF; Japan Securities Dealers Association; World Federation of Exchanges; national debt agencies

The push for a single European financial market drove an increase in competition across European Union banks that led to an aggressive search for profits from balance sheet expansion (see Dermine (2003)). While the US banking system had always been highly dynamic and competitive, the splintered European market was traditionally sleepy and overbanked. In 1989, however, the European Commission enacted the Second Banking Directive which allowed European banks to establish branches in other EU member countries without further authorisation – later extended

3 See, for example, Ehrmann, Fratzscher and Rigobon (2011) and references cited therein.



in 1992 to members of the European Free Trade Association (EFTA) (except Switzerland). The implications of this directive for EU-wide bank competition were supported by the adoption in 1999 of the single currency in the euro area. In the financial boom of the 2000s, with cross-border bank takeovers still difficult (reflecting barriers as a result of national regulations), banks rapidly expanded their balance sheets and directly expanded into other countries, exacerbating existing overcapacity. This process is vividly illustrated in Figures A14–A16, which show BIS data on cross-border bank presence for 14 EU countries for the years 1999, 2003, 2007 (the eve of the crisis) and 2010: into other European economies (Figure A14); from other European countries (Figure A15); and net positions (Figure A16). Note that this data encompasses several countries outside of the euro area but in the passporting system, including the United Kingdom and Sweden, suggesting the trend was not driven solely by the single currency, while there was little increase in intermingling of the Swiss banking system (also shown, and which was outside of the passporting system) with EU members.

The generalised expansion in cross-European banking is illustrated in Figure A14, which shows an expansion by home EU banks into other EU countries between 1999 and 2007, with only a modest subsequent reversal largely in the Benelux countries (as local banks were sold to foreign entities). Interestingly, the flip side of the coin (Figure A15) shows that European banks mainly expanded into fast-growing periphery regions (including Scandinavia) between 1999 and 2007, followed by some pull-out from southern Europe between 2007 and 2010. This dynamic was supported in some cases (e.g. Ireland, the United Kingdom and Iceland) by a conscious decision to adopt ‘light touch’ regulation that limited prudential supervision of banks, that – together with low global interest rates – helped set off unsustainable foreign acquisitions and domestic housing booms. As the net positions (Figure A16) make clear, the overall effect was to transfer funds from the EU core (France, Benelux, Germany, plus Sweden) to the EU periphery through 2007 with a modest pull-back (largely in Germany and the Benelux) subsequently.

Finally, different approaches to global bank regulations across the North Atlantic led to divergent paths to higher leverage that helped drive financial interconnectedness between the United States and Western Europe. In the United States, the authorities required banks to maintain a simple leverage ratio as well as a risk-weighted one. As a result, US banks expanded leverage by placing assets in securitised pools and then selling them. By moving these assets off their balance sheet, this allowed them to conserve capital. In Europe, however, only a risk-weighted capital ratio was used. Generous risk weights produced an incentive to buy highly rated bonds – a triple-A rated bond with a 10 per cent risk weight required only 0.8 per cent capital (the basic 8 per cent ratio times the risk weight). As a result, European banks were major buyers of highly rated US securitised assets. Highly rated US assets played a dual role, both supporting profits through returns and providing collateral that could be easily used to raise US dollar wholesale funding in repo markets.

The outcome was a bank-dominated Western European financial system that was structurally dependent on US dollar wholesale funds, much of it provided by loosely supervised US non-banks (including investment banks). When the unexpected bankruptcy of Lehman Brothers in late 2008 led to severe problems in US wholesale markets, this instability was immediately transferred to Western Europe.

### 3. Empirical Estimates of North Atlantic Growth Spillovers

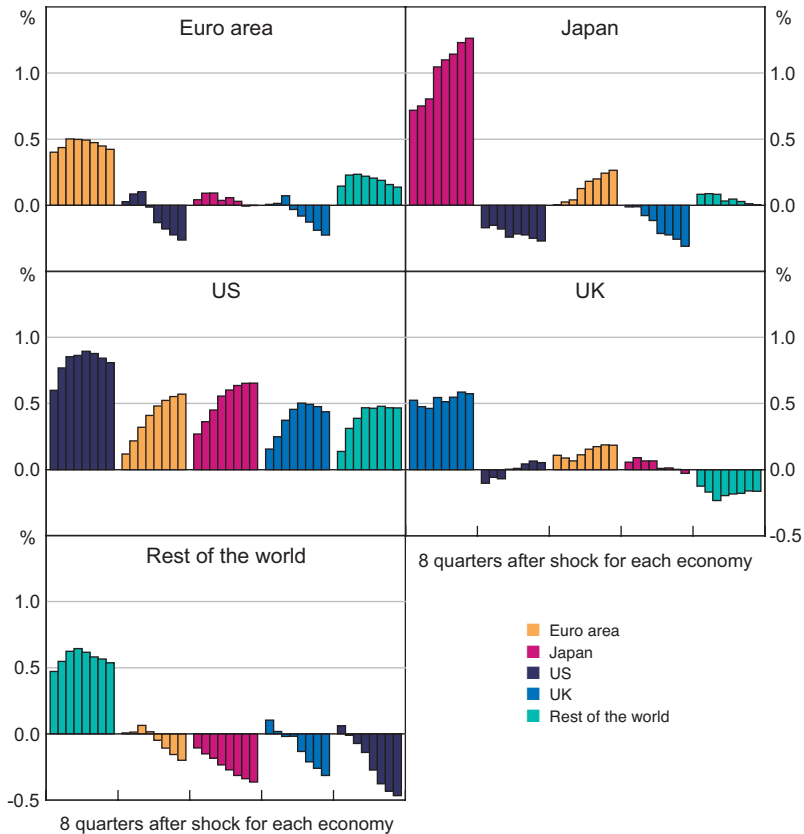
#### 3.1 Time series evidence

Having mapped out trade and financial linkages between the North Atlantic economies over time, this section directly estimates growth spillovers using an innovative time series technique based on identification via heteroskedasticity. This is an old form of identification revived by Rigobon (2003) and extended by Bayoumi and Bui (2010) to look at growth spillovers. The technique works as follows. Let us suppose that there is a period of time over which underlying relationships are stable, but where regimes with differing ratios of shocks can be identified. In the case of growth spillovers across the major advanced economies, Bayoumi and Bui (2010) use the period since 1970 as the sample, and the break in regime is the onset of the 'great moderation' that (to varying degrees) lowered growth volatility across almost all economies and started sometime in the 1980s. Causation can then be identified within a VAR framework by relating changes in relative variance across countries to changes in correlations of shocks. Suppose, for example, that over the great moderation period the volatility of US growth relative to that of UK growth rises and that, at the same time, the correlation of US and UK growth rises. Then the methodology would identify causation as generally running from US growth to UK growth.

An innovation in Bayoumi and Bui (2010) is to also realise that by varying the (uncertain) date at which the great moderation started, it is possible to not only estimate the direction of contemporaneous causation but also the uncertainty around these estimated coefficients. In other words, in addition to the usual uncertainty in impulse response functions from VARs caused by parameter uncertainty, one can overlay uncertainty over the parameters of the matrix defining the correlation of contemporaneous growth shocks across countries (the so-called *A* matrix that is generally identified by assumption using a Choleski decomposition rather than being estimated). This 'bootstrap' technique works as Rigobon (2003) showed that the estimation technique was consistent even if the choice of the break date between the two samples is incorrect. Hence, Bayoumi and Bui (2010) are able to calculate uncertainty around the impulse responses due to uncertainty about the *A* matrix, as well as the 'usual' uncertainty as a result of potential volatility on the coefficients of the VAR.

Results for a VAR using quarterly growth for the euro area, Japan, the United States, the United Kingdom and an amalgam of other countries identified as the rest of the world, from 1970 to the end of 2007, are reported in Figure 4. Each panel in the figure shows the impact of a shock in one area on itself and other regions – for example, the centre-left panel shows the estimated effect of a US shock on each of the members of the VAR over 8 quarters.

**Figure 4: Empirical Growth Spillovers**  
1970–2007, per cent of output



Notes: Panels refer to origin of shock; spillovers are accumulated impulse response functions associated with a one standard error positive shock to real GDP growth

Source: Bayoumi and Bui (2010)

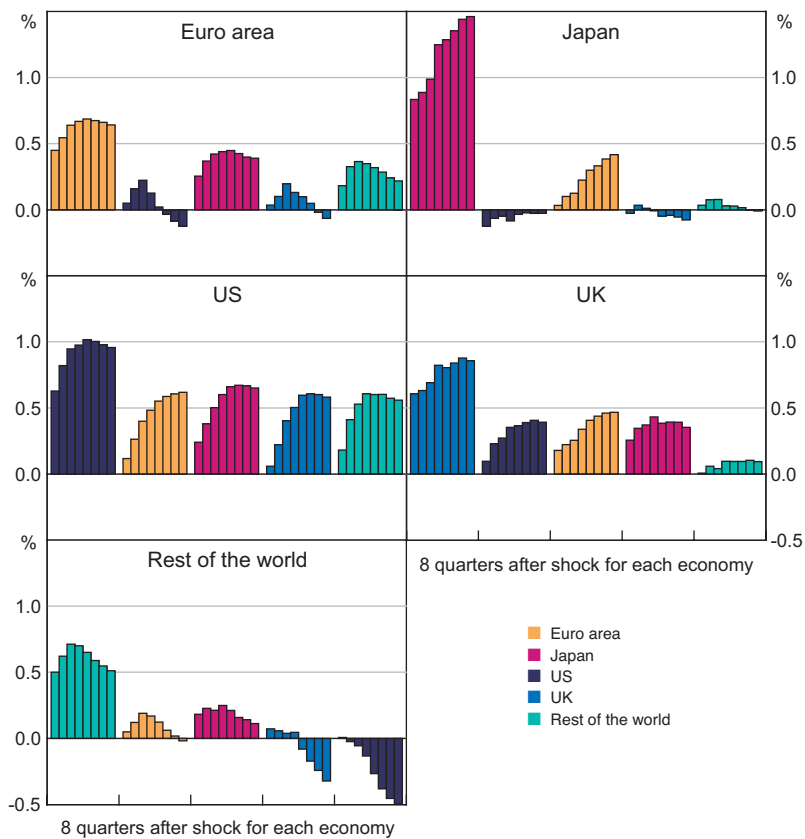
The results suggest that growth spillovers across the North Atlantic are highly asymmetric. Spillovers from US growth shocks on foreign real GDP rise gradually over time, to between half and three-quarters of the relevant US value after 8 quarters, and are generally significant. More specifically, a shock that increases US real GDP by 0.8 per cent over two years increases euro area and UK real GDP by 0.6 per cent and 0.4 per cent, respectively. However, the opposite effects from the euro area to the United States are much smaller and insignificant. In particular, despite its economic size, euro area spillovers to the United States rise modestly over the first few quarters and then fall to close to zero. In addition, within Europe the (marginally significant) spillovers from the United Kingdom to the much larger euro area economy are estimated to be at least as large as those in the opposite direction.

The earlier discussion provides a plausible explanation for the strong asymmetry seen in growth spillovers between the United States and European economies, and within Europe, between the United Kingdom and the euro area. If financial relationships are more important for growth

spillovers than trade ones, then the large US and UK spillovers make sense. Bayoumi and Bui (2010) provide some suggestive evidence for such an explanation. Another approach is to examine the impact of the recent financial crisis. Since the shock from the United States to Europe, and from the United Kingdom to the euro area, was clearly channelled through financial market relationships, one would expect the inclusion of the financial crisis in the estimation to increase spillovers.

This intuition is supported by the results from VARs including the post-2008 crisis period and reported in Figure 5. The results in Figure 5 come from an estimation in which the crisis period is simply included in the VAR as if it were a continuation of the pre-great moderation period of instability (see Bayoumi and Bui (2010) for details). As can be seen by comparing these estimates with those in Figure 4, the crisis boosts estimates of both US and, in particular, UK spillovers. The disadvantage with this approach, however, is that it is difficult to get a clean estimate of the spillovers during the crisis as this part of the sample is mixed with data from the 1970s and 1980s. Macroeconomic models provide an alternative approach.

**Figure 5: Empirical Growth Spillovers – With Crisis Period Added**  
1970–2010, per cent of output



Notes: Panels refer to origin of shock; spillovers are accumulated impulse response functions associated with a one standard error positive shock to real GDP growth

Source: Bayoumi and Bui (2010)

### 3.2 Macroeconomic model evidence

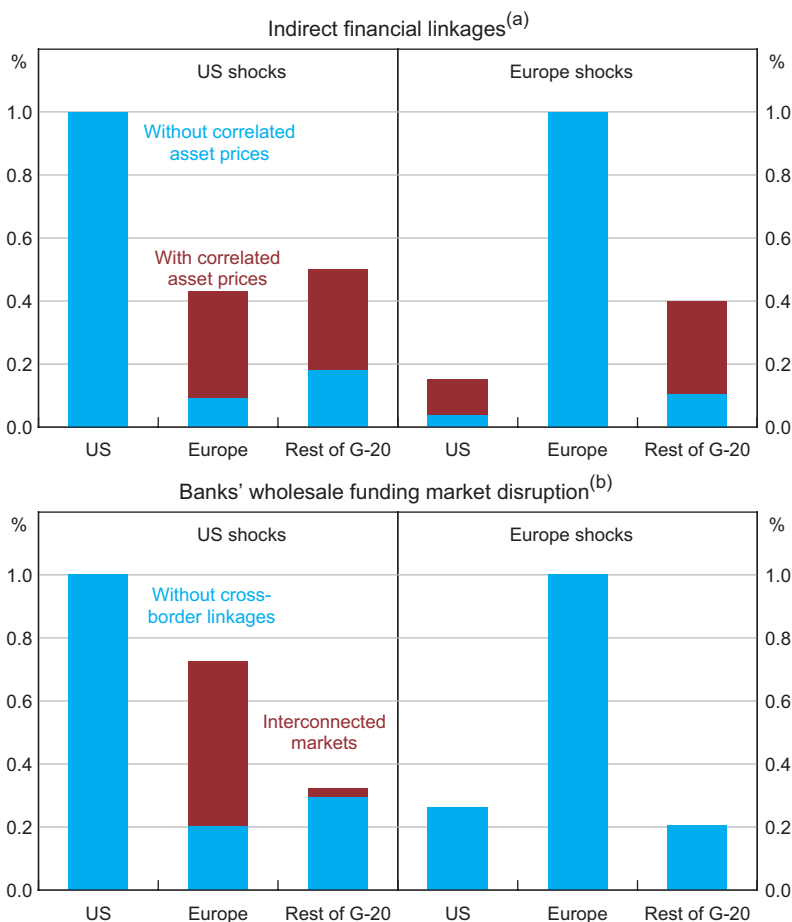
An alternative way of estimating growth spillovers is to use results from an empirically estimated macroeconomic model. While the structural VAR discussed above is closer to the data, macroeconomic models allow for more precision on the sources and mechanisms through which these spillovers occur. This section uses the macroeconomic model described in Vitek (2010, 2011c). This model was chosen as it covers a wide range of economies (the G-20) and has sufficient financial market detail to allow financial spillovers to be modelled realistically. More precisely, the model includes bond yields, equity prices and a spread between government and private sector short-term interest rates for each economy, thereby allowing realistic cross-country correlations across bond, equity and wholesale funding market risk premiums to be imposed.<sup>4</sup> A further advantage of the model is that it is linear, so that simulations can be layered on one another to provide insights as to sources of spillovers.

Results again find that US spillovers are much larger than Western European ones and come largely through financial market channels. The top panels of Figure 6 report results from two simulations layered on top of one another for a typical growth shock (more precisely, an equal weighting of an aggregate demand, aggregate supply, term risk premium and equity risk premium shock). The blue columns represent a pure simulation in which the model is allowed to run without imposing additional financial market correlations. This results in small and relatively similar growth spillovers across the major countries coming mainly through trade. Hence, for example, a 1 per cent increase in US output raises demand for exports from other countries. The impact is small as bilateral trade is also small – exports to the United States represent just 2 per cent of combined euro area and UK GDP. Crucially, there are few financial market spillovers. This is because domestic bond yields depend only on the expected path of domestic short-term policy interest rates, themselves driven by a Taylor rule. As growth spillovers are small, there is little knock-on to monetary policy rates and bond yields. It is worth stressing that this is a typical result from conventional macroeconomic models and is not a peculiarity of the chosen model.

Adding empirically estimated correlations of international risk premiums produces larger and more asymmetric growth spillovers. The red columns show the results of a simulation in which bond and equity risk premiums are correlated using the empirical estimates discussed earlier and reported in Bayoumi and Bui (2011). Focusing on the North Atlantic economies, a 1 percentage point increase in US bond yields is assumed to create around a 0.4 percentage point increase in euro area and UK yields, while the feedback in the other direction is small. For equity prices, the impact is around a 0.6 per cent increase to a 1 per cent increase in US equity prices. This results in much larger US growth spillovers. A 1 per cent increase in US output now generates a 0.4 per cent increase in European output, while the reverse impact remains similar to the initial simulation. Further investigation reveals that the main spillover channel comes through bond yields (Vitek 2011a). These responses, which can be regarded as estimates of spillovers for a typical shock, are much closer to the baseline empirical estimates reported in Section 3.1 and support the hypothesis that financial market linkages explain the size and asymmetric effect of US growth spillovers.

<sup>4</sup> For other applications of this model, see Vitek (2011a, 2011b).

**Figure 6: Simulated Growth Spillovers from G-20 Model with Macro-financial Linkages**



Notes: (a) Depicts the average peak output loss from demand, supply, duration risk premium and equity premium shocks, which generate a peak output loss of one per cent in the economy where the shocks originated

(b) Depicts the average peak output loss from shocks to wholesale funding costs, which generate a peak output loss of one per cent in the economy where the shocks originated

Source: Vitek (2011a)

Disruptions to bank wholesale funding markets are another powerful source of growth spillovers. The bottom panels of Figure 6 show the results of a shock to US and European wholesale funding costs. Again, there are two simulations layered on top of one another. In the basic regression, it is assumed that wholesale funding is limited to local markets and that spillovers occur only through bank loans across regions. As can be seen, the impact of a US and a European wholesale funding shock is similar and (relatively) limited, with a multiplier of around one-quarter. In the second simulation, however, it is assumed that half of all European wholesale funding comes from US markets, and hence that a 1 percentage point increase in US wholesale funding costs leads

to a 0.5 percentage point increase in European funding costs. Nobody knows the true extent of marginal dollar funding of European banks, but one-half is not an unreasonable estimate. This enhances the growth spillovers from US wholesale funding costs from one-quarter to more like three-quarters – considerably higher than the spillovers caused by the financial market correlations. This illustrates the important role of US–European bank links – in particular, the heavy dependence of European banks on US dollar wholesale funding – in propagating global shocks.

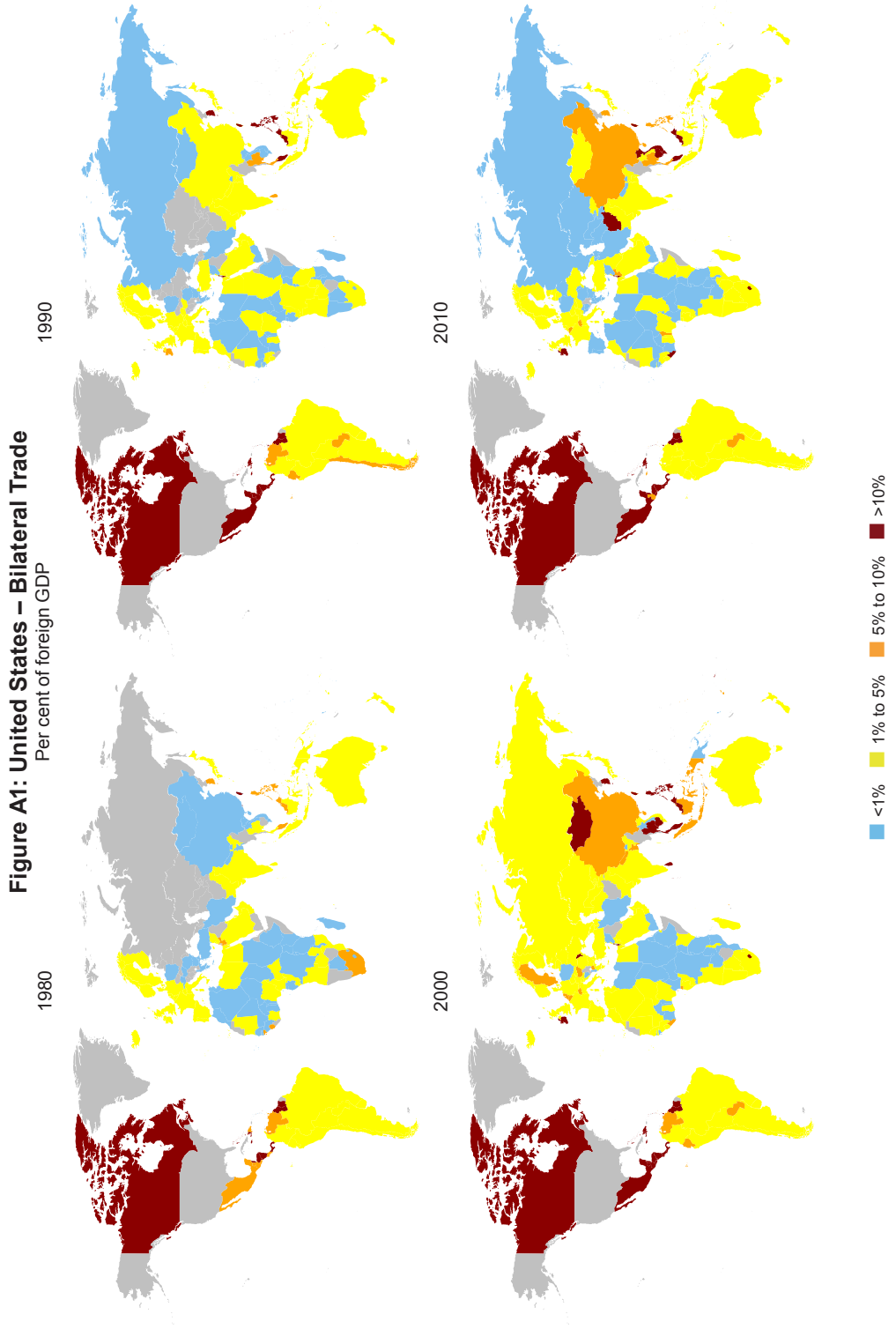
#### 4. Conclusions

This paper has examined interrelationships across the North Atlantic economy from three perspectives. Historical data reveal a strong dichotomy between trade and financial market developments. Trade links, upon which most macroeconomists focus, were in relative stasis, the main sources of dynamism being either within these economies (NAFTA and the European single market) or with other parts of the world (notably Asia). By contrast, the North Atlantic furnished a uniquely close relationship across financial institutions, as a combination of dominant US financial markets, European competition policy and differences in financial regulation made the European banking system heavily dependent on US dollar wholesale funding. Empirical estimates and macroeconomic model simulations indicate that growth spillovers predominantly flow eastward across the North Atlantic. The bellwether nature of US financial markets creates uniquely large spillovers to the rest of the world even in normal times, and these spillovers are only enhanced if disruptions to bank wholesale funding markets are added – as occurred during the recent global crisis.

Looking forward, three things stand out from this analysis. The first is the important role played by differences between US and European financial regulation, and policies to promote a single market within Europe, in encouraging close financial market ties across the North Atlantic. This lesson should not be lost as global and European financial regulations are reformed. Second, the sheer size of US growth spillovers mean that the rest of the world have a legitimate interest in US policy decisions, underlining the importance of international processes promoting dialogue and co-operation across governments. Third, the apparent importance of financial market ties in generating international growth spillovers emphasises the importance of research to understand high correlations of prices across markets. The days of focusing on trade as the major source of international spillovers should be over.

One final thought is that the dominant status of US financial markets is not immutable. The status of the US dollar as the main global store of value rests on many factors, including stable US macroeconomic conditions. After the crisis, others may increasingly question whether this will continue. While it will take time for the underlying market infrastructure to be created, the fulcrum of financial market activity – and associated spillovers – may gradually start to move, with interesting implications for the global business cycle.

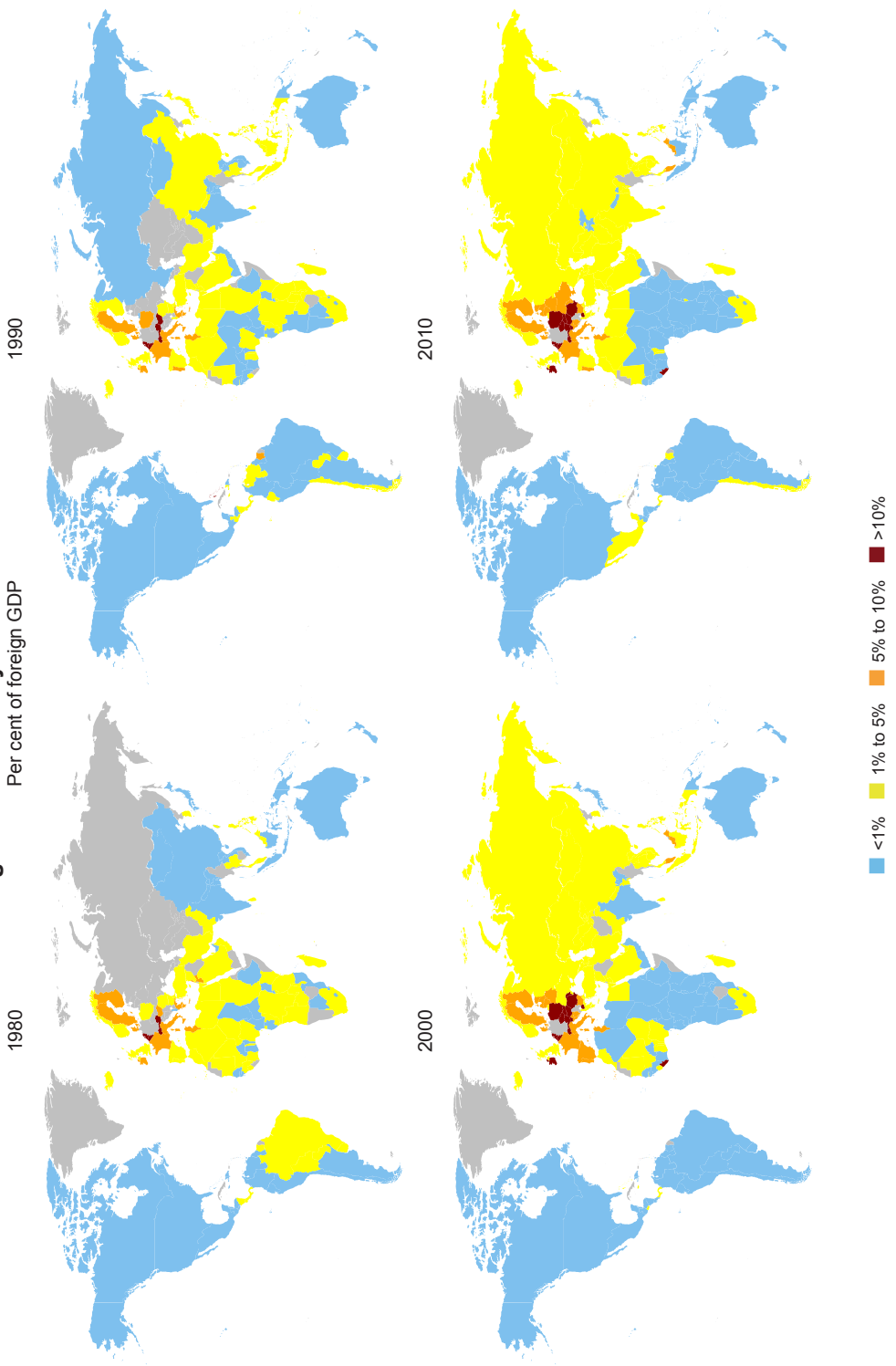
Appendix A



Sources: IMF; United Nations

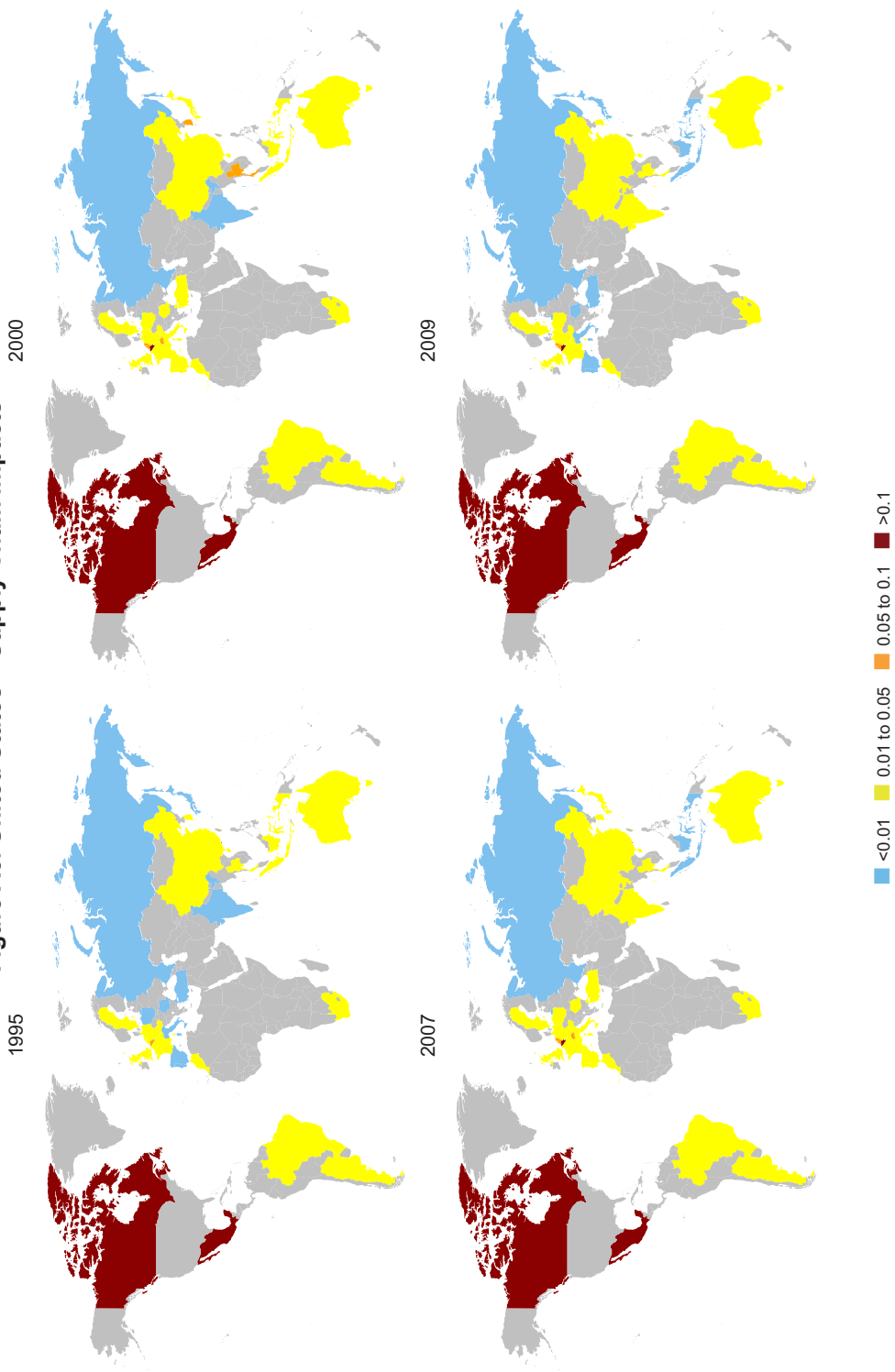


**Figure A2: Germany – Bilateral Trade**  
Per cent of foreign GDP



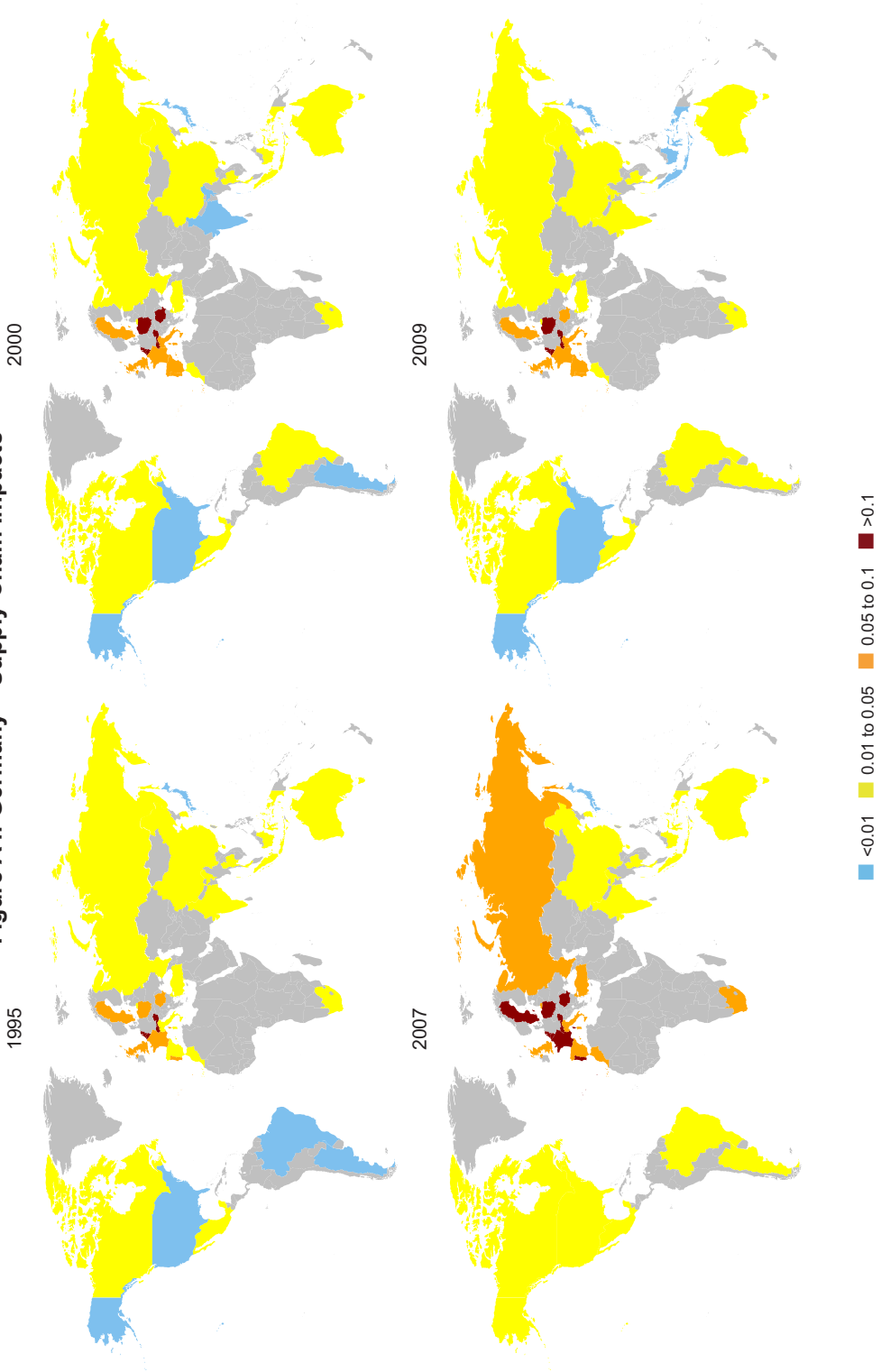
Sources: IMF; United Nations

Figure A3: United States – Supply Chain Impacts



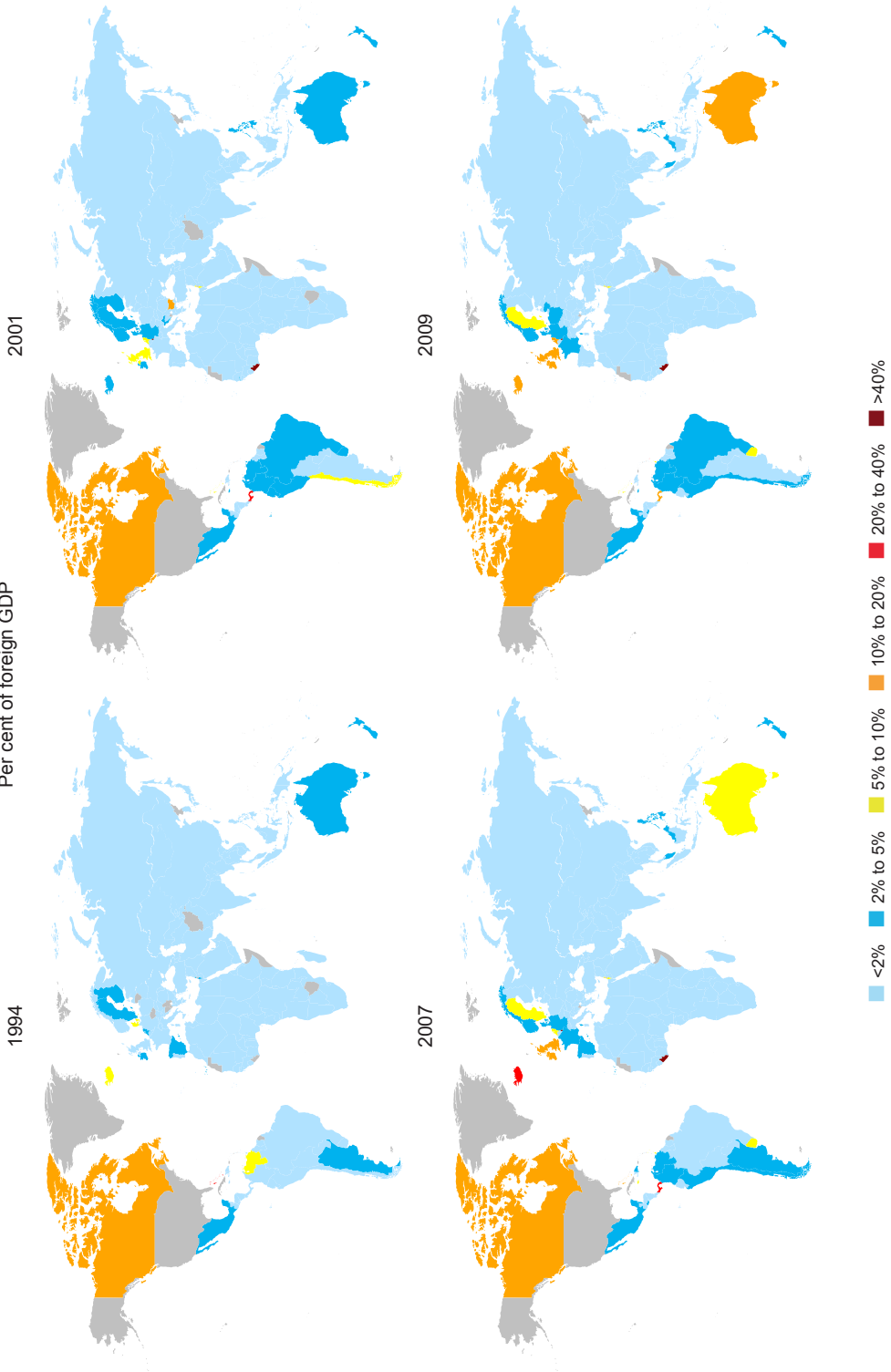
Notes: Impact of a 1 per cent shock to US import demand on foreign exports as a share of foreign GDP; calculated using bilateral manufacturing exports  
Sources: IMF; United Nations

Figure A4: Germany – Supply Chain Impacts



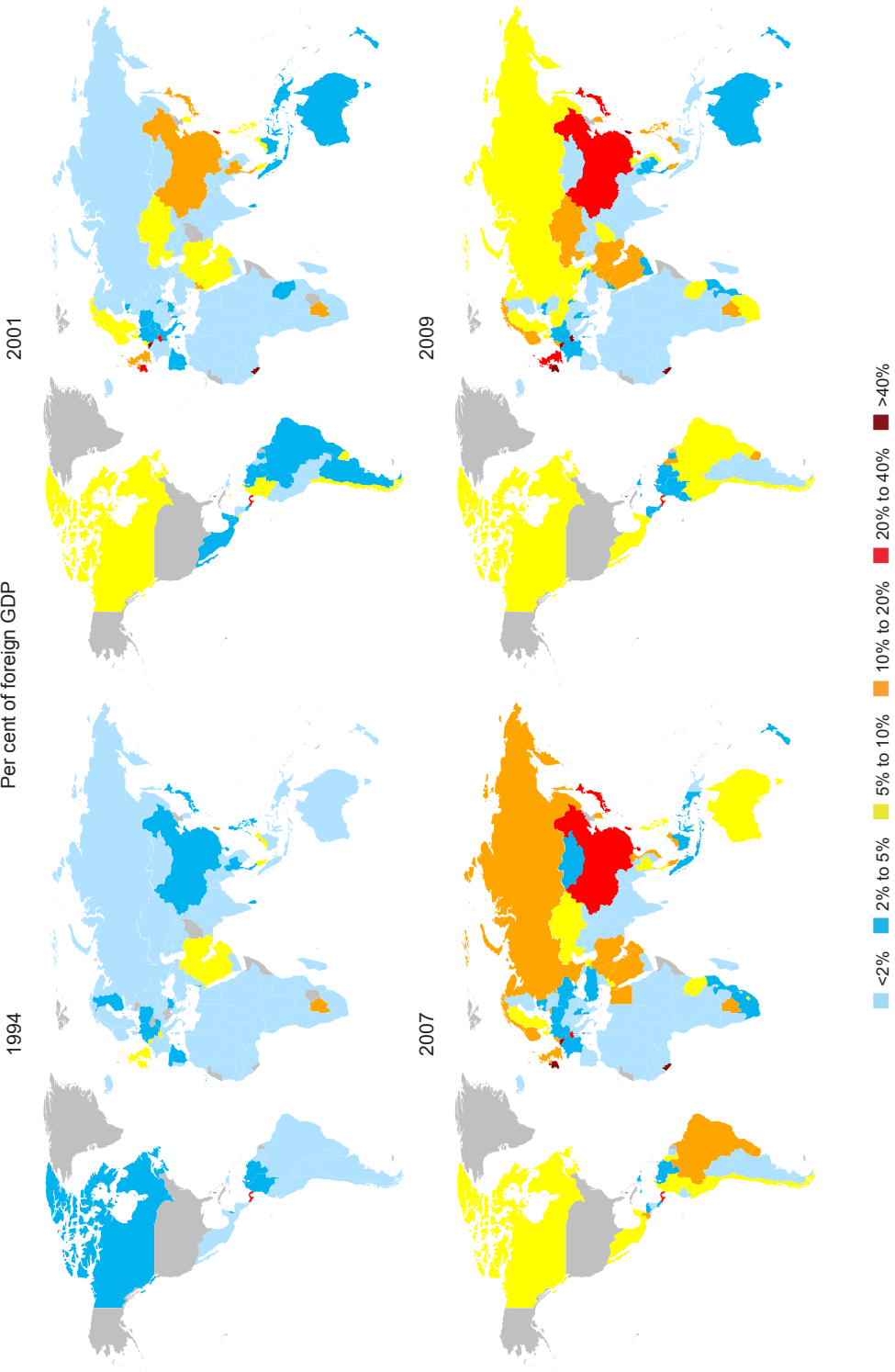
Notes: Impact of a 1 per cent shock to German import demand on foreign exports as a share of foreign GDP; calculated using bilateral manufacturing exports  
Sources: IMF; United Nations

**Figure A5: US Holdings of Foreign Bonds**  
Per cent of foreign GDP



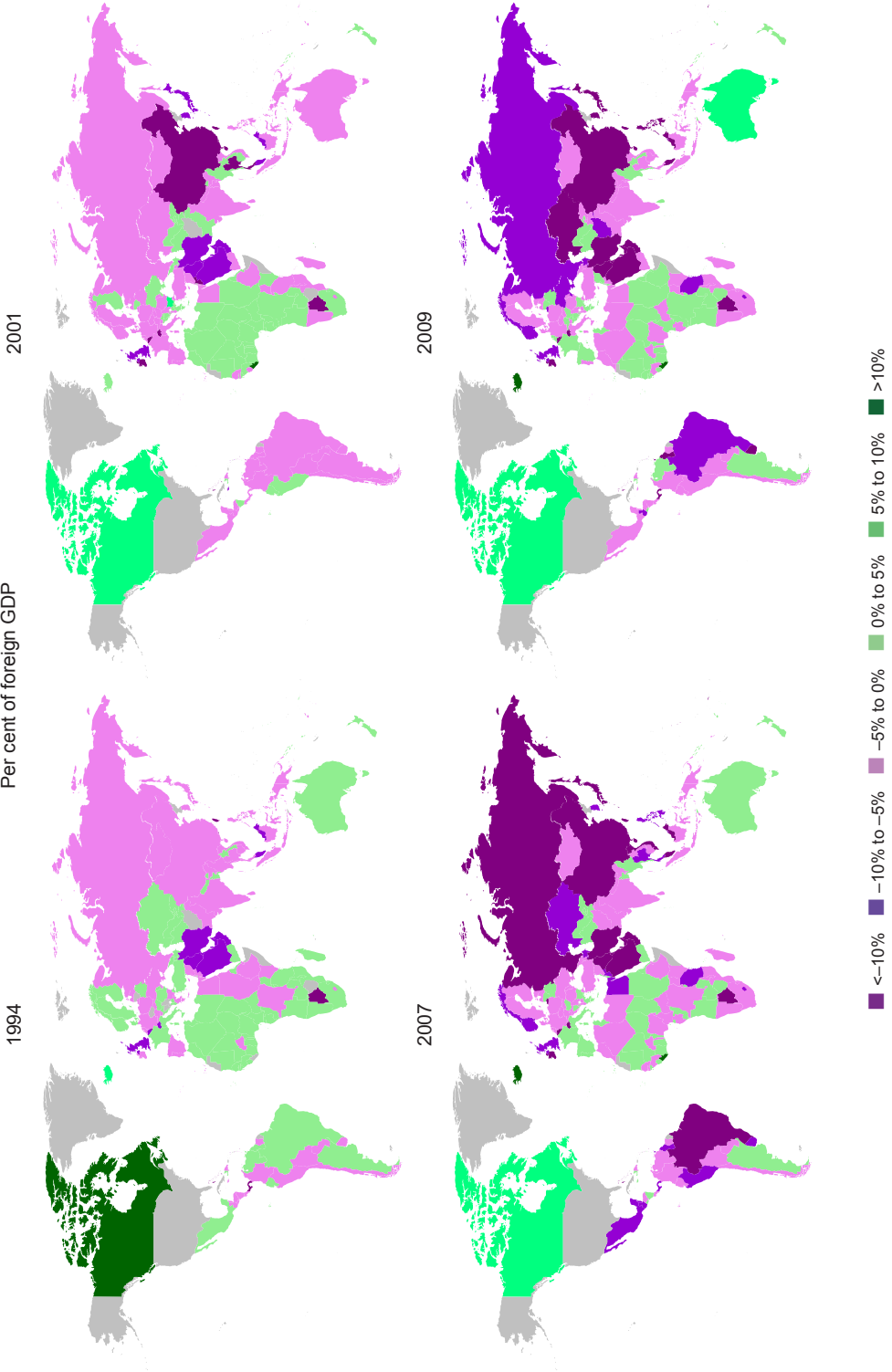
Sources: IMF; US Department of the Treasury

**Figure A6: Foreign Holdings of US Bonds**  
Per cent of foreign GDP

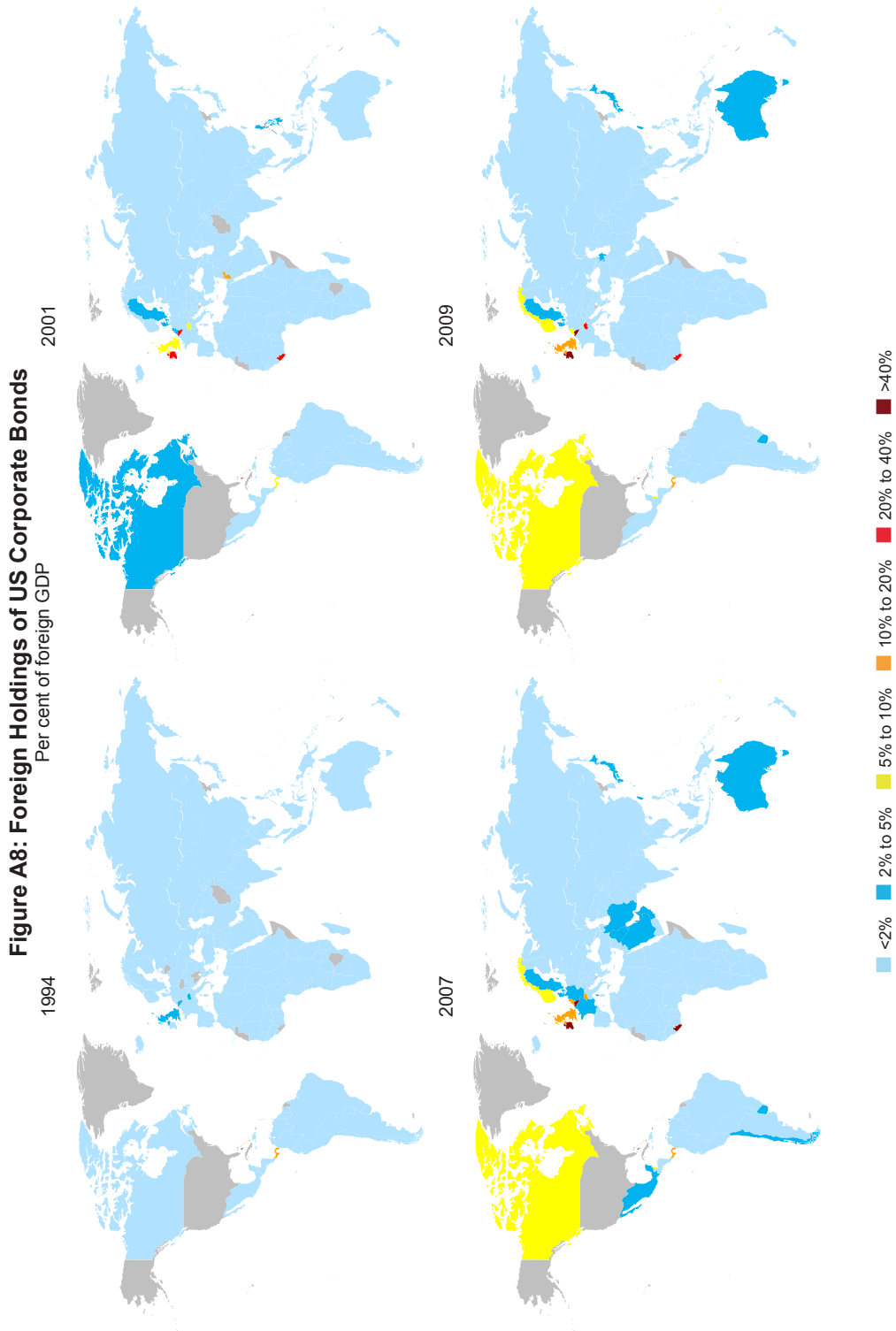


Sources: IMF, US Department of the Treasury

**Figure A7: Net US Holdings of Bonds**  
Per cent of foreign GDP

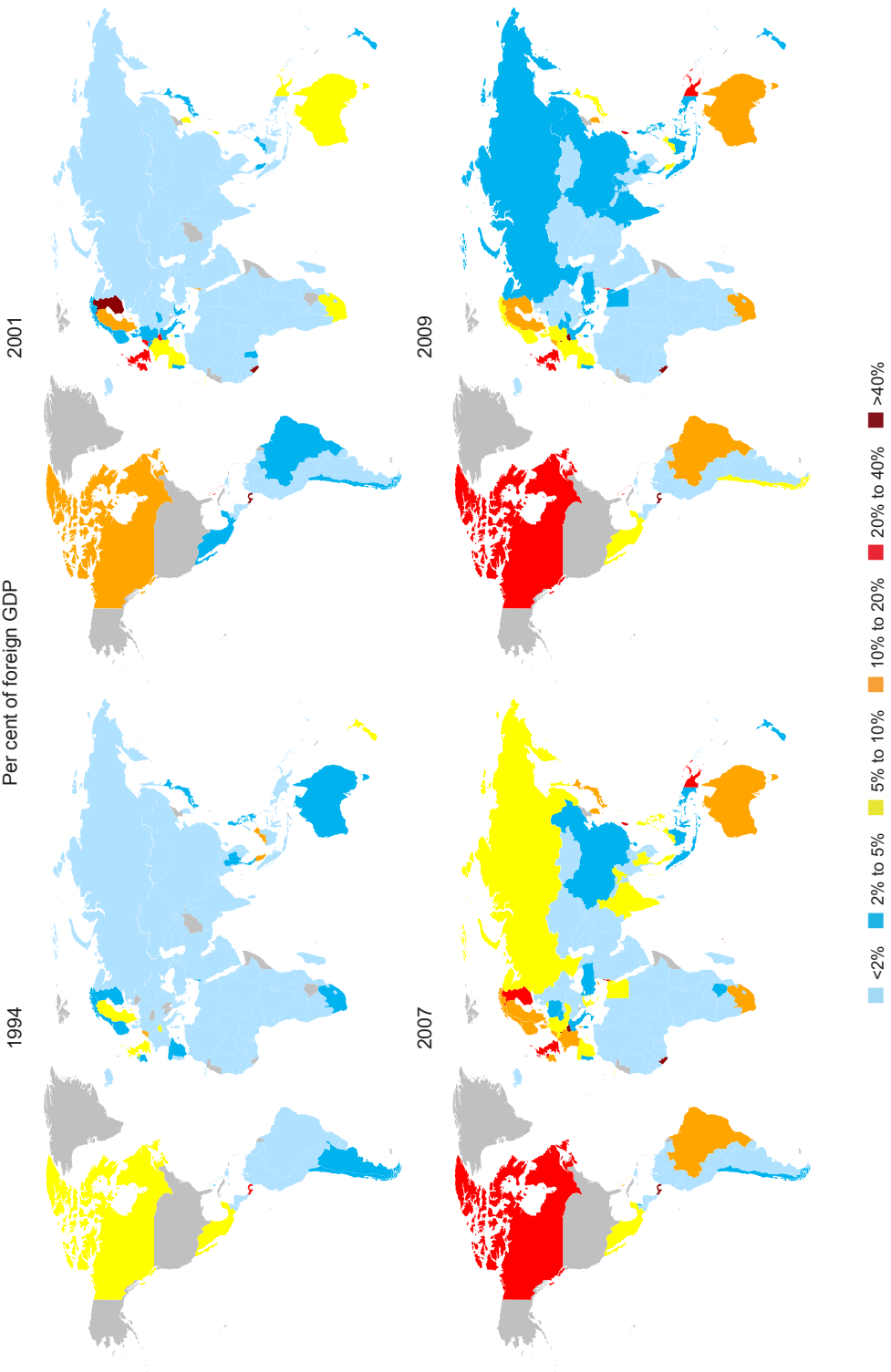


Sources: IMF; US Department of the Treasury



Sources: IMF; US Department of the Treasury

**Figure A9: US Holdings of Foreign Equities**  
Per cent of foreign GDP

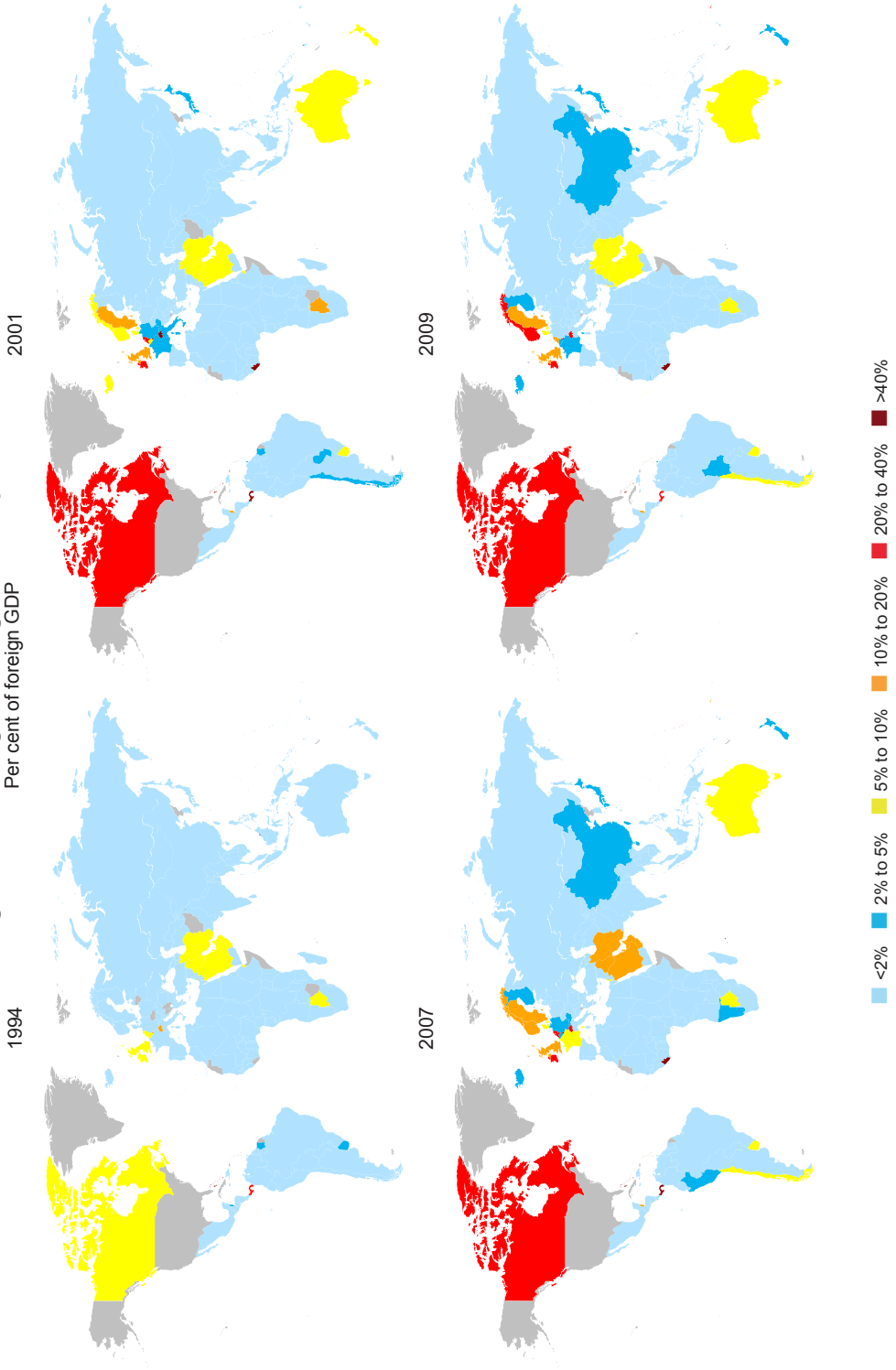


Sources: IMF; US Department of the Treasury



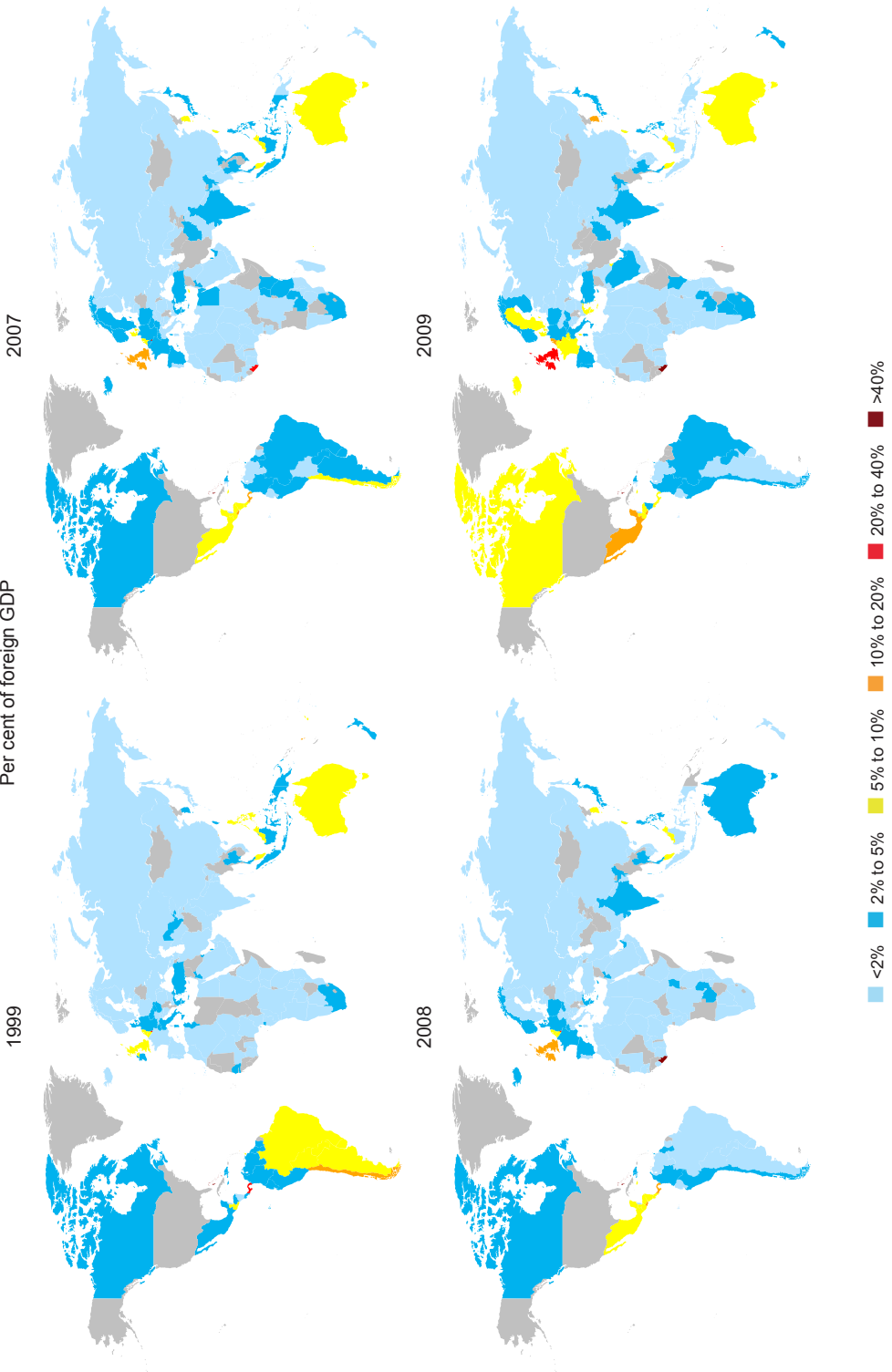
**Figure A10: Foreign Holdings of US Equities**

Per cent of foreign GDP

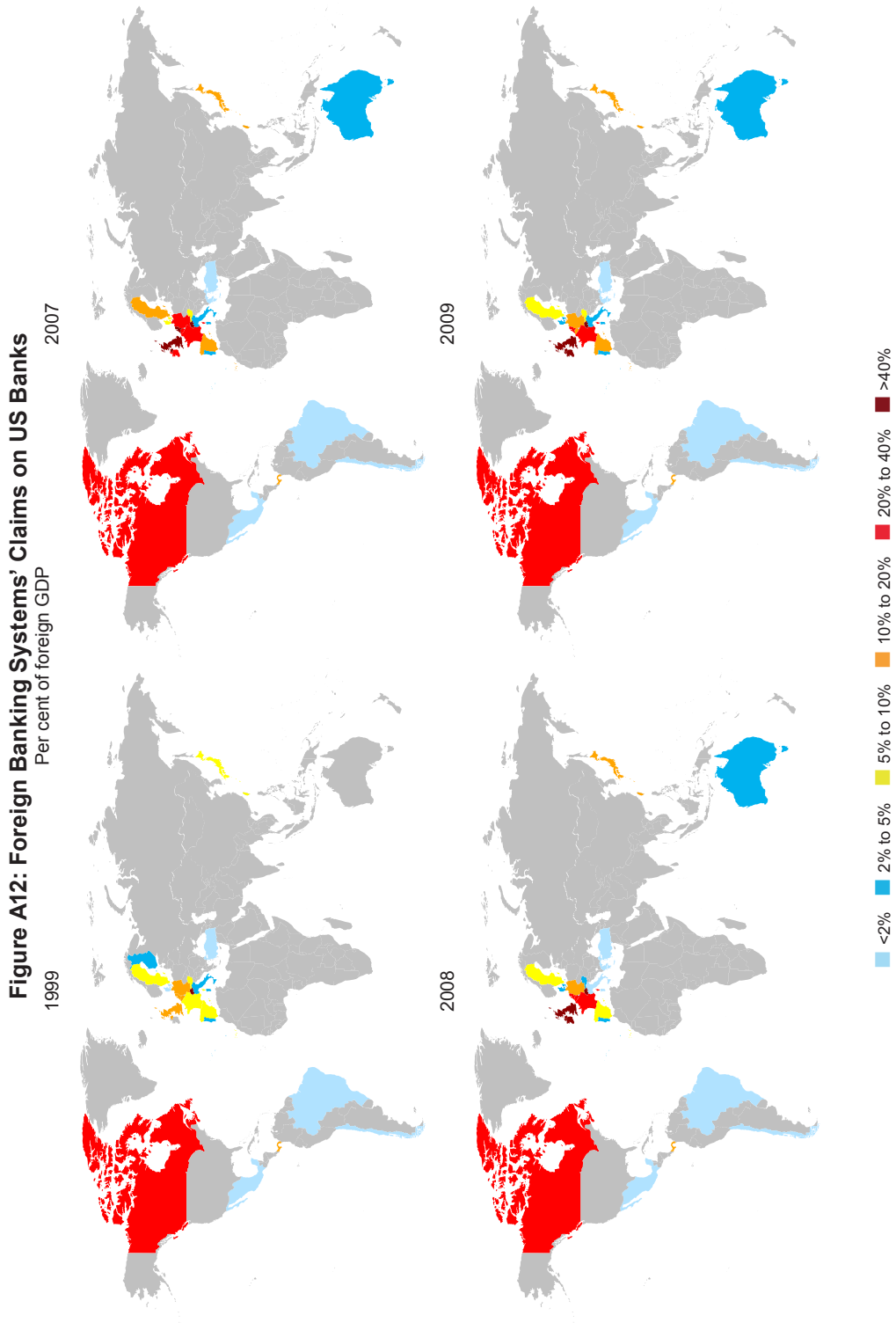


Sources: IMF; US Department of the Treasury

**Figure A11: US Banks' Claims on Foreign Banking Systems**  
Per cent of foreign GDP

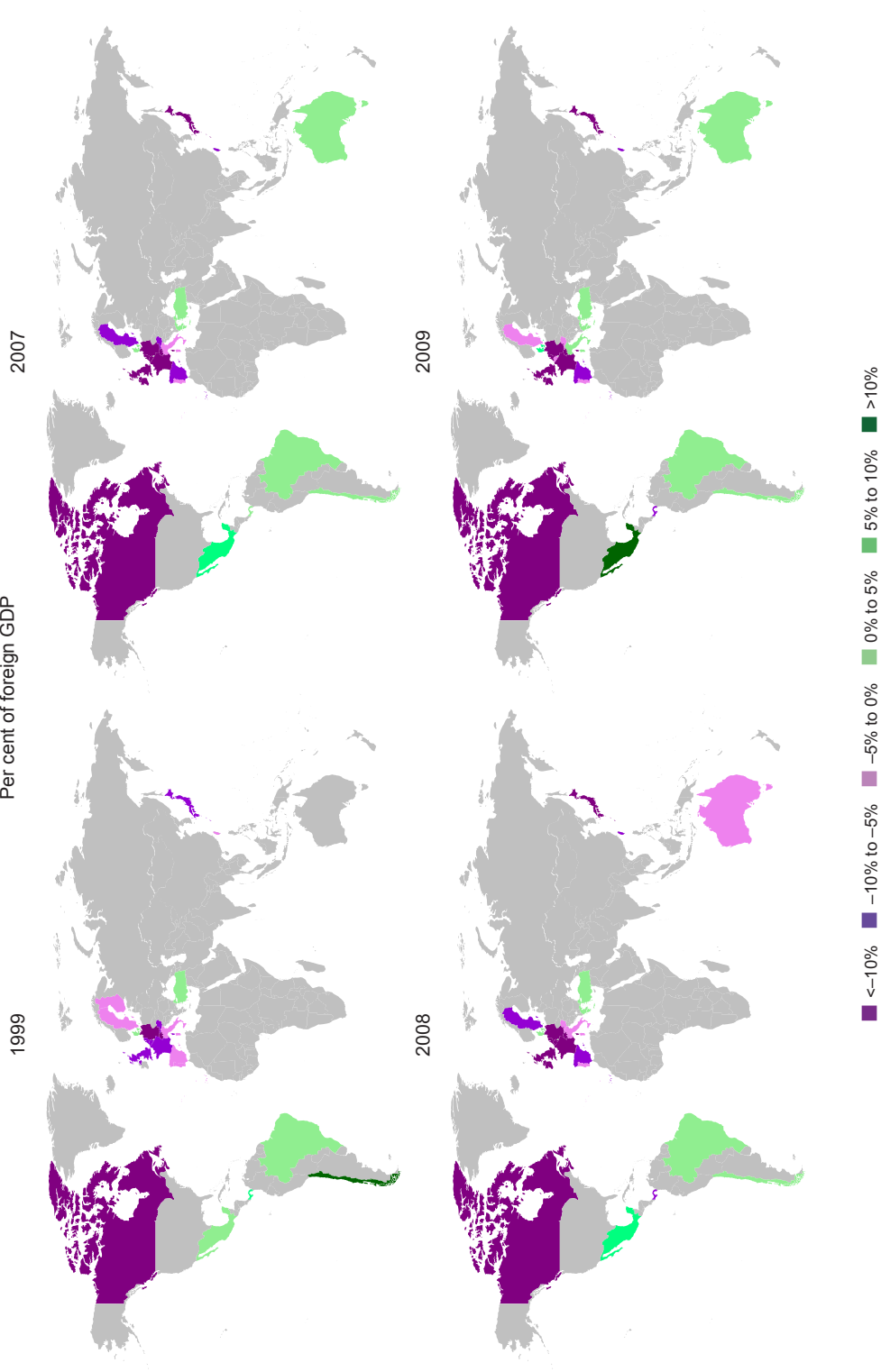


Sources: BIS; IMF



Sources: BIS; IMF

**Figure A13: Net US Banks' Claims**  
Per cent of foreign GDP

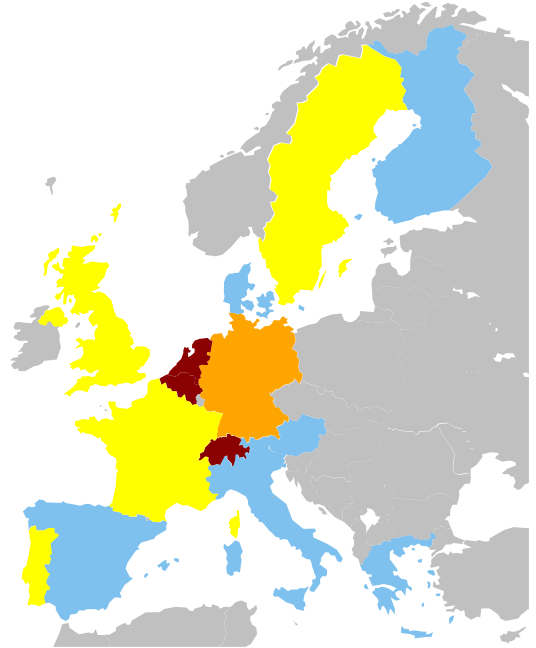
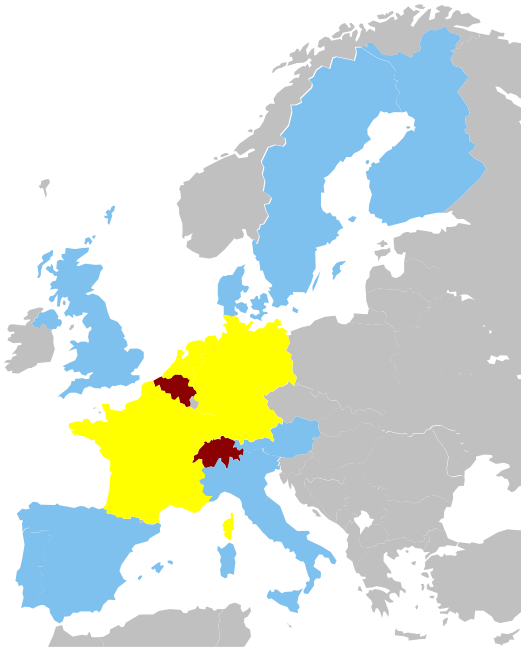


Sources: BIS; IMF

**Figure A14: EU Banking Systems' Claims on Other European Banking Systems**  
Per cent of own GDP

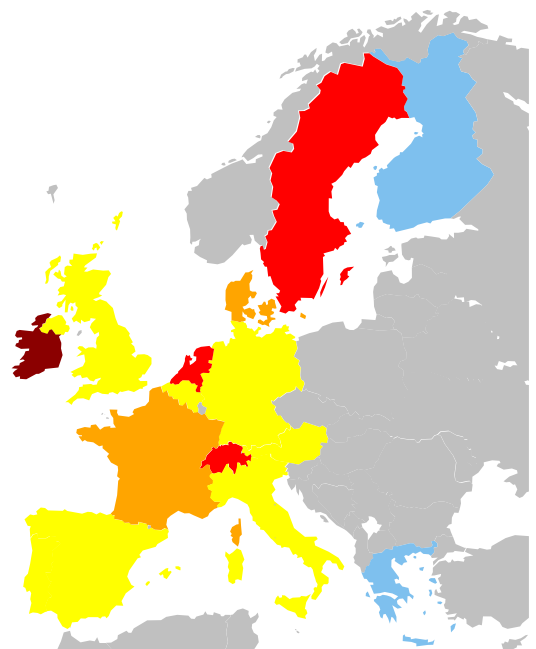
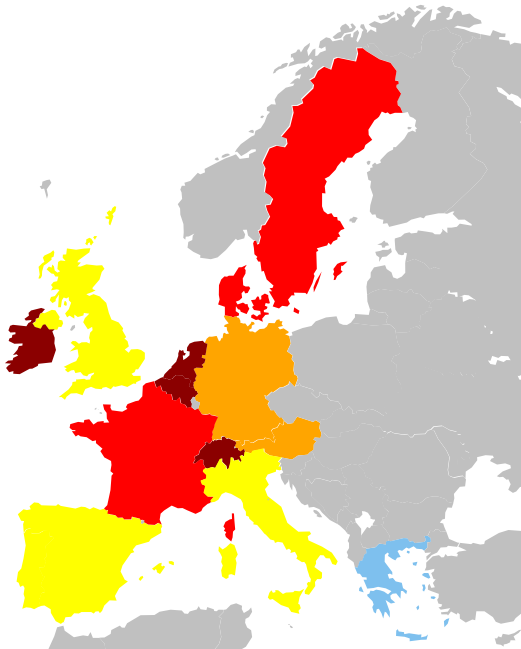
1999

2003



2007

2010



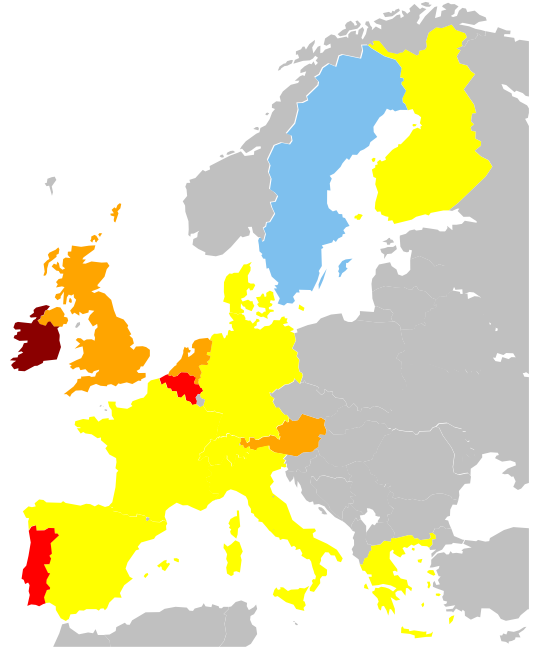
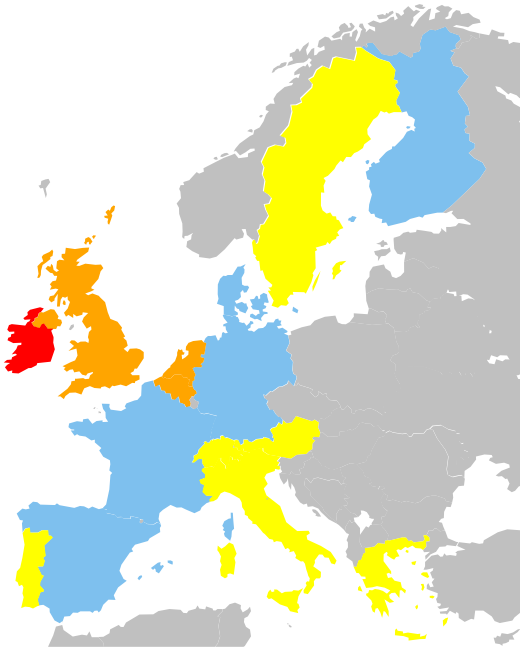
■ <0% to 25%   ■ 25% to 50%   ■ 50% to 75%   ■ 75% to 100%   ■ >100%

Sources: BIS; IMF

**Figure A15: Other European Banking Systems' Claims on EU Banking Systems**  
Per cent of own GDP

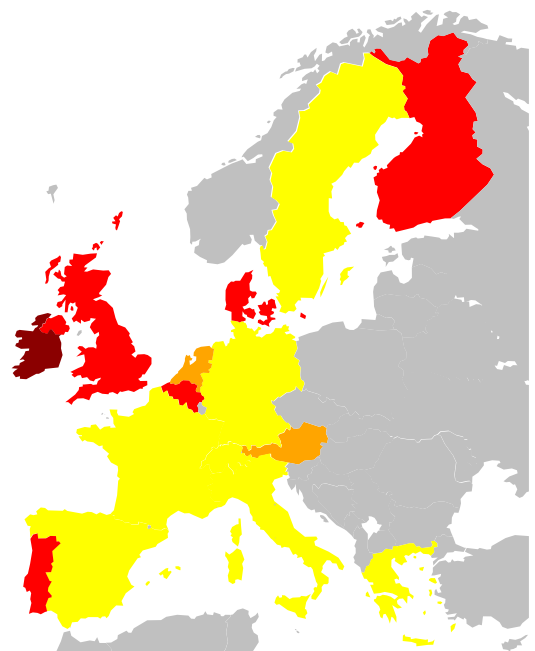
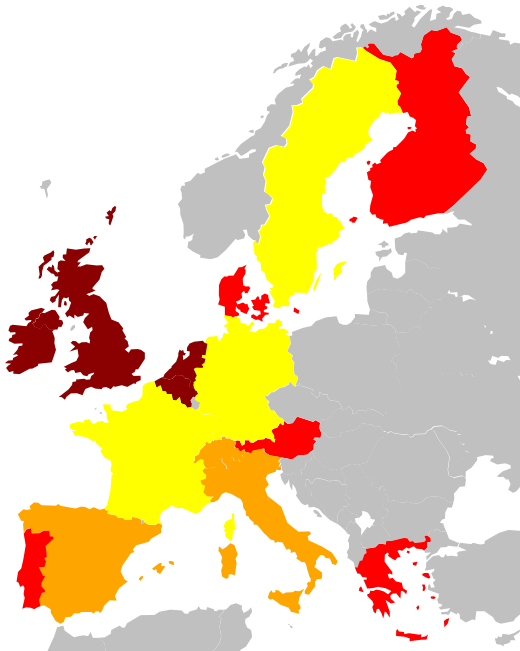
1999

2003



2007

2010



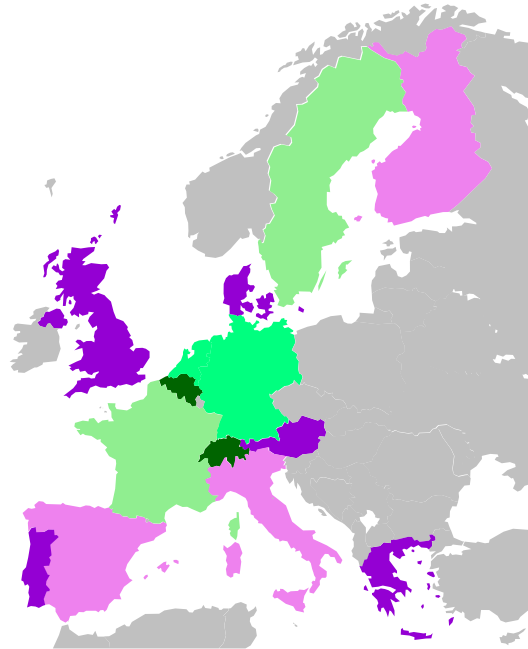
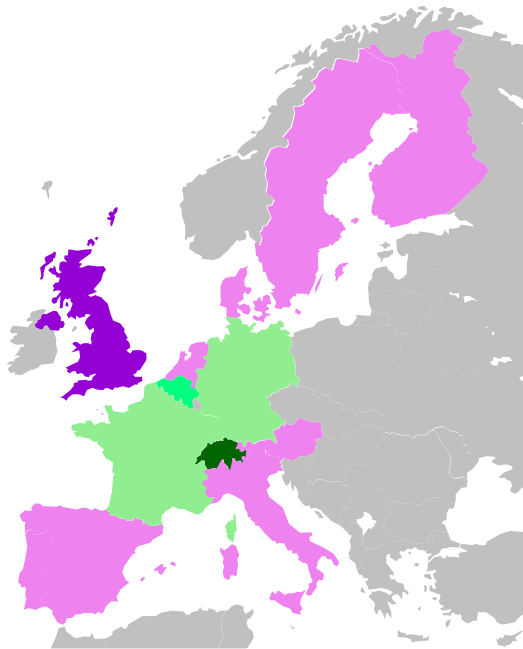
■ <0% to 25%   ■ 25% to 50%   ■ 50% to 75%   ■ 75% to 100%   ■ >100%

Sources: BIS; IMF

**Figure A16: Net EU Banking Systems' Claims on Other European Banking Systems**  
Per cent of own GDP

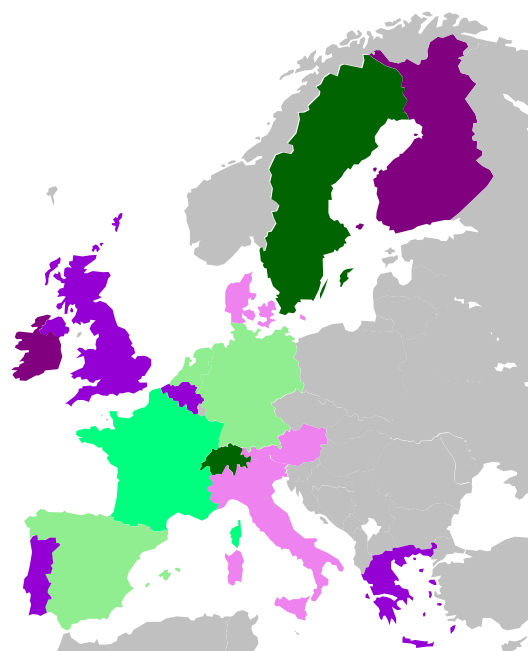
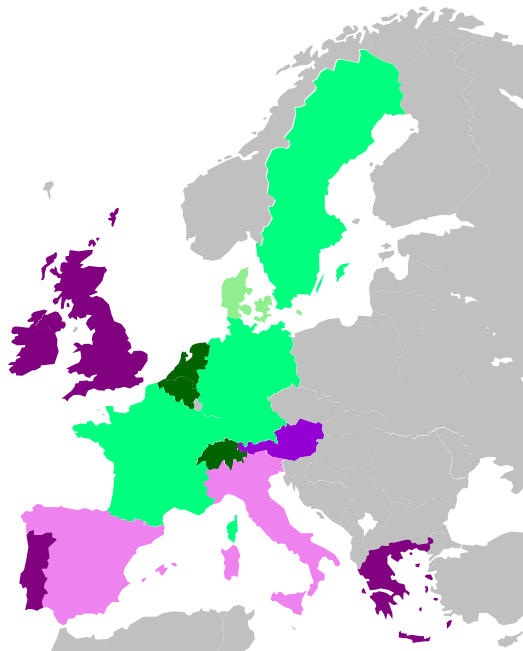
1999

2003



2007

2010



■ <-50% ■ -50% to -25% ■ -25% to 0% ■ 0% to 25% ■ 25% to 50% ■ >50%

Sources: BIS; IMF

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# Discussion

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## 1. Kathryn Dominguez\*

This ambitious paper by Bayoumi and Bui seeks to explain how the recent global financial crisis (GFC) spread between the United States and Europe. The paper argues that the culprit is financial market developments in the North Atlantic countries, which led to conditions that allowed a housing crisis in the United States to severely undermine the banking systems in Europe and the United Kingdom. The paper intriguingly argues that causality is unidirectional; a negative shock in the United States moved eastward across the North Atlantic.

The paper examines the linkages between the North Atlantic countries from three perspectives: (1) historical data; (2) empirical estimates; and (3) macroeconomic model simulations. The first section of the paper uses a series of heat maps (presented in Appendix A) over time to make the case that it was financial linkages, and not trade linkages, that propagated the crisis. The heat maps allow ocular analysis of the changes in both trade and financial linkages across the globe. The maps show that trade dynamics are within North America and with Asia, but not much has changed between the North Atlantic countries. In contrast, the heat maps show that financial links, measured using cross-holdings of private sector assets and banking ties, have deepened dramatically between the United States, the United Kingdom and Western Europe. These heat maps provide a fascinating 'moving picture' of specific linkages between countries, but they do not provide a test of any particular hypothesis. Indeed, although it may well be the case that North Atlantic trade linkages did not change prior to the GFC, this does not necessarily mean that trade was not a channel of propagation during the crisis. It is hard to argue that the collapse in the durable goods sectors of these economies was not interrelated. It may be that trade issues did not initiate the crisis, but it seems likely that trade provided a critical linkage in the transformation of the financial crisis into a global recession.

The first section of the paper also provides descriptive evidence on the evolution and co-dependence of the North Atlantic financial markets. Asymmetries in competition structures and banking regulations between the United States, the United Kingdom and Western Europe are argued to have led the United States to an increasingly dominant role in providing US dollar wholesale funding and (highly rated) securitised assets to European banks. When the US housing market collapsed, US dollar funding collapsed as did the high ratings on housing-related securitised assets. This is the one place in the paper where the authors suggest some culpability outside of the United States. They argue that national banking regulations in Europe (which made cross-border bank takeovers difficult), combined with EU directives that encouraged cross-border competition, led to incentives for overcapacity and excessive balance sheet expansion, which in turn resulted in European banks being overly dependent on US financial markets.

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The second section of the paper describes empirical and model-based evidence that Bayoumi and Bui have published in other papers, supporting the view that the GFC started in the United States and was propagated eastward via financial market linkages. It is worth stating at the outset that testing for macroeconomic causality, in this case for growth spillovers from one country to another, is the Holy Grail of economic research. Countries have multiple linkages, trade and financial linkages as well as many others, and are often influenced by similar demand and supply shocks. All these linkages and shocks make it extremely difficult to disentangle propagation channels. One approach to this problem of identification is to relate changes in the relative variance of growth rates across countries to changes in growth rate correlations. The idea is that if the correlation of growth rates rises between certain countries (which occurred in the downward direction during the GFC), then we can identify which country 'caused' the general downward spiral by looking for the country which at the same time had the highest relative change in growth variance. Bayoumi and Bui (2010) use this kind of identification via heteroskedasticity approach to estimate growth spillovers and find evidence for causality going from the United States and the United Kingdom to the euro area (and not vice versa). One important caveat is that in order to identify changes in the relative variance of growth rates across countries, they compare the 'great moderation' period to the recent GFC combined with data from the 1970s and 1980s (they need to do this to get enough observations). So their results are not 'clean' in the sense that they indicate that if we combine spillovers in the 1970s, 1980s and most recently, the United States looks to be the culprit in terms of creating the most growth spillovers.

An alternative approach to identifying causality provided in the paper relies on simulations of an International Monetary Fund macroeconomic model. The idea here is to use a standard model which allows for both trade and financial linkages across countries, and simulate the effects of a 'typical' growth shock to see what the model predicts in terms of growth spillovers. The authors start with a conventional version of the model where the spillovers come mainly through trade linkages and find small spillover effects. They then adjust the model by assuming: (1) highly correlated bond and equity risk premiums for the United States, the United Kingdom and the euro area; and (2) that half of all European wholesale funding comes from US markets. In both of these modified versions of the model they find much larger US growth spillovers. This result is not surprising, in that any assumption of tighter financial linkages would be expected to lead to higher growth spillovers. Nonetheless these results are interesting in that they suggest that spillovers can be dramatically larger when these financial linkages are assumed to exist.

The paper largely ignores the role of monetary and fiscal policies in the North Atlantic countries before and during the GFC in order to highlight the role of financial market linkages. The argument seems to be that these financial market linkages, in and of themselves, can lead to global financial market dislocation. An implication of this is that as long as financial market co-dependencies continue in the North Atlantic, another negative financial shock in the United States could propagate another GFC. Policy-makers are therefore likely to have mixed views on the message in the paper. On the one hand, by focusing on financial market development and regulation, rather than policy mistakes, monetary and fiscal authorities on both sides of the Atlantic will be delighted to be off the hook for any responsibility for the GFC. On the other hand, the lack of attention to the roles of fiscal imbalances and pre-crisis expansionary US monetary policy, is likely to make the analysis in the paper less relevant to current macroeconomic policy debates,

which are more focused on fiscal policy than financial market regulation. The contribution of the paper, therefore, is less in its lessons for policy (or its estimates of growth spillovers) and more in the insights it provides regarding the critical role of private sector capital flows in a world of differentially imperfect financial markets.

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## 2. General Discussion

Different aspects of the global financial crisis were the subject of much discussion. A number of participants felt that more emphasis should have been placed on trade, alongside financial factors, as an important element in how the crisis played out towards the end of the 2000s. In particular, trade was seen to be a key method of propagation during the crisis period. The rapid fall in durable goods trade was given as a leading example by one participant, particularly impacting activity in Germany. The financial services component of trade was also discussed, as was the need to distinguish between inter-regional and intra-regional trade. One participant thought that the extent of trade linkages and spillovers between economies may be underestimated by not making this distinction. In response, it was suggested that trade between North Atlantic and east Asian economies was certainly an important part of the story during the 2000s, but that within the North Atlantic economies, increased financial linkages were the big story of the past decade.

Also on the topic of the global financial crisis, one participant thought that the maturity mismatch of bank funding was just as important, if not more so, than currency mismatch. Banks were particularly reliant on short-term funding in the lead up to the crisis period, which led to a run on the wholesale funding market, prompting the Federal Reserve to put in place swap facilities in an attempt to improve US dollar liquidity outside the United States. Also, the lack of profitable domestically sourced investment opportunities for European banks (as discussed in the paper) was contrasted with the Australian experience. The fact that Australian banks had profitable domestic lending opportunities was seen as a key reason why Australian banks did not invest heavily in structured products in the lead up to the crisis and therefore fared comparatively well when the crisis hit.

The identification strategy used in the paper was also discussed extensively and several participants questioned whether it was possible to adequately identify spillover effects of different structural shocks in this setting. For example, one participant was surprised that, in the paper, a shock to the United States was found to have a strong impact on European countries but not vice versa. This result was suggested to be somewhat at odds with other results in the literature such as factor models that find little evidence of an independent US factor being important in addition to a common G7 factor.

It was also stressed by one participant that predictions about the transmission mechanism of certain shocks can be very different depending on the nature of the shock. For example, a US demand shock could have positive or negative spillover effects for trading partners depending

## DISCUSSION

on the reallocation of global capital. A US productivity shock, on the other hand, will tend to have only positive spillovers. Similarly, whether a shock is specific to an individual country or common across countries was considered important. A common risk shock across countries was said to typically have negative spillovers, unlike an individual country risk shock. Another participant also mentioned that it would be interesting to estimate the effect of a growth shock in east Asia on the rest of the world, although it was recognised that this was outside the scope of the paper.

In response, it was noted that most standard macroeconomic models do not have a well-specified financial sector and cannot replicate the high degree of correlation between bond rates seen across countries. Further, other more standard transmission mechanisms discussed in macroeconomics are still not well understood. Therefore, while imposing the observed correlation between bond rates on the model was somewhat of a 'black box' mechanism, this should not rule it out as an interesting exercise.

On the topic of the regulation of financial institutions, one participant suggested that regulation was far from adequate in a number of areas, and that too little regulation of US-owned or based investment banks (particularly those operating in the United Kingdom) was a key determinant of the imbalances that led to the global financial crisis. The dangers of poorly organised deregulation were also highlighted and were thought to have been important in Europe. Different regulatory requirements between the United States and Europe (e.g. in the form of simple leverage ratios versus risk-weighted leverage ratios) had created a type of 'regulatory arbitrage' that also sowed the seeds of the crisis. Another participant noted that it seems clear now that having unregulated financial institutions is risky for a country and that supervision can be an effective tool for policy-makers and authorities.

Finally, relating to the heat maps presented in the paper, one participant thought that it would also be interesting to see how different social, political and economic ideas spread around the world over time.

# Australia's Prosperous 2000s: Housing and the Mining Boom

Jonathan Kearns and Philip Lowe\*

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## 1. Introduction

At the start of the 2000s Australia was derided by some for being an 'old economy'. It lacked a substantial information and communications technology sector and was seen to be overly dependent on the extraction of resources, an activity that was not going to be enriching due to the declining relative value of commodities and weak potential productivity gains. However, by the end of the 2000s Australia was once again seen as the Lucky Country, riding on the back of rapidly rising commodity prices and having experienced only mild downturns at the time of the two international recessions that bookended the decade.<sup>1</sup> Overall, it was indeed another prosperous decade; the unemployment rate fell and incomes rose strongly. The 2000s was the first decade since Federation in which the annual growth rate of real GDP in Australia remained positive throughout the decade.

The 2000s will be remembered for the mining boom and closer trade links to China. In 2000, Australia had a growing economic relationship with Asia, but most eyes were still focused elsewhere, particularly on the United States. For example, in the volume from the Reserve Bank's Conference in 2000 reviewing the 1990s (Gruen and Shrestha 2000), the words 'China' and 'Chinese' do not appear, but the 'United States' is mentioned 93 times. The focus has now changed dramatically, with significantly increased attention paid to the extent to which Australia's economic fortune is tied to that of Asia. The most visible manifestation of the increasing development of Asia was the surge in commodity prices and the terms of trade; in SDR terms the average level of the Reserve Bank's commodity price index at the end of the decade was almost two and a half times its average in 1999.<sup>2</sup> This increase led to a significant policy debate about how to deal with the boom in the terms of trade, both regarding what to do with the increased government revenue and how to accommodate the resulting structural change in the economy.

While the commodity boom and the global financial crisis were dominant themes over the second half of the decade, in the first half it was strong growth in household spending and substantial increases in household borrowing and house prices that dominated the discussion. Despite household spending having since moderated, there have been lasting effects on the household

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\* Thanks to Michael Robson and many colleagues at the Reserve Bank for assistance and helpful comments. The views expressed are those of the authors and do not necessarily reflect the views of the Reserve Bank of Australia.

1 This change in fortunes is highlighted in a comparison of The Economist (2000) which summarises the argument at the time that Australia was an 'old economy' and Grimond (2011) which highlights Australia's recent success.

2 Commodity prices have increased further since then, so that the average value of the commodity price index in the first half of 2011 was four times that in 1999.

sector's balance sheet. A related major policy debate of the decade concerned the causes and consequences of this housing boom.

A third theme of the decade surrounded developments in the labour market. At the start of the decade the unemployment rate was around 6½ per cent. Gruen and Stevens (2000) noted that stable growth and a long expansion meant that maintaining the unemployment rate below 6 per cent seemed 'only slightly ambitious' whereas earlier in the 1990s it would have 'seemed ludicrous to many'. In the end, the unemployment rate was below 6 per cent for two-thirds of the 2000s, and reached a trough of 4 per cent, a rate not seen since the mid 1970s. This impressive performance raised an important question: below what rate of unemployment would inflation accelerate? In the quest to enhance the functioning of the labour market there were substantial debates regarding the form of regulations that would achieve the best employment and social outcomes. This issue is considered in detail in Borland (this volume) and so is not pursued further here.

Over the decade, growth in employment was strong relative to that in output, with labour productivity growth slowing markedly from the rates in the 1990s. The capital stock also grew more rapidly in the 2000s than in the 1990s, so that the slowdown in multifactor productivity was more pronounced. The issue of weak productivity growth periodically surfaced, but was to some extent hidden by reasonable growth in output as a result of greater factor usage and by a boost to real incomes from the rise in the terms of trade. These trends are discussed in more detail by Eslake (this volume).

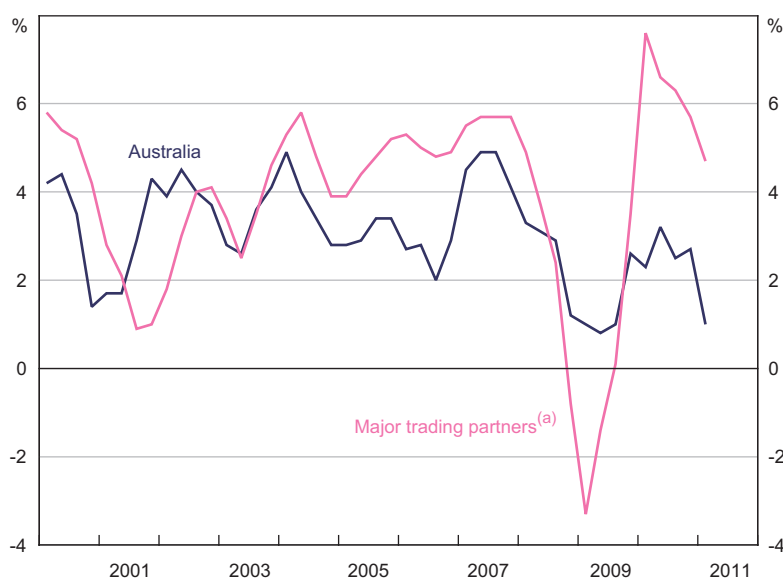
In this paper we provide an overview of the Australian economy in the 2000s. The paper begins with a comparison of the performance of the Australian economy in the 2000s to that in previous decades. Sections 3 and 4 then consider the implications of the two driving forces for the two halves of the decade: the changes to household balance sheets and the impact on Australia of rapid development in Asia. Sections 5 and 6 discuss the major debates regarding monetary and fiscal policy. While the role of policy has generally been less topical in the 2000s than was the case in the 1990s, there were nonetheless active debates regarding the role of asset prices in monetary policy settings, and how fiscal policy should respond to a rising terms of trade. Finally, in Section 7 the paper considers how Australia might best take advantage of the new opportunities offered by the transformation of the global economy, while at the same time managing the risks that come with this transformation.

## 2. Overview of the Decade

Despite the perception of being an old economy, Australia was experiencing above-average growth at the turn of the century, with strong domestic demand and stimulus provided by a strong international economy and a low exchange rate (Figure 1). The announced introduction of the Goods and Services Tax (GST) on 1 July 2000 resulted in a substantial bring-forward in housing investment which saw a slowing in the second half of the year. Just as the economy was recovering, the international economy was slowing, with the United States and a few other developed economies entering a shallow recession (see Bayoumi and Bui in this volume for a summary of the North Atlantic economies over the decade). It had often been said that when the United States sneezes, Australia catches a cold. But on this occasion, the Australian economy

did not follow the United States into recession. There are a number of reasons for this. The first is that, thanks to fortuitous timing, the Australian economy was bouncing back from the slowing in the second half of 2000 associated with the introduction of the GST. Second, in a signal of the changing economic landscape, Australia's major trading partner growth remained positive thanks to strong growth in Asia and despite output in the G7 declining in three consecutive quarters. Third, the bursting of the tech bubble did not lead to large negative wealth effects in Australia as the absence of large tech firms meant that the domestic equity market continued to rise through to 2002 as global markets declined. Finally, reinforcing these effects, household spending remained strong as house prices and household wealth continued to rise. As the Australian economy outperformed other developed economies in the early part of the decade, the Australian dollar rebounded from its all-time low in 2001 to around the average of the floating era by 2003.

**Figure 1: GDP Growth**  
Year-ended



Note: (a) Weighted using export shares at market exchange rates  
Sources: ABS; CEIC; IMF; RBA; Thomson Reuters

Consumer spending in Australia continued to grow at a brisk rate following the global downturn, fuelled by rising incomes and wealth. The robust growth in domestic demand was to a large extent self-reinforcing, as strong employment growth and rising wages drove income growth, which in turn contributed to rapid house price growth. The increasing value of housing assets, and solid stock market returns, meant that household wealth grew at an above-average rate. Consequently, households felt more confident and were willing to take on more debt and reduce their saving. The impact on household balance sheets of rapid house price growth and the associated increase in debt was substantial, as discussed further in Section 4. Concern that speculative elements were building given the rapid price growth and expansion of credit, and the possibility of the erosion of



lending standards, led to a number of policy initiatives, as outlined in Section 5 (see also Bloxham, Kent and Robson (2010)). While domestic demand was strong, export growth was weaker than might have been expected given above-average growth in Australia's major trading partners, and consequently the trade deficit and current account deficit remained wide.

In late 2003 the seemingly inexorable rise in house prices finally abated with national dwelling prices flat in nominal terms over the following couple of years; prices fell in Sydney, with small price rises in most other cities. Nevertheless, households remained optimistic, with consumption broadly growing in line with incomes and the net household saving ratio remaining around zero. Gradually, though, business investment came to play a more important role as a driver of growth in the middle part of the decade. Initially the strength in investment was in the non-mining economy, but with the sharp increase in commodity prices from 2005, mining investment increased dramatically (as discussed by Connolly and Orsmond in this volume). With this shift from consumption to investment, domestic demand continued to be the main source of growth for the Australian economy as export growth remained below expectations. Resource volumes were unable to respond immediately to the stronger global demand, and the further appreciation of the Australian dollar associated with the rise in commodity prices weighed on other exports and stimulated import demand.

Through this sustained expansion in the middle of the decade, excess capacity was gradually absorbed with the unemployment rate declining by 3 percentage points from late 2001 and survey measures of capacity utilisation reaching record highs. With inflationary pressures building, monetary policy was gradually tightened over a long six-year phase. The cash rate reached 7.25 per cent in early 2008, its highest level in over a decade.

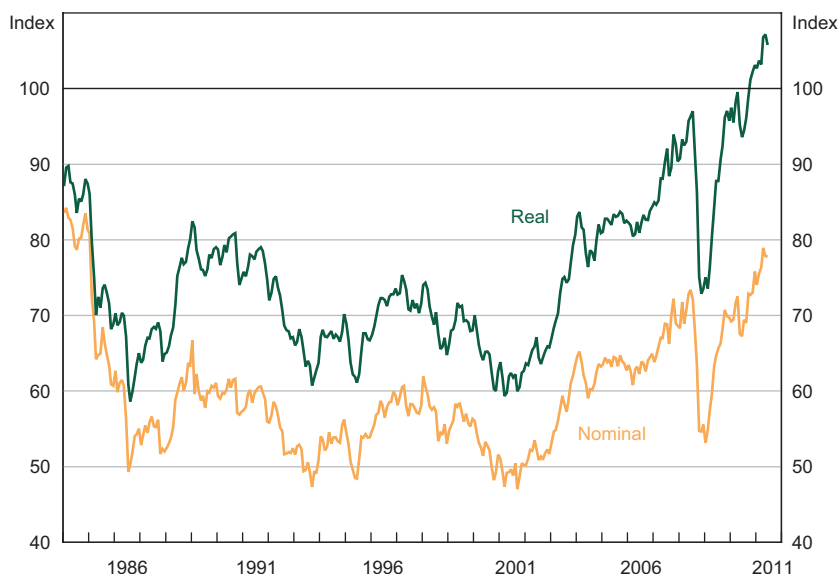
The domestic economy was slowing over the first half of 2008, prior to the extreme financial shock in September in the aftermath of the bankruptcy of Lehman Brothers. The resulting collapse in sentiment and the marked deterioration in the global economic outlook precipitated a sharp fall in commodity prices and the Australian dollar and a prompt fiscal and monetary stimulus in Australia. By May 2009, the RBA's commodity price index in SDRs had fallen by over 30 per cent from its October 2008 level, while the Australian dollar depreciated by around 30 per cent over the six months from its July 2008 peak. The first stage of a large discretionary fiscal stimulus – which totalled around 6 per cent of GDP over several packages – was implemented within three months of the collapse of Lehman Brothers. Monetary policy was also eased rapidly, with the cash rate cut by 100 basis points at the scheduled Reserve Bank board meeting just three weeks after the collapse of Lehman Brothers, and by a total of 375 basis points within five months of the Lehman Brothers collapse. The downturn in Australia turned out to be milder than expected, thanks to the rapid policy response, the sharp depreciation of the Australian dollar and the strong demand for bulk commodities from China, which resulted in part from infrastructure construction associated with China's own large fiscal stimulus. As a result of China's demand, Australian export volumes continued to grow through late 2008 and early 2009, a remarkable performance given global trade volumes fell by around 20 per cent.<sup>3</sup> Despite the deep recessions in developed economies, key emerging economies continued to grow and demand for Australian export

3 See Kearns (2011) for a discussion of the roles of policy and external demand in the performance of the Australian economy in 2008–2009 in the context of a comparison with Canada.

commodities rebounded quickly with SDR prices exceeding their previous peak a little over 18 months after their precipitous decline.

The Australian dollar quickly appreciated along with rising commodity prices. Apart from the large, but short-lived, fall during the financial crisis, the currency trended higher over the 2000s with the trade-weighted exchange rate appreciating more than 40 per cent in nominal terms from its trough in 2001 to the end of the decade, and almost 60 per cent on a real basis (Figure 2). By the end of the decade, the real effective exchange rate was at its highest level since 1977.

**Figure 2: Australian Dollar TWI**  
May 1970 = 100



Sources: RBA; Thomson Reuters; WM/Reuters

A recurring theme in the second half of the decade was that the economy was operating at multiple speeds, with rapid growth in mining and related sectors, and below-trend growth in a number of other sectors and in the south-eastern states. This often led to the claim that monetary policy settings were inappropriately tight for the non-mining parts of the economy. This mirrored the argument earlier in the decade that the setting of monetary policy was overly tight because of the housing boom in the south-eastern states. While there were differences in regional and sectoral economic performance, on the whole there was substantial spillover from the mining sector to other parts of the economy through demand for goods and services by the mining sector, taxes and income flows to other sectors through dividend payments, as discussed in Connolly and Orsmond (this volume) and Stevens (2010a, 2011).

## 2.1 The 2000s in historical context

On many levels the 2000s were a successful decade for Australia. As discussed above, Australia experienced relatively mild downturns in the face of two international recessions, and in between these experienced a strong expansion. Annual employment growth averaged 2.2 per cent over the decade, substantially faster than in the 1990s and recovering to rates recorded in the 1960s and 1980s (Table 1). In both downturns experienced in Australia, the increase in the unemployment rate was much smaller than in the 1980s and 1990s recessions, and subsequently fell more quickly. Consequently, the average unemployment rate over the decade was significantly lower than in the 1980s and 1990s and, in addition, there was a substantial increase in the participation rate. Indeed, the low unemployment rate in the second half of the decade – which troughed at 4 per cent, a rate not seen since the mid 1970s – prompted significant consideration as to what rate represented full employment (see Borland in this volume).

**Table 1: Macroeconomic Outcomes**  
Decade averages, per cent

	1960s	1970s	1980s	1990s	2000s
Real GDP growth	5.1	3.1	3.4	3.4	3.0
Real GDP per capita growth	3.0	1.5	1.8	2.2	1.5
Employment growth <sup>(a)</sup>	2.5	1.6	2.4	1.2	2.2
Unemployment rate	2.0	3.9	7.6	8.8	5.5
CPI inflation (excl interest) <sup>(a)</sup>	2.5	10.1	8.1	2.8	3.2
CPI inflation (excl interest and GST impact) <sup>(a)</sup>	2.5	10.1	8.1	2.8	2.8
Balance of trade (per cent of GDP)	-1.1	0.0	-1.9	-0.8	-1.3
Current account (per cent of GDP)	-1.8	-1.1	-4.1	-4.0	-4.6

Note: (a) Annualised rate

Sources: ABS; RBA

The introduction of the GST at the start of the decade added a little over 3 percentage points to the headline inflation rate. As this was a temporary impact, the Reserve Bank said at the time it would not react to this spike in inflation. Abstracting from this, annual inflation over the decade averaged 2.8 per cent, consistent with the inflation target that inflation should average ‘two-point-something’, although slightly higher than the 1990s inflation-targeting period.<sup>4</sup>

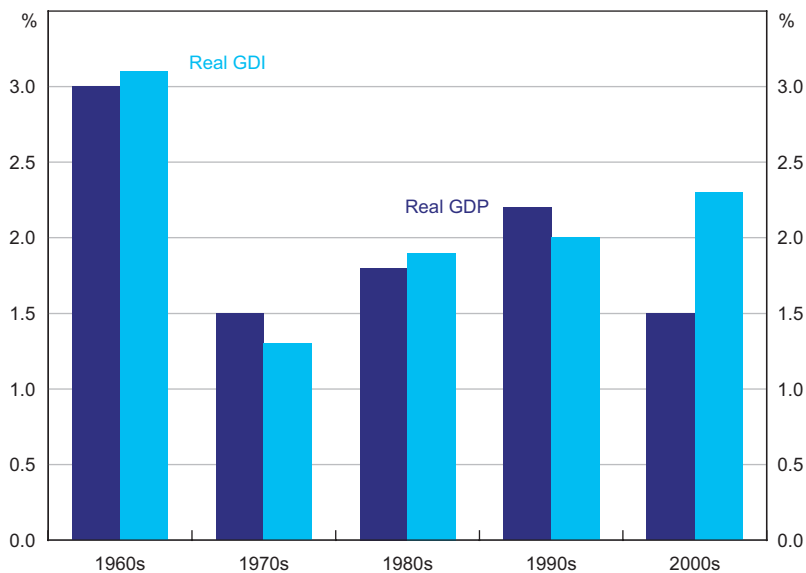
<sup>4</sup> The target of inflation averaging between 2 and 3 per cent over the cycle is sometimes misinterpreted to imply inflation should average this midpoint of 2.5 per cent. For an early expression of the target equating to inflation averaging ‘two-point-something’, see Debelle and Stevens (1995).

For much of the 2000s, growth in export volumes was surprisingly weak given generally strong external conditions, the low value of the exchange rate over the first part of the decade and the strong commodity demand over the latter part of the decade. Conversely, the growth in consumption and investment resulted in strong import growth. Consequently, the average trade deficit, at 1.3 per cent of GDP, was larger than in the 1990s, but still smaller than in the 1980s. Toward the end of the decade the trade position moved to surplus, as a result of the increased value of resource exports. The average current account deficit in the 2000s was larger than in previous decades at 4.6 per cent of GDP, reflecting the trade deficit as well as increased net foreign liabilities and strong returns on Australian assets. Equivalently, the large current account deficit in Australia can be seen as the outcome of the high investment rate. This was Australia's largest decade average current account deficit in the period since Federation. Yet the 1980s debate about the perils of current account deficits summarised in Tease (1990) did not resurface, with a general view that the current account deficit in Australia did not represent an imbalance, but rather the outcome of savings and investment decisions of individuals and firms in the absence of major distortions, as discussed in Debelle (2011).

One area in which Australia's performance over the 2000s was less impressive is the growth of output per capita. While average real GDP growth, at 3 per cent, was roughly  $\frac{1}{2}$  percentage point less than in the 1980s and 1990s, growth in real GDP per capita was  $\frac{3}{4}$  percentage point less than in the 1990s reflecting the stronger population growth in the 2000s (Figure 3). Further, much of this growth in per capita GDP reflected greater use of factors of production: labour utilisation increased with the decline in the unemployment rate and the increase in the participation rate, while the pick-up in investment resulted in faster growth in the capital stock (Figure 4). The relatively weak growth in output given the stronger growth in labour and capital reflects the marked slowing in multifactor productivity growth in the 2000s. In contrast, productivity growth, and so growth of GDP per capita, had accelerated in the 1990s following significant economic reforms.

While growth in productivity and GDP per capita were weak in the 2000s, this was offset by the large increase in the terms of trade, which resulted in faster real income growth. Real gross domestic income (GDI) per capita grew at an average annual rate of 2.3 per cent, the fastest rate since the 1960s, and well above the 1.5 per cent average growth in per capita real GDP. Since this margin between GDP and GDI growth reflected the increase in the terms of trade from higher commodity prices, and the mining sector has significant foreign ownership, some of this income growth will have accrued to foreigners (see Connolly and Orsmond in this volume).

**Figure 3: Output and Income**  
Per capita, average annual growth



Sources: ABS; RBA

**Figure 4: Labour and Capital**  
Average annual growth



Note: Heads-based growth in labour prior to September 1966

Sources: ABS; RBA

### 3. Development in Asia – Implications for Australia

Australia has greatly benefited from the rapid growth in Asia over the past decade, in particular in China and India. As Huang and Wang (this volume) summarise, the development of Asia has been quite remarkable. Not only did Asian countries experience fast growth in the 2000s, but for China and India this growth was uninterrupted in contrast to the major developed economies. As a result, Asia's share (excluding Japan) of world GDP, at market exchange rates, has increased from around 10 per cent in 2000 to 17 per cent in 2010. Australia has prospered from this growth, both because of its endowment of natural resources and because growth in Asia means that there are now large economies closer to Australia than has previously been the case.

Industrialisation and urbanisation in China, and elsewhere in Asia, has greatly increased demand for resources, especially coal and iron ore for producing steel. China alone now accounts for almost half of global steel production. Australia is a major exporter of the key resources for steel production because it has large endowments of coal and iron ore, relative to a comparatively small population. In 2010, iron ore accounted for 17 per cent of the value of Australia's exports, while coal accounted for another 15 per cent. This represented incredible growth, rising from 3 and 7 per cent of export values, respectively, in 2003. Other exporters of these bulk commodities, such as Brazil for iron ore, have also benefited from this strong demand and the associated rising prices. However, being closer to China with direct shipping access has been an additional benefit for Australian producers as it lowers the cost of shipping. This boosts demand for Australian bulk commodities or increases the revenue of Australian producers, and so benefits Australian producers in the same way as having lower extraction costs.

The increase in commodity prices, and in particular coal and iron ore prices, has led to substantial efforts to increase commodity production. Since 2005, mining investment has increased from 12½ per cent of total private business investment to be around one-quarter. As a share of GDP, mining investment has increased from less than 2 per cent to around 4 per cent now, and with a significant contribution from liquefied natural gas (LNG) is forecast to increase to be above 6 per cent in coming years. Mining is more capital intensive than other industries and so, with a bigger mining sector, Australia's capital-output and investment-output ratios have increased and are likely to remain higher than they have been.

The increase in the size of the mining sector is likely to make the Australian economy, and its fiscal position, more cyclical. Commodity prices are inherently more volatile than prices of services or manufactured goods because supply is typically less elastic in the short run and demand more sensitive to economic cycles. In addition, historically, the difficulty in forecasting commodity demand and prices, particularly at the long horizons of resource investment projects, has often led to over-investment and 'hog cycles'.

The mining boom has had other implications for the structure of the Australian economy. As well as mining investment and construction, it has increased the demand for labour, although overall mining-related employment remains a very small share of total employment. The flexibility of the Australian labour market has thus far enabled this greater demand to be accommodated without significant labour shortages or widespread increases in wages. The increase in commodity prices has also seen the Australian dollar appreciate significantly to 30-year highs in real terms, contributing to the reallocation of resources within the economy.

The growth of Asian economies has also lessened the isolation of Australia from major economic markets. Quah (2011) documents how the centre of global economic activity has shifted from being in the mid Atlantic in 1980, to be east of Bucharest in 2008, and is projected to be between China and India by 2050. Australia is still not close in absolute distance to large economies; for example, Beijing and Delhi are both closer to London than they are to Sydney. However, it certainly is the case that Australia is closer to Asia than it is to Europe or the United States. So the expansion of the Asian economies reduces Australia's relative economic isolation. This should work to increase Australia's trade, as distance is significant in explaining a country's trade; see, for example, Guttman and Richards (2006) and Disdier and Head (2008). Despite this, while the ratio of Australia's imports and exports to GDP increased in the 1990s following tariff reductions, it has been relatively stable through the 2000s despite the rapid growth of Asian economies.

The benefits of this relative proximity to large economies in Asia are likely to be more evident in some non-resource sectors, particularly services such as tourism and education. Education has been one of Australia's strongest growing export sectors; being relatively close, in a similar time zone with well-established English-language courses and generally favourable visa arrangements is an advantage. Australia is one of the five largest education exporters in the OECD and much of this demand has come from China and India. China and India together now account for just over 40 per cent of Australian education exports versus around 15 per cent at the start of the decade. But growth in education exports is likely to slow because of increased competition internationally, the appreciation of the Australian dollar, more restrictive visa requirements and some domestic capacity constraints (Hall and Hooper 2008).

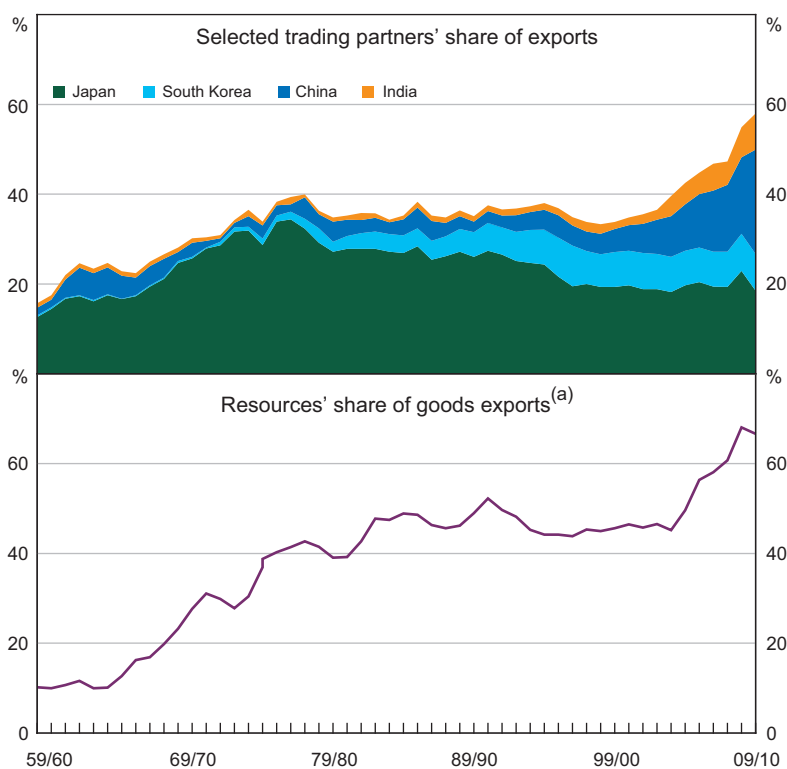
Similarly, the share of tourism from China and Hong Kong is roughly double what it was in 2000; with a combined share of around 11 per cent they represent the second largest source of tourist arrivals. Nevertheless, this is still only half of the share coming from other countries in Asia, even after excluding Japan. But while rising incomes in Asia have increased tourist numbers, macroeconomic and other factors still have a dominant impact on tourism. The rising Australian dollar over the decade has depressed inbound international tourist numbers – as did the terrorist attacks in September 2001, the outbreak of SARS, and the financial crisis – so that overall growth in this sector has been weak.

The effects of developments in Asia flow through Australian imports as well as exports. Urbanisation and industrialisation has greatly expanded the production of manufactures in non-Japan Asia. As a result, the share of global manufactures trade coming from Asia, and China in particular, has greatly increased over the past decade. The heightened competition from Asian manufacturers exerted significant downward pressure on global manufactures prices. Consequently Australian import price growth was low over the decade, which also worked to boost the terms of trade. Overall, imports from Asia have increased from around 40 per cent of total imports at the start of the decade to around one-half.

There are some similarities in the impact on Australia from the development of China over the past decade and the growth of Japan in the mid 1960s to mid 1970s. Japan was already a significant trading partner accounting for 17 per cent of Australia's merchandise exports in 1965. With continued rapid growth over the following decade, Japan's demand for resources from Australia increased substantially. The share of Australian exports going to Japan doubled to 34 per cent and

the resource share of Australian exports trebled to just under 40 per cent (Figure 5). This increase in Australia's resource exports and the importance of an individual trading partner looks remarkably similar to the 2000s. However, an important difference is that over the period from 1965 to 1975 Australia's terms of trade did not increase as they have recently (Figure 6). The increase in Australia's resource exports to Japan resulted from rapid growth in the volume of resource exports, with resource prices moving broadly in line with import prices. In part, the rapid growth in volumes reflected the discovery and development of large iron ore deposits. In contrast, over the past decade the increase in the share of resource exports is attributable to a substantial increase in prices, not volumes.

**Figure 5: Australian Exports**

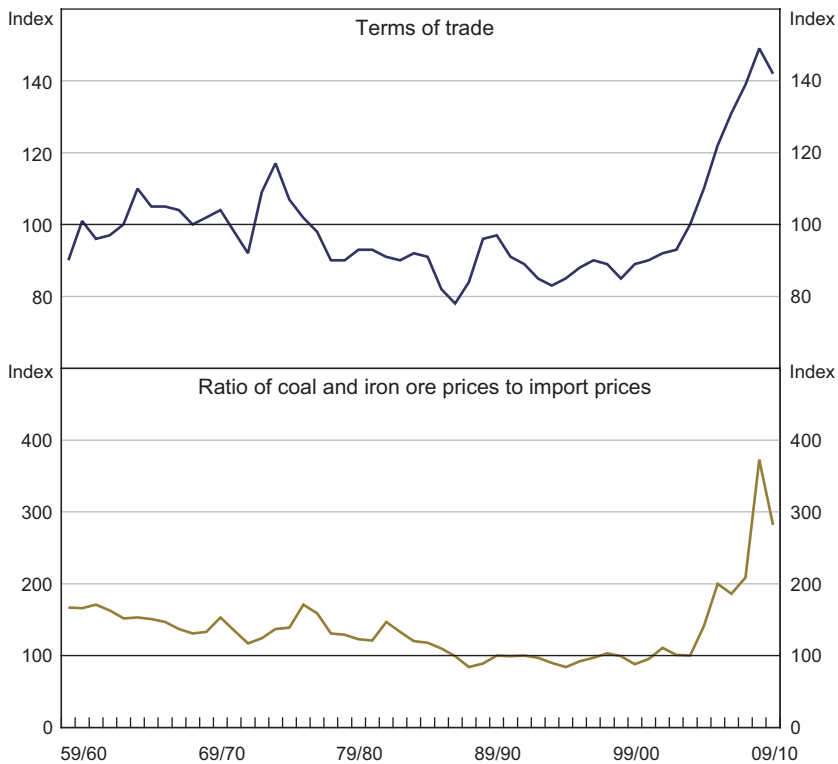


Note: (a) Excludes mineral fuels and gold pre 1974/75

Sources: ABS; Foster (1996)



**Figure 6: Trade Prices**  
2003/04 = 100



Sources: ABS; RBA

The difference in the price response is not simply because China is a larger country; at market exchange rates China's share of global GDP now is broadly similar to Japan's share in the mid 1970s. One key difference in the current episode is that China is experiencing much more resource-intensive growth compared with Japan in the 1960s. Indeed, Eslake (2011) shows that the share of global GDP produced by countries at a resource-intensive stage of development is currently much larger than at any time in the second half of the 1900s. China's share of global steel production has increased from 15 per cent at the start of the decade to around 45 per cent in 2010. In contrast, Japan's share of global steel production peaked at 17 per cent in 1973.<sup>5</sup> Similarly, at the end of the decade China accounted for close to half of global coal consumption, over 10 times Japan's share in the 1960s and 1970s.<sup>6</sup> Furthermore, Australia's resource export volumes also grew more rapidly in the 1960s and the first half of the 1970s, with annualised growth around 15 to 20 per cent, compared to 5 per cent over the past decade, seemingly reflecting the greater difficulties with expanding an already large and relatively mature mining industry.

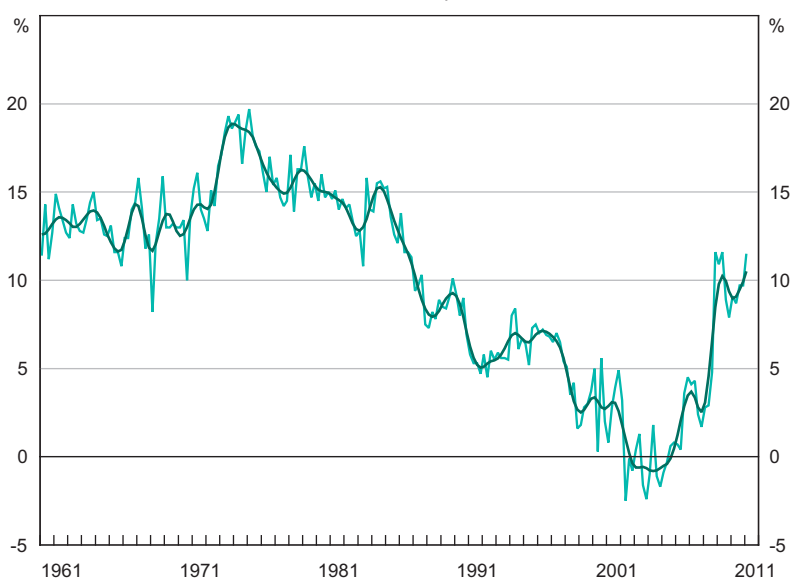
5 World Steel Association (2010).

6 BP (2010).

## 4. Household Balance Sheets

At the start of the decade, households were facing favourable economic conditions. Steady growth in employment and wages was delivering rising incomes, while wealth was increasing with rapid growth in house prices and steady, if not spectacular, increases in domestic share prices. These factors gave households the confidence to reduce their saving. Further, household saving out of current income was reduced as households moved to a higher debt-to-income level because of their greater access to credit. The saving rate continued the decline that had commenced in the mid 1980s, and by early in the 2000s household spending (net of depreciation) was estimated to exceed household incomes (Figure 7).

**Figure 7: Household Saving Ratio**  
Per cent of household disposable income



Notes: Net of depreciation; 13-period Henderson trend

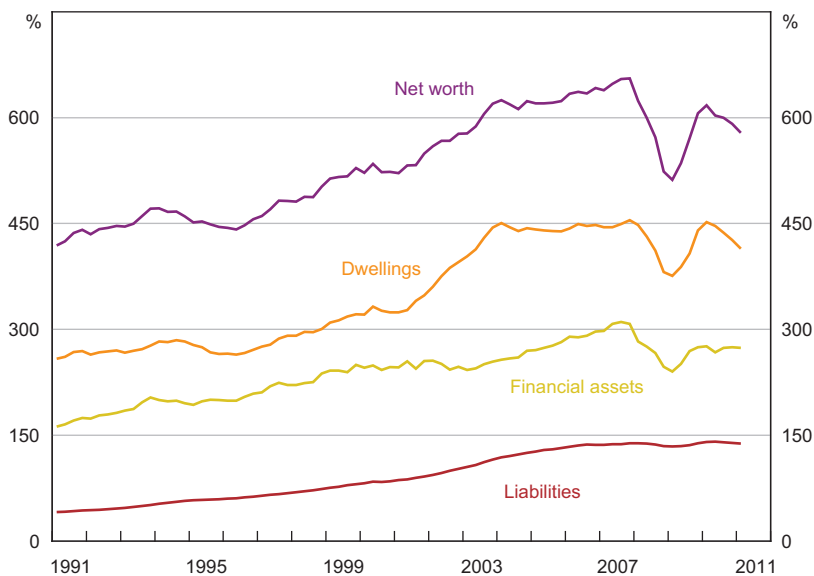
Sources: ABS; RBA

House prices had begun to rise from the mid 1990s reflecting a couple of key factors. First, the decline in nominal interest rates associated with lower inflation reduced the initial repayment burden for a given loan size and so increased households' borrowing capability. Second, the increased competition and innovation in the lending market that started with the reforms of the banking sector in the 1980s had greatly increased the accessibility and availability of housing finance (see Yates (this volume) and Ellis (2006)). In the late 1990s the rate of dwelling price growth accelerated and in the first four years of the 2000s prices increased at an average rate of 14 per cent.

Rising house prices were accompanied by accelerating growth in borrowing for housing. Growth in housing credit increased from rates around 12 per cent in the second half of the 1990s to over 20 per cent in 2003 (Davis, in this volume, summarises this and other financial developments over the decade). The sense that this was unsustainable was heightened by the increasing share of this

borrowing undertaken by households buying properties to rent out rather than owner-occupy. As discussed in Bloxham *et al* (2010) and in Section 5, the dynamics of rapid house price and credit growth, in conjunction with some signs of excess in parts of the housing and lending markets, became an increasing concern for the Reserve Bank and other policy-makers. Partly in response to policy measures, national house prices plateaued in late 2003 and were broadly flat in nominal terms over the following two years. While there were some differing regional cycles, notably with falls in nominal prices in Sydney in 2004 and prices in Perth continuing to grow strongly, overall national house prices grew broadly in line with household incomes between 2003 and 2008, followed by a small fall in the national median house price in 2008 (Figure 8). Nevertheless, credit continued to grow at a brisk pace, not slowing to the 12 per cent rates of the late 1990s until late 2005. With growth in household borrowing outpacing that in incomes, the ratio of household liabilities to incomes continued to rise, as did the ratio of liabilities to assets.

**Figure 8: Household Wealth and Liabilities**  
Per cent of annual disposable income



Notes: Household sector includes unincorporated enterprises; disposable income is before the deduction of interest payments

Sources: ABS; APM; RBA

Financial asset holdings also increased over the decade. This masked differing trends, with superannuation assets as a ratio to income increasing strongly from around 110 per cent at the start of the decade to over 150 per cent (Figure 9). This reflected strong compulsory and voluntary flows into superannuation and the large share of superannuation invested in domestic equities, which experienced strong returns over the decade. In contrast, non-superannuation financial assets declined as a ratio to income so that by the end of the decade superannuation assets were larger than all other financial assets. The value of households' total financial assets peaked in late

2007 at over 300 per cent of income, but the subsequent falls in values during the financial crisis were larger than for housing and valuations and have yet to recover this previous peak.

**Figure 9: Household Balance Sheet**  
Per cent of annual disposable income



Notes: Household sector includes unincorporated enterprises; disposable income is before the deduction of interest payments

(a) Includes cash & deposits, equities & unit trusts, and other financial assets

Sources: ABS, RBA

As discussed above, several factors contributed to the strong growth in house prices up to the mid 2000s, with a key one being the liberalisation of the credit market. Greater access to credit enabled households to substantially increase their borrowing over the 1990s and 2000s. The growth in household borrowing outpaced house price growth so that housing gearing increased from 11 per cent in 1990, to 21 per cent in 2000, to a little under 30 per cent in 2010. Once house prices and borrowing were rising together, it was difficult to determine whether increased borrowing capacity led to higher house prices or rising house prices spurred increased borrowing.

One benchmark is to compare Australian households' debt levels to that of other countries. In 1990 Australia had one of the lowest household debt-to-income ratios in the developed world at 46 per cent. By 2000 it had doubled to 94 per cent and was similar to that in Canada and the United States. By the end of the 2000s, the Australian ratio at around 150 per cent of household disposable income was one of the highest in a group of comparable developed economies (Battellino 2010).

Even with these higher levels of debt, loan arrears rates and defaults have remained low relative to history and other countries (RBA 2011). Further, most of the debt is held by higher income households who appear well placed to repay this debt (Battellino 2010). Nevertheless, as recent

international experiences demonstrate, household debt can amplify shocks. As Stevens (2010b) notes, Australian households would be prudent not to increase their indebtedness at the same rate as over the past two decades.

## 5. Monetary and Financial Policy

### 5.1 The framework

The past decade saw less debate than in previous decades about the appropriate monetary policy framework for Australia. Throughout the 2000s, there was broad community and political support for the key elements of the framework which include: (i) a medium-term inflation target; (ii) the cash rate being the instrument of monetary policy; (iii) the Board of the RBA setting the cash rate independently of government; and (iv) the RBA being accountable for, and communicating, its decisions.

The main framework-related issue over the decade was the role of monetary policy in addressing financial imbalances. While this has recently been topical at the global level following the financial crisis, it was extensively discussed in Australia in the early years of the decade. Here, the particular issue was the extent to which the RBA should take account of the then rapid increases in housing credit and housing prices when setting the cash rate.

In 2001, even as the RBA was cutting interest rates as a result of the global slowdown in the aftermath of the tech boom, it was expressing concerns that lower interest rates risked further boosting housing prices and credit. Then in 2002 and 2003 as interest rates were being increased, the RBA frequently noted the risk of imbalances building up in the housing market. In 2003, in particular, the most common theme in speeches and in the RBA's research agenda was the risks posed by unsustainable growth in both housing credit and prices. In part, the RBA's strategy during this period was to bring to the public's attention the risks involved with making investment decisions on the assumption that the then current trends would continue.<sup>7</sup> Unlike every other developed country, and most large emerging economies, the RBA did not cut interest rates at any point in 2003.

During 2002 and 2003, the RBA came in for some criticism from those who saw it as exceeding its mandate or who interpreted its actions as targeting housing prices. The RBA went to considerable lengths to explain its actions as consistent with flexible inflation targeting and to explain that it was not targeting credit growth or asset prices. Developments in the housing market were, however, given as one reason for increasing interest rates in response to general macroeconomic conditions sooner rather than later.

Internationally, the debate on how monetary policy should respond to emerging financial imbalances is far from settled. The weight of opinion has, however, shifted somewhat towards the view that in some situations it may be appropriate to respond to a big run-up in assets prices that is accompanied by rapid credit expansion.<sup>8</sup> While this view can sit uncomfortably with a more rigid inflation-targeting framework where the policy rate is set so that the inflation forecast

7 See Bloxham *et al* (2010) for a fuller discussion of the RBA's approach during this period as well as actions taken by APRA and ASIC.

8 See Cagliarini, Kent and Stevens (2010) and Miskhin (2011) for more details.

at a fixed horizon is equal to the target midpoint, it is not inconsistent with the medium-term inflation-targeting framework that the RBA has employed since 1993. In particular, in some situations, responding to financial imbalances may deliver an average inflation rate that is closer to the target and less volatile, even if it results in some short-run deviation from the target. This is particularly so if such a response can help avoid a costly 'boom and bust' that damages the financial system. The challenge here is how this can be done in practice. How might adjustments in interest rates be calibrated? What is the trade-off with other policy instruments? And, how are such actions best explained to the public? These questions are likely to be debated frequently over the decade ahead.

Looking back, it is difficult to judge how effective the RBA's approach was in the early 2000s. The Bank's comments at that time did, however, attract widespread media coverage, including in the popular press. Following the increase in interest rates at the end of 2003, housing price growth did decelerate sharply, and Australia was able to avoid the worst of the excesses seen in other housing markets around the world. Furthermore, the adjustment in housing prices was not accompanied by major stress in either the household or financial sectors.

Whatever conclusions one draws from that particular episode, the past decade has seen a shift globally towards a more flexible approach to inflation targeting. With the adoption of inflation targeting by some countries in the 1990s, there was a discussion about the importance of constraining the discretion of the central bank, so that it delivered on its inflation objective.<sup>9</sup> In a sense, this was understandable given the experience of earlier decades. But as inflation expectations became better anchored, a number of central banks have adopted a more flexible approach with greater consideration given to medium-term outcomes, including for output and employment. Recently it has also become clearer that low inflation does not guarantee financial stability and so there is increasing thought being given to how the setting of monetary policy should take into account financial stability issues.

A second framework-related issue that was at times controversial was the degree of transparency of the RBA's decisions. While in 1990 the RBA was one of the first central banks to commence releasing a statement announcing changes to the policy interest rate, for many years, the RBA was ambivalent about the practice of releasing statements and minutes after every Board meeting. The main concern was that too frequent communications would create additional uncertainty. But by 2007, the evaluation of the benefits and costs of increased communication had changed, partly based on the experience of other central banks. Since then, a statement has been released after each Board meeting and minutes have been released two weeks after the meeting.<sup>10</sup> In February 2008, the Bank also began publishing numerical forecasts for both inflation and output on a quarterly basis, after having published descriptive forecasts in the *Statement on Monetary Policy* for over a decade, and the amount of material published by the Bank, and the number of public speeches given by senior staff, has increased significantly. Unlike many other central banks, RBA officials take questions from the media at these speeches, although the RBA does not hold regular press conferences as have become increasingly common elsewhere.

9 There was also a discussion on the need for 'penalties' on the central bank if the inflation target was not met.

10 See Stevens (2007) for a full discussion of the reasons for this change.

One issue that attracts attention periodically is the structure of the RBA Board, which has a majority of part-time external members drawn primarily from the business community. This longstanding structure is unusual by international standards and has both its critics and defenders. Its critics raise the issues of conflicts of interest and the capability of part-time members to question the views being put by the RBA executives. In contrast, supporters of the current structure point to the importance of bringing timely, real-world experience to the RBA's deliberations and the generally successful outcomes delivered by the current arrangements. Over the decade the only change made to the appointment process was in 2007, when the Treasurer announced that new Board appointments would be made from a register of eminent candidates to be maintained by the Secretary to the Treasury and the Governor of the RBA.

The Statement on the Conduct of Monetary Policy, which records the common understanding of the Governor and the Government on key aspects of Australia's monetary policy framework, was re-signed four times during the decade.<sup>11</sup> On each occasion, the broad objectives of monetary policy and the key elements of the inflation target were reaffirmed. The largest change to the Statement was in 2010, when a separate section on financial stability was added, recognising the RBA's longstanding responsibilities in this area. The other main changes were made in 2007 and related to the RBA's independence and its increased transparency.

## 5.2 The major policy considerations

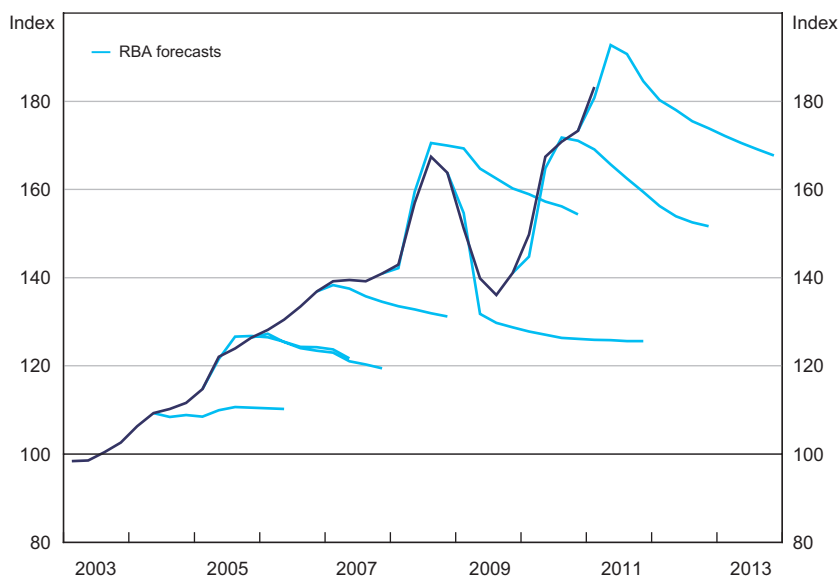
Apart from developments in the housing market, two major issues confronted monetary policy over the decade. The first was the very large shift in the relative price of commodities, which led to Australia's terms of trade rising to their highest level in over 140 years. The second was the North Atlantic financial crisis and the associated severe global recession.

Looking back over the past decade, the most frequently recurring theme in the RBA's communications was the rise in Australia's terms of trade. This rise has not only been very large, but it has taken place almost continuously since 2003, although there was a sharp, but temporary dip, during the financial crisis. It was largely unexpected and, in hindsight, is explained by the boom in China following a period of relatively low global investment in resource extraction and food production. Like many others, the RBA repeatedly revised up its forecasts for the level of commodity prices and the terms of trade over the period (Figure 10).

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<sup>11</sup> These re-signings occurred in 2003 following the reappointment of Ian Macfarlane as Governor, in 2007 when Glenn Stevens was appointed Governor, and in 2007 and 2010 following federal elections.

**Figure 10: Terms of Trade**  
2003 average = 100



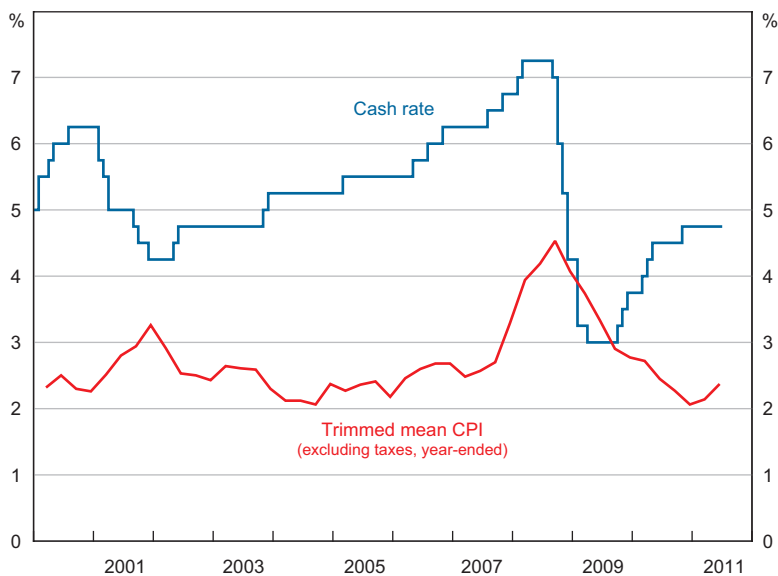
Sources: ABS; RBA

This rise in the terms of trade, and the frequent upside surprises, meant that for most of the decade monetary policy was being tightened. Indeed, from 2004 to 2008, the RBA's two-year-ahead forecast for inflation, based on the assumption of a constant cash rate, was in the top half of the medium-term target band. Not surprisingly, there was a long upswing in the cash rate running from 2002 to 2008, with monetary policy becoming restrictive in 2006 (Figure 11). The pace of tightening picked up in late 2007 as it became clear that capacity pressures in the economy were leading to a sharp pick-up in inflation. This pick-up was substantially larger than the RBA had been expecting and it saw underlying inflation increase to a little above 4½ per cent.<sup>12</sup>

<sup>12</sup> See Lowe (2011) for a detailed account of this pick-up in inflation.



**Figure 11: Inflation and the Cash Rate**



Sources: ABS; RBA

This peak in inflation occurred in the September quarter of 2008, just when the financial crisis was intensifying dramatically following the failure of Lehman Brothers. Despite the high inflation rate, the RBA cut the cash rate rapidly over the final months of 2008 as the global economic outlook deteriorated markedly. Including the 25 basis point cut in September, the cumulative reduction from the peak in the cash rate was 425 basis points to 3 per cent in April 2009, a new cyclical low but substantially above policy rates in almost all other developed economies.

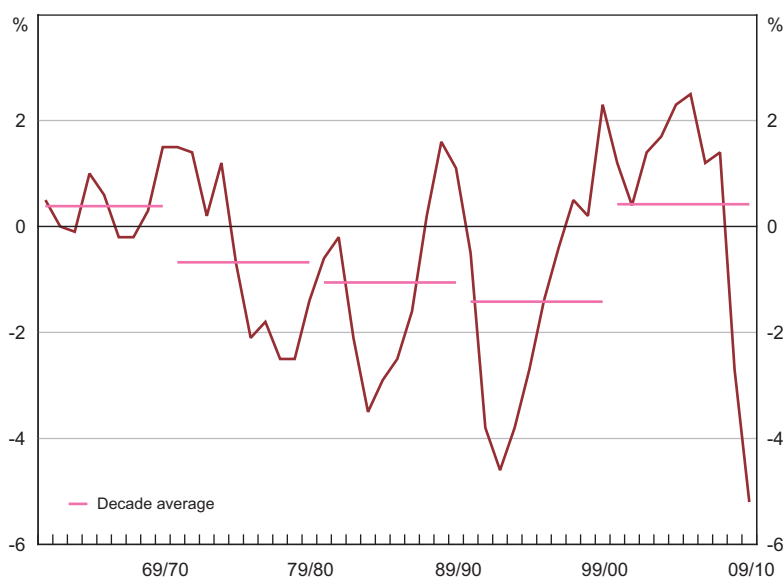
Importantly, the RBA also provided significant liquidity support to the domestic money market. Unlike many other central banks it was able to do this through its pre-existing framework for market operations. This framework allowed significant flexibility as the RBA had long dealt with a wide range of counterparties, dealt in the market every day, and conducted repurchase agreements for a range of maturities and with different classes of collateral. Following the failure of Lehman Brothers, the RBA, among other actions, increased the supply of settlement balances to increase the liquidity of the system and widened the pool of securities eligible for repurchase agreements.<sup>13</sup> These actions helped smooth the operation of the financial system in what were very troubled times globally. Overall, the assistance that was provided was considerably less than in many other countries and was able to be unwound relatively quickly as conditions improved.

<sup>13</sup> See RBA (2009) and Debelle (2010) for more details.

## 6. Fiscal Policy

One of the most striking differences between macroeconomic policy in Australia and that in most other developed economies is the way in which fiscal policy has been conducted over the past couple of decades.<sup>14</sup> In the 11 years to 2007/08, the Australian Government ran budget surpluses on 10 occasions, and by 2005/06, the Government had no net debt (Figure 12).<sup>15</sup> In contrast, most countries in the OECD have consistently run budget deficits, with the aggregate debt-to-GDP ratio showing little change over the two decades to 2007, before increasing sharply during the financial crisis (Figure 13).

**Figure 12: General Government Underlying Cash Balance**  
Per cent of GDP



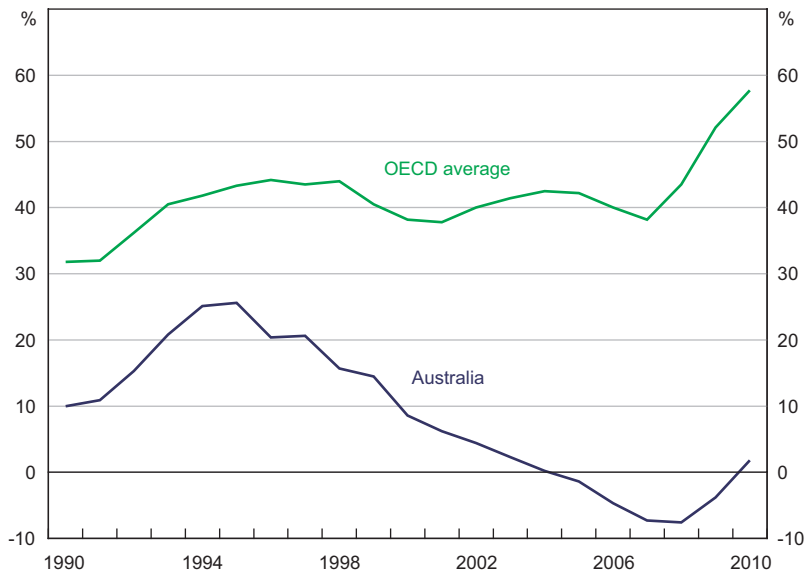
Source: Australian Government budget papers

It is difficult to pinpoint the reasons why fiscal policy in Australia has been conducted so differently to that in many other countries. The strong terms of trade has certainly helped, although the commitment to sound fiscal policy predates, by quite a few years, the big run-up in the terms of trade. Perhaps its origins lie in the debates in the 1980s and early 1990s about the current account deficit. These debates were associated with a sense of national economic insecurity regarding the consequences of high and persistent trade deficits. In the national soul searching that went on at the time, an increase in public sector savings was widely regarded as the most effective way of ‘improving’ the current account deficit. This view coincided with some dissatisfaction with the effects of the stimulatory fiscal policy in the early 1990s.

<sup>14</sup> For a review see Gruen and Sayegh (2005).

<sup>15</sup> The decline in government debt in part also reflected asset sales.

**Figure 13: General Government Net Financial Liabilities**  
Per cent of GDP



Source: OECD

In retrospect, it is somewhat ironic that when public savings did increase in the mid 1990s there was not a reduction in the average current account deficit. Yet the public commitment to sound fiscal policy that emerged during those years has been highly persistent. Both major political parties have committed to maintain a balanced budget over a run of years, and there is broad public support for this approach.

Against this backdrop, three fiscal issues have attracted considerable attention at various points over the decade: (i) the role that fiscal policy can play as a countercyclical tool; (ii) the appropriate use of the revenue from the resources boom; and (iii) the role of public debt in financing public sector infrastructure.

For some years up until the crisis, the conventional wisdom was that fiscal policy's role as a countercyclical tool was limited to allowing the automatic stabilisers to work. Using discretionary fiscal policy was seen as too difficult from both a political and implementation perspective. The financial crisis in 2008 changed this, with many countries implementing large fiscal stimuli, under the imprimatur of the IMF and the G-20. The stimulus in Australia – equivalent to around 6 per cent of GDP – was one of the largest in the world. It was also the largest discretionary easing of fiscal policy in at least two decades.

One reason that Australia was able to implement such a large stimulus was that public finances were in sound shape prior to the crisis; unlike in many other countries, the fiscal response was not constrained by concerns about medium-term fiscal sustainability. Whether this episode marks a return to more activist fiscal policy though remains to be seen. In many respects the circumstances that led to the stimulus were highly unusual: a crisis in the global financial system, a very large increase in uncertainty and risk aversion, and a collapse in international trade. These events were

easily identified and were not the result of domestic factors, thus overcoming some of the hurdles that can limit the fiscal response to a deterioration in economic activity.

A second issue has been how the proceeds of the resources boom should be used. In the period from 2004 to 2008, the strong growth in nominal income generated strong growth in tax receipts. This growth in revenue was used to fund significant cuts in income tax and increase transfer payments to the household sector, as well as to build up assets in a number of funds. While estimates of the structural budget position during this period are very sensitive to assumptions about the ongoing level of the terms of trade, most estimates suggest a deterioration during the latter part of this period, although the actual surplus remained around 1½ per cent of GDP.

During this period there was some debate as to whether the fiscal proceeds from the strong economy should have been used in other ways. A similar debate has resurfaced over the past year or so when considering how the proceeds of the current resources boom should be dealt with if the boom continues. One perspective has been that some of the proceeds should be allowed to accumulate in a fund to support future spending. The argument here is that, given the uncertainty about the longevity of the resources boom, it might be prudent to increase public-sector saving to smooth public expenditure and support the economy if the boom were to unexpectedly end.<sup>16</sup> A related argument is that saving the proceeds could take some of the pressure off aggregate demand. On the other hand, one counterargument is the boom is expected to be highly persistent and thus accumulating revenue in a fund would be an inappropriate transfer from current taxpayers to future taxpayers. Another argument has been that using growth in revenue to fund tax cuts would help improve the incentives for work and promote growth in the economy.

A third issue has been the role of the public sector in infrastructure provision. From the mid 1980s until around the mid 2000s there was a steady decline in public investment relative to GDP, largely due to declining investment by state governments. A number of these governments have limited the borrowing that they have been prepared to undertake for public infrastructure, partly due to concerns that increased borrowing could jeopardise their high credit ratings. While this approach has ensured that state government finances have remained generally sound, its critics argue that it has led to projects not being undertaken that have social rates of return considerably higher than the cost of borrowing.<sup>17</sup> The aversion to debt also saw strong growth in public-private partnerships as a way of funding infrastructure, with mixed results. An issue over the coming decade is likely to be how to fund public-sector infrastructure and the appropriate size of public-sector balance sheets.

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<sup>16</sup> See, for example, Garnaut (2005) and OECD (2010).

<sup>17</sup> See, for example, Quiggin (2002), Argy (2007) and Gruen (2010).

## 7. Making the Best of the Terms of Trade Boom and Managing the Risks

As discussed above, the Australian economy has performed strongly over the past two decades and has avoided a severe downturn. From some perspectives though, the economy looks to have moved out along the risk-return frontier, particularly over the latter part of this period. Australia's abundant supply of natural resources and its strong links with Asia have significantly boosted real incomes and have substantially improved the expected outcomes over the next decade. But along with the new opportunities and higher expected returns have come new risks.

During the 2000s, Australia's international trade became more concentrated, both in terms of the goods exported and export destinations, potentially exposing the Australian economy to larger shocks. Over the past year, for example, exports of metal ores and coal have accounted for around 40 per cent of Australia's total export receipts, and exports to Asia now constitute more than 60 per cent of Australia's total exports, with Japan and China accounting for two-thirds of that. Further, an increasing share of exports is to emerging economies, which historically have had more volatile economic growth.

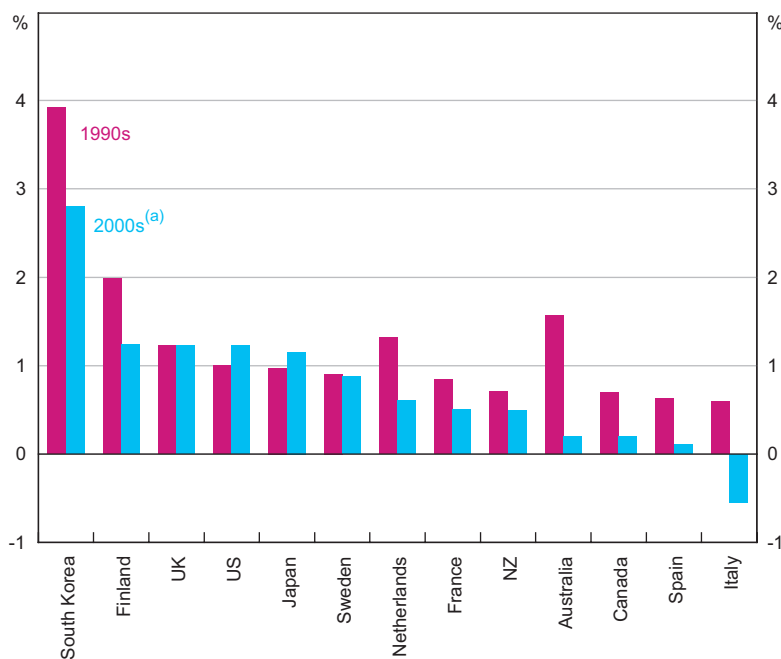
Looking forward, the challenge is to ensure that Australia makes the best of the new global economic landscape while at the same time managing the risks that come with this landscape.

In taking advantage of the new opportunities, the economy is inevitably undergoing significant structural change. The return on capital is high in the resources and related sectors, and labour and capital are flowing to these sectors. At the same time, other sectors are contracting in relative importance. These adjustments can be very difficult for those involved, including the owners of the existing capital in the industries not growing strongly and those working in these industries. But the economy made similar adjustments in previous decades, and if these adjustments do not occur then Australia is likely to forego some of the expected benefits that the strong growth in Asia offers.

In addition, for these benefits to be fully realised, productivity growth will need to pick up. In the 1990s, strong growth in living standards was underpinned by strong growth in output per hour worked. However, productivity growth slowed significantly in the 2000s, with output growth being boosted by faster growth in capital and labour, and income growth being boosted by the rise in the terms of trade (Figure 14).

In the decade ahead, it is highly unlikely that the rise in the terms of trade witnessed in the 2000s will be repeated. This means that if living standards are to continue to rise at the rate we have become accustomed to, productivity growth will need to pick up significantly. For Australia to fully capitalise on the new possibilities, both businesses and government need to be focused on improving how things are done and addressing inefficiencies in regulation and business practices. If this does not occur and complacency bred by good economic times was to set in, then some of the benefits that now seem possible would fail to materialise.

**Figure 14: Multifactor Productivity Growth**  
Annual average growth



Note: (a) To latest available year in 2000s

Source: OECD

A related set of challenges is how to ensure that the Australian workforce has the appropriate set of skills to take advantage of the new opportunities. There also needs to be sufficient and appropriate infrastructure, with a suitable balance found between financing public-sector infrastructure and retaining sound public-sector balance sheets. In the period ahead, the economy will also need to continue its adjustment to more traditional savings patterns by the household sector after a protracted period in which growth in consumption exceeded that in income. In addition, as an economy with a comparative advantage in the production of carbon-based energy, Australia faces a challenge as the world looks to less carbon-intensive forms of energy.

In terms of the risks, there is little that Australia can do to reduce the probability of economic volatility elsewhere in the world. But the choices that are made domestically can have a significant effect on how such volatility affects the Australian economy.

The floating exchange rate remains a key stabilising influence. Over the past three decades, movements in the value of the Australian dollar have played an important role in offsetting some of the effects of large shocks from the global economy (DeBelle and Plumb 2006). While these movements can have significant implications for individual businesses, for the overall economy they have been a source of stability.

Retaining flexibility in other areas is also a significant form of risk mitigation. One area that is important is the labour market. During the 2008–2009 downturn, flexibility in working

arrangements and hours meant that the downturn in labour demand was spread more evenly across the workforce than would have occurred with less flexible arrangements. This spread the burden of adjustment and, arguably, helped avoid a more serious downturn in the economy.

The ability to respond quickly and decisively with macroeconomic policy is also important from a risk management perspective. Ensuring that the monetary policy framework remains credible is obviously important here. And in terms of fiscal policy, there is a need to ensure that public debt levels remain relatively low and that the medium-term fiscal outlook is seen as credible, and that fiscal policy is sufficiently flexible to be able to respond and be adjusted quickly.

More broadly, one form of possible risk mitigation is for the nation to save a significant share of the benefits of the resources boom, and then to only gradually increase spending if the outcomes are as positive as expected. Whether this is desirable though depends, in part, on society's tolerance of bearing risk. The benefit of higher savings is that if things do not work out as expected, costly adjustments might be avoided, or at least mitigated. Of course, the downside is that if things do work out well, current levels of national consumption are lower than desirable, with future consumption increasing strongly not only because of the favourable economic outcomes, but also because of the saving that is done now.

Another way in which risk is moderated is through foreign ownership in the mining sector. With a larger mining sector, growth in output and employment, and tax revenue, are more correlated with resource prices and demand than they have been in the past. Foreign ownership of the mining sector, however, means domestic investors hold more non-mining assets, including foreign assets, and so their investment income is less correlated with resources and the associated spillovers to the economy. Indeed, foreign ownership of this sector is estimated to be much higher than for the corporate sector as a whole. While this reduces the already substantial benefits to domestic residents of a mining boom, it also reduces the domestic costs of a mining downturn.

Overall, the 2000s were another prosperous decade for Australia. Strong employment growth contributed to a sustained fall in the unemployment rate and, along with a substantial increase in the capital stock, to faster growth in output than in most other developed economies. Over the latter part of the decade, the unprecedented increase in the terms of trade significantly boosted domestic income growth. To a considerable extent, the ability of the economy to prosper in this environment and avoid the overheating seen in previous booms in the terms of trade reflects the benefits of the flexible economic framework put in place over the past few decades and sound macroeconomic management over this period. The slowdown in productivity growth, after the pick-up in the 1990s, however, raises some troubling questions. While it is far from certain why productivity growth declined, what is clear is that for standards of living to continue to increase as they have in recent decades, faster productivity growth will be needed. Overall though, there remains much to be optimistic about. The Australian economy has demonstrated resilience and adaptability over the 2000s, and no doubt these characteristics will need to be on display once again over the coming decade.

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# Discussion

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## 1. Chris Richardson

The immediate – indeed striking – observation on reading the valuable conference paper by Kearns and Lowe is just how remarkable a decade Australia had in the 2000s compared with our rich world peers. If this were a paper reviewing the experience of the past decade in almost any other western nation, it could be rapidly summarised as ‘bad stuff happens’.

Yet the point driven home by Kearns and Lowe is that, although we had our share of challenges to climb, by and large the 2000s were a decade in which ‘bad stuff didn’t happen’ in Australia. Or, as the authors put it (at p 78), ‘[o]n many levels the 2000s were a successful decade for Australia’.

That means a key task for Kearns and Lowe – and the Conference as a whole – is to discern how and why the Lucky Country got lucky again, and the implications that may have for the coming decade.

The authors tackle that task by telling us:

- *what happened*: increases in housing and commodity prices, as well as wealth and business investment, falls in unemployment, productivity growth and saving rates; no wage breakout; the financial crisis; the Australian dollar’s surge, the ups and downs of the cash rate, and the ‘two speed economy’;
- *why it happened*: the impact of China and other emerging economies on the terms of trade; shifts in interest rates and the degree of competition in financial markets; as well as reforms (and, in some cases, the lack of reforms); and
- *some possible implications* for monetary, fiscal and structural policies.

Their analysis makes sense at each of these steps.

### What happened

The authors (at p 74) identify what they see as ‘the two driving forces for the two halves of the decade: the changes to household balance sheets and the impact on Australia of rapid development in Asia’.

Although that’s true in terms of the chronology, I would divide the last decade differently. While it makes sense to place Asia’s rapid development at the heart of Australia’s performance last decade, I’d see the global financial crisis (or, as the Reserve Bank sometimes calls it, the North Atlantic financial crisis) as the other key development of recent times.

Indeed, I think the surge in the terms of trade in the second half of the decade was an important reason why the housing price hike in the first half of the decade didn’t lead to as many problems as it might – the boost to nominal incomes ‘forgave’ some of the earlier enthusiasm in housing prices.

Or, to put that differently, it made sense the Conference opened with a paper on the rise of Asia (Huang and Wang) and then followed it with one that looked at the financial crisis (Bayoumi and Bui). The first of these provided Australia with an opportunity, while the second provided challenges.

## Why it happened

The authors identify other important drivers of the past decade, and I broadly agree with them.

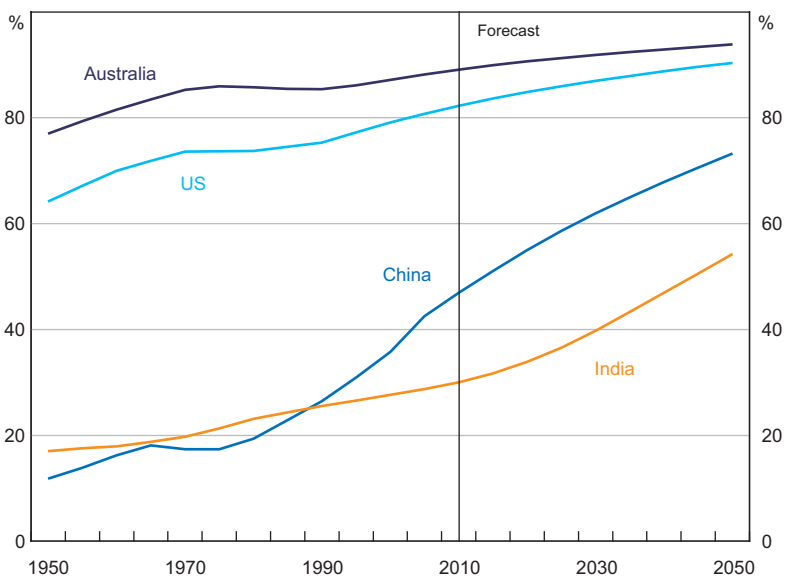
However, and having differed from Kearns and Lowe by giving second place to the financial crisis rather than the housing price boom in an assessment of developments over the past decade, I do think that Asia's development – and in particular, its impact on Australia's terms of trade – was the single most important factor in explaining the performance of Australia's economy in the 2000s.

That's why I'll concentrate on Asia's impacts here in these comments.

Of course the rise of Asia is merely a continuation of an old story for the world economy as the two great trends of urbanisation and industrialisation are continuing to transform the global landscape. As Figure 1 shows, there are enormous numbers of people moving from the country to the city in the emerging world, and the pace of that urbanisation is unlikely to slow any time soon.

People are moving from the country to the city so that they can move from farms to factories. They want to do that because the wages they can command in the latter – even allowing for the impact of the higher cost of living in cities – is a considerable improvement on the purchasing power of their farm earnings.

**Figure 1: Share of Population Living in Urban Areas**

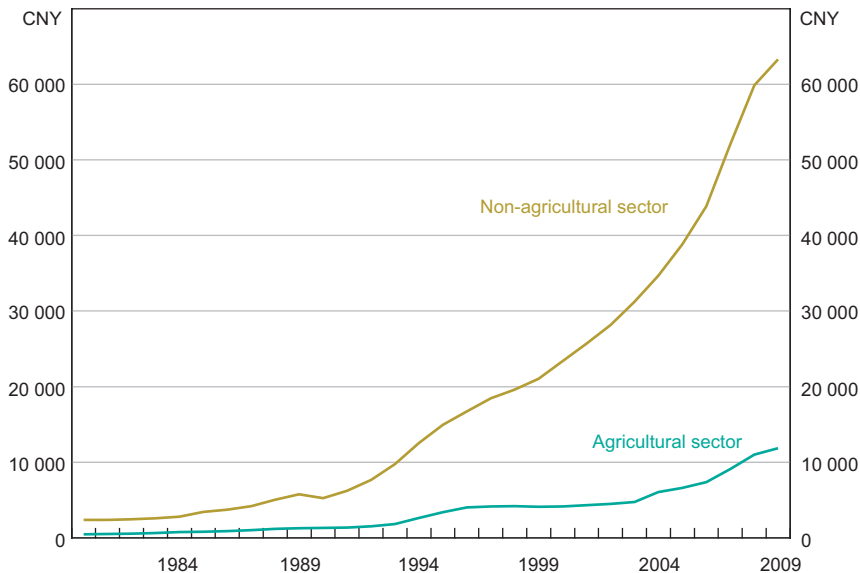


Source: United Nations, 'World Urbanization Prospects, The 2009 Revision' database

That process also provides emerging economies with substantial productivity momentum: Figure 2 shows that output per worker in a Chinese factory is more than five times that on a Chinese farm.

**Figure 2: China – Output per Worker**

Current prices

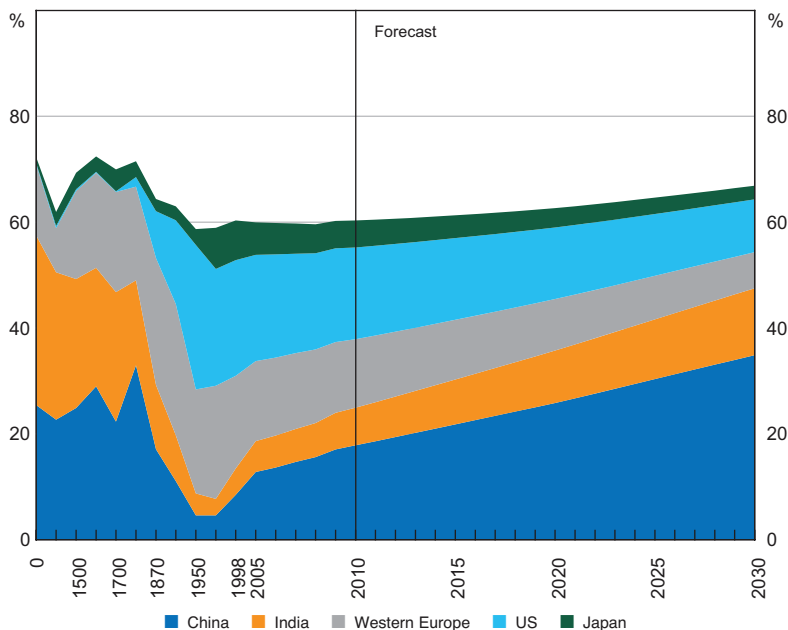


Source: Thomson Reuters

Or, more broadly, the twin drivers of urbanisation and industrialisation are the trademarks of a global industrial revolution in which three billion people are changing the way they live and where they work in a way that is reshaping the global economic landscape at a truly frantic pace (see Figure 3).

It is worth stressing the centrality of the Asian development story for Australia. For us, Asia's impact comes as a profound global demand shock for our exports of industrial inputs such as coal and iron ore. Kearns and Lowe dramatically illustrate the impact of that when they point out that iron ore's share by value of Australian exports leapt from 3 per cent in 2003 to 17 per cent in 2010.

Of course the reason that iron ore values grew as much as they did was because prices shifted so sharply. In turn, the main impact for Australia came from commodity prices rather than through quantities because it simply takes longer for supply to respond in mining markets than in most other markets. (The common assessment is that the response takes about a decade, and I'd date the surge in China's commodity consumption as beginning in 2003, so it's no surprise that global mineral supply has yet to really hit its straps.)

**Figure 3: Share of World Output**

Sources: The Conference Board, Total Economy Database™; Deloitte Access Economics; Maddison A (2009), 'Statistics on World Population, GDP and Per Capita GDP, 1–2008 AD'

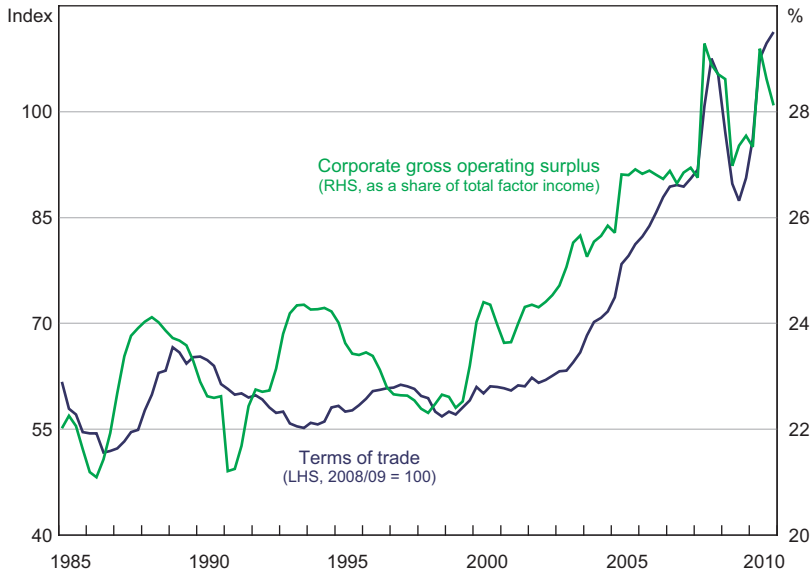
## The centrality of the terms of trade effect

Figure 4 shows the remarkable climb in the terms of trade which occurred through the past decade.<sup>1</sup> That same figure also includes a measure of the profit share. Although profit shares moved up in much of the world over the past decade, the equivalent move in Australia was strong and closely tied to the shift in the terms of trade.

That is no surprise. In simple terms, a China boom is a commodity price boom is a terms of trade boom is a profit boom.

Moreover, the shift in the terms of trade also invoked a series of other key responses in Australia's economic performance in the past decade. For example, as alluded to above, arguably one of the reasons why the upswing in Australian housing prices in the first half of the past decade didn't then prove problematic in the second half of the decade was that the lift in national income due to the lift in the terms of trade helped to 'forgive' the earlier upswing in housing prices.

<sup>1</sup> Given falling levels of labour productivity in mining, Australia's factoral terms of trade have performed relatively worse than the (usually reported) net barter terms of trade seen in Figure 4. Note that, given the focus of the Conference, this and some of the other figures have been truncated to end at December quarter 2010 or 2009/10.

**Figure 4: Terms of Trade and Profit Share**

Source: ABS

Similarly, a little remarked upon linkage – though Borland in this volume correctly identifies its importance – is that the profit boom which accompanied the rise in the terms of trade also shifted the relative price of labour and capital. Hence, as is usually the case when real unit labour costs fall, the profit boom of the 2000s was associated with faster-than-average employment growth (one of the many reasons why measured labour productivity underperformed last decade – though far from the only reason).

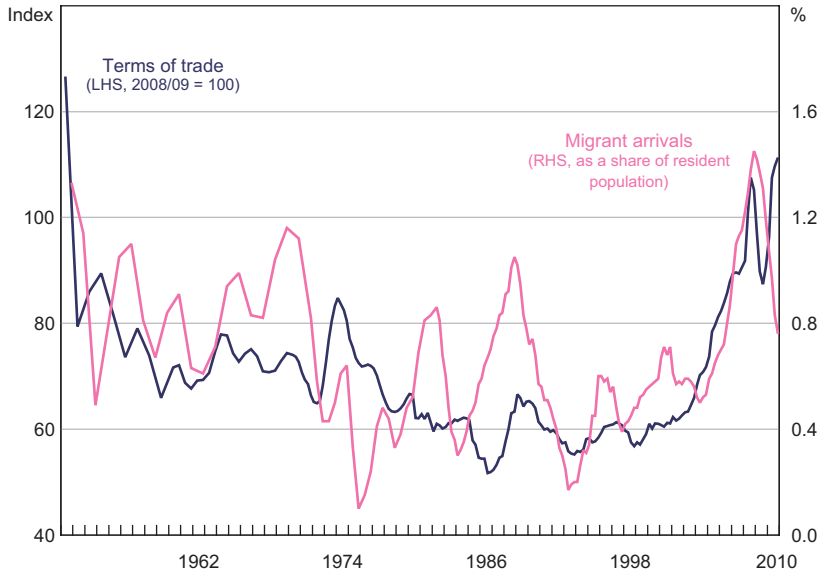
Moreover, it is also arguable that shifts in the terms of trade are correlated with the relative pace of migration to Australia. Such a ‘migration equation’ is shown in Figure 5, which points to the historical similarity between the terms of trade and the pace of migration.

Hence the hand of the terms of trade is evident in many of the standout features identified by Kearns and Lowe as key characteristics of Australia’s economic performance through the 2000s.

To that list I would add one final important linkage – the impact of the terms of trade on the Australian Budget.

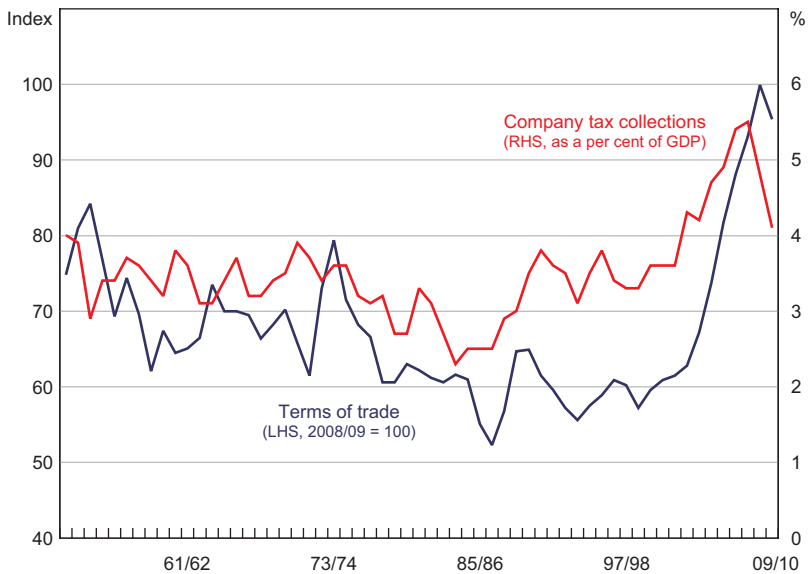
Figure 6 shows the relatively close link between the terms of trade and company tax collections as a share of GDP. Although this linkage broke down in 2009/10 (as the global financial crisis led to reduced collections of capital gains tax as well as the impact on company tax collections of accumulated corporate losses racked up through the crisis), the latter gap between the terms of trade and company tax collections is likely to prove temporary rather than permanent.

**Figure 5: Terms of Trade and Net Migration**



Note: Quarterly data from 1970 for terms of trade and from 1982 for migrant arrivals  
 Sources: ABS; Deloitte Access Economics

**Figure 6: Terms of Trade and Company Tax Collections**



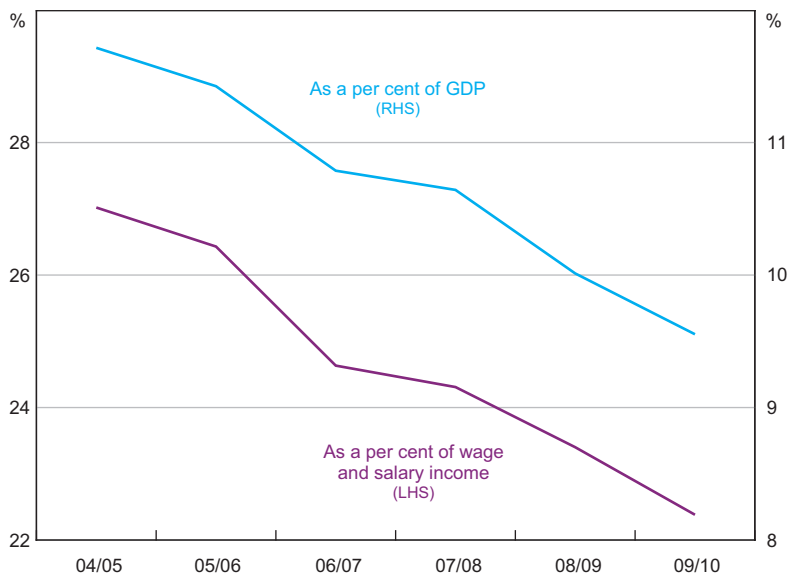
Note: Removes 'doubling up' of company taxes in 2000/01  
 Sources: ABS; Deloitte Access Economics; Foster R (1996), 'Australian Economic Statistics 1949–50 to 1994–95', RBA Occasional Paper No 8, rev 1997; RBA

## Fiscal implications

What to do with that terms of trade-driven surge in fiscal revenues? As Kearns and Lowe note, 'one form of possible risk mitigation is for the nation to save a significant share of the benefits of the resources boom, and then to only gradually increase spending if the outcomes are as positive as expected' (p 98).

Unfortunately for the nation, the surge of national income and the resultant impact on tax collections was not treated in a risk-averse fashion by Canberra. Rather, the lift in profits (and hence revenues) was recycled into eight personal income tax cuts (see Figure 7) as well as into an increase in spending on family benefits and the like.

**Figure 7: Average Rate of Personal Income Taxes**



Sources: ABS; Deloitte Access Economics; RBA

## The key conclusion – the rise in risks and returns

What next? Kearns and Lowe reach an unassailable conclusion when, at p 96, they note that 'the economy looks to have moved out along the risk-return frontier'.

I think there could be no better summary of what happened to Australia over the past decade. As argued above, the key story of the last decade as far as Australia was concerned was a profound demand shock, having its particular impact on prices (the terms of trade) rather than quantities.

To the extent to which China's 'entry' into the world economy through the 2000s reflects the removal of barriers that constrained its development, Heckscher-Ohlin would suggest that some part of the resulting terms of trade improvement to Australia is a permanent gain.



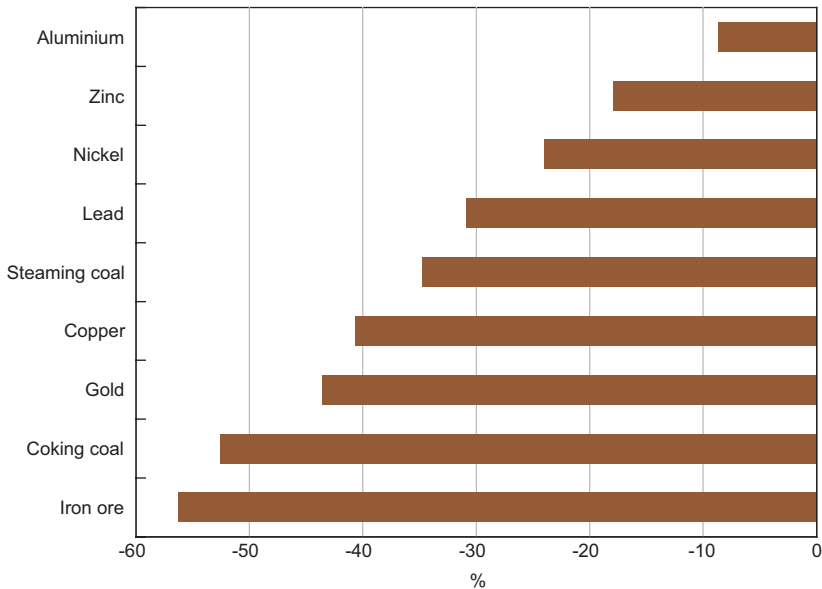
DISCUSSION

Yet that also begs a related question. If Kearns and Lowe are correct that average returns in Australia have risen, is there a chance that the coming decade will see the associated increase in risk coming home to roost?

After all, if the story of the past decade for Australia was the impact here of a profound global demand shock, surely there's a chance that the story of the coming decade will be a supply driven one. All around the world – everywhere from West Africa to Mongolia – the soil is being shifted faster as miners leap to feed extra supply into the magic margins of the moment.

Figure 8 is drawn from a July 2011 survey undertaken by Consensus Economics. It points to the difference between current commodity prices and those expected towards the end of this decade, with that shift measured in real terms. If the forecasts in Figure 8 prove correct – remembering that such falls in prices imply even larger falls in profit margins, especially to the extent that long-run marginal costs are rising – then it may be that the matching Reserve Bank conference in a decade's time will once again be noting that Australia has indeed moved out along the risk-return frontier, but that our subsequent experience saw those risks eventuate in a way that the past decade did not.

**Figure 8: Forecasts of Real US\$ Commodity Prices for 2017–2021**  
Percentage change from July 2011



Source: Consensus Economics, *Energy & Metals Consensus Forecasts*, July 2011

To summarise, the 2000s in Australia were in many ways a ‘China’ story of the implications for this nation of leaping mineral demand. But what if the 2010s are a story of rising global mineral supply – with a bigger negative effect on margins than widely recognised?

If so, then the ‘what happened’ summary in a decade's time may read differently, with risks dominating returns; with the performance of commodity prices, housing prices, wealth and

business investment all under pressure relative to the experience of the 2000s, albeit with a lower Australian dollar and lower interest rates taking pressure off ‘two speed economy’ effects at the sectoral level.

Moreover, that ‘what happened’ summary in a decade’s time may be affected by the risk that:

- the prosperity of the 2000s left Australia as an underachiever on reforms – and hence as a continuing underachiever on productivity gains in the 2010s; and
- the prosperity of the 2000s left us too sanguine on the structural budget deficit, and made us ‘late’ in tackling intergenerational-style fiscal challenges.

Let’s hope that’s not right.

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## 2. General Discussion

A number of different issues were taken up by participants during the discussion. First, the question was raised as to whether or not the increase in the terms of trade experienced during the second half of the 2000s was foreseeable. It was highlighted that the rapid growth in China over the past decade was similar to that over the 1990s, suggesting that forecasters could have extrapolated this outcome of rapid growth into the 2000s, particularly as China was still a long way from ‘catching up’ with more advanced economies. Further, it was mentioned that key characteristics of the Chinese economy, such as its high resource intensity and very large population, were well known at the beginning of the decade. One participant pointed out, however, that past episodes, including rapid development in Japan and also strong growth in China in prior decades, did not result in substantial movements in the terms of trade, with large increases only observed from 2003. They argued, therefore, that even given an expectation of strong growth in China, it was not obvious that the rapid increase in Australia’s terms of trade was predictable. It was also mentioned that it took longer than expected for additional supply to come on line in response to the rapid increase in commodity demand (although one participant thought that this was a regular and potentially predictable feature of supply). It was also suggested that there was always great uncertainty in predicting future demand; for example, the development of India is a further source of demand that might not be fully incorporated into projections made today.

Another participant stressed that strong demand in China was not the only driver of the relative price shock experienced by Australia over the past decade. They suggested that global monetary policy, coupled with pegged exchange rates in fast-growing economies like China, had contributed to excess demand and global inflation, and that this monetary effect has tended to be overshadowed by the perceived slow response of supply. Related to this issue, one participant asked if, even given perfect foresight about the commodities boom, policy-makers would have been able to deliver better outcomes in Australia. They suggested that the lack of strict adherence to a single plan enabled policy-makers to be less rules-based, less prescriptive and more flexible, which led to good outcomes overall during the 2000s.

A second key theme during the discussion was how the gains from the mining boom should be best utilised. One participant noted that the consumption-to-output ratio in Australia has been quite flat in recent times, suggesting that not all of the mining boom gains have been spent. It

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was also mentioned by one participant that compulsory superannuation increased during the decade, contributing to national saving, although it was pointed out that this policy was not a direct response to the terms of trade.

It was noted that the issue of what should be done with the gains from the historically high terms of trade depends on both the persistence of the relative price shock and the country's degree of risk aversion. If the increase in export prices relative to import prices is permanent, then it would be optimal to increase consumption today. However, given the uncertainty surrounding the persistence of the relative price shock, it is likely to be optimal to save some of the gains. If individuals are risk averse, then it makes sense to save more now. It was suggested that the risk appetite of society as a whole was something that should be debated.

A third topic discussed was Australia's favourable experience during the global financial crisis compared with most other economies. In the discussion, several factors were mentioned as being important. The profitable opportunities for Australian banks in the domestic market, and their funding structure, reduced their incentives to hold what turned out to be high-risk securities. Memories of the experience of Australian financial institutions during the early 1990s recession were also thought to have shaped banks' attitude to risk. The supervisory role of APRA was mentioned as being key to the resilience of financial institutions in Australia; in particular, the fact that APRA was less rules-based than other institutions. Along with the domestic fiscal and monetary stimulus, the very large fiscal stimulus in China was also seen as a significant factor boosting the Australian economy during the crisis period. The exchange rate was also highlighted as a key shock absorber for the economy.

A fourth issue taken up was weak productivity growth in Australia over the past decade. One participant thought that this should be expected to a certain degree given the downward trend in unemployment, with workers entering employment at least initially having low productivity. Similarly, in Europe and the United States, productivity slows as unemployment falls and productivity improves during periods of increasing unemployment. Another participant made the comment that immigration was an important issue over the past decade that deserved more focus. Alongside higher permanent immigration, increased temporary immigration in the 2000s added flexibility to the economy and added to the human capital stock. The issue of slowing population growth was also raised. It was questioned by one participant how temporary this might be, and also whether the population figures could be influenced by foreign students leaving the country, in which case the slowdown in population growth might be less of an issue for labour supply.

A fifth point raised by one participant was the two-speed economy in Australia, noting that since both households and governments seem to be deleveraging in the current environment, coupled with a high exchange rate, structural change could be quite painful for certain sectors of the economy. The authors agreed that it could be difficult, but that structural change was necessary if relative prices facing the economy were persistent or permanent. Another participant suggested that allowing more capital and labour to flow into the country would enable all sectors of the economy to grow more quickly without necessarily increasing inflation. In particular, growth in the non-mining economy would not have to slow as much to absorb the mining sector.

# The Mining Industry: From Bust to Boom

Ellis Connolly and David Orsmond\*

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## 1. Introduction

The Australian mining industry experienced a remarkable revival over the 2000s. At the beginning of the decade, mining was dismissed as emblematic of Australia's 'old economy', with prices for key resource exports at their lowest levels in real terms for a century.<sup>1</sup> This seemed to corroborate the Prebisch-Singer hypothesis that commodity prices would continue to fall over time relative to other goods and services.<sup>2</sup> However, the rapid urbanisation and industrialisation of emerging economies in Asia dramatically transformed global commodity markets over the 2000s. This paper highlights the turnaround in the fortunes of the mining industry, and discusses the effects on the economy more generally.

Australia has been particularly well placed to benefit from the rise in demand for commodities. As discussed in Section 2 of the paper, the prices of commodities used in steel and energy production rose particularly sharply over the decade. In response, the composition of the Australian mining industry shifted towards the extraction of coal, iron ore and liquefied natural gas (LNG), and away from metals processing, as outlined in Section 3. In the second half of the decade, mining investment rose to its highest recorded levels as a share of the economy. Along with expansions in coal and iron ore, several very large LNG projects commenced in response to strong demand for natural gas, with a number of Asian economies looking to diversify their sources of energy. The high level of investment is expected to result in substantial increases in resources production by the mid 2010s.

The rise in global commodity prices has boosted activity and incomes in the economy and encouraged the factors of production to shift towards the mining industry. Section 4 outlines the strong growth in labour, materials and investment in the mining industry, along with its effect on national incomes and domestic demand. The effects were initially more easily identifiable in the resource-rich states of Western Australia and Queensland, although by the end of the decade, the benefits appeared to be flowing more evenly across the country.

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\* Thanks to our colleagues at the RBA for many helpful comments. The views expressed are those of the authors and do not necessarily reflect the views of the RBA.

1 For instance, Macfarlane (2002) noted the criticism Australia received during the World Economic Forum in Melbourne in 2000 for not making more IT and telecommunications investments.

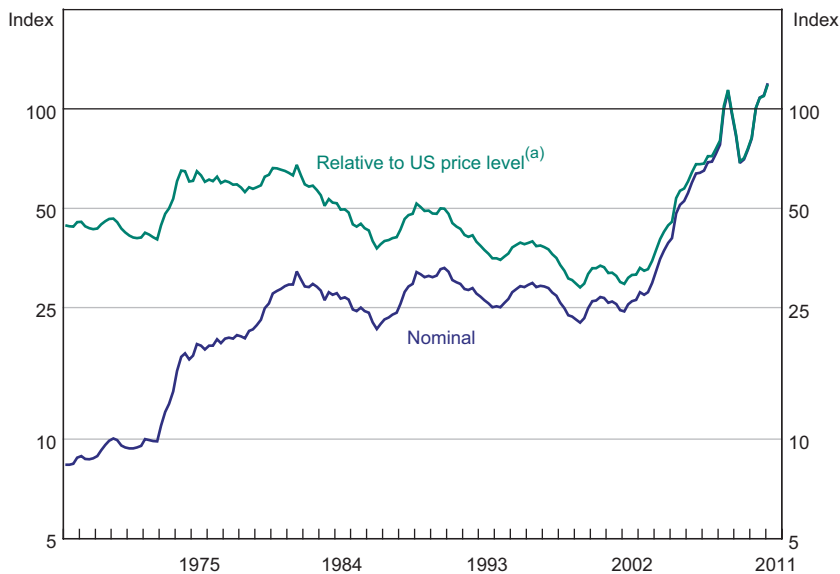
2 See Gillitzer and Kearns (2005) for a discussion of the Prebisch-Singer hypothesis.

Australia’s macroeconomic performance during this period has been much more stable than in the earlier mining booms between the late 1960s and early 1980s. Section 5 argues that part of the explanation is a stronger institutional framework, with a floating exchange rate, decentralised wage bargaining, an inflation-targeting regime and more flexible product markets. The clear price signals and flexible economic environment helped to encourage resources to shift towards the mining industry without destabilising broader inflation expectations.

## 2. Global Demand, Supply and Commodity Prices

Global commodity prices soared during the 2000s, driven by strong demand from emerging economies, with the boom exceeding both in duration and magnitude the period of high commodity prices in the 1970s. From 2003 to 2011, global prices for Australia’s resource exports (in US dollar terms) increased by more than 300 per cent, after having been flat in nominal terms over the preceding two decades (Figure 1). While the rise has been broad based, there were particularly large increases in the prices of the key steelmaking commodities that Australia exports. Prices of energy commodities, such as oil and thermal coal, also increased strongly. The extraordinary increase in commodity prices highlights that global supply has had difficulty keeping pace with the growth in demand.

**Figure 1: Resource Export Prices**  
 US\$, 2010 average = 100, log scale



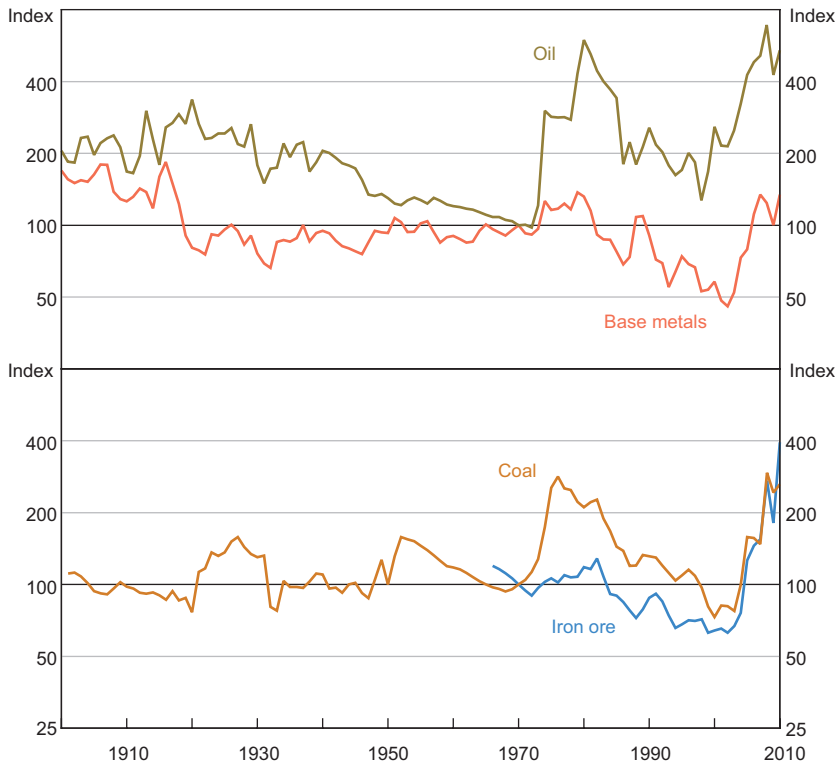
Note: (a) Using US GDP deflator, given that commodities are priced globally in US dollars

Sources: ABARES; ABS; RBA; Thomson Reuters

The pick-up in commodity prices over recent years followed a period from the late 1980s to the early 2000s when real prices were unusually low by historical standards. Compared with the average price level in the United States, commodity prices fell noticeably from their peak in 1981,

to be well below historical averages in the late 1990s; the oil price troughed near US\$10 per barrel in late 1998, its lowest inflation-adjusted price since 1974, while real base metals and coal prices were at their lowest levels in at least a century (Figure 2).

**Figure 2: Resource Prices**  
Relative to US GDP deflator, 1970 = 100, log scale

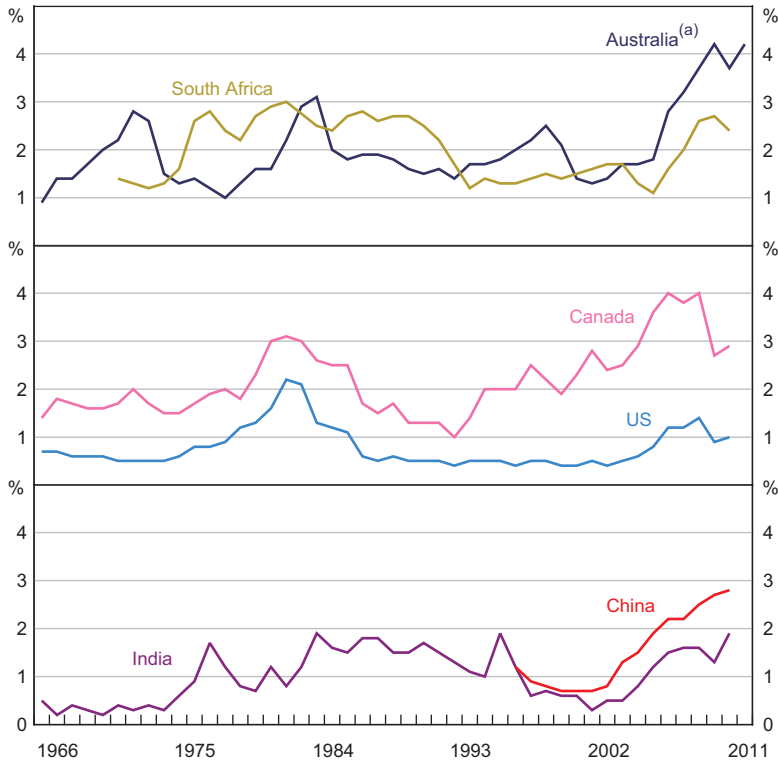


Sources: ABARES; ABS; Bureau of Mineral Resources, Geology and Geophysics; Global Financial Data; IMF; RBA; US Geological Survey; World Bank

The stagnation of commodity prices through the 1980s and 1990s discouraged producers from investing in capacity expansions. The 1990s saw Japan's 'lost decade' and the collapse of the former Soviet Union where steel production and energy consumption fell by more than a third. Later in the 1990s, a number of Australia's major trading partners were affected by the Asian financial crisis, which was followed by the early 2000s global recession and a sharp slowdown in world trade. With depressed commodity prices and a subdued outlook for demand, mining investment as a share of the economy was relatively low in a range of commodity producers including Australia, while global exploration expenditure was also weak (Coombs 2000; Metals Economics Group 2011; Figure 3). There was a wave of mergers in the global mining industry, as companies sought economies of scale in an attempt to offset sliding profitability. This is also likely to have contributed to the reduction in mining investment, as the merged companies consolidated their capital expenditure and exploration budgets (Hogan *et al* 2002). As a result

of this prolonged period of low investment, the mining industry was not in a strong position to quickly increase supply when global demand for commodities finally picked up strongly in 2003.

**Figure 3: Mining Investment**  
Per cent of nominal GDP



Note: (a) Financial years; 2010/11 estimate based on partial indicators to March 2011

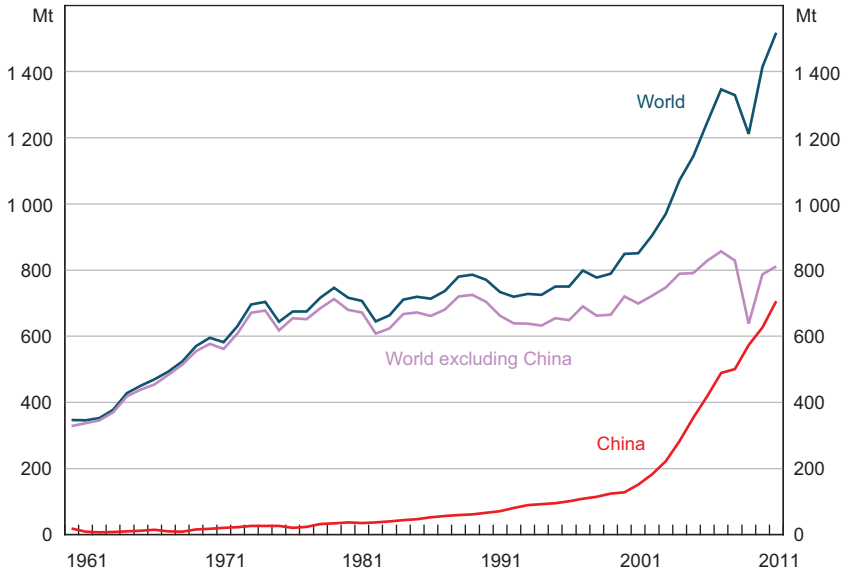
Sources: ABS; Bureau of Economic Analysis; CEIC; IMF; OECD; RBA; Statistics Canada; Thomson Reuters

The global steel industry – the source of demand for Australian iron ore and coking coal – suffered a particularly long period of stagnation from the mid 1970s to the early 2000s, with production in the G7 economies and the former Soviet Union falling significantly (Figure 4). This followed a golden period for the steel industry until the onset of the first oil shock in 1973, with strong demand from Japan spurring the development of the Australian seaborne trade in iron ore. After the Asian financial crisis and the 2001 recession in the United States, there was perceived to be considerable overcapacity in the global steel industry. Steelmaking countries – mindful of the US Government’s plans to raise trade barriers on steel – agreed in 2002 to significantly reduce steel capacity,<sup>3</sup> while the Chinese Government placed a prohibition on building new steelmaking facilities and sought to close down obsolete steel mills (OECD 2001). While these announcements

3 The agreement was to cut steel capacity equivalent to 14 per cent of global production over three years and included countries that accounted for 80 per cent of global steel production in 2000. The key producer not party to the agreement was China (OECD 2002).

highlight how grim the outlook for steelmaking commodities appeared at the beginning of the decade, Chinese steel production nonetheless began accelerating and production in the rest of the world recovered after the 2001 recession.

**Figure 4: World Steel Production**



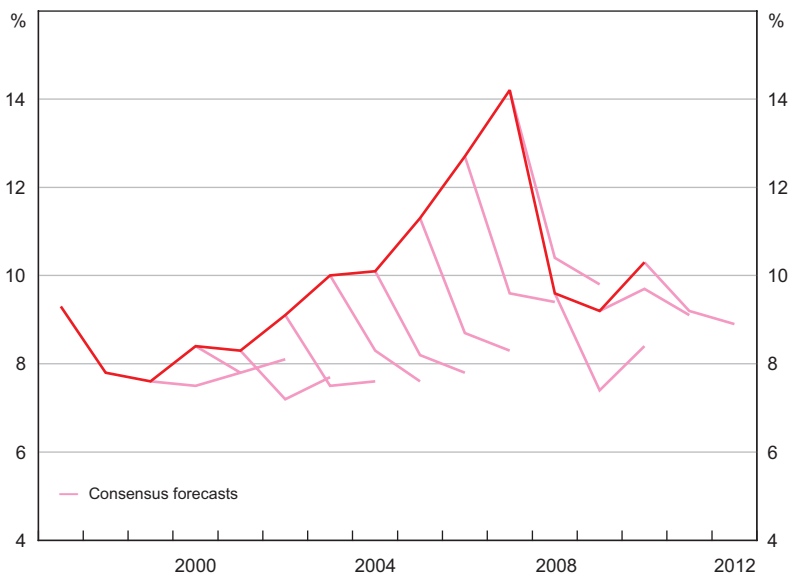
Note: 2011 based on data to June

Sources: CEIC; World Steel Association (worldsteel)

Emerging economies have been the key drivers of global growth and the surge in commodity prices since 2003. China’s steel production picked up strongly in the early 2000s, driving growth in global production as rapid as that seen in the 1960s and early 1970s. While the potential of China’s large domestic market was recognised in the early 2000s, the rapid pace at which it would industrialise through the decade and the implications for commodity prices were not widely anticipated. For instance, consensus forecasts consistently under-predicted China’s growth from 1999 through to 2007; it was not until the second half of the 2000s that analysts began to forecast that the medium-term rate of growth had increased above the Chinese Government’s 7–8 per cent targets in their five-year plans (Figure 5). Similarly, mining companies took some time to be convinced that the pick-up in commodities demand would be sustained, with mining investment as a share of GDP not rising to above-average levels until the second half of the 2000s.



**Figure 5: China – GDP Growth**  
Annual average

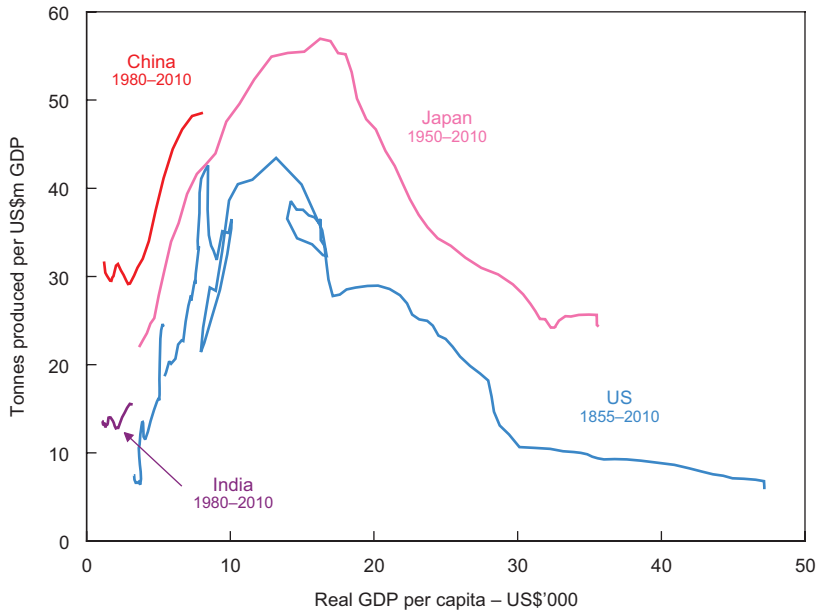


Note: As at January of first forecast year

Sources: CEIC; Consensus Economics

China’s demand for steel has been driven by a sustained period of rapid industrialisation and urbanisation, requiring high levels of investment in infrastructure, buildings and machinery.<sup>4</sup> The ‘steel intensity’ of the Chinese economy has risen over the past 30 years, as occurred during the industrialisation phases in the United States in the late nineteenth century and Japan in the 1950s and 1960s, with resources in the economy shifting away from agriculture towards manufacturing as real incomes rise (Figure 6). Past experience suggests that the process of steel intensification eventually slows and reverses once infrastructure is in place and households begin to demand more services, as occurred in the US post-WWII and in Japan since the 1970s. However, the period of high steel intensity in China has the potential to continue for some time given the relatively low level of per-capita income and the continuing process of urbanisation. The United Nations (2009) projects that China’s urban population will grow by around 50 per cent in the next 25 years – an increase of over 300 million people – requiring ongoing investment in housing and infrastructure. Furthermore, there is considerable scope for demand from India to rise in the future as it moves into the phase of steel-intensive growth. India’s Government is promoting the development of its steel industry to meet the country’s substantial infrastructure needs, with the United Nations projecting that India will become the most populous country in the world in the next 20 years (see Cagliarini and Baker (2010) for further discussion).

<sup>4</sup> For more detail on developments in the Chinese steel industry, see Holloway, Roberts and Rush (2010). Also see Roberts and Rush (2010) for an analysis of the sources of Chinese demand for steel, which include construction and manufacturing exports.

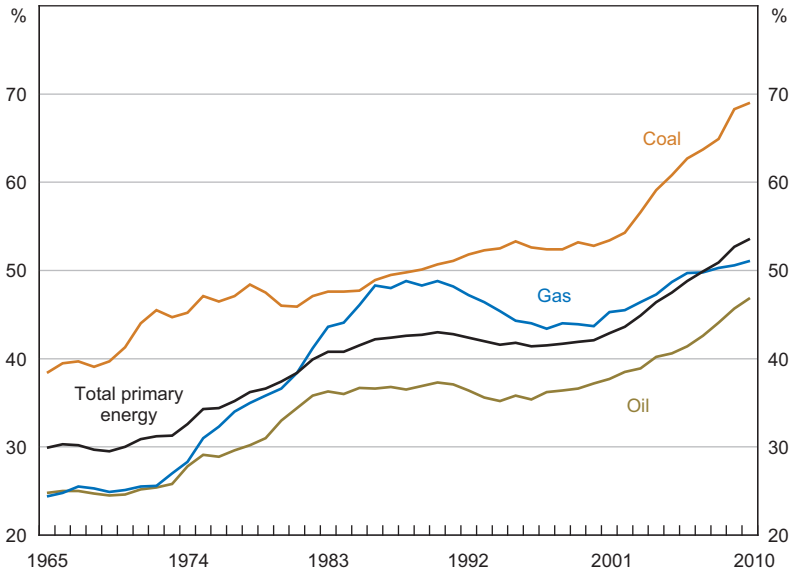
**Figure 6: Steel Production Intensity and Economic Development**

Notes: 2010 prices converted at 2005 PPP exchange rates; 5-year moving-averages; US iron production intensity prior to 1897; Japan steel production is by JFY prior to 1980

Sources: The Conference Board, Total Economy Database™ (January 2011); IMF; The Japan Iron and Steel Federation; Johnston and Williamson (2010); Maddison (2009); RBA; US Bureau of Mines; US Geological Survey; World Steel Association (worldsteel)

Strong demand from emerging economies is also affecting energy markets, with the share of global energy consumed by these economies rising from a little over 40 per cent in 2000 to above 50 per cent in 2010, driven by China, India and the Middle East (Figure 7). China is the world's largest consumer of coal – both for steelmaking and electricity generation – while India is the third largest. China's share of global coal consumption rose from around 30 per cent in 2000 to 50 per cent in 2010, with China switching from being a net exporter to an importer of coal later in the decade. While China and India consumed only 5 per cent of global natural gas in 2010, the growth in their consumption has been much more rapid than the world average. Globally, there is also likely to be some substitution towards natural gas as a way to reduce carbon emissions, since it is the cleanest burning fossil fuel. The IEA (2010) projects that China and India will contribute half of the growth in global energy use over the period to 2035, with their energy mix shifting towards gas, supporting the expansion of the LNG industry in Australia.

**Figure 7: Emerging Economies' Share of Global Energy Consumption**



Note: Emerging economies include all non-OECD economies  
 Source: BP Statistical Review of World Energy, June 2011

### 3. The Australian Mining Industry during the 2000s

Australia is a significant producer and exporter of a wide range of commodities, and is well placed to benefit from the rise in demand for steel and energy. The country is endowed with reserves of coal, iron ore, bauxite, copper and gold that rank in the top six worldwide (Geoscience Australia 2010). These reserves are sufficient to sustain current production levels for many more decades, and ongoing exploration and technological advances are likely to continue to increase supply (Table 1). In contrast to these resources, Australia’s reserves of oil and gas are small in a global context. While Australia’s oil reserves would be exhausted in around 20 years at current rates of extraction, known reserves of gas have grown strongly over recent decades and would sustain the current production rate for an extended period.

**Table 1: Australia's Resource Reserves and Production**

	Share of global reserves in 2009 <sup>(a)</sup> Per cent	Remaining years of production at 2009 rate	Share of global production Per cent	
			2000	2009
Coal <sup>(b)</sup>	7	98	7	6
Iron ore	17	71	18	25
Bauxite	23	95	39	34
Copper	13	94	6	6
Gold	16	33	11	9
Oil	0.3	21	1	1
Gas	2	61	1	2

Notes: (a) Economic-demonstrated resources for coal, iron ore, bauxite, copper and gold; proved reserves for oil and gas

(b) Excludes brown coal

Sources: ABARES; *BP Statistical Review of World Energy*, June 2011; Geoscience Australia

In the early 2000s, the Australian mining industry was suffering from the weakness in global commodity markets outlined in the previous section. Parts of the industry, including gold and base metals, were in the downward phase of an investment cycle following the Asian financial crisis, and exploration expenditure was at its lowest level as a share of the economy since the early 1960s. The weakness was highlighted by the failures of several mining companies early in the decade, including Pasminco and Centaur Mining in 2001, and Anaconda Nickel defaulting on its bonds in 2002.<sup>5</sup> In a global wave of mergers and acquisitions, several Australian mining companies became part of multinationals as companies sought economies of scale to sustain profitability, with the most notable being the merger of BHP and Billiton, along with the takeovers of Mount Isa Mines (MIM) by Xstrata and North Limited by Rio Tinto. Overall, of the top 20 mining companies on the Australian Securities Exchange (ASX) in 2000, only 7 of these were still listed in Australia at the end of 2005 (Table 2).

<sup>5</sup> Pasminco (Australia's largest zinc mining company and owner of the Century Zinc mine) and Centaur Mining (a nickel and gold exploration and mining company) both failed in 2001 as a result of falling commodity prices and their currency hedging strategies. Anaconda Nickel (developer of the Murrin Murrin nickel mine) went into default on its bonds in 2002, although it recovered following an equity raising from existing shareholders and was renamed Minara Resources in 2003.

**Table 2: Consolidation of the Australian Mining Industry**

Top 20 mining companies listed on ASX in 2000	ASX market capitalisation \$ billion		Mergers, takeovers and failures in the first half of the 2000s
	March 2000	July 2011	
BHP	32.0	139.5	2001: merged with Billiton
Rio Tinto <sup>(a)</sup>	15.4	45.7	
WMC	7.4		2005: taken over by BHP Billiton
Woodside Petroleum	6.6	31.6	2001: attempted takeover by Royal Dutch Shell
Comalco	5.3		2000: taken over by Rio Tinto
North <sup>(b)</sup>	2.6		2001: taken over by Rio Tinto
Santos	2.4	11.7	
MIM	1.8		2003: taken over by Xstrata
Normandy Mining <sup>(c)</sup>	1.8		2002: taken over by Newmont Mining (US company)
Pasminco	1.1		2001: placed in voluntary administration
Southern Pacific Petroleum <sup>(d)</sup>	1.1		2003: went into receivership
Iluka Resources	0.8	7.9	
Newcrest Mining	0.8	30.6	
Anaconda Nickel	0.8	0.8	2002–2003: defaulted on bonds, recapitalised by investors; changed name to Minara Resources
Sons of Gwalia	0.6		2004: placed in voluntary administration
QCT Resources	0.5		2000: taken over by BHP
Delta Gold	0.4		2002–2006: involved in series of mergers and takeovers, eventually taken over by Barrick Gold (Canadian company)
Ticor	0.3		2005: taken over by Anglo American
Novus Petroleum	0.2		2004: taken over by Medco Energi (Indonesian company)
Ashton Mining	0.2		2000: taken over by Rio Tinto

Notes: (a) Includes market capitalisation of Coal & Allied, which was majority owned by Rio Tinto throughout the decade, and ERA following Rio Tinto's takeover of North Ltd

(b) Includes market capitalisation of ERA, majority owned by North Ltd

(c) Includes market capitalisation of Normandy NFM, majority owned by Normandy Mining

(d) Includes market capitalisation of Central Pacific Minerals, which had significant cross shareholdings with Southern Pacific Petroleum, with the two companies merging in 2002

Sources: AFR (2011); BRW (2000); RBA; company announcements

The value of Australia's resource exports rose strongly during the 2000s, to be over half of total exports by the end of the decade, driven by annual average growth in commodity prices of 9 per cent in Australian dollar terms (Table 3). In contrast, the volume of resource exports only increased at an annual rate of 3 per cent over the period, half its rate of growth during the 1990s. Within the mining industry there was considerable structural change over the decade. In the 1990s, processed metals (such as aluminium, copper and gold) made up almost one-third of Australia's resource exports, as large as the combined exports of iron ore and all other ores. However, by the end of the 2000s, Australia's comparative advantage had clearly shifted towards the export of coal and iron ore, where volumes and especially prices growth were high. In contrast, processed metals export volumes contracted, and their share in total exports fell sharply. With the gradual exhaustion of some of Australia's major oil basins, the volume of crude oil exports also fell, although this was offset by the shift in production away from oil towards LNG, which grew at a rapid pace over the decade.

**Table 3: Australia's Resource Exports**  
Per cent

	Average annual growth				Share of total export values		
	Volumes		Prices		1990	2000	2010
	1990 –2000	2000 –2010	1990 –2000	2000 –2010			
Coal	6	6	–1	10	9	6	15
Oil and gas	9	1	6	5	5	9	8
Crude oil	11	–2	5	6	3	6	4
LNG	11	9	6	5	1	2	3
Iron ore	5	10	2	15	4	3	17
Other ores	4	0	0	9	10	6	8
Processed metals <sup>(a)</sup>	5	–2	0	5	13	10	7
<b>Total resources<sup>(a)</sup></b>	<b>6</b>	<b>3</b>	<b>1</b>	<b>9</b>	<b>40</b>	<b>35</b>	<b>55</b>

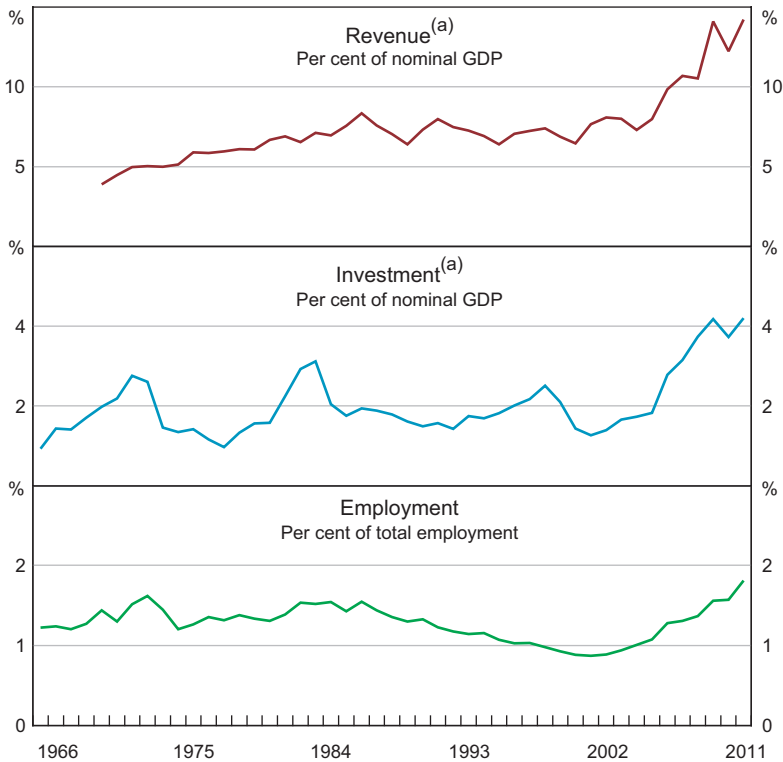
Note: (a) Net of gold imports, which are largely re-exported

Sources: ABS; ABARES; RBA

In a historical context, the mining boom in the 2000s was much larger as a share of the economy than the mining booms in previous decades in terms of sales revenue, investment and employment (Figure 8).<sup>6</sup> Mining revenue increased from 6 per cent of GDP in 2000 to 14 per cent by the end of the decade, driven by the growth in bulk commodity export receipts. Mining investment rose from 1½ per cent of GDP in 2000 to over 4 per cent recently, to be well above the levels during previous booms. Mining employment increased from under 1 per cent of total employment in 2000 – the lowest share in at least a century – to 1.7 per cent by the end of the decade – the highest share in over 50 years. These ratios are continuing to rise into the current decade.

<sup>6</sup> Mining revenue is almost entirely sales and service income; it also includes government funding for operational costs, capital work done for own use and the change in inventories.

**Figure 8: Mining Industry**  
Financial years



Note: (a) 2010/11 estimates based on partial indicators to March 2011

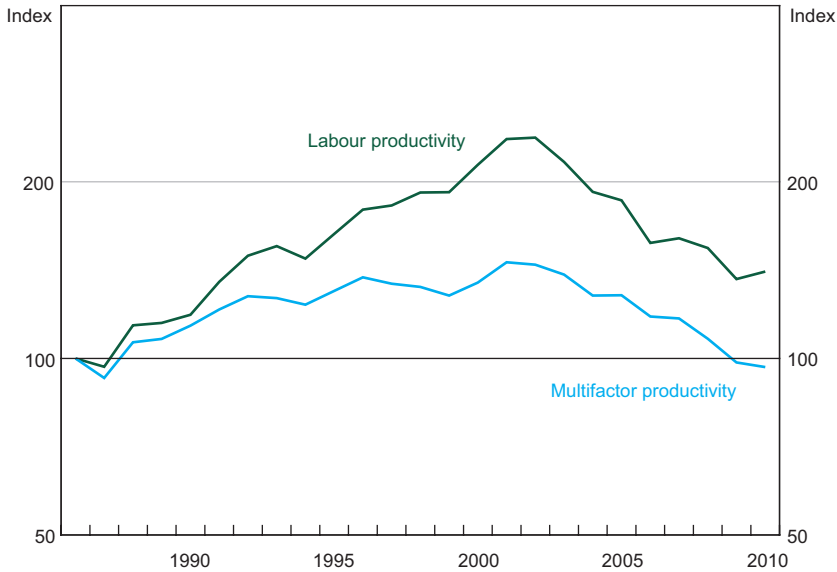
Sources: ABS; RBA; Withers, Endres and Perry (1985)

While mining industry revenue has grown rapidly over the decade, the volume of output has only grown at an annual average rate of 3 per cent, despite mining employment more than doubling and strong growth in the capital stock. As a consequence, both labour productivity and multifactor productivity are estimated to have fallen from around 2003, when commodity prices started rising sharply (Figure 9). This followed a period of strong productivity growth, as mining firms reduced costs through industry consolidation, outsourcing and the adoption of new technologies in response to the low commodity prices around the beginning of the decade (Mélanie *et al* 2002). Topp *et al* (2008) explored the potential explanations for this fall in productivity, highlighting two factors as the most significant, with both related to the mining boom. First, the depletion of reserves for commodities such as oil and copper reduced productivity, as mining companies began to extract lower-grade resources using more inputs.<sup>7</sup> This effect was exacerbated by the rise in commodity prices, which made the extraction of more marginal deposits profitable. Second, there are long lead times between investment in new capacity and

7 Mudd (2010) finds there are long-term declines in average ore grades processed for most metallic minerals in Australia. There is also a compositional element: the oil industry, which is highly capital intensive and therefore has a relatively high level of labour productivity, has been receiving less weight in mining sector productivity measures as its output falls.

the output coming on stream, with Topp *et al* estimating that the lead time had historically been around three years.<sup>8</sup> Looking ahead, production and export volumes of iron ore, coal and LNG are expected to grow strongly over coming years, as currently committed investment projects are completed, which may contribute to a recovery in mining productivity (Christie *et al* 2011).

**Figure 9: Mining Productivity**  
1985/86 = 100, financial years, log scale



Source: ABS

The rise in mining revenue over the 2000s has been dominated by iron ore and coal, while the largest investments have occurred in oil and gas, particularly LNG (Table 4). In contrast, the mining of other ores has experienced a much smaller boom, while metals manufacturing has weakened over the decade. The composition of mining employment is quite different from revenue and investment, with the oil and gas industry employing relatively few workers, reflecting its high capital intensity. Most employees in the industry work in ores mining and mining exploration and support services. The most striking trend in employment has been the steady decline of metals manufacturing, which employed more than twice as many workers as the mining industry at the start of the decade, but ended the 2000s as a smaller employer.

<sup>8</sup> Consistent with this, Gruen and Kennedy (2006) noted that it took over five years from the start of the mining boom in the late 1970s for commodity export volumes to start growing strongly. Also see Eslake (this volume) for a discussion of mining productivity.



**Table 4: Revenue, Investment and Employment**

	Revenue		Investment		Employment	
	1999/2000	2009/10	1999/2000	2009/10	1999/2000	2009/10
<b>Share of total</b>	%	%	%	%	%	%
Coal	25	29	8	14	25	27
Oil and gas	26	18	36	44	5	10
Iron ore	9	23	4	19	8	9
Other ores	35	21	49	16	41	33
Mining services	5	9	3	6	21	21
<b>Totals</b>	<b>\$b</b>	<b>\$b</b>	<b>\$b</b>	<b>\$b</b>	<b>'000s</b>	<b>'000s</b>
Mining	43	157	10	48	78	173
Metals manufacturing <sup>(a)</sup>	13	17	3	7	182	147

Note: (a) Metals manufacturing value added is presented instead of revenue to avoid double counting the inputs from the mining industry

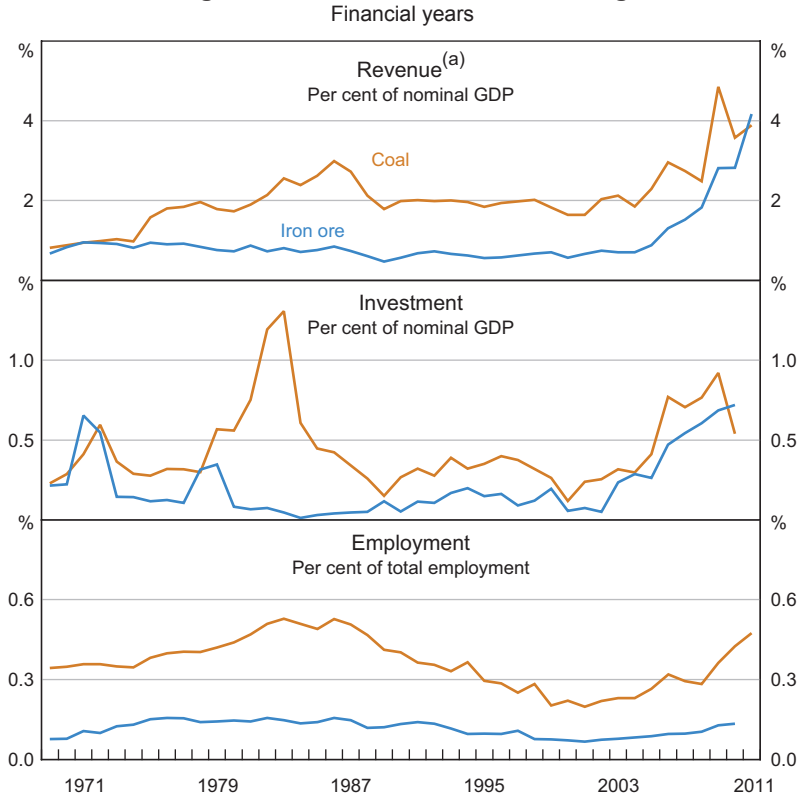
Sources: ABS; RBA; company reports

### 3.1 The boom in bulk commodities

The rise of Chinese demand for steel and energy has led to significant changes in bulk commodities markets. Iron ore and coking coal are key inputs into the production of steel, while thermal coal is primarily used to generate electricity. Australia is a relatively low-cost supplier of iron ore and coal, with large reserves of hematite iron ore, requiring little processing before export, and good quality black coal, characterised by low ash and sulphur content. Australia's mining operations are also relatively efficient and close to Asian markets, reducing freight costs (Mélanie *et al* 2002). Iron ore has become a larger share of the mining industry over recent years, with revenues rising from less than 1 per cent of GDP through the 1990s to over 3 per cent of GDP by the end of the 2000s, and investment has risen well above historical levels as a share of GDP (Figure 10). Revenue in the coal industry has also risen strongly over recent years, to above the highs following the energy boom in the early 1980s, while investment has risen to its highest levels since that period.

At the beginning of the decade, analysts were forecasting weak growth in demand for coking coal and iron ore. They were expecting moderate increases in world steel production to be partly offset by more efficient steelmaking operations that required fewer raw materials. While growing demand from China was recognised, China was thought to have abundant reserves of coal, and following the Asian financial crisis, the Chinese Government provided incentives for producers to export coal, with the consequent increase in exports depressing international prices (Schneider 2004; Andrews 2009). Following the global wave of consolidation noted earlier, Rio Tinto, BHP Billiton and Vale (in Brazil) accounted for around 70 per cent of the seaborne trade in iron ore (ABARE 2002).

**Figure 10: Iron Ore and Coal Mining**

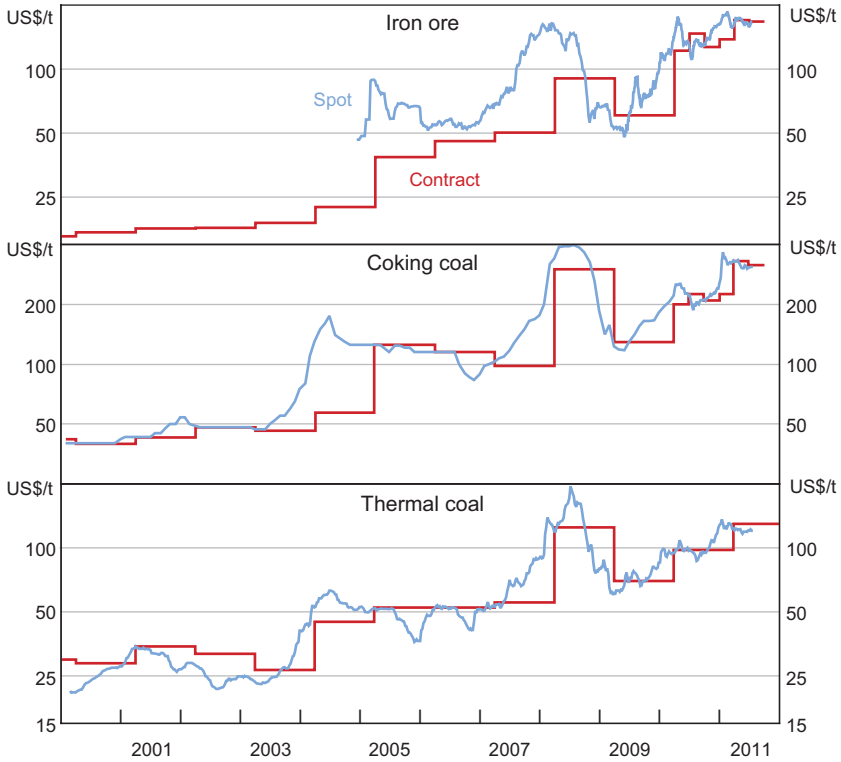


Note: (a) 2010/11 estimates based on partial indicators to March 2011

Sources: ABS; RBA; company reports

The benchmark contract prices for bulk commodities, which had been settled annually with Japanese steel mills and utilities since the 1960s, rose strongly in response to the surge in Chinese demand. Thermal coal contract prices increased by 70 per cent in 2004, while coking coal prices rose by 120 per cent and iron ore prices by 70 per cent in 2005 (Figure 11). These were the largest price increases seen since the energy price boom of the 1970s. However, there were doubts at the time as to whether the rapid growth in demand would be sustained, with commodities analysts predicting longer-term price declines of around 40 per cent (discussed in RBA (2005)). Throughout the remainder of the decade, analysts repeatedly forecast iron ore and coal prices to remain flat or decrease from their relatively high levels, only for them to increase further in subsequent years, consistent with the general under-prediction of Chinese growth. Following the contract price rises of 2004 and 2005, investment in the coal and iron ore industries as a share of the economy increased to above historical averages.

**Figure 11: Bulk Commodity Prices**  
 US\$ per tonne, free on board basis, log scale



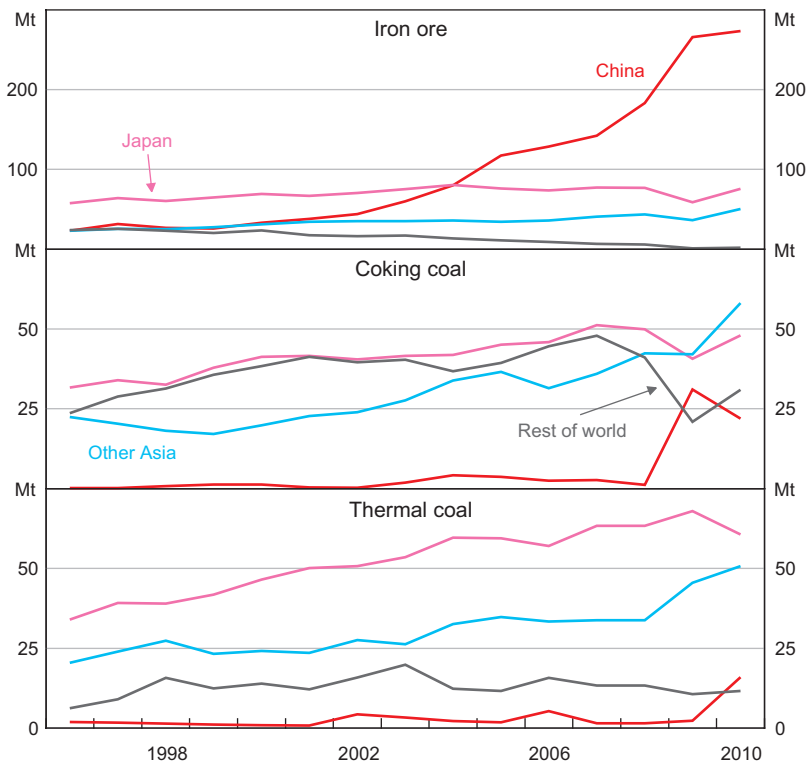
Sources: ABARES; Bloomberg; Citigroup; Energy Publishing; globalCOAL; Macquarie Bank; RBA

There was a second round of very large increases in bulk commodity contract prices in 2008, which was followed shortly after by a collapse in demand during the North Atlantic financial crisis, and eventually an overhaul of the pricing mechanism for iron ore and coking coal when demand recovered. Spot prices soared through 2007, culminating in coking coal contract prices rising by 200 per cent in 2008, and thermal coal prices by 125 per cent. However, iron ore negotiations were unusually protracted. While Vale settled for a 65 per cent increase in iron ore prices, the Australian producers sought a higher price from their Asian customers to take into account the lower cost of shipping iron ore from Australia relative to Brazil. The steel mills eventually agreed to an 85 per cent increase in Australian iron ore prices. When the North Atlantic financial crisis struck in late 2008, the demand for steel collapsed, spot prices fell dramatically, and some customers were unwilling to pay the contract price, preferring instead to purchase more cheaply on the spot market. As the market tightened again in late 2009, producers advocated shorter-term reference pricing to narrow the gap between spot and contract prices. Although customers preferred the certainty provided by the annual benchmark system, they accepted a shift to quarterly reference prices for both iron ore and coking coal in 2010.<sup>9</sup> Since then, the producers have continued to seek short terms for contract prices.

<sup>9</sup> Pricing for thermal coal continues to be a combination of annual benchmarks and a relatively liquid spot market.

The increase in Chinese demand through the decade had a very clear effect on the direction of trade in the seaborne iron ore market. However, the effect on the global coal market was more subtle, given China's status as the world's largest producer, as well as consumer. The proportion of global iron ore exports purchased by China rose from around 15 per cent in 2000 to a peak of almost 70 per cent in 2009, with Australian iron ore remaining in high demand due to the lower cost of shipping relative to Brazil. Consistent with this, Australia overtook Brazil during the decade to become the world's largest producer of iron ore, supplying a quarter of the world's production in 2009 (Table 1). While China remained self-sufficient in coal until 2008, its exports began to fall in 2003, as the Chinese Government removed export incentives. During this period, Australia's coal exports to other Asian countries increased, buoyed by Indian demand in particular (Figure 12). While China's demand for steel recovered in 2009 following the North Atlantic financial crisis, lower global prices meant Chinese coal mines – which are relatively high-cost producers – were not able to compete, and imports of Australian coal increased sharply. Chinese steel mills have continued to purchase a significant amount of coal from Australia since then.

**Figure 12: Bulk Commodity Export Volumes**



Source: ABS

The boom in iron ore demand later in the decade also triggered several attempts to further consolidate the Australian iron ore industry. As spot prices soared in late 2007, BHP Billiton made a bid to purchase Rio Tinto, which was rejected and eventually abandoned in November 2008 during the North Atlantic financial crisis. Rio Tinto was highly leveraged following its takeover of Alcan in 2007, placing the company under financial pressure during the crisis. In February 2009, Rio Tinto entered into an agreement with the Chinese company Chinalco to receive an equity injection. However, following an improvement in market conditions, Rio Tinto withdrew from this deal in June 2009, and instead agreed to an iron ore production joint venture with BHP Billiton. This proposal was opposed by steel producers around the world and competition regulators, and was eventually abandoned in October 2010. So at the close of the decade, the ownership of the existing iron ore mines in Australia remained similar to that in 2001.

The profitability of the iron ore industry also encouraged new companies to enter later in the decade, with Fortescue Metals exporting its first iron ore in 2008. Some of the new developments currently under construction are financed by Chinese steel producers, including CITIC Pacific's Sino Iron project and Ansteel's joint venture with Gindalbie Metals to develop the Karara iron ore project. Joint ventures involving Asian steel producers have historically been important for the expansion of the Australian iron ore and coal industries, with many of the mines opened since the 1960s developed through joint ventures.<sup>10</sup>

The contrast in the ability of the Australian iron ore and coal industries to increase export volumes is partly explained by their differing supply-chain ownership structures. The iron ore industry has a more vertically integrated supply chain, with Rio Tinto and BHP Billiton controlling the mines, railways and ports they use to produce and export iron ore. In contrast, growth in coal exports was slower to pick up, in part reflecting co-ordination difficulties among the many participants in the coal supply chain, where the mines, railways and ports are typically owned and operated by several different private and public corporations. These are most acute in New South Wales, and in response the Hunter Valley Coal Chain Coordinator was established from 2010 to plan and co-ordinate long-term capacity usage in the region, along with a new agreement with the mine owners to fund future infrastructure capacity.<sup>11</sup> Early reports indicate these new arrangements are better aligning incentives and streamlining future capacity expansions.

Looking ahead, the pipeline of committed projects is likely to lead to large increases in global iron ore and coal production capacity over coming years. In Australia, there are around \$35 billion worth of iron ore investment projects committed, which are projected to increase Australian iron ore export capacity by a further 50 per cent between 2011 and 2015. Significant iron ore production capacity expansions are also expected to take place in Brazil over coming years. Australia's capacity to export coal in 2013 is projected to be around 20 per cent higher than it was in 2010 (Christie *et al* 2011). Significant expansions in thermal coal capacity are likely to take place over coming years in Indonesia, South Africa and Colombia, although the global supply of coking coal is not expected to increase to the same extent (ABARES 2011).

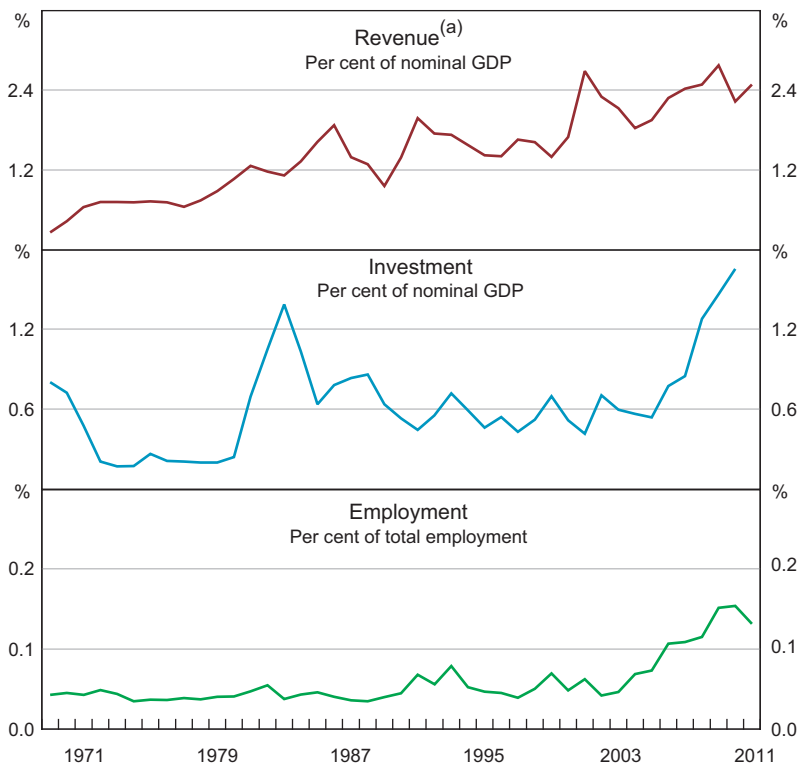
10 Rio Tinto's Robe River mine was developed from 1970 with the Japanese company Mitsui, and the Channar mine from 1987 with SinoSteel, which was the first overseas mining project entered into by a Chinese company. BHP's Mount Newman and Mount Goldsworthy joint ventures were developed in the late 1960s with the Japanese companies Mitsui and Itochu, while BHP's Wheelara joint venture was entered into in 2004 with four Chinese steel mills and two Japanese companies.

11 The process to develop central planning and co-ordination for the Hunter Valley coal chain started earlier in the decade with the establishment of the Hunter Valley Coal Chain Logistics Team in 2005

### 3.2 The decline of oil and the rise of LNG

In aggregate, oil and gas revenue did not change significantly as a share of the economy over the 2000s, with rising prices and LNG production offset by falling oil production (Figure 13). Australia’s oil production peaked in 2000, and since then has fallen by almost 40 per cent due to the maturing of oil wells in the Bass Strait and the basins off Western Australia. In contrast, LNG production more than doubled over the decade, driven by the expansion of the North West Shelf LNG Project off Western Australia, which accounts for over 80 per cent of Australia’s total production. As a result of these developments, LNG increased as a share of oil and gas exports from around 20 per cent at the beginning of the decade to 40 per cent by the end. Oil and gas are the most capital-intensive part of the mining industry, with a relatively high level of investment, and although employment has grown strongly during the decade, the industry only accounts for a small share of total mining employment.

**Figure 13: Oil and Gas Mining**  
Financial years



Notes: Data from 1968/69 to 1981/82 include brown coal mining  
(a) 2010/11 estimates based on partial indicators to March 2011  
Sources: ABS; RBA

The Australian oil and gas industry has contributed around half of the rise in aggregate mining investment, driven by a series of large LNG projects (Table 5). As a share of the economy, oil and

gas investment at the end of the 2000s was well above the peak in the energy boom of the early 1980s, during which investment in the North West Shelf Project commenced. During the 1980s and 1990s, there were large discoveries of gas, including the Gorgon field, while in the early to mid 2000s there were further significant discoveries off Western Australia, with known gas reserves growing by around 40 per cent. The major investments in oil and gas during this period were the expansion of the North West Shelf Project, and the construction of the Darwin LNG plant. Later in the decade, investment in the industry rose sharply, with joint ventures involving multinational and Australian petroleum companies and Asian utilities developing a range of projects. The \$15 billion Pluto project commenced in 2007, followed by the \$43 billion Gorgon project in 2009, one of Australia's largest ever resource projects.

**Table 5: Major Committed LNG Projects Since 2000**

Project	Joint-venture partners	Period of development	Cost <sup>(a)</sup> \$ billion	Production capacity mtpa
North West Shelf Phases IV and V	BHP Billiton, BP, Chevron, Japan Australia LNG, Shell and Woodside	2001–2008	5	8.8
Darwin	ConocoPhillips, Eni, Santos, INPEX, Tokyo Electric and Tokyo Gas	2003–2006	2	3.6
Pluto Train 1	Woodside, Tokyo Gas and Kansai Electric	2007–2012	15	4.3
Gorgon	Chevron, ExxonMobil, Shell, Osaka Gas, Tokyo Gas and Chubu Electric	2009–2016	43	15.0
Queensland Curtis (CSG-LNG)	BG Group	2010–2014	15	8.5
Gladstone (CSG-LNG)	Santos, Petronas, Total and Kogas	2011–2015	16	7.8
Prelude	Shell	2011–2016	12	3.6
Australia Pacific Phase 1 (CSG-LNG)	Origin Energy, ConocoPhillips and Sinopec	2011–2015	13	4.3

Note: (a) The cost estimates are from company and government announcements; where costs were reported in US\$, the exchange rate at the time of the announcement has been used to convert into A\$

Sources: RBA; company and government announcements

Over the 2000s, improvements in extraction technology and high energy prices also supported the development of coal seam gas (CSG) reserves in Queensland.<sup>12</sup> At the beginning of the decade, consideration was being given to installing a gas pipeline between Papua New Guinea and Queensland to supply the eastern states of Australia, since gas resources in these states were

12 The development of unconventional gas supplies in Australia is part of a global trend, with companies in North America utilising new drilling technologies to develop large reserves of shale gas during the 2000s. To extract coal seam gas, a large number of wells are drilled over time, and a significant amount of waste water is produced. The environmental impacts of projects are considered by various government bodies before approval is granted.

being steadily depleted (Fainstein, Harman and Dickson 2002). At the same time, CSG exploration activity in Queensland started picking up following the development of drilling technologies that significantly decreased the cost of drilling wells. Production of CSG increased in the early 2000s, to the point where it was supplying around 60 per cent of Queensland's gas demand in 2006. From 2006 to 2009, further exploration resulted in a fivefold increase in known CSG reserves, raising the prospect of eastern Australia joining Western Australia as an exporter of LNG to the Asian region (Geoscience Australia 2007, 2010). Three CSG-LNG projects in Queensland have recently received investment approval – the first CSG-LNG projects in the world to progress to this stage of development. When committed projects in Western Australia and Queensland are combined, Australia's LNG export capacity is expected to be almost three times higher in 2016 than it was in 2010 (Christie *et al* 2011).

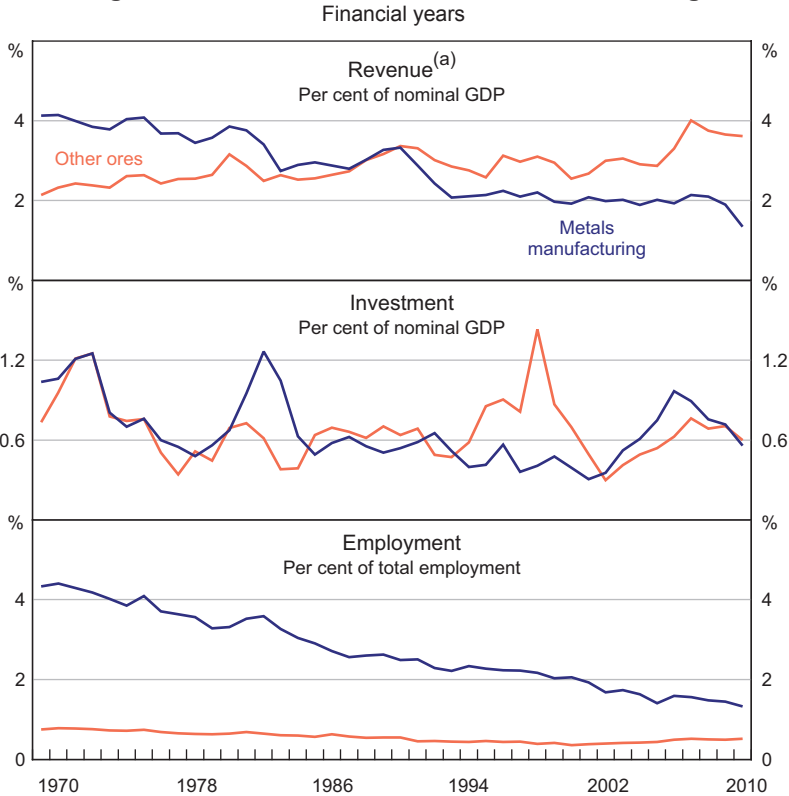
Rising energy security concerns in Asia have also helped to underpin investment in the Australian LNG industry. As noted above, Australia's reserves of gas are small on a global scale, and Australia's potential customers for LNG in Asia – particularly Japan, Korea, China and India – are all relatively close to countries with large gas reserves, such as Russia, Turkmenistan and Iran, where it is possible to import gas through pipelines potentially more cheaply than importing LNG. However, geopolitical issues have led countries in the region to pursue multiple sources of natural gas. Compared to many of the countries with large gas reserves, Australia is viewed as politically stable, both as a destination for petroleum investment and as a source of supply (Angevine and Cervantes 2011). Consistent with this, the very first contract to supply LNG to China was granted to Australia's North West Shelf project in 2002 (Schneider 2004). The interest in Australian LNG has also been enhanced by Qatar's decision in 2005 to place a moratorium on further development of its North Dome gas field, which is the largest field in the world. In this context, the joint ventures in Australian LNG have been able to secure the long-term supply contracts with Asian energy companies necessary to justify developing such large capital-intensive projects.

### 3.3 Where the boom passed by: other ores and metals manufacturing

The mining of other ores (which include bauxite, copper, gold, lead, nickel and zinc) did not perform as strongly over the 2000s (Table 3). The decade started poorly, with the mid 1990s investment boom in base metals and gold ending with the Asian financial crisis, and investment and employment falling to record lows as a share of the economy. While revenue and investment increased with base metals prices to a peak in 2007, they then eased with the subsequent sharp price falls during the North Atlantic financial crisis (Figure 14). Many producers scaled back or ceased production, with the most prominent example being BHP Billiton's closure of the Ravensthorpe nickel mine in 2009 after less than one year of operation, while Oz Minerals, Australia's third largest diversified mining company at the time, sold most of its assets to the Chinese company Minmetals to reduce its debt burden. Part of the weakness in export volumes over the decade was also due to declining ore grades, particularly for gold, nickel and lead (Mudd 2010). Nevertheless, with the partial recovery in base metals prices since the crisis and the ongoing strength in gold prices, there have been some capacity expansions. These have included the reopening of the Boddington gold mine in 2009, which is expected to become Australia's largest gold mine once at full capacity. There are also some projects under consideration, including BHP Billiton's plans to significantly expand its Olympic Dam copper, uranium and gold mine (ABARES 2011).



**Figure 14: Other Ores and Metals Manufacturing**



Note: (a) Metals manufacturing value added (revenue less intermediate inputs)

Sources: ABS; RBA; company reports

The metals manufacturing industry, which includes smelting, refining and producing metal products, has not been a significant beneficiary of the mining boom. Metals manufacturing in Australia has faced increased competition from Chinese smelters and refineries with greater scale and lower costs (Maurer *et al* 2004), while profit margins have been affected by higher energy prices and the appreciation of the Australian dollar. The industry's value added remained flat through most of the 2000s as a share of the economy, before contracting sharply over 2008–2010, as it did during the recessions in the early 1980s and early 1990s. The export volume of processed metals fell over the decade as some processing facilities were shut down, with the weakness broad based across a wide range of refined metals. For instance, BHP Billiton and Rio Tinto both developed iron plants in Western Australia during the late 1990s and early 2000s to add value to iron ore, but these plants have since been shut down. Another example is copper smelting and refining, which has been taking place at Mt Isa and Townsville since the 1950s, with the current owner Xstrata announcing in 2011 that these plants would be closed down over coming years. While investment in metals manufacturing picked up in the middle of the decade, it has since fallen back, and according to New, Ball, Copeland *et al* (2011), in 2011 there were only two metals processing projects under construction (both alumina refineries) and no committed projects.

## 4. The Effect of the Mining Boom on the Broader Economy

Thus far the discussion has focused primarily on trends within the mining industry itself. The growth of the mining industry over the past decade also affected other parts of the Australian economy, as described below.

### 4.1 Theory and overview of the evidence

Traditional trade theories outline how an economy is likely to evolve following an increase in the price of its major export. Using a Heckscher-Ohlin-Samuelson framework extended to three sectors (commodities, other tradables and non-tradables), a rise in the global price of commodities has a factor transfer and an income effect.<sup>13</sup> Assuming the economy is at full employment, the *factor transfer effect* reflects the movement of labour and other factors towards the production of mining and its intermediate inputs (such as mining equipment and exploration services) as inputs are bid away from the production of other tradables (e.g. non-mining manufacturing, education, tourism) and non-tradables (services like health and child care, dwelling construction, etc) in response to the increase in commodity prices and mining industry profits. As a consequence of this effect, output of other tradables and of non-tradables falls.

The *income effect* reflects the changes in the output of different industries within the economy as the higher commodity export earnings are spent. In addition to payment for the inputs used, mining receipts are distributed as tax and royalty payments to federal and state governments and boost the income and wealth of resident shareholders via dividend payments and higher equity prices. To the extent these income gains are spent rather than saved, demand for other tradables and non-tradables increases. Assuming tradable prices are fixed at global prices, this increase in demand raises the relative price of non-tradables to tradables (i.e. the real exchange rate appreciates) as well as imports of other tradables. Hence, while domestic production of other tradables is lower (due to the factor transfer effect), the final effect on the level of non-tradable output depends on whether the income effect dominates the transfer effect.

While the *direction* of these various effects is well identified by theory, their *magnitude* depends on a range of factors. In general, the transfer effect following an increase in commodity prices will be smaller: the more excess capacity there is in labour and other input markets at the outset of the adjustment; the smaller the amount of inputs used in the production of mining output; and/or the easier the ability to import mining-related labour and capital rather than having to source them domestically. Further, the larger the share of the mining industry owned by foreigners, the smaller will be the income effect. In regard to price movements, the greater the degree of substitutability between non-tradables and tradables in consumption, the smaller will be the change in the real exchange rate. More broadly, the higher the degree of flexibility in the economy, the smaller will be the magnitude of the overall wage, price and exchange rate changes necessary to induce inputs and the pattern of spending to shift in response to the rise in mining production and domestic demand.

In practice, tracking the magnitude of the mining boom's effects on the structure of the overall economy is challenging, not least because the expansion of the mining industry in the 2000s

13 For details and model extensions that cover a variety of special cases, see Gregory (1976), Corden (1982, 1984), Corden and Neary (1982) and Cook and Sieper (1984). See also the discussion in Henry (2008), McKissack *et al* (2008) and Banks (2011).

occurred around the same time as other significant developments, such as the slowing pace of productivity growth and changes in household spending behaviour (discussed in other papers in this volume). Nonetheless, a general overview of the magnitude of the recent changes that have occurred throughout the economy can be provided by calculating structural change indices. Specifically, we examine here the changes in the share of different industries in total nominal output, real output, employment and nominal investment. We also use the same measures to evaluate structural change over time between the Australian states, in order to get a feel for the degree of change in the resource-rich and non-resource parts of the economy.

The structural change index (SCI) used takes the form:

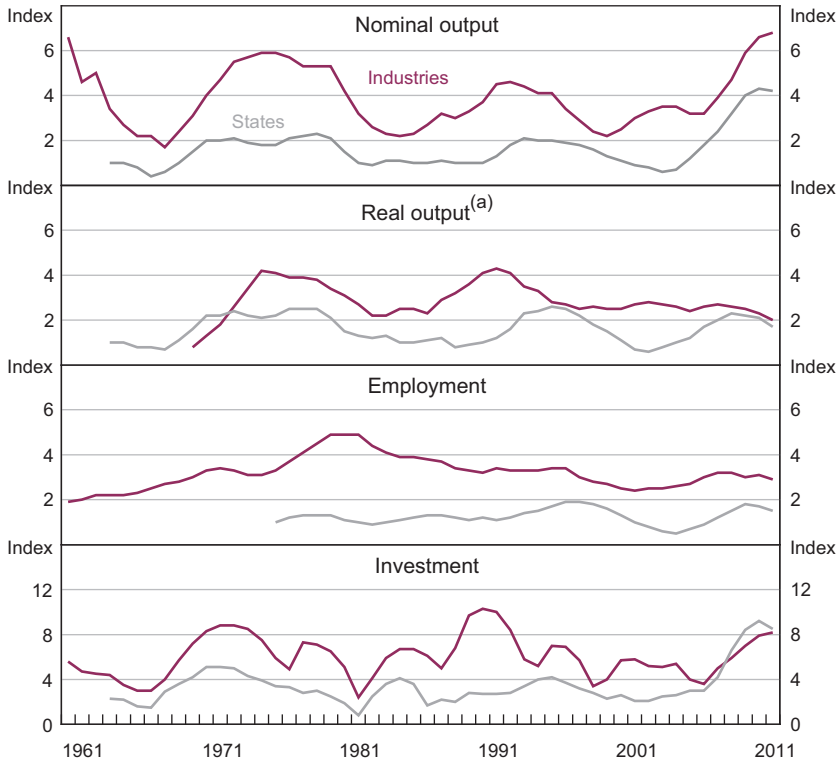
$$SCI = \frac{1}{2} \sum_{i=1}^n |x_{i,t} - x_{i,t-5}|$$

where  $x_{it}$  is the average share of industry (or state)  $i$  in the economy in the five years to year  $t$ ; we use five-year averages to abstract from short-term variation within the economy.<sup>14</sup> The eight industry groups are: agriculture; mining; manufacturing; construction; distribution services and utilities; business services; social services; and personal services. For the state measures, the Northern Territory is included with South Australia and the Australian Capital Territory with New South Wales for data availability reasons. Under these measures, if there has been no change in the relative importance of different industries (or Australian states) over the period, the indices have a value of zero. If, however, the share of one industry (or state) has increased by say 2 percentage points over the five-year period (with a corresponding decrease in the shares of other industries or states), the index has a value of 2.

As is readily apparent from Figure 15, for several measures the rate of structural change has increased since the early 2000s, which corresponds with the onset of the mining boom. For the industry measures, this is particularly noticeable in the measure for nominal output – reflecting the sharp rise in commodity prices over recent years – and is also evident in the investment measure. In contrast, the degree of structural change in the share of the various industries in real output and employment has not been especially large over recent years. This reflects, in part, the inevitable lags between the start of the large investment projects and the increase in mining output, the fact that much of the change to date has occurred *within* industries rather than *between* them, and that the mining industry directly employs a relatively small share of the workforce (as discussed below).

<sup>14</sup> This description updates Connolly and Lewis (2010); for details on the structural change index, see also Productivity Commission (1998).

**Figure 15: Structural Change Indices**



Notes: Output refers to value added by industry and gross state product; estimates for 2010/11 output and investment based on partial indicators to March 2011

(a) Based on relative prices in 2008/09

Sources: ABS; Donovan (1981); RBA; Withers *et al* (1985)

In the measures covering divergences among the various Australian states, the rate of structural change in their total nominal output and investment has been the highest over the past 50 years, reflecting in part that the current mining boom is larger and more geographically concentrated than the booms between the late 1960s and the early 1980s. While the degrees of structural change in the state shares of real output and employment have increased, they have nonetheless been around levels seen during previous periods of high structural change. In fact, on both measures the degree of structural change within the Australian states has fallen back somewhat of late, as output and employment trends in the resource-rich states have more closely followed those of the other states. We now turn to a more detailed discussion of the various direct and indirect effects of the mining industry expansion on the rest of the economy that lie behind these developments, focusing first on the national and then the state economies.

## 4.2 Direct effects of the mining industry on the national economy

According to data from the Australian Bureau of Statistics (ABS), mining industry revenue increased from around 6 per cent of GDP in 2000 to 14 per cent of GDP by the end of the decade, an average annual growth rate of almost 15 per cent (Table 6). As noted earlier, much of this reflected the rise in global commodity prices, although increases in mining output also played a part. After paying for the labour and other intermediate inputs used in mining operations, the balance of the revenue (termed the gross operating surplus) is divided between royalty and tax payments, immediate dividend distributions and retained earnings (after deducting interest and depreciation). In the rest of this section, the links between each of these components with the rest of the economy are examined, as well as the large increase in mining investment that has also boosted activity in the national economy.

**Table 6: Distribution of Mining Revenue**

	1999/2000	2003/04	2008/09	2010/11 <sup>(a)</sup>
<b>Revenue – \$b</b>	<b>43</b>	<b>63</b>	<b>177</b>	<b>195</b>
Labour costs	5	8	18	21
Intermediate input costs	18	28	70	82
<i>Goods and materials</i>	6	9	23	na
<i>Services</i>	13	20	47	na
Gross operating surplus <sup>(b)</sup>	19	27	89	92
<i>Royalties</i>	3	4	11	11
<i>Company income tax</i>	1	3	13	na
<i>Other<sup>(c)</sup></i>	15	20	65	na
Memo item: Investment	10	15	52	58
<b>Revenue – per cent of GDP</b>	<b>6.5</b>	<b>7.3</b>	<b>14.1</b>	<b>14.2</b>
Labour costs	0.8	0.9	1.4	1.6
Intermediate input costs	2.8	3.3	5.6	5.9
<i>Goods and materials</i>	0.8	1.0	1.8	na
<i>Services</i>	1.9	2.3	3.8	na
Gross operating surplus <sup>(b)</sup>	2.9	3.1	7.1	6.7
<i>Royalties</i>	0.4	0.5	0.9	0.8
<i>Company income tax</i>	0.2	0.3	1.1	na
<i>Other<sup>(c)</sup></i>	2.2	2.3	5.2	na
Memo item: Investment	1.4	1.7	4.2	4.2

Notes: (a) Estimates based on partial indicators to March 2011

(b) Gross operating surplus differs from taxable income used in the calculation of company income tax

(c) Includes interest expenses and depreciation

Sources: ABS; Australian Taxation Office; RBA; Australian and state government budget papers

### 4.2.1 Direct labour usage

Direct labour costs in mining operations have been equivalent to around 10 per cent of total mining receipts.<sup>15</sup> After falling gradually during the 1990s, employment in the mining industry grew rapidly during the 2000s, rising by around 10 per cent a year, compared with growth of around 2 per cent a year in the national economy. Indeed, the pace of mining employment growth during the decade was significantly higher than for virtually all other industries.

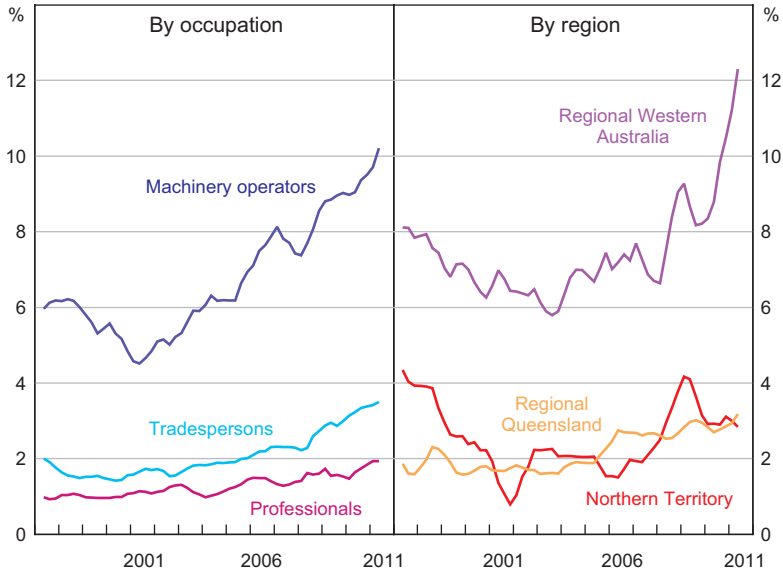
However, mining is very capital intensive and hence the amount of labour used for mining operations has remained comparatively small. Despite its rapid growth over the decade, mining employment increased by only 110 000 over the decade (to around 200 000 or 1.7 per cent of total employment), representing a small share of the 2.2 million increase in employment nationally.<sup>16</sup> Hence, while annual employment *growth* rates were below that of the mining industry, most other industries – especially within the services sector – saw an increase in the *number* of employed persons that was much larger, with health and social services employment in particular rising by a multiple of almost four times that of mining during the decade. The main exception was a decline in employment in manufacturing, but this continued a trend that has been evident for several decades.

Mining employment is dominated by a few occupations, with one-third machinery operators, one-quarter tradespeople, and one-fifth professionals such as engineers. Even within these occupations the increases in the mining industry were small, with the share of machine operators working in mining rising from 6 per cent to 10 per cent of total national supply and tradespersons working in mining increasing from only 2 per cent to a little over 3 per cent (Figure 16). In addition, while mining provided a boost to employment in the regions of the country that have a comparatively high concentration of resources – the Northern Territory, Western Australia excluding Perth, and Queensland excluding Brisbane – the mining industry accounted for at most 12 per cent of these regions' total employment.

<sup>15</sup> This section covers only the direct labour used in mining operations. It excludes labour used in the production of intermediate products purchased by mining operations for their operations, and workers used by construction companies that are contracted to build mining projects; these components are discussed below.

<sup>16</sup> Nonetheless, mining employment growth was more significant on a state basis; of the 300 000 increase in employment in Western Australia over the decade, almost 50 000 were in the mining sector.

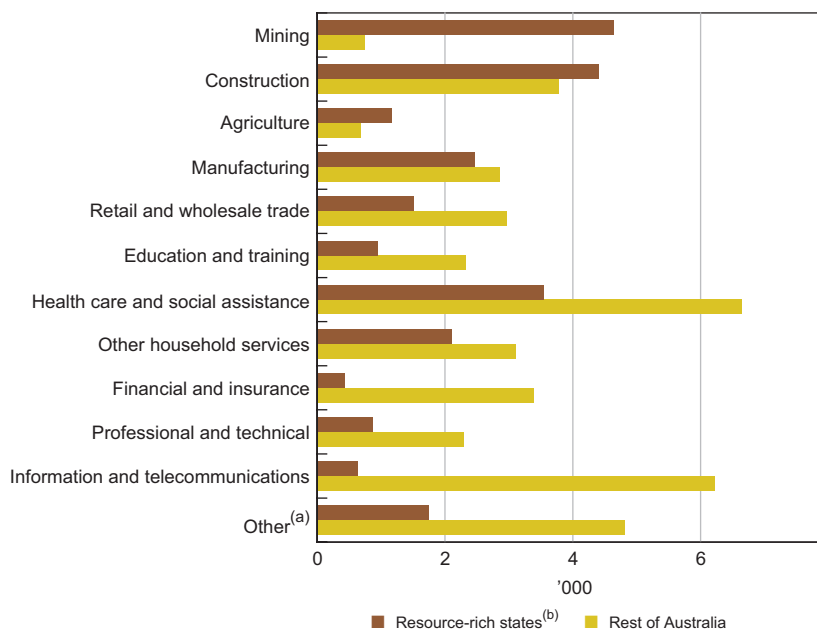
**Figure 16: Mining Employment**  
Rolling annual average share of total



Source: ABS

Some of this increase in mining employment during the decade was accommodated from outside the initial labour force. Coinciding with the onset of the mining boom, the participation rate rose by around 3 percentage points, initially jumping in the resource-rich states and later also rising in other states. The increase in the participation rate was accompanied by a strong rise in immigration to the resource-rich states. In part this reflected an increase in temporary migrants (the 457 business visa category), with the resource-rich states receiving the majority of those working in the mining and construction industries (around 4 500 in each industry; Figure 17). Nonetheless, the total number of 457 visa migrants in Australia has remained fairly low (72 300 as at mid 2011) although there are a range of other business visa categories.

**Figure 17: Primary 457 Visa Holders**  
May 2011



Notes: (a) Includes transport & storage, utilities, rental & real estate and public administration

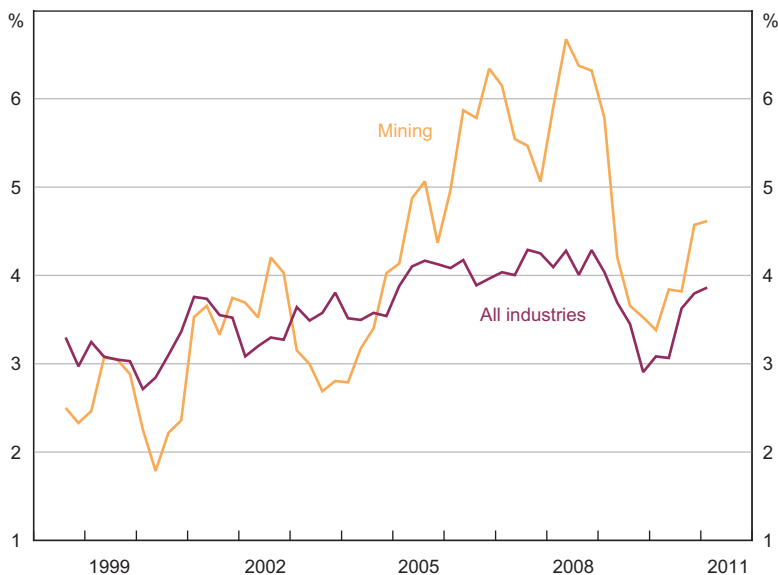
(b) Includes Northern Territory, Queensland and Western Australia

Source: Department of Immigration and Citizenship

Given the remote areas in which many mines are located, mining wage levels are typically higher than in other sectors in order to attract labour towards the industry. Based on the ABS wage price index – which controls for changes in quality and the composition of the type of labour employed – annual mining wage growth was strong after the onset of the mining boom, peaking at 6½ per cent, and non-wage benefits growth was also reported to have been high (Figure 18). Furthermore, although mining wage growth slowed during the North Atlantic financial crisis, its pace has since picked back up. Nonetheless, there appears to have been only a limited degree of spillover to wages in the rest of the economy, which outside of the period of the financial crisis continued to grow at around 4 per cent. The Bank's recent business liaison also indicates that at least to date there has been fairly little impact of wage growth in the mining industry on wages in the broader economy, even in the occupations where there are early signs of emerging skill shortages.



**Figure 18: Wage Price Index Growth**  
Year-ended



Source: ABS

#### 4.2.2 Intermediate input usage for mining operations

Intermediate input costs have been much larger than direct labour costs, typically representing around 40 per cent of total mining revenue. Goods and materials used in mining operations constitute around one-third of intermediate input costs with the remainder being services, such as freight, contractors, rent and repairs. Intermediate input costs grew quickly after the onset of the mining boom, rising at an annual average rate of 15 per cent, or 3 per cent of GDP over the decade.

Input-output tables available from the ABS provide an indication of the types of industries in the economy that have been supported by the rise in intermediate input demand for mining operations, although the latest data are only available to 2006/07. The data suggest that of the goods used in mining operations, many were commodities provided by the industry itself (such as coal and ores). While purchases of petroleum and chemical products (such as fuel and explosives) were substantial, a high share of these purchases is imported by the companies providing these goods to the mining industry (Table 7). Metal products purchased from local companies are a smaller share of total mining intermediate inputs, and direct imports by mining companies constitute around 10 per cent of total mining intermediate inputs (which are primarily goods).<sup>17</sup>

<sup>17</sup> More recent data suggest the import share for inputs used in mining operations in Western Australia was around 8 per cent in 2009 and 4 per cent in 2010; see Department of State Development and Department of Commerce (2011).

**Table 7: Inputs into Mining Operations by Industry**  
Per cent of total, gross values

	1998/99	2006/07
<b>Goods and materials</b>	<b>35</b>	<b>34</b>
Mining products	5	9
Manufactured products	18	15
<i>Petroleum, coal and chemicals</i>	6	8
<i>Metal products and machinery</i>	9	6
Direct imports <sup>(a)</sup>	12	10
<b>Services including contractors</b>	<b>65</b>	<b>66</b>
Mining support services	15	18
Finance, insurance, property and business	15	18
<i>Finance and insurance</i>	4	5
<i>Property and business</i>	11	13
Construction <sup>(a)</sup>	5	8
Transport and storage	12	6
Wholesale and retail trade	9	6
Electricity, gas, water and waste services	5	4
Accommodation, cultural and personal	2	4

Note: (a) May include a mix of goods and materials as well as services

Source: ABS

In contrast, purchases of *services* by mining companies for their operations – which constitute two-thirds of mining intermediate inputs – are more commonly provided locally, with, for instance, mining companies often contracting Australian businesses to undertake their ongoing service and maintenance due to their locational advantage. Around one-quarter of these purchases are support services provided by the mining industry itself, such as drilling, draining and plumbing. Another one-quarter are finance, insurance, property and business services, which includes a wide range of services such as engineering consulting, employment placement, legal, accounting, computer system design, marketing, rental and hiring of equipment, and mine support staff provided by service operators (e.g. cooks, cleaners and bus drivers). The rest of the intermediate service inputs covers activities such as transport and storage, distribution, accommodation and services provided by utilities companies.<sup>18</sup>

Not all of the increase in intermediate input costs over the past decade has reflected an increase in the quantity of goods and services supplied to the industry. Along with the increase in fuel prices, global competition for mining equipment has led to rapid growth in the prices of mining intermediate inputs. Reflecting this trend, the price index for materials and services used in coal mining for instance – such as prices for extraction, washing, preparation and transportation – grew at an average annual

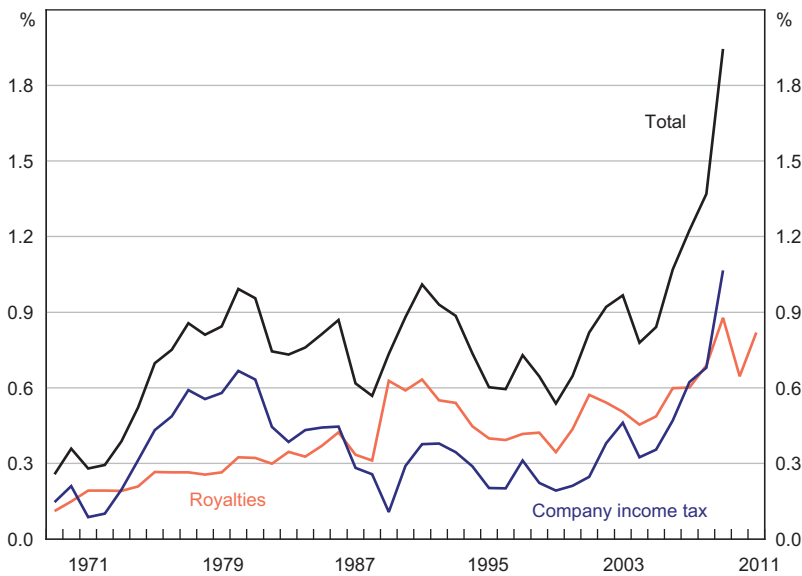
<sup>18</sup> Note that accommodation, cultural and personal services include some non-wage expenses provided to mining industry workers. Also, the input-output data show construction supplies only around 8 per cent of total mining inputs. However, this figure does not include the substantial amount of mining investment that takes place within the construction industry itself (see section below).

rate of 6 per cent from the mid 2000s, twice the pace of price growth in the broader domestic economy, after having grown in line with domestic prices over the preceding decade.

### 4.2.3 Tax and royalty payments

The mining companies pay royalties and taxes to various levels of government in Australia. Royalties and company income taxes paid by the mining industry increased from around ½ per cent of GDP at the start of the decade to around 2 per cent in 2008/09 (the latest available data) – their highest share of GDP since at least the late 1960s. As a share of annual mining receipts, these payments increased from around 10 per cent to almost 15 per cent over the decade. The rise in royalties and taxes was driven by the significant increases in global prices and to a lesser extent export volumes for bulk commodities, while the share of the oil and gas industry in payments to governments fell over the period, reflecting the gradual depletion of Australia’s oil fields. Most of this increase was driven by mining income taxes; company income tax is levied on taxable profits, while mining royalties are generally levied on production and are less sensitive to movements in commodity prices (Figure 19).<sup>19</sup> The rise in tax and royalty payments to governments coincided with cuts in personal income taxes from the mid 2000s and a more recent rise in infrastructure investment (including under Western Australia’s ‘Royalties for Regions’ program).

**Figure 19: Mining Royalties and Company Income Tax**  
Per cent of nominal GDP, financial years



Sources: ABS; Australian Taxation Office; RBA; Australian and state government budget papers

19 The main exceptions are the Petroleum Resource Rent Tax (PRRT) and royalties collected in the Northern Territory, which are levied on measures of profits. The large increase in royalties in the late 1980s was associated with the introduction of the PRRT. In 2010 there was a national debate when the Government proposed replacing the existing system of mining royalties with a broad-based resource rent tax. The proposal was subsequently scaled back to only apply to iron ore and coal production, with the application of the PRRT broadened to include on-shore coal seam gas projects.

#### 4.2.4 Dividends and retained earnings

The gross operating surplus of the mining industry, after deducting royalties and tax payments, rose from around \$15 billion in 1999/2000 (2.2 per cent of GDP) to around \$65 billion in 2008/09 (5.2 per cent). Earnings (after tax, interest and depreciation) are distributed to shareholders as dividends or retained within the company. Since the mining industry in Australia is majority foreign-owned, most dividends and retained earnings do not add to national income.

The foreign ownership share of the mining industry is difficult to determine for several reasons: many publicly listed equities are held in the name of nominee companies; holdings of companies listed on the ASX that are less than 5 per cent of total equity do not need to be disclosed; and the degree of foreign ownership varies by industry and even by specific mine. Overall, based on published data by the iron ore, coal and LNG producers, effective foreign ownership of the current mining operations in Australia could be around four-fifths, with the share for iron ore producers a little lower and coal and LNG producers a little higher. Part of the earnings to Australians is distributed by mining companies as dividends, with the balance retained by the companies and reflected in rising share valuations. Indeed, mining equity prices increased by 180 per cent relative to the broader market over the 2000s, providing a significant boost to the wealth of Australian residents over the decade (Figure 20).

**Figure 20: Mining Share Prices**  
Relative to broader market, log scale



Notes: Resource share price index divided by market index (ASX 200); average since 1960 = 100

Sources: Bloomberg; RBA; Thomson Reuters

#### 4.2.5 Investment

Thus far this analysis has focused on the direct distribution of the mining sales receipts over the decade and its impact on activity and incomes within the broader economy. The mining industry

also boosted spending in the Australian economy through its investment activity, which rose from \$10 billion (1.4 per cent of GDP) at the start of the decade to around \$58 billion (4.2 per cent) more recently.<sup>20</sup> This spending covers payments for construction workers and purchases of non-labour inputs for mining investment. It has been financed by a combination of foreign inflows from multinational energy companies – especially for many of the LNG project investments – and retained earnings from existing operators in Australia, such as those producing iron ore and coal.

In regard to the labour used during construction, large mining companies typically engage the services of engineering, procurement and construction management (EPCM) firms to oversee their investment projects. Part of the responsibilities of an EPCM firm is to procure the necessary labour, which can be supplied from its own staff or through subcontracting workers from more specialised construction firms. There is little information available on the total number of construction workers employed on mining projects at any one time, and the Bank's liaison indicates that contractors try where possible to shift labour from one project to the next as different stages of the projects advance. Modelling by the National Resources Sector Employment Taskforce (2010) suggested that the total number of mining-related construction workers employed is fairly small, at around 30 000 in 2010 (¼ per cent of national employment), although this is expected to rise in coming years.

A large part of the inputs used for mining investment is imported rather than sourced from the domestic economy. The share of total investment that is contracted domestically varies significantly depending on the technology used in the project, whether the equipment is assembled locally or imported wholly assembled, and the scale, specification and cost of the steel products used. In addition, the local content share varies from year to year depending on the stages the projects are in. For instance, while some of the labour employed in LNG investment occurs at the front-end when earth and civil works and port dredging is undertaken, more occurs at the back-end of the project after the large LNG modules arrive from offshore and need to be secured in place. Local spending also varies among the different iron ore and coals projects.<sup>21</sup>

Reports by the companies concerned and from official sources suggest in broad terms that over the life of a project the domestically contracted share of mining investment averages around 70–80 per cent for iron ore projects (which are comparatively labour intensive) and around 40–60 per cent for LNG projects (which are not as labour intensive). There is less information available in regard to the domestic spending share in the coal industry, but it may be broadly

20 This estimate reflects the costs of machinery and equipment, buildings and structures, exploration and software and R&D investment specifically related to mining on-site operations and support activities by contractors (including exploration). It does not include investment in infrastructure used to transport (e.g. rail, roads, pipes) and export (e.g. ports) mining products, or for the processing of minerals. These types of investments have also increased in recent years and are expected to continue to do so.

21 For instance, magnetite iron ore projects require labour for on-site processing and assembly of processing and crushing modules as well as for the earth and civil works that are also used in the development of hematite mines. Machinery and equipment (car dumpers, stackers and reclaimers) are usually imported; rolling stock has traditionally been sourced domestically, but an increasing share is imported. As well as mine development, magnetite production requires a magnetite concentrator for processing the ore and key infrastructure to facilitate the production process, such as water and energy utilities. For coal investments, local content shares vary depending in part on whether new mines are underground or open-cut (with the latter having a larger local labour content).

similar to that for iron ore.<sup>22</sup> However, all these estimates overstate to some extent the actual degree of local spending: the reported ‘domestic spend’ share is the amount contracted from locally based firms, part of which is subsequently sourced from abroad (e.g. for parts). Australian-based firms have indicated that much of the machinery and materials needed cannot be provided from local sources due to limited domestic capability to deliver the scale and specifications required. Adjusting for this effect, perhaps half of the total cost of mining investment in recent years has been domestically spent. This share may fall somewhat in coming years given the intensity of LNG investment and its lower domestic content compared with other mining activities.

Putting all this together, the increase in mining revenues in the 2000s made a significant direct contribution to economic activity and incomes of Australian residents. The main channels identified were through direct labour costs (around 10 per cent of total mining operational revenue), the mining industry’s demand for domestically sourced intermediate inputs especially services (perhaps around 25 per cent of total revenue), tax and royalty payments (close to 15 per cent of total revenue in recent years), and the share of the after-tax profits owned by Australian residents (around 5–10 per cent of total revenue). While it is difficult to be exact, these estimates suggest that overall, Australian residents accrued a little over half of the total receipts earned from current mining operations. In addition, perhaps half of the total costs of mining investment was spent acquiring domestically supplied labour and other inputs, which generated further activity in the Australian economy.

### 4.3 Indirect effects of the mining industry on the national economy

As outlined in the Kearns and Lowe paper in this volume, the rise in global commodity prices and the associated rise in the terms of trade boosted the level of Australia’s income during the decade.<sup>23</sup> Given the strong growth of income, demand growth outpaced that of output over the entire mining boom period, with the exception of a short period during the North Atlantic financial crisis. In line with the predictions of the theory outlined earlier, in response to this spending the pace of non-tradables inflation picked up after the onset of the mining boom, running at around 4 per cent a year compared with 3 per cent in the preceding years, while inflation in tradables (excluding fuel) averaged around 1 per cent a year. Consistent with this, measures of the real exchange rate appreciated, rising by around 35 per cent over the mining boom period.

There is also evidence that this large rise in the real exchange rate over the decade has been associated with a shift in spending from non-tradables to tradables. The pace of import volumes growth over the decade has picked up noticeably, especially for capital imports for businesses and foreign travel by residents. Similarly, the pace of growth of exports has slowed for a range of manufactured goods and tourism services.<sup>24</sup> Within the domestic economy, demand conditions

22 However, as noted, the variation around these industry-average spending estimates is considerable; for instance, Department of State Development and Department of Commerce (2011) estimates that around 85 per cent of the work undertaken in 2010 on the iron ore expansions of Rio Tinto and BHP Billiton in Western Australia was contracted locally compared with around 40 per cent for the Gorgon LNG project in 2010. The WA Government also estimates the share of locally contracted investment spending for companies operating under state agreements at 65 per cent in 2009 and 69 per cent in 2010.

23 See also Stevens (2010a, 2011) for discussion of the macroeconomic effects of the current mining boom.

24 Exports of education continued to grow, before slowing more recently, partly in response to changes in visa policies.

varied considerably, even within the same industry or state. For instance, activity at hotels servicing capital cities and fly-in/fly-out air services has been strong, while hotel bookings and flight reservations to resort areas – even within the same states – have softened considerably. There has also been large variation in the pace of output growth within different parts of the manufacturing and construction industries, partly depending on whether their products and activities are used by the mining industry. This intra-industry variability could be one reason why the structural change index noted earlier suggested that to date the overall pace of change of the real output shares and employment between industries has not changed significantly from that prevailing since the mid 1990s. Nonetheless, to the extent the real exchange rate appreciation reflects a highly persistent change in fundamentals, the changes in the structure of domestic demand and industry output are likely to grow over time.

#### 4.4 Effects of the mining boom on the states

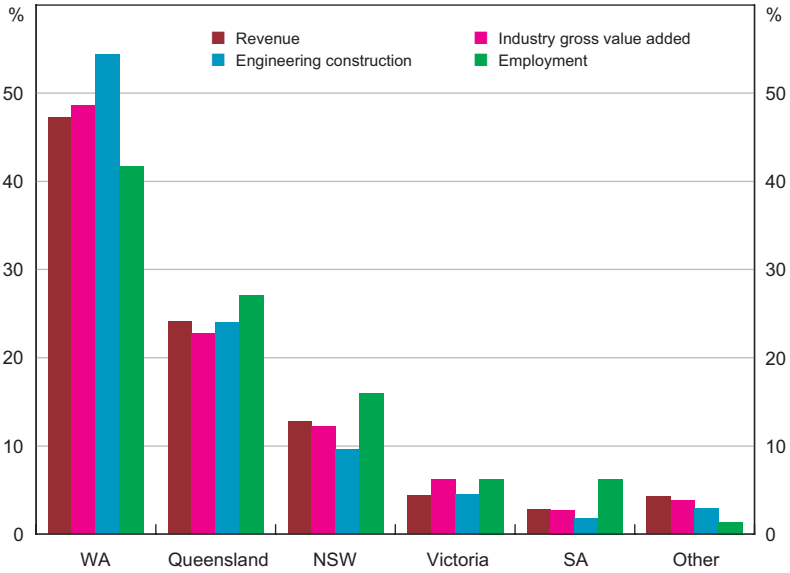
Resources are spread unevenly across the country, with Western Australia, Queensland and the Northern Territory having the highest concentration of known reserves (Table 8). Almost all iron ore mining occurs in Western Australia, while two-thirds of black coal mining is in Queensland (the remaining one-third is in New South Wales). In the case of natural gas, the bulk of current production is from Western Australia, although Queensland is likely to also become a major supplier of CSG-LNG in coming years. The varying concentrations of resource deposits are reflected in the structure of the state economies, with Western Australia and Queensland accounting for about one-half and one-quarter, respectively, of the mining industry's revenue, employment and engineering investment (Figure 21).

**Table 8: Resource Endowments by State**  
2009/10

State/Territory	Share of mining in state output Per cent	Main resource deposits
Western Australia	27	Iron ore, bauxite, nickel, gold, silver, copper, lead, zinc, diamonds, mineral sands, oil and natural gas
Northern Territory	21	Bauxite, gold, silver, lead, uranium, zinc and natural gas
Queensland	10	Black coal, bauxite, gold, silver, copper, nickel, lead, zinc and coal seam gas
South Australia	4	Uranium, gold, silver, copper and iron ore
New South Wales	3	Black coal, gold, silver, copper, lead, mineral sands and zinc
Victoria	2	Brown coal, gold, mineral sands, oil and natural gas
Tasmania	2	Gold, silver, lead, tin and zinc

Sources: ABARES; ABS; Geoscience Australia

**Figure 21: Share of Australian Mining Industry**  
2009/10

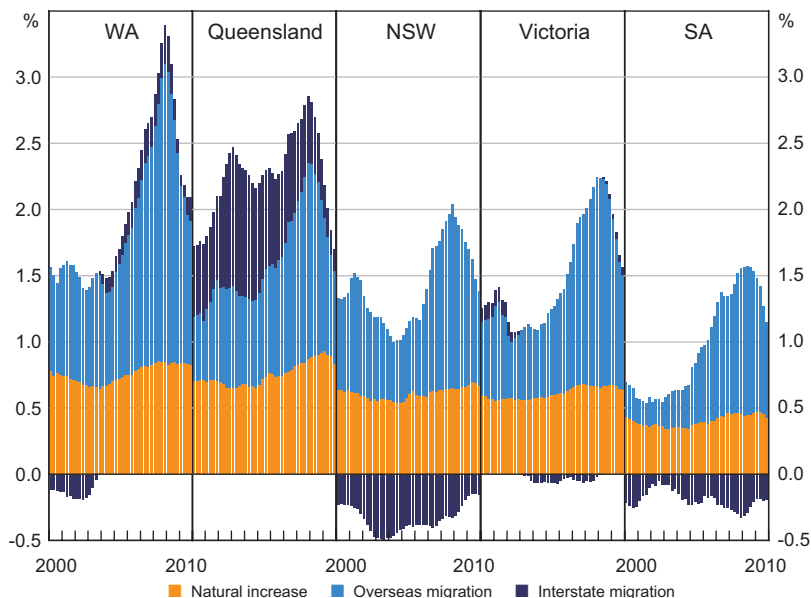


Source: ABS

In addition to the rapid rise in investment in the resource-rich states, the structural change index noted earlier suggests there has been an increase in state variation in other economic indicators. As well as solid output growth, the resource-rich states have had the highest population growth. In part this reflected a high level of overseas migration to these states – especially in the case of Western Australia – and also interstate movements in Queensland, although in the case of Queensland this trend predates the mining boom (Figure 22). For both of these states, the population growth from these sources has slowed significantly in the past year or so.



**Figure 22: State Population Growth**  
Contributions to year-ended state population growth



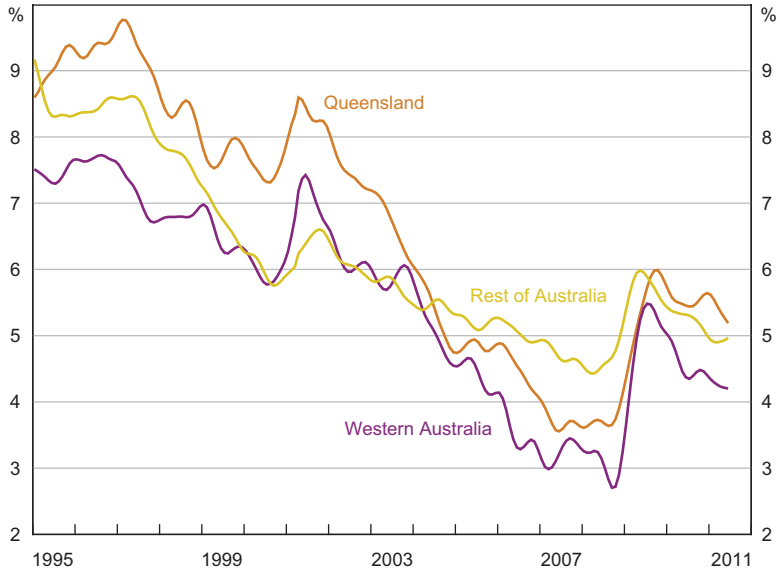
Source: ABS

While the growth of mining industry output, population and investment varies between states, over recent years growth in overall demand and output across the states has become more similar. While the level of mining operations and investment is clearly concentrated in the resource-rich states, the distribution of the mining receipts is more dispersed across the country. The particular channels, as noted earlier, include the purchase of intermediate inputs from other parts of the country to service mining activities,<sup>25</sup> Australian equity holders are widely dispersed, and tax payments to the Australian Government are spent across the country.<sup>26</sup> This could be one reason why unemployment rates have been low in all states since the onset of the mining boom, although lowest in Western Australia and, until recently, in Queensland (Figure 23). Indeed, while final demand in the resource-rich states expanded rapidly between 2003 and 2007, rising at an average annual rate of around 8 per cent, since that time final demand in the resource-rich states has slowed significantly and broadly tracked the pace of growth seen in the rest of the economy, though this partly reflects state-specific reasons as well (Figure 24).

25 Data for Western Australia suggest around 10 per cent of the value of the contracts awarded within Australia for mining operation and mining investment projects located in Western Australia were to companies based outside of that state; see Department of State Development and Department of Commerce (2011).

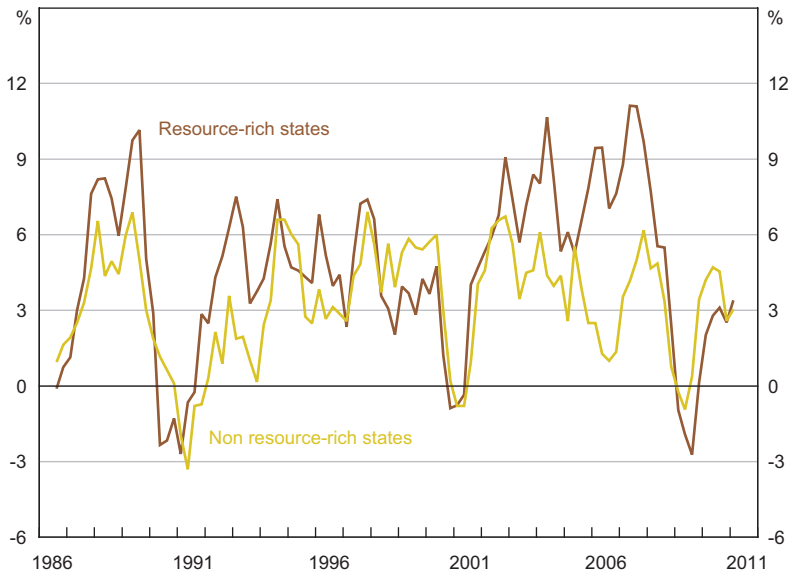
26 For further discussion on state economic disparities and regional transfers, see Stevens (2010b).

**Figure 23: State Unemployment Rates**  
Trend



Source: ABS

**Figure 24: State Final Demand**  
Year-ended percentage change



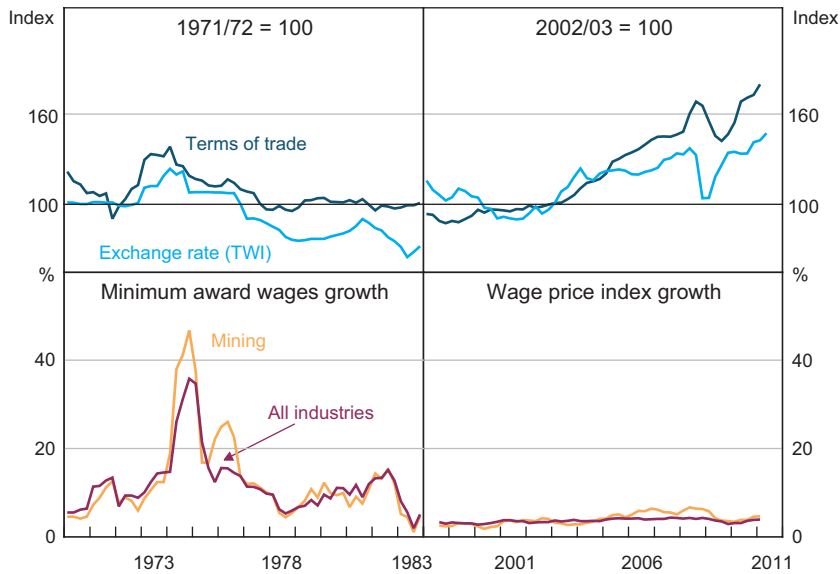
Source: ABS

## 5. Comparisons with Past Mining Booms

Mining booms are not new to Australia. Focusing on the post-WWII period, there were a number of booms between the late 1960s and the early 1980s, due to new discoveries and surges in global commodity prices. In the late 1960s, increased Japanese demand for steelmaking materials and the development of bulk carriers opened up the seaborne trade in coal and iron ore, and there were discoveries of oil, bauxite and nickel. This resulted in a surge in mining investment and culminated in the Poseidon stock market bubble in 1969/70. Then in 1973 and 1974, energy prices increased dramatically due to the OPEC oil embargo, while mineral commodity prices also rose strongly, resulting in a 30 per cent increase in Australia's terms of trade before they fell back as the world entered recession in 1974/75. The second surge in commodity prices from 1978 to 1981 led to another period of great optimism, with expectations that Australia would become a much larger exporter of energy and processed metals. However, this turned out to be short-lived – although commodity prices rose by 40 per cent over the period, import prices were also rising strongly, largely offsetting the boost to national income, and commodity prices subsequently began their long decline with the 1982 global recession.<sup>27</sup> These booms were associated with periods of very poor macroeconomic outcomes, with high unemployment and inflation. In comparison, although Australia has experienced a larger mining boom in the 2000s, the macroeconomy has been much more stable, partly due to improvements in the institutional framework with the adoption of a floating exchange rate, decentralised wage bargaining, an inflation-targeting regime and product market flexibility.

Australia's freely floating exchange rate has allowed a real appreciation to occur in response to the 2000s mining boom without the adjustment coming through high inflation, as occurred under the less flexible exchange rate regimes of the 1970s and early 1980s. The surge in mining export receipts in the late 1960s and early 1970s generated strong domestic demand and placed upward pressure on the exchange rate. The Government kept the exchange rate fixed, building foreign reserves and allowing the domestic money supply to grow at an annual rate of over 20 per cent in the early 1970s (Figure 25). When the Government finally revalued the exchange rate in late 1972 and 1973, it was too late to restrain inflation, which had drifted up from around 3 per cent in the late 1960s to 7 per cent in 1971. In contrast, during the 2000s, the floating exchange rate began appreciating as the global economy recovered from the 2001 recession, and appreciated further over the remainder of the decade as the terms of trade continued to rise. Furthermore, when commodity prices moved sharply in 2008/09, the exchange rate adjusted to cushion the shock to the economy. Overall, the higher exchange rate has helped to offset the expansionary effect of the increase in mining export receipts and investment.

<sup>27</sup> For more detail on these mining booms, see Sykes (1978), Pagan (1987), Blainey (2003), Gruen (2006) and Battellino (2010).

**Figure 25: Mining Booms and the Macroeconomy**

Note: The terms of trade and exchange rate are log scale

Sources: ABS; RBA

The consequences of the mining booms in the 1970s and early 1980s for inflation were magnified by the wage-fixing system, which tended to transmit demand pressures in one sector to wages across the economy through the principle of comparative wage justice. In early 1974, at the height of the terms of trade boom, miners secured a 20 per cent increase in minimum award wages, which was followed soon after by a similar increase in award wages for all industries. When combined with the surge in energy prices, the wages explosion resulted in inflation peaking at over 17 per cent in early 1975. This episode significantly increased real wages across the economy, contributing to a structural increase in unemployment over subsequent years. The (short-lived) resources boom of the early 1980s led the metals manufacturing industry to agree to a 24 per cent rise in hourly wages in 1982, which then set a precedent for other industries, resulting in a 16 per cent rise in wages across the workforce (Kelly 1992). This explosion in wages was followed by inflation of over 12 per cent and the 1982/83 recession, during which employment in metals manufacturing fell by a fifth and the unemployment rate rose to 10 per cent. In contrast, the replacement of the centralised wage system with more deregulated wage structures has enabled a rise in mining industry wages in the 2000s to be contained from the wage structure across the economy.

Other changes in government policy have also contributed to better macroeconomic outcomes during the 2000s. The current boom has occurred after a strengthening of institutions, including the introduction of a clear inflation-targeting framework and operational independence for the RBA, with inflation and aggregate wage growth remaining much more contained during the 2000s than in the 1970s and early 1980s. In addition, the economic reforms undertaken by Australian Governments since the 1970s to deregulate product markets have improved the ability

of the economy to flexibly respond to mining booms and changes in relative prices more broadly. As an example, trade barriers have been wound back progressively, with the Productivity Commission (2011) estimating that the effective rate of assistance to manufacturing has fallen from around 35 per cent in the early 1970s to around 5 per cent in the 2000s. The lower trade barriers have given households and businesses greater access to global markets to satisfy the extra demand generated by the mining boom, reducing the inflationary pressure in the domestic economy.

## 6. Conclusion

The rapid growth in Asia – especially China – is having a significant effect on the structure of the global economy, and on the Australian economy in particular. The strong global demand for energy and other commodities has led to rapid growth in the mining industry, both in the value of commodity exports and the level of mining investment, especially for iron ore, coal and LNG. At the same time, oil and metals processing exports have contracted, as Australia's oil fields have been depleted and Australia's comparative advantage has shifted towards the export of basic commodities.

The rapid growth in mining receipts has also had an impact on the directly affected industries and regional areas, as well as the rest of the economy. Activity within the mining industry has spilled over into domestic activity through its demand for labour, intermediate inputs (especially services) and investment, its payment of taxes and royalties, and the boost to Australian incomes through the ownership of mining equities. Overall, the available data suggest a little over half of the total receipts from current mining operations accrued to Australian residents, with around half the value of mining investment also spent within Australia.

Although the associated rise in spending has been a benefit to the Australian economy, it has also led to pressure on the price of non-tradables, and a large increase in the real exchange rate. While this has clearly had an impact on some activities – especially those affected by the exchange rate appreciation – overall the structural changes in the 2000s were more noticeable in investment patterns in the national and state economies rather than on unusually large changes in the industry composition of employment and real output. Nonetheless, there is evidence of changes *within* different industries, such as manufacturing, construction and accommodation.

Looking ahead, the increase in mining investment still in prospect is likely to see the mining industry having a larger effect on the economy, both in terms of the availability of the factors of production for the non-mining sector and its income effects. The economy is now closer to full employment and hence additional demands for labour and other inputs from the domestic economy and the distribution of mining revenues have the potential to spill over into further changes in input and non-tradable prices.

This is likely to be a challenging environment for policy as it attempts to ensure continued containment of overall demand and inflation pressures. In this regard, examination of past mining booms with the current one shows the benefits that have been derived from flexibility in both relative prices and allocative efficiency to help smooth these changes to input usage and domestic spending patterns.

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# Discussion

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## 1. Clinton Dines\*

I firstly want to congratulate Ellis Connolly and David Orsmond on preparing an excellent and thorough summary of the Australian mining boom over the last decade; this paper is comprehensive and comprehending (I'd expect no less from the RBA).

Under the heading of the paper there are many potential topics to discuss but I am a China guy with a mining and resources background, so I'll try to make some observations on China's demand for resources, both to date and going forward, and also with respect to how the Australian mining sector has responded to date.

First, I would suggest that we need to settle with a little more confidence on the idea of China as a reliable denominator of demand, now and for the foreseeable future, and that China's demand is quite likely to be sustainable barring anything except the most extreme scenarios. In recent years there has been an enormous amount of discussion about the sustainability of China's economic growth and developmental model. I feel like I've spent much of my life answering this question. Responding repeatedly on the topic of whether or not China can keep going is really the 'groundhog day' of macroeconomic discussions. A lot of people don't seem to like my usually fairly optimistic answers but can't really tell me why! I won't wallow in the detail here but suffice it to say that over my 30 plus years of living and working in China, if I had listened to the advice of 'China bears' every time, I'd long be back home in rural Queensland.

We in the Western world generally struggle to understand the nature of the transformation in China; the China story does not fit our intellectual models and putting China data in our analytical models keeps giving us the unsatisfactory answers. China has also come upon us quite recently, with startling rapidity and surprising scale and tenacity, and in spite of a general developed world view that the so-called 'China model' was unlikely to produce good outcomes. All of this is a bit disruptive or even dismaying. The Western world bearish case on China these days veers between the wishful and the wistful; the Europeans and Americans in particular seem to be in some form of anxiety-based denial. As Australia is a strategic and philosophical fellow traveller with the Atlantic alliance, many people here tend to parrot or align with the orthodox Western world positions on China. But, since Australia's position with respect to China is almost unique among the developed world nations, this distinctive situation behoves us to examine China's sustainability through a more dispassionate lens. It is in fact critical that, of all Western countries, we should have the clearest view of China, and the most effective framework for thinking about China's development, if we are to maximise the benefits and manage the undeniable challenges of China's emergence.

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\* My thanks to the RBA for the invitation to attend and participate in this Conference.

For me, China is a relatively simple story – a chunk of the global population of historically unprecedented magnitude is now able to participate in economic activity leading to much-improved standards of living, with all of the unanticipated consequences implied by that. There is an extent to which what is happening gets over-analysed. For example, I have always argued that the orthodoxy around China's deemed dependence on exports for growth has been overestimated and the extent to which the primary drivers of transformation and growth were domestic investment and consumption were given less credit than was their due. Over time, China's net exports have never occupied more than a modest position as a driver of growth. The global financial crisis (GFC) went some way to demonstrating this point but I note that these ideas die really hard. The current orthodoxy that China urgently needs to convert her growth model from being export-dependent to being more domestic consumption-led is an extension of this thinking. Again, I think that the consistently unexpected tenacity of China's energy and raw materials demand over the last seven or eight years (especially in the bulk commodities) underpins the idea that the really big drivers of growth were rapid urbanisation, infrastructure development and consumption relating to rising living standards. The stuff that we sell them isn't getting re-exported.

So, China didn't fall in a heap when exports evaporated during the GFC. China has been able to maintain strong growth since the GFC with demand weakness in all major export markets. If that doesn't demonstrate a notable resilience in the model (and some frailty in the conventional wisdom) I don't know what does.

Just to close off my comments on China, although the continued rapid urbanisation and infrastructure development of a continental economy with 23 per cent of the world's population is plenty for the Australian mining sector to be going on with, there are dimensions to how these things are happening in China which Ellis and David might find interesting to examine further. The extent of rural–urban migration to date (generally stated as being around 46 per cent) is overestimated, simply by virtue of the bureaucratic definitions applied. Somewhere like Chongqing is said to have over 30 million urban residents when in fact the urban component of the municipality's populace may be well less than half of that and the others are still living in rural conditions.

Related to this issue is the fact that arable land, always a premium in China, has become increasingly precious in the last two decades as uncontrolled urban sprawl has eaten into the areas surrounding cities. This is already a notable socio-political issue – policy in the 1990s was ill-conceived and clumsy and local authorities have been both short-termist and heavy-handed in their conduct. But it also creates major imperatives for the future. China's policy-makers and urban planners have to conceive of accommodating 300–400 million more people in the cities in the next 15 years, without further resumption or degradation of farmland. Verticality is the only solution, and this implies a materials-intensity in construction unlike anything we have seen before. I would also comment that while we should definitely refer to the experiences of the United States, Japan and others as they went through their own eras of rapid development, we need to bear in mind that China is a latter-day industrialisation and modernisation story, and although the hypotheses all suggest that mankind becomes more efficient in the use of resources over time, the trend in developmental terms tends to suggest that materials and energy intensity has increased in successive developmental instances. This issue of China's sheer scale (a continental economy with

a massive population) and the rapidity of the transformation also conspire to distort convergence with other developmental reference points.

Other features of China's development worthy of note with respect to future prospects include the fact that household (and business) wealth in China is generally and widely understated (see Wang (2010)), so consumption is far from as fragile as is often portrayed, especially for things like residential real estate.<sup>1</sup> And Chinese consumption growth (measured by proxies such as retail sales growth) has been consistently very robust for over a decade – Chinese consumers are already consuming. The proportionality of consumption in the overall economy is subsumed by the investment-intensive nature of this phase of modernising and industrialising a continent-sized nation. It is also worth noting that at best only about 250 million Chinese have thus far arrived at the 'comparative affluence' level of income, but all the others, some 1.1 billion of them, have seen that happen. Possibly for the first time in history, such a large number of people believe that a similar prospect is now an achievable aspiration. Such an aspiration in such a large population both underpins China's growth and development and creates an irresistible political imperative for the Chinese Communist Party.

Turning to the mining sector and the impact of the boom on Australia, I fully concur with Ellis and David in their conclusions that not only will the boom continue to impact the economy significantly but that this will provide a very challenging policy environment going forward. I think it is worth looking at how we have responded to the challenges to date as a reference point for how we might do in the future.

As I have suggested with respect to the sustainability of China's growth story, I am in the school of thought that believes while there may be the odd point of comparison with past mining industry cycles in Australia, this particular upswing is most definitely not our grandfathers' mining boom. This one is truly much stronger for much longer, simply on the basis of the order of magnitude of population now participating in meaningful economic activity, and the dare-I-say proven tenacity of China's demand alone, even if India and other developing world countries never shift into a China-style take-off mode.

Early in their paper Ellis and David identify that the major impact of the mining boom on Australia has derived mainly from price increases, which implies a shortage of supply. They also highlighted that:

While the potential of China's large domestic market was recognised in the early 2000s, the rapid pace at which it would industrialise through the decade and the implications for commodity prices *were not widely anticipated*. For instance, consensus forecasts consistently under-predicted China's growth from 1999 through to 2007; it was not until the second half of the 2000s that analysts began to forecast that the medium-term rate of growth had increased above the Chinese Government's 7–8 per cent targets in their five-year plans (Figure 5). Similarly, *mining companies took some time to be convinced that the pick-up in commodities demand would be sustained*, with mining investment as a share of GDP not rising to above-average levels until the second half of the 2000s. (emphasis added, p 115)

I cannot tell you how much that paragraph resonates with me!

Just a few years of real price declines and consequent disinvestment in any industry causes some damage, but a couple of decades of real price declines and structural surplus capacity is another

<sup>1</sup> The discussion around housing affordability indices is distorted as a result.

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matter entirely. Any industry's ability to recover rapidly from what happened to the global mining sector from 1981 onwards would be very severely impeded. Sustained disinvestment is not just about not expanding or not building or not starting new projects. During the downswing that preceded the current boom: minerals exploration was cut to near nothing; spending on new technology and innovation evaporated; pressure was applied to costs of all ilks; suppliers (tyre producers, explosives makers, truck manufacturers, specialised equipment producers, etc) all cut capacity, and over time eliminated capacity; contractors (engineering firms, transportation providers, drilling contractors, maintenance providers, etc) laid off people and put their attention on other things; educational institutions like universities stopped training geologists and mining engineers (the smart kids avoid what are perceived to be 'sunset industries' and study business and IT and go to work for Goldman's and Apple); and infrastructure such as railways and ports and adjacent townships were barely maintained, held together with bailing wire and chewing gum.

Further, something else that is not generally understood is that, at both state and federal levels, the government departments overseeing the industry declined, shrank and atrophied (the smart and ambitious bureaucrats moved on to other 'sexier' departments), and the manpower, experience and intellectual policy-making acuity in government was seriously degraded. At a corporate level, in the executive suites and boardrooms of the companies involved in the industry, sustained decline also has consequences. For a start, the bright guys don't want to come to work in such an industry. Let's face it, over time the guys who rise to the top in such an environment are the 'B Team' and by circumstance and necessity they are the determined optimisers, the hard-eyed cost-cutters, the numerically focused seekers of economies of scale, and in the latter stages of an extended cycle, they are those who would abandon involvement in the industry altogether – optimists and innovators are scarce. Other things happen too. In the market, buyers become habituated to the expectation that this year's price will be lower than last year's, and they wield their buying power ruthlessly in the belief that they will hold the strategic whiphand forever; contract terms slide remorselessly in favour of the buyers.

Over a 20 to 25-year period it is amazing how deep the extent and institutionalisation of these changes can be, and the way in which the Australian mining sector responded to the unexpected positive shift in demand patterns in the early part of the last decade shows just how hard these trendlines are to reverse.

As Ellis and David pointed out, in the first part of the decade, from 2000 until 2005, nobody (least of all the mining companies) had any faith at all that China's uptick in demand for raw materials was sustainable. Even now there remain sceptics in the mining companies. Ellis and David say that 'mining companies took some time to be convinced'. In my own experience, I'd say that from when the first rigorous evidence of the potential for market growth was presented (around 2000), to the first big investment in expanding capacity that could be described as material in scale relative to market demand, the industry hesitated for about five years. With hindsight we can now see that the opportunity costs of such hesitation were very substantial. The nature of the preceding decades created conditions in every facet of how the industry functioned which conspired to impede our capacity for any kind of agile response. Of course, one can also argue that the buyers reaped what they sowed – it's an interesting sidebar to this discussion to contemplate that the Japanese did most of the sowing and the Chinese have reaped the price increases.

In this context I would also observe that the revival of all of the capacities required for Australia to build new mining capacity commensurate with both China's demand and our geological endowment is far from complete. The generational change in the executive suites and boardrooms has been relatively limited – shareholders are happy with nice profits so there isn't much pressure for real change. The government departments relevant to the industry have also struggled to adjust, both in policy terms and, at a state level, in terms of coping with the required rate of change being imposed by relentless Chinese demand growth.

Capacity growth is now occurring among suppliers and contractors and educational institutions, but we continue to be constrained by the inescapable succession of time lags that inevitably occurs between the fact of demand, the conviction that it is real and sustainable, the investment decision, the installation of new capacity and the availability of material volumes of new product.

In closing, I thank Ellis and David for a very thorough piece of work, which I enjoyed reading and found informative. I personally think that the China story has a long way to go and that the real challenges for the Australian mining sector are much more on the supply side here with us than they are on the demand side in China. Ultimately, our high-quality geology, our systemic advantages and our geographic proximity to Asia will serve us very well, but I believe that there is additional margin and volume available to Australia if we can manage the development of our industry more effectively in the next decade.

## Reference

**Wang X (2010)**, 'Analysing Chinese Grey Income', translated, *Credit Suisse Expert Insights*, 6 August, pp 12–39.

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## 2. General Discussion

Following on from a similar point made during the discussion of the Kearns and Lowe paper, one participant argued that, in addition to the increase in demand from China, at least part of the rapid rise in commodity prices in the latter half of the 2000s was a consequence of global inflationary pressures. A comparison with the 1970s was made, highlighting the increase in real oil and coal prices. Loose fiscal policy in the United States during that period and monetarisation of the fiscal deficit was said to have led to excess demand and inflation. It was suggested that, in the 2000s, relatively low US interest rates, coupled with pegged exchange rates in rapidly growing Asian economies, had also contributed to excess demand and inflation. The participant said that up to one-third of the relative price shock experienced in the second half of the 2000s could be attributed to these monetary factors. Making this distinction was seen to be important for answering questions about how sustainable the run-up in Australia's export prices will be and to what level prices might revert to in the future when expansionary fiscal and monetary policies around the world are unwound.

Participants thought that Figure 6 in the Connolly and Orsmond paper (p 117), showing steel production intensity at different stages of a country's economic development, was very interesting and they suggested that other variables, such as the terms of trade and consumption as a share of output, would also be interesting to look at in a similar way. One participant queried whether

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there were examples of countries that did not follow the same steel-intensive pattern through their development phase as shown in the figure, and whether or not it was inevitable that India would follow the same pattern as China. Related to this, another participant thought that it would be very difficult to predict when China's resource intensity would peak and at what level, with factors such as demographic change and carbon intensity adding to this uncertainty.

There was also robust discussion about the prospects for China and commodity prices over the coming decade. While it was recognised that there is still much more domestic infrastructure investment to be done in China, it was suggested by one participant that it might be difficult for the current pace of urbanisation to continue. Another participant stressed that so far we have only seen the first half of the likely commodity cycle – resource prices have gone up – but questioned what would happen to the domestic economy if the commodity cycle starts to turn (they also noted that it is a rare thing to see a permanent boom in margins).

The supply response in commodity markets was also a focus of the discussion. One participant noted that to date there has not been a boom in volumes and wondered if this was in the pipeline. The corporate consolidation in the mining industry was also raised, which has in effect created an oligopolistic market structure. It was suggested that large mining companies could internalise the effect on prices of increased supply and so moderate the supply response which could make predicting supply-side developments difficult but could also reduce the 'hog cycle'. The failure to forecast the rapid increase in commodity prices was also seen as a key explanation for the (lack of) supply response (commodity price forecasts that reverted to their historical mean would have implied that substantially increasing investment would not have been a good decision). Large companies were also thought to be potentially less agile to respond to changing trends. One participant asked how difficult it was for companies to retreat from large mining investments, but in response it was felt that projects are normally completed once started but that the next line of investment projects would be less likely to proceed.

Referring to structural change indices shown in the Connolly and Orsmond paper (Figure 15, p 135), one participant noted that the mining boom seemed to have relatively little impact, although it was recognised that maybe this was still to come. They also mentioned that it was not obvious how large the adjustment in the economy would need to be to accommodate the rapidly growing mining sector – capital could be borrowed from overseas and since only a small fraction of total employment was in mining the reallocation of labour would also be small as a share of the labour market. A different participant stressed, however, that there were substantial structural effects going on in the economy. Incomes have increased, as has the real exchange rate, and the fixed factor market (e.g. land) was one area where the effects from the mining boom could be seen. It was also suggested that structural change might be taking place within industries, rather than across industries, which could explain the limited movement in the employment structural change index.

During the discussion it was noted that up to one-third of mining receipts are spent on local labour and other inputs used in mining production. Also, a share of mining income was said to flow either directly to households via shares and dividends or through government spending. A question was then raised about whether or not higher incomes in Australia were being spent or largely saved, and there was conjecture that unemployment may increase if households choose to save a larger share of their incomes. Finally, while the mining boom was seen to be the big story of the 2000s, other factors, including good policy, contributed to positive economic outcomes.





# The Australian Labour Market in the 2000s: The Quiet Decade

Jeff Borland\*

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## 1. Introduction

The 2000s were a 'quiet decade' for the Australian labour market. Outcomes in the labour market were not sufficiently strong to excite great interest or attention, nor sufficiently weak to arouse major concern. No substantial increase in unemployment occurred, there were no big disputes about the appropriate theory for understanding labour market activity, and changes to labour market policy for the most part involved tinkering rather than rebuilding.

In all these ways, the 2000s were very different to the decades that came before (see, for example, Gregory and Duncan (1979); Chapman (1990); and Dawkins (2000)). Certainly the labour market received less attention from policy-makers in the 2000s. In contrast to previous decades, there was no Reserve Bank conference on unemployment (DeBelle and Borland 1998); no Industry Commission review of the Australian labour market (Industry Commission 1997); and no Economic Planning Advisory Commission (EPAC) survey of literature on the labour market (Norris and Wooden 1996). At the same time, the growing availability of unit-record data (most notably the Household, Income and Labour Dynamics in Australia (HILDA) Survey; the Department of Families, Housing, Community Services and Indigenous Affairs (FaHCSIA) administrative data set; and Australian Bureau of Statistics (ABS) survey data) meant that academic research became (quite sensibly) more oriented towards micro-level topics.

Lack of newspaper headlines and attention from policy-makers and researchers does not, however, mean that the Australian labour market was not an interesting place. The fact that the decade was quiet is itself of interest. That a mining boom was accommodated without a breakout in wage inflation or a worsening in matching efficiency, and that the global financial crisis (GFC) was navigated without a large increase in the rate of unemployment, can be considered considerable achievements. More generally, wellbeing in the Australian labour market improved during the decade as the incidence of long-term unemployment and jobless families declined, and there were increases in real earnings for workers throughout the earnings distribution.

Interesting questions also emerged in the 2000s. I will suggest that one question relates to the sources of increasing labour force participation by older males and immigrants – reversing the

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\* Department of Economics, University of Melbourne. I am grateful for helpful discussions with Mick Coelli, Ian McDonald and Lawrence Uren, for comments from participants in the Brown bag seminar at the University of Melbourne, and from Michael Plumb, Jonathan Kearns and other participants at a seminar at the Reserve Bank, as well as to Mark Wooden, Roger Wilkins and Guyonne Kalb for assistance with the policy discussion. I have made several revisions and extensions to the version of the paper that was presented at the RBA Conference – I thank the participants, and in particular David Gruen and Judy Sloan, for their comments at the Conference. Email: jib@unimelb.edu.au.

previous trend for both groups. Another question is about the causes of a decline in average working hours and why there appears to have been a greater role for average hours of work in adjustment to downturns in the 2000s. Yet another is why the Phillips curve would have shifted to show a weaker relation between inflation and labour demand in the 2000s. These are some examples of issues that will come from an analysis of the Australian labour market in the past decade.

In this paper, I have taken the instruction to write about the 2000s quite literally; for the most part I focus quite narrowly on this period which I take to be from 2000:Q3 to 2010:Q3. Where appropriate, however, I use a longer time horizon; such as in trying to understand whether adjustment processes in the labour market were different in the 2000s from earlier time periods.

There is one (knowing) major omission from the paper. Ideally, a paper about the Australian labour market in the 2000s would have drawn on the range of unit-record data sources available for this period (thereby giving recognition to the fantastic work of Mark Wooden and FaHCSIA in creating HILDA, of Bruce Chapman and others in negotiating the Australian Vice-Chancellors' Committee (AVCC) agreement to provide easier access to ABS data, and to James Jordan and Chris Foster for developing the FaHCSIA administrative data set). Unfortunately I haven't done this here – in trying to cover as broad a range of aspects of labour market activity as possible, I have restricted my attention to using ABS data. Hopefully, I can rectify the omission in future work.

The rest of the paper is organised as follows. I commence with a variety of background information for an understanding about the Australian labour market in the 2000s: a description of main labour market developments in the 1990s (Section 2); a review of key features of the Australian economy in the 2000s (Section 3, see also Kearns and Lowe in this volume); and a summary of recent labour market policy developments (Section 4). My empirical overview begins with a summary of the main outcomes in the Australian labour market in the 2000s (Section 5). Those outcomes are then explored in more detail, including: labour force participation (Section 6); employment (Section 7); and unemployment (Section 8). The regional dimension of labour market outcomes (distinguishing between 'mining' and 'non-mining' states) is examined (Section 9); and labour market adjustment in the 2000s is considered – first, by comparing what happened in downturns in the 2000s with previous episodes in the 1980s and 1990s (Section 10); and second, by considering job matching and wage-setting processes via the Beveridge and Phillips curves (Section 11).

## 2. The Labour Market in Australia at the Start of the Decade – An Upswing Phase

The 1990s divided quite neatly into two phases (see Table A1; and Dawkins (2000)). The decade began with the aftermath of the 'recession we had to have', where the rate of unemployment increased from 5.8 to 11.0 per cent between November 1989 and August 1993. Thereafter it declined fairly consistently to reach 6.1 per cent in August 2000 (putting aside the 'five minutes of economic sunshine' blip of the mid 1990s; to give equal time to the two main occupiers of the Prime Ministerial office in this period). The 2000s began then in an upswing phase of economic activity, quite different to the 1990s.

By the end of the 1990s, the aggregate employment-to-population rate and labour force participation rate were little different to the beginning of the decade; however, compositional

changes evident from the 1980s had continued – for example, growing female and part-time employment, declining employment in the manufacturing industry, and an increasing proportion of long-duration jobs (associated with increases in female employment). Average hours of work were steady over the 1990s.

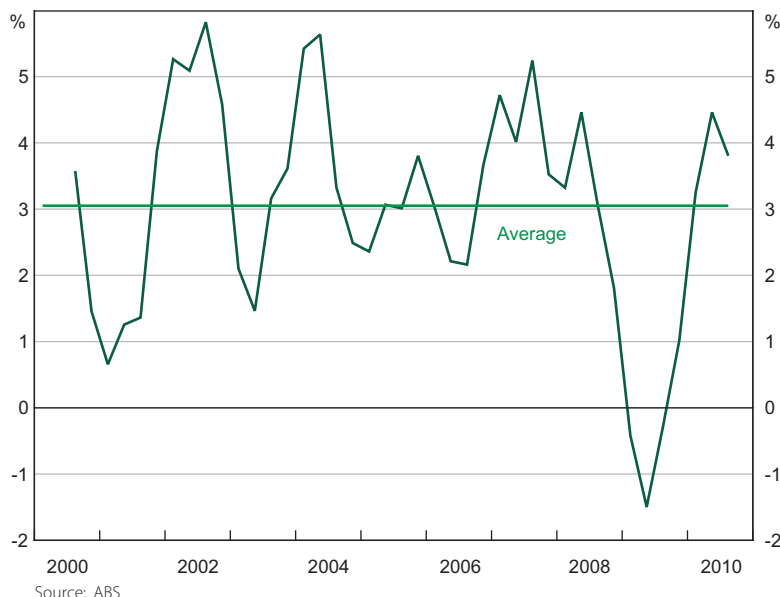
The rate of unemployment may have decreased, considering the decade as a whole, but the rate of labour underutilisation was higher in 2000 than it had been at the start of the decade, as were the rate of long-term unemployment, the proportion of jobless families, and the rate of receipt of disability-related income support payments.

Quite strong growth in real earnings occurred in the 1990s, combined with an increase in earnings dispersion. High rates of growth in labour productivity were achieved in the mid 1990s, but rates of growth appeared to be slowing by the end of the decade.

### 3. The Australian Economy in the 2000s – Boom but no Crisis

GDP growth averaged 3.1 per cent per annum over the 2000s. Figure 1 shows that consistently strong output growth occurred from 2004 to 2008, with relatively slower growth from 2000 to 2004 and during the GFC from 2008 to 2009. GDP growth in the 2000s was less than in previous decades, with average rates of 3.6 and 3.3 per cent, respectively, having occurred in the 1990s and 1980s.

**Figure 1: Annual GDP Growth**  
Market sector



Downturns in the Australian economy in the 2000s were much less severe than the recessions of the 1980s and 1990s. In particular, Australia managed to avoid a major recession during the GFC at the end of the decade. The strength of the Chinese economy, successful macroeconomic policy

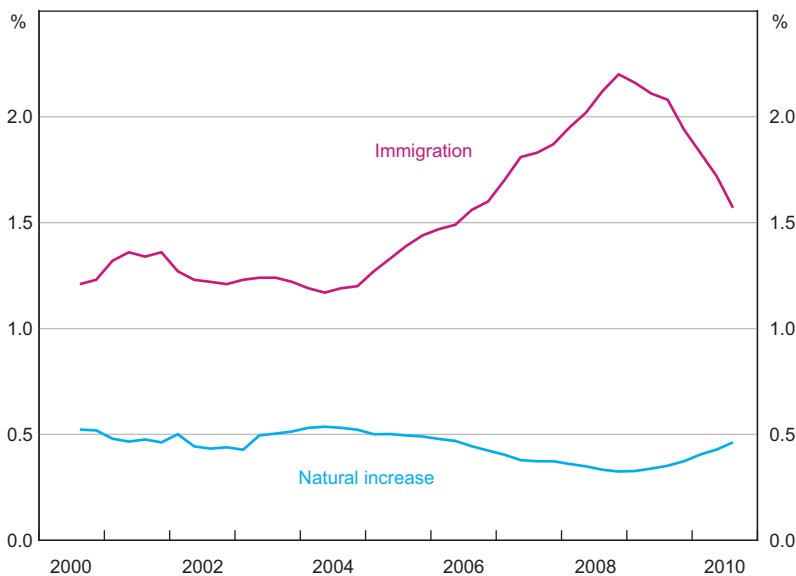
management and the Australian financial sector’s lack of exposure to toxic securities sheltered the Australian labour market from the forces that buffeted US and European labour markets.

The composition of output in Australia in the 2000s continued to shift away from agriculture and manufacturing – for example, the share of GDP accounted for by manufacturing declined from 11.1 to 8.7 per cent. Industries that accounted for higher shares of GDP included: mining; construction; professional, scientific & technical services; and health care & social assistance.

In the 1980s and 1990s, globalisation and technological change were identified as major influences on patterns of labour demand. Usage of information technology (IT) continued to increase throughout the 2000s. There was rapid growth in internet usage and broadband subscriptions in the 2000s; the number of secure internet servers per million people increased from 176 in 2001 to 1 716 in 2010 (World Bank 2011). Changes to international trade, however, appear to have been less pronounced over the most recent decade. In the 1990s the ratio of exports plus imports to GDP grew from 32 per cent to 40 per cent, but by 2008 had only reached 42 per cent (World Bank 2011).

Population growth in the 2000s was relatively rapid, averaging 1.8 per cent per annum. Figure 2 shows that growth was particularly strong in the second half of the decade, caused by an expansion of immigration. In the late 2000s immigration accounted for almost 70 per cent of population growth, compared to only about 50 per cent in the early 2000s. The ageing of the Australian population continued in the 2000s. The proportion of the population aged 55 years and above grew from 21.4 per cent to 24.8 per cent, whereas the proportion aged less than 25 years declined from 34.6 per cent to 33.0 per cent.

**Figure 2: Annual Resident Population Growth**



Source: ABS

## 4. Policy in the 2000s

### 4.1 Wage-setting and industrial relations

Significant reform of Australia's industrial relations system commenced in the late 1980s and early 1990s (see Dawkins (2000); Wooden (2001); and Borland (2003)). A series of reforms (including the *Industrial Relations Amendment Act 1992* and *1994*, and the *Industrial Relations Reform Act 1993*) encouraged the spread of enterprise bargaining, allowing a collective agreement for an individual enterprise registered with the Industrial Relations Commission to replace the award that would otherwise apply to those workers, provided a no-disadvantage test was met. Awards were defined to constitute a 'safety net'. New unfair dismissal provisions were also introduced.

The *Workplace Relations and Other Legislation Amendment Act 1996* introduced further reform: scope for agreements with individual workers; restrictions on the role of unions and multi-employer agreements; a reduced role for the award system, with the IRC restricted to setting minimum wages and conditions regarding 20 allowable matters, and no scope to arbitrate on matters above the minimum safety net; outlawing of union preference clauses, and discrimination in favour of union members; and limits on the right to strike.

As the reforms to the IR system were spread throughout the 1990s, and during that period were not 'tested' by a major downturn or by a booming sector in the economy, the 2000s take on significance as a period where any effects of these reforms might be revealed.

There was also further reform to the IR system in the 2000s. In the middle of the decade, the Howard Government introduced the new Work Choices system (2005/06). This system expanded the flexibility for negotiating new agreements by abolishing the no-disadvantage test, and restricting the safety net in awards to six minimum standards. A Fair Pay Commission was established to set minimum wage rates. Some restrictions on agreement content and union rights were introduced, and the scope for unfair dismissal claims against 'small' employers (100 or less employees) was removed. The scope of federal industrial relations regulation was expanded using the corporations power of the Constitution (Stewart 2006).

As part of its policy platform in the 2007 federal election, the ALP had committed to 'wind back' the Work Choices system. The outcome was the former Rudd Government's *Fair Work Act 2009*. The Act abolishes individual agreements, introduces requirements for parties to engage in collective bargaining in 'good faith', and restores the 'no-disadvantage' test in the form of a 'better overall' test. The Act initiated a process of award modernisation to create a reduced number of standardised awards that are consistent with a set of common National Employment Standards (NES). A greater role is provided for unions in agreement-making and for multi-employer agreements. Unfair dismissal conditions have been restored under 'adverse action' provisions. The 12-month window for preservation of wages and conditions for transferring employees is removed, and the coverage of these provisions has been expanded to include outsourcing. Referred powers from the states mean that all private-sector workers (except in Western Australia) are covered by the legislation (Sutherland and Riley 2010).

The effects of the Work Choices and Fair Work reforms have been much discussed and much contested in recent times. The relatively short periods in the 2000s for which the reforms were

in place, however, are likely to make it difficult to ascertain their effects in a study of aggregate labour market outcomes in the past decade.

## 4.2 Active labour market programs

Major changes to active labour market programs in Australia occurred in the late 1990s with the introduction of the Job Network (JN) system. This system brought a ‘managed’ market with private sector provision of government-funded services for persons out of work. The JN model was the basis for labour market programs through the greater part of the 2000s. In 2009/10, the former Rudd Government introduced Job Services Australia (JSA), and Disability Employment Services – a new vehicle for provision of assistance to persons with a disability. JSA integrates previously separate services (such as JN and the Placement Employment and Training program), and has introduced new categories to characterise job seekers’ extent of disadvantage and the timing and type of services they will receive from their chosen JSA provider (see Taskforce on Strengthening Government Service Delivery for Job Seekers (2011), Appendix C).

## 4.3 Welfare policy

Effects on labour supply from income support payments can derive from their eligibility requirements, or the level and structure of payments. The main reforms of these aspects of payments in Australia in the 2000s were to the Age Pension. The age of eligibility for the Age Pension for females is being progressively increased (from 61½ years in 2000 to 64 years in 2010, to reach 65 years on 1 July 2013). The Pension Bonus Scheme (PBS) for deferral of retirement was introduced in 1998, along with a reduced taper rate and increase in the free area in 2000; both designed to promote work activity among the aged population. In 2009 the PBS was closed and replaced with a Work Bonus Scheme, and the earlier changes to the taper rate were reversed. Changes for eligibility for the Disability Support Pension were also made on 1 July 2006, reducing the threshold number of hours for which a person must not be able to work from 30 hours to 15 hours per week.<sup>1</sup>

Activity test requirements have been progressively increased since the early 1990s, most notably for unemployment payment recipients. For Newstart Allowance and Youth Allowance recipients, extra job search monitoring was introduced via the Job Seeker Diary in 1996; and the Mutual Obligation Initiative requiring recipients aged 18 to 24 years and unemployed for more than six months to undertake an activity such as training, working as a volunteer or for a community work project was introduced from 1 July 1998 (and from 1 July 1999 for those aged 25 to 34 years). For Parenting Payment (single) recipients, the activity test requirement was changed on 1 July 2006 to apply from when their youngest child reached 6 years rather than 13 years of age. Extension of activity test requirements is consistent with the principle of Mutual Obligation, enshrined as a core principle of the welfare system by the Reference Group on Welfare Reform in its 2000 report (Reference Group on Welfare Reform 2000).

<sup>1</sup> For an overview, see FaHCSIA (2010).

## 5. The Labour Market in the 2000s – An Overview

The 2000s saw relatively rapid growth in employment and the labour force in Australia – certainly by comparison with the 1990s. Table 1 shows that employment grew at an average of 2.3 per cent per annum over the decade, and labour force participation grew at 2.2 per cent; whereas population growth was 1.8 per cent per annum. The rate of growth in hours worked was less than in employment, due to a shift in the composition of employment from full-time to part-time jobs.

**Table 1: The Labour Market by Decade**  
Annual average growth, per cent

	Employment <sup>(a)</sup>	Aggregate monthly hours	Labour force <sup>(a)</sup>	Population <sup>(a)</sup>	GDP	Real unit labour costs (non-farm)
1980s	2.2	2.0	2.3	2.0	3.3	
1990s	1.4	1.4	1.3	1.4	3.6	-0.1
2000s	2.3	1.8	2.2	1.8	3.1	-0.7

Note: (a) Based on civilian population aged 15+ years

Source: ABS

Growth in employment and the labour force is shown in Figure 3 to have been strongest from 2004 to 2008, with slower rates of growth in 2000/01, 2003/04 and 2008/09. To develop this point in a little more detail, Table 2 shows the average rates of growth for sub-periods during the 2000s. The annual rate of employment growth in 2004–2008 was about double that in the periods before and after. Variation in labour force participation between the sub-periods was more muted, but still evident.

**Figure 3: Employment and the Labour Force**  
Annual percentage change



Source: ABS



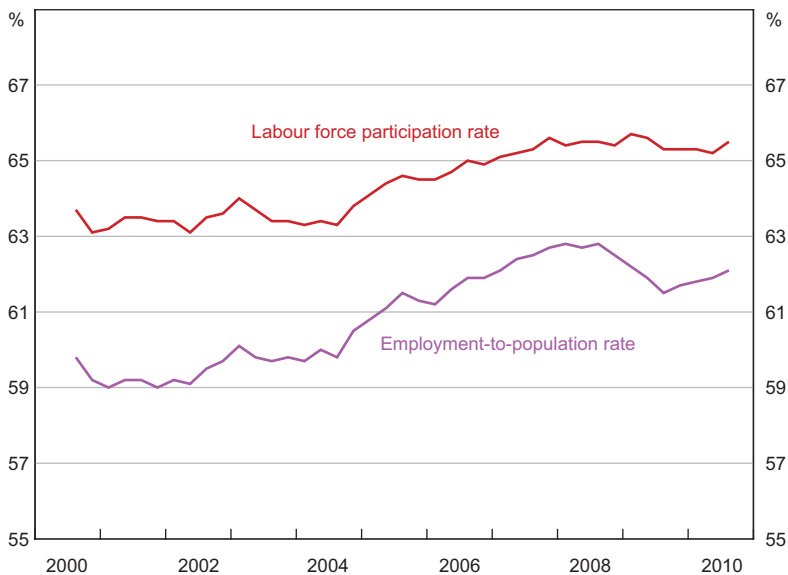
**Table 2: Main Labour Market Outcomes**  
Average annual growth, per cent

	Employment	Labour force participation	Population
2000:Q3–2004:Q3	1.5	1.4	1.6
2004:Q3–2008:Q3	3.2	2.6	1.9
2008:Q3–2010:Q3	1.7	2.2	2.2

Source: ABS

The employment-to-population rate and the labour force participation rate (LFPR) over the 2000s are displayed in Figure 4. Both can be seen to have increased strongly between 2004 and 2008, and been relatively steady in other periods – although both series show some decrease during the downturns of 2000–2001 and 2008–2009.

**Figure 4: Employment and Participation Rates**  
Seasonally adjusted



Source: ABS

Growth in the part-time employment-to-population rate occurred consistently throughout the 2000s, explaining all of the increase in the aggregate employment-to-population rate over the decade. Cyclical variation in the aggregate employment-to-population rate was therefore explained by changes in the full-time employment-to-population rate. For example, the full-time employment-to-population rate increased by 3 percentage points from 2004 to 2008 (August), and then declined by 1.3 percentage points during the GFC downturn. As well as the share of part-time employment increasing in the 2000s, the share of female employment is shown in Table 3 to have continued to grow.

**Table 3: Shares of Total Employment and Aggregate Monthly Hours Worked**  
Per cent

	August 2000	August 2010
Female – full-time	25.0 (27.9)	24.7 (28.0)
Female – part-time	19.4 (8.7)	20.6 (10.3)
Male – full-time	48.4 (60.2)	45.6 (57.2)
Male – part-time	7.2 (3.2)	9.1 (4.5)

Note: Figures in brackets are for aggregate monthly hours worked

Source: ABS

The evolution of the unemployment rate from its most recent peak in 1993:Q3 to the end of the 2000s is shown in Figure 5. After decreasing fairly steadily to reach 6.1 per cent in 2000:Q3, the rate of unemployment then increased for a short period, rising to 6.9 per cent in 2001:Q4. After this brief downturn, the downward trajectory resumed, and the rate of unemployment fell to 4.1 per cent in 2008:Q3. The GFC caused a rise in the rate of unemployment over four quarters to 5.8 per cent, before it fell again to 5.1 per cent by 2010:Q3.

**Figure 5: Unemployment Rate**  
Seasonally adjusted

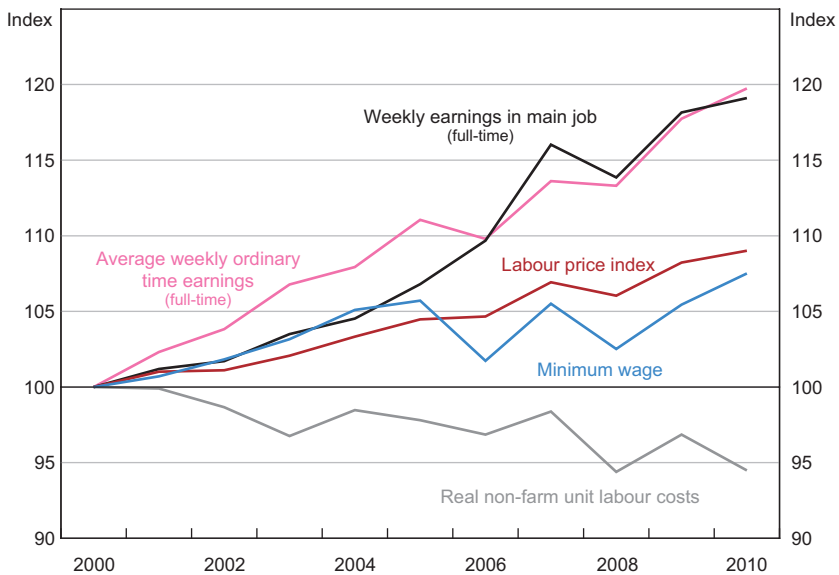


Source: ABS

Changes in real earnings and labour costs in the 2000s are displayed in Figure 6. All measures reported show that workers across the earnings distribution appear to have had increases in their real (CPI-adjusted) earnings during the 2000s. Average real weekly earnings increased by about 20 per cent from 2000 to 2010. The real labour price index (LPI) measure shows labour costs

increasing steadily over the decade, by a total of about 10 per cent. Given that the LPI measure does not incorporate the effects of changes to the skill composition of the workforce, and to some extent will exclude the effects of increases in capital per worker, it is to be expected that it would show a slower rate of growth than the weekly earnings series. Workers who earn minimum wages also had higher real earnings over the 2000s, but only by about 5 per cent. Finally, real non-farm unit labour costs are shown to have declined consistently, by a total amount of about 6 per cent over the decade. This compares with the 1990s, where real unit labour costs showed little change (see Table 1).

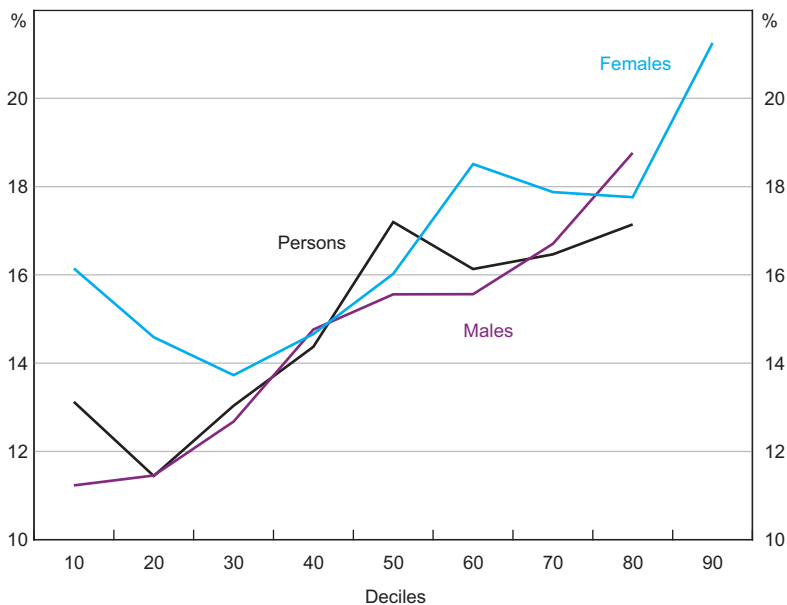
**Figure 6: Real Earnings and Cost of Labour**  
2000 = 100



Sources: ABS; Fair Work Australia (2011)

Increases in earnings inequality continued in the 2000s. Figure 7 shows changes in real weekly earnings for full-time workers in main job by deciles in the earnings distribution. Growth in real earnings was generally positively related to position in the earnings distribution. For example, female workers at the 90th percentile had earnings increases that were about 5 percentage points higher than for workers at the 10th percentile. Increases in earnings inequality in the 2000s do, however, seem to have been less than in the 1990s; primarily because of smaller increases in inequality in above-median earnings.

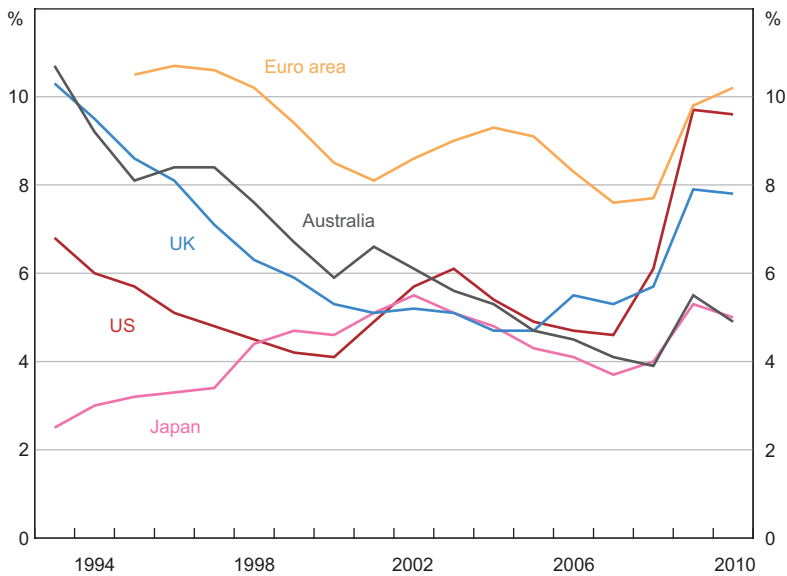
**Figure 7: Real Weekly Earnings Growth**  
By deciles in earnings distribution, August 2000 to August 2010



Note: Full-time employees in main job

Source: ABS

Australia's labour market performance in the 2000s compared favourably with other industrial economies. As an illustration, Figure 8 shows the rate of unemployment in Australia and other developed economies over the past two decades. Following the early 1990s recession, Australia's rate of unemployment was similar to that in the United Kingdom and the euro area countries, and well above the United States. In the period to 2008 it fell to be below the average in euro area countries, converging to that of the United States. A much smaller increase in its rate of unemployment than in the euro area countries, the United Kingdom or United States during the GFC left Australia, at the end of the 2000s, with a rate of unemployment considerably lower than in those economies.

**Figure 8: Unemployment Rate for Selected Economies**

Sources: ABS, Thomson Reuters

## 6. Labour Supply

### 6.1 Aggregate labour force participation

The 2000s saw strong growth in the LFPR, which increased by 1.9 percentage points over the decade, after a puzzling lack of growth in the 1990s recovery (Dawkins 2000, p 324). The sources of the increase in the LFPR can be decomposed into the effects of changes to the age composition of the population and changes to the LFPR within age groups. This exercise is reported in Table 4. Ageing of the population would have caused the participation rate to decline by 1.5 percentage points due to older age groups having relatively lower participation rates. Against this, increases in participation rates within age groups for both the Australian-born and immigrant populations caused the participation rate to increase by 3.3 percentage points.

Therefore, the next question to ask is which age groups experienced increases in their LFPR that explain the rise in the aggregate LFPR. Table 5 reports the findings from the decomposition analysis disaggregated by age and gender. The main sources of the increase in the aggregate LFPR are shown to have been increases in the LFPR of females aged 25 to 54 and 55 years and above, and males aged 55 years and above. These results are reinforced in Figure 9, which displays the LFPR of disaggregated age and gender groups from 2000 to 2010. For example, the LFPR of males aged 55 years and above is shown to have increased from 33.5 to 41.8 percentage points during the 2000s.

**Table 4: Sources of Change in the Labour Force Participation Rate**  
August 2000 to August 2010

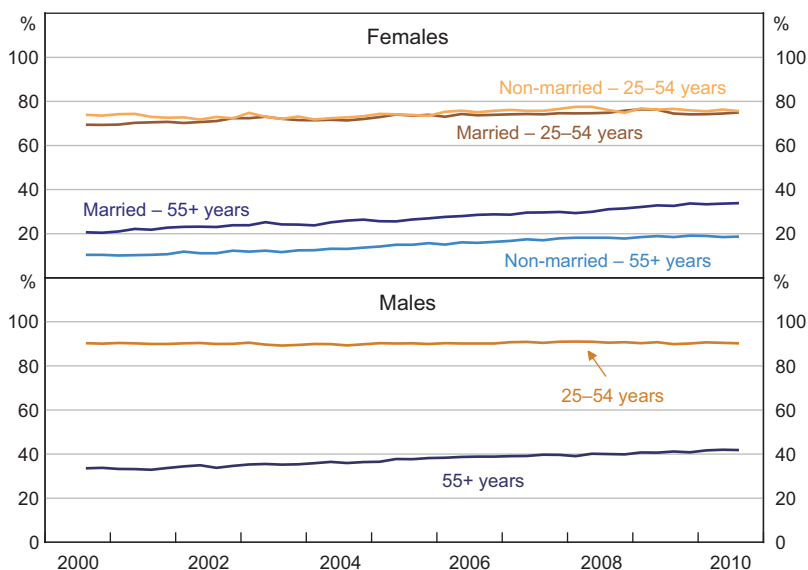
<b>Contribution of:</b>	<b>Percentage points</b>
Change in composition of Australian-born population by age	-1.0
Change in LFPR within age groups in Australian-born population	+2.2
Change in composition of immigrant population by age	-0.5
Change in LFPR within age groups in immigrant population	+1.2
<b>Total change in LFPR</b>	<b>+1.9</b>

Source: ABS

**Table 5: Sources of Change in the Labour Force Participation Rate**  
August 2000 to August 2010

<b>Contribution of:</b>	<b>Percentage points</b>
Females	
Married – 15–24 years	+0.1
Married – 25–54 years	+1.1
Married – 55+ years	+1.0
Not married – 15–24 years	-0.3
Not married – 25–54 years	+0.1
Not married – 55+ years	+0.6
Males	
15–24 years	-0.3
25–54 years	0.0
55+ years	+1.0
Composition effect	-1.5
<b>Total change in LFPR</b>	<b>+1.9</b>

Source: ABS

**Figure 9: Labour Force Participation Rate by Age and Gender**

Source: ABS

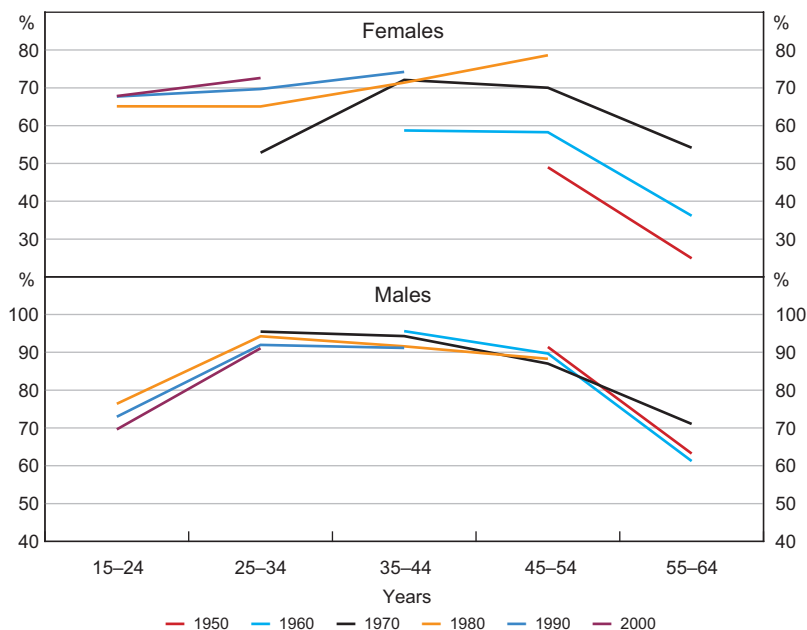
## 6.2 Female participation continues its upward trajectory

A variety of potential explanations exist for the growth in the LFPR of females aged 25 to 54 years during the 2000s. In part, this growth was due to cohort effects, as influences such as increasing educational attainment and changing attitudes to female labour participation have caused labour force participation to rise with date of entry to the labour market, an effect that then extends through the age distribution as each cohort gets older.

The top panel of Figure 10 shows the pattern of cohort effects for females who were aged 15 to 24 at 10-year intervals from 1950 to 2000. Each line shows the participation rate for a particular cohort as they move into different age brackets over time. The line labels reflect the year in which that particular cohort was in the 15–24 age bracket. Each observation is the participation rate of that cohort at 10-year intervals from 1950 to 2010. Profiles of labour supply for these cohorts are clearly ordered by time of entry to the labour market. More recent cohorts have rates of labour force participation that are higher, and less variable, throughout the life cycle.

Other possible explanations for increases in female participation that have been discussed are the growing availability of part-time and flexible employment, improvements to the availability of child care (Breunig *et al* 2011), and debt-servicing costs for home owners (for example, Connolly, Davis and Spence (2011) describe increases in the proportion of females aged 30–60 years with home loans, and an approximately 10 percentage point differential in LFPR between females in households with and without home loans; see also Belkar, Cockerell and Edwards (2007)).

**Figure 10: Labour Force Participation Rate**  
By labour market entry cohort



Note: Participation rates are not available prior to 1980, constraining the profile for older cohorts

Source: ABS

### 6.3 The mature age population bounces back

Increases in labour force participation by the older population, similarly, can be ascribed to a variety of sources. For females, cohort effects are again a potential explanation, together with the rising pension age and increases in household indebtedness (Connolly *et al* 2011). However, for males, cohort effects appear to have been less important. The bottom panel of Figure 10 shows that the recent growth in the LFPR of older males is a departure from what would be expected based on cohort patterns; most notably, the profile for the cohort aged 15 to 24 in 1970 crosses those of older cohorts.

Kennedy and Da Costa (2006) make the point that the bounce back in participation by older males is common across industrialised economies. This suggests that we should be looking for a set of causes that are also largely shared between those economies. Possible explanations might therefore be increasing life expectancy, strong business cycle conditions (at least until the late 2000s), the growth in service sector jobs (which are less physically demanding), and improved health of the older population.<sup>2</sup>

Kennedy, Stoney and Vance (2009) found that for the first half of the 2000s the strongest increases in participation for the older population in Australia occurred for the group with no post-school

<sup>2</sup> See Cai and Kalb (2007) on the importance of health status as a determinant of labour force participation in the older population in Australia.

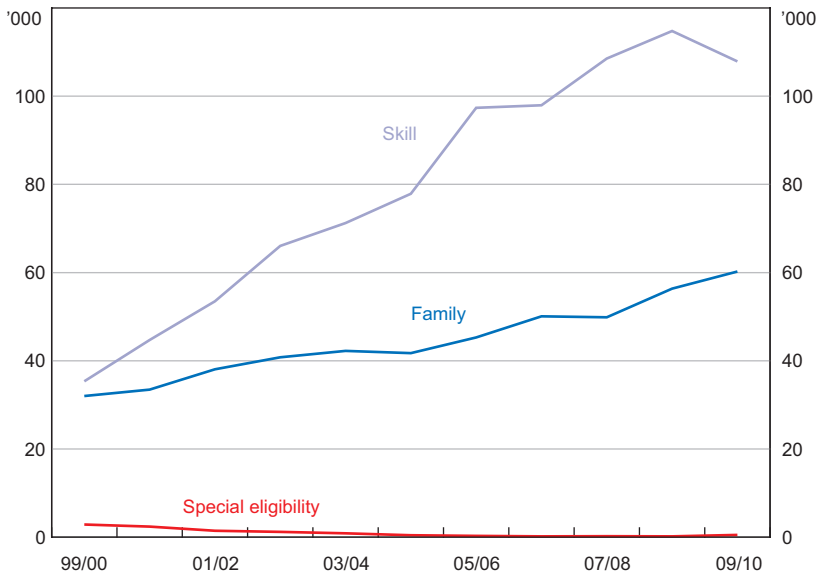


qualifications, which suggests that strong economic conditions and health improvements may have played a role. Warren (2011) considers whether increases in female participation might have caused married males to delay retirement in order to be able to co-ordinate retirement with their partners. Her analysis of retirement decisions of males and females aged 55 to 70 years, using the HILDA database for 2002–2008, finds that the hazard rate for exit to retirement for both males and females is significantly lower when their partner remains in the labour market.

### 6.4 Immigrants – how composition affected the LFPR

Prior to the 2000s, the LFPR for immigrants had declined for the previous 20 years – from 63.8 per cent in 1980 to 57.8 per cent in 2000. The reversal of this pattern in the past decade, with the LFPR increasing to 60.3 per cent, is therefore striking. There are several possible explanations for the growth in labour force participation by immigrants: increased emphasis on skilled and employer-sponsored migration in the permanent migration program (see Figure 11); increasing openness to temporary migrants such as working holiday-makers and skilled workers who have high rates of participation; and policy reform that restricted access to welfare payments for permanent immigrants in their first two years after arrival (for analysis, see Hsieh and Kohler (2007), Connolly *et al* (2011) and Cully (2011)).

**Figure 11: Australia’s Migration Program by Stream**



Source: Department of Immigration and Citizenship

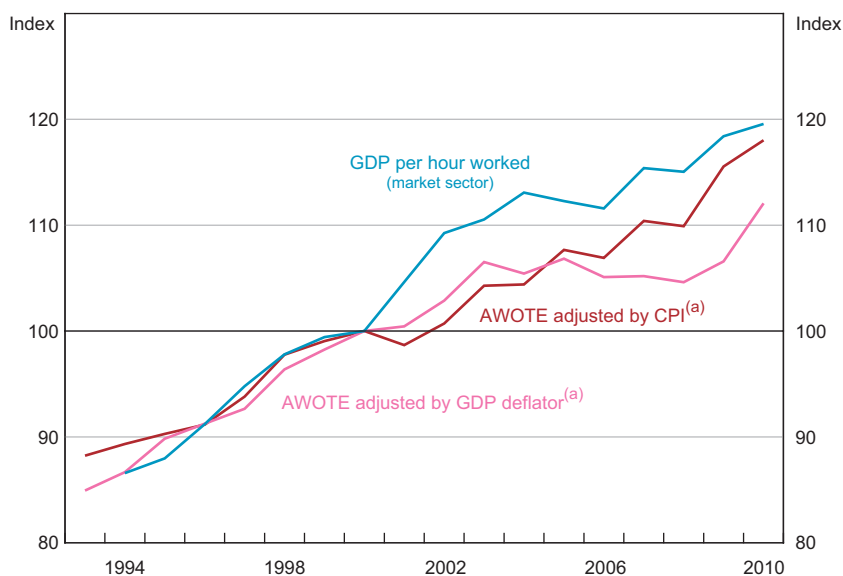
## 7. Employment

### 7.1 Aggregate employment

The 2000s was a period of relatively strong growth in aggregate employment and hours worked. Increases in employment were particularly strong in the years from 2004 to 2008, which matches the timing of the highest rates of growth in GDP. Comparison with previous decades (see Table 1) suggests that the rate of growth in employment over the decade was larger than might have been expected given the rate of GDP growth.

One explanation for the relatively strong employment growth may have been favourable labour cost conditions in the 2000s. It has already been noted that real unit labour costs declined in the 2000s (Figure 6). An extra perspective on labour costs is provided in Figure 12, which graphs a series of weekly ordinary time earnings for full-time adult male workers adjusted by the CPI (consumer real wage), along with GDP per hour worked. Labour productivity can be seen to have increased more quickly than the consumer real wage up until the mid 2000s, and while this gap then narrowed, it still increased by about 1.5 percentage points more over the decade.<sup>3</sup>

**Figure 12: Consumer and Producer Real Wages and Labour Market Productivity**  
2000 = 100



Note: (a) AWOTE is average weekly ordinary time earnings for full-time adult males

Source: ABS

Figure 12 also shows the weekly earnings series adjusted using the GDP deflator (producer real wage). Whereas growth in the producer real wage was slightly higher than the consumer real wage in the 1990s following the early 1990s recession, in the 2000s growth in consumer wages

<sup>3</sup> For reviews of productivity in Australia in the 2000s, see Productivity Commission (2010) and Eslake (this volume).

was higher than producer wages by 6 percentage points. This pattern can be explained by the dramatic improvement in Australia's terms of trade in the second half of the 2000s.

## 7.2 The industry composition of employment – a story of services, mining and manufacturing

The shares of employment growth by industry in Australia for the whole decade and for sub-periods in the 2000s are shown in Table 6. One feature that stands out is the consistent importance of service sector employment as a source of employment growth. Over the 2000s, increasing employment in the three service sectors shown in the table (professional, scientific & technical services; education & training; and health care & social assistance) accounted for 41 per cent of total employment growth in Australia. A second feature is the role of increases in mining employment (after 2004), and construction employment (up to 2008), which were the source of about 20 per cent of total employment growth. The timing of changes to mining and construction employment is important for explaining the concentration of growth in total employment in the years from 2004 to 2008, when almost 60 per cent of employment growth for the decade occurs. A third feature is the decline in manufacturing employment, continuing a pattern from previous decades.

**Table 6: Employment Growth by Industry**  
Share of total employment growth, per cent

	2000–2004	2004–2008	2008–2010
<b>Entire period</b>	<b>(25.9)</b>	<b>(57.7)</b>	<b>(16.4)</b>
<b>By industry:</b>			
Mining	2.8 (0.7)	6.1 (3.5)	6.7 (1.1)
Manufacturing	-2.8 (-0.7)	-1.1 (-0.6)	-14.8 (-2.4)
Construction	17.8 (4.6)	15.6 (9.0)	1.5 (0.2)
Professional, scientific & technical services	6.4 (1.6)	11.3 (6.5)	22.3 (3.6)
Education & training	11.4 (2.9)	9.4 (5.4)	12.1 (2.0)
Health care & social assistance	21.4 (5.5)	10.8 (6.2)	46.2 (7.6)

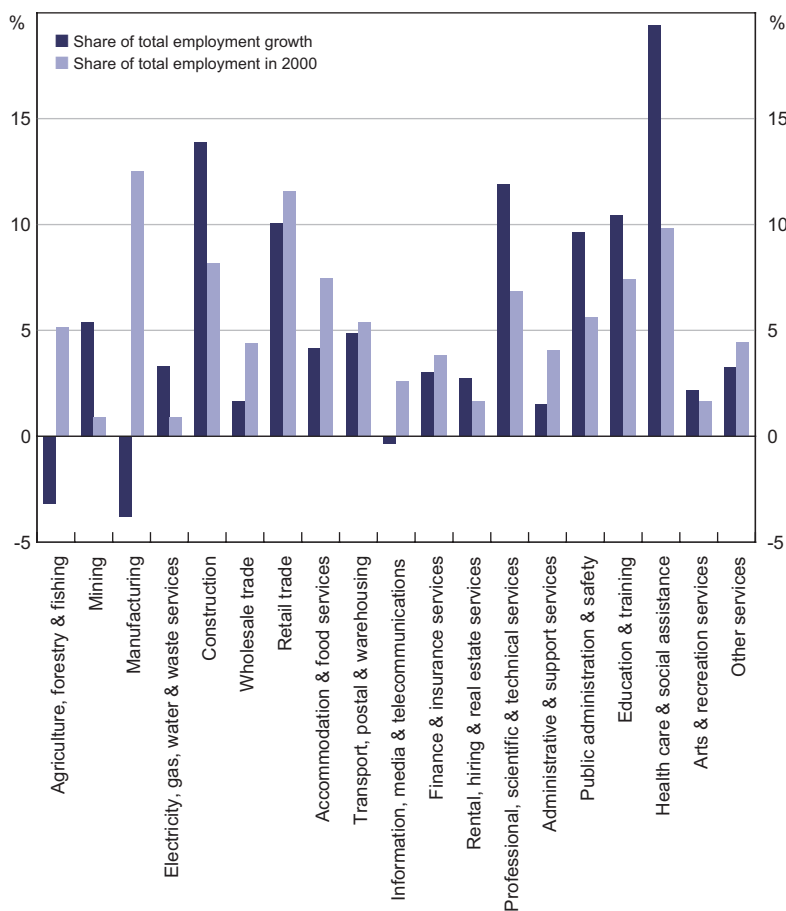
Note: Figures in brackets report the share of total employment growth over the entire period 2000–2010

Source: ABS

The description of employment growth by industry is further developed in Figure 13. It shows the share of total employment in each industry in 2000, and the share of growth in total employment from 2000 to 2010 accounted for by each industry. From the figure it can be seen that the employment shares of health care & social assistance, professional, scientific & technical services, mining, and construction increased quite substantially, and shares of agriculture, forestry & fishing, and manufacturing declined. For example, the health care & social assistance industry, which had 9.8 per cent of total employment in 2000, accounted for 19.3 per cent of the increase in employment in the 2000s.

The changes to the industry composition of employment in the 2000s appear to largely reflect changes to the structure of economic activity – such as the increase in mining and construction activity, growth in demand for child care and aged care, and the declining share of manufacturing output. For example, the share of construction in GDP increased from 5.2 to 7.3 per cent during the 2000s, and correspondingly its share of employment grew from 8.1 to 9.4 per cent.

**Figure 13: Employment by Industry**  
August 2000 to August 2010



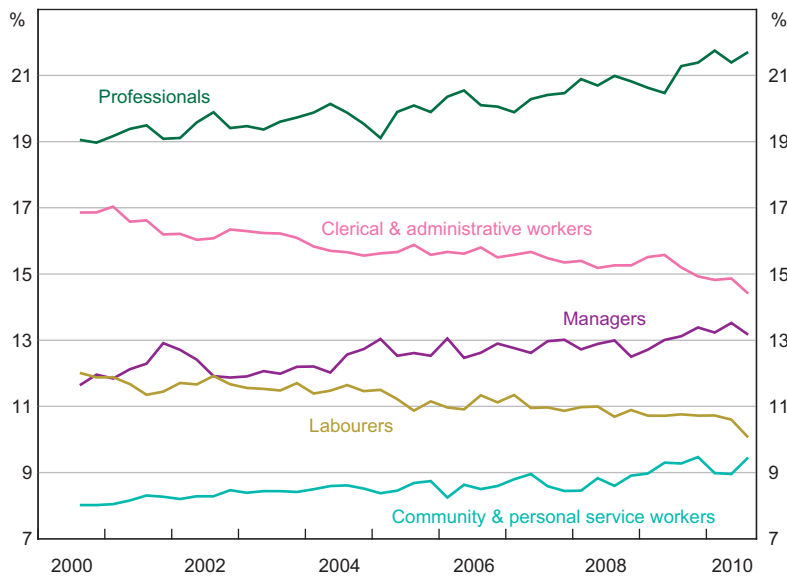
Source: ABS

### 7.3 The occupational composition of employment – insecurity in routine jobs?

Shares of total employment for selected occupations in Australia from 2000 to 2010 are shown in Figure 14. The composition of employment shifted towards managerial, professional, and community & personal service workers, and away from clerical & administrative workers and

labourers. For example, the share of workers in managerial and professional occupations increased from 30.6 to 34.8 per cent over the decade.

**Figure 14: Employment by Selected Occupations**  
As a share of total employment



Source: ABS

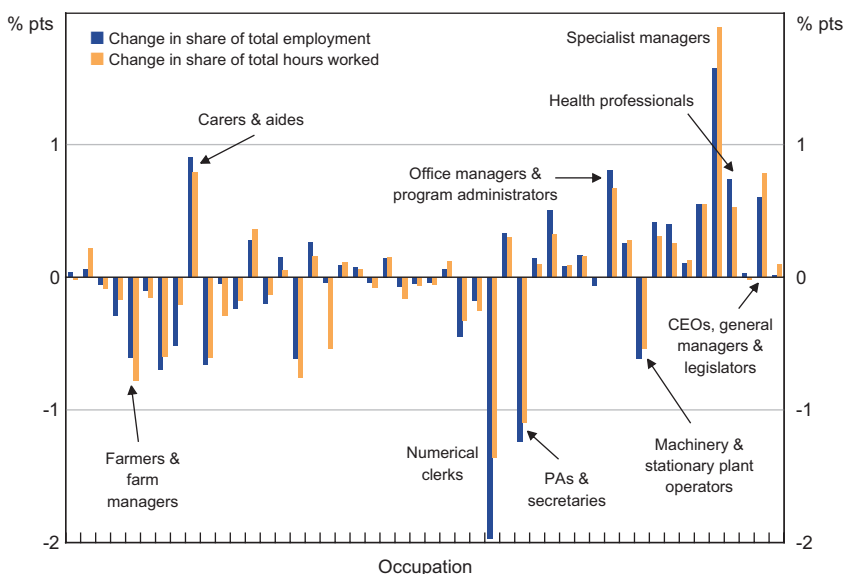
Changes in the occupational composition of employment appear to be partly related to changes in the industry structure of employment. A decomposition analysis (see Table A2) found that changes in employment by industry appear able to explain a large fraction of changes in employment in the professional, community & personal service, machinery operator & driver, and labourer occupations.

In the United States and Europe, recent attempts to explain changes in the occupational distribution of employment have emphasised the effects of IT adoption. In both locations there is evidence of a U-shaped pattern of relative demand for labour by skill level, with increases in relative demand for workers at the bottom and top of the skill distribution (Goos, Manning and Salomons 2009; Acemoglu and Autor 2010). This pattern, it has been argued, reflects changes in the demand for tasks (and the labour to perform those tasks) due to IT adoption. This explanation classifies tasks according to the role of cognitive skills and their degree of routine. Computer-based technologies are regarded as being able to substitute for workers performing tasks that are cognitive and routine (such as basic clerical jobs) or non-cognitive and routine (such as operation of basic machinery), but not for tasks that are cognitive and non-routine (such as management), or non-cognitive and non-routine (such as aged care). Therefore, IT adoption will, for example, decrease relative demand for medium-skill labour that performs basic clerical or machine operated-related tasks. Empirical analysis appears to confirm that changes to the

occupational distribution of employment in the United States and Europe can be explained in this way (see, for example, Autor and Dorn (2009) and Goos *et al* (2009)).

To examine whether the same effects of IT adoption might explain changes in the occupational distribution of employment in Australia, Figure 15 graphs the change in the share of employment by two-digit occupation, with occupations ordered by their average hourly wage. The pattern can not be described as a U-shape; nevertheless, there is some evidence that appears consistent with effects of IT adoption on demand for tasks by their degree of routinisation and the cognitive skills required. The largest increases in demand have occurred for the cognitive non-routine tasks of management and professional activities, and the non-cognitive non-routine task of caring. The largest decreases in demand have occurred for the cognitive routine tasks of numerical clerical work and secretarial assistance, and the non-cognitive routine task of machinery & plant operation.

**Figure 15: Employment and Hours Worked by Two-digit Occupation**  
August 2000 to August 2010

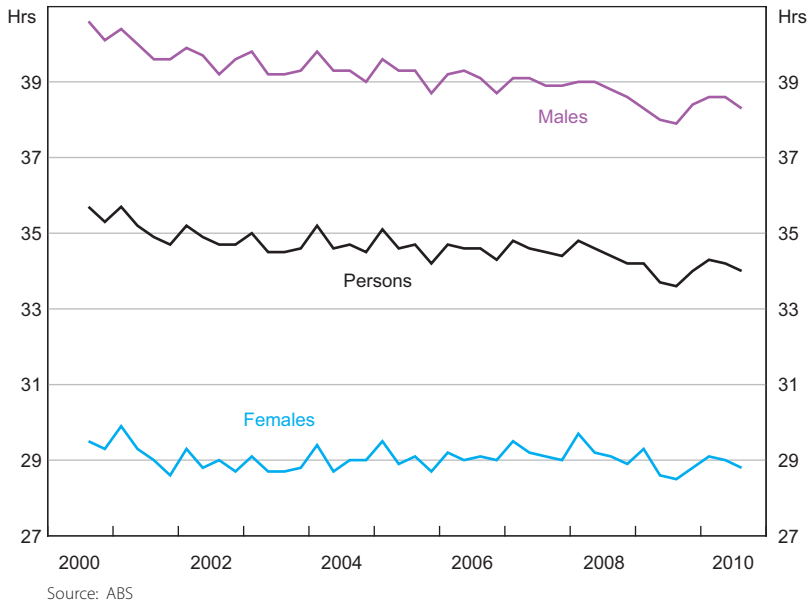


Note: Occupations ordered by average hourly wage

Source: ABS

## 7.4 Hours of work – the decline of the long work week

A notable aspect of the evolution of employment in the 2000s has been a decrease in average hours of work. After remaining relatively stable from 1980 to 2000, Figure 16 shows that during the 2000s average (actual) weekly hours worked declined from 35.7 to 34.0. Table 7 reports the findings from a decomposition analysis of the sources of this change. It shows that the decrease occurred mainly due to a decline in the proportion of males working 50 to 59 hours and more than 60 hours.

**Figure 16: Average Actual Weekly Hours Worked****Table 7: Sources of Change in Average Actual Weekly Hours Worked**  
August 2000 to August 2010

	Hours
Change in average actual weekly hours worked	-1.68
Change in average actual weekly hours worked due to changes in the 'distribution' of hours worked	-1.65
Decomposition of 'distribution' effect:	
1-15 hours	+0.03
16-29 hours	+0.35
30-34 hours	+0.55
35-39 hours	+0.45
40 hours	-0.24
41-44 hours	-0.27
45-49 hours	-0.37
50-59 hours – males	-0.54
50-59 hours – females	-0.14
60+ hours – males	-1.34
60+ hours – females	-0.13

Source: ABS

The proportion of males working more than 50 hours is shown in Figure 17. Over the 2000s it declined from 15.8 per cent to 12.8 per cent. Analyses of the effects of changes to the industry and occupational composition of employment (available on request from the author) found that virtually none of the change in the distribution of hours worked can be explained by these changes. Hence, the explanation for the reduced proportion of males working long hours must be one that has a broad impact across industries and occupations.

**Figure 17: Males Working 50+ Hours**  
As a share of total employment

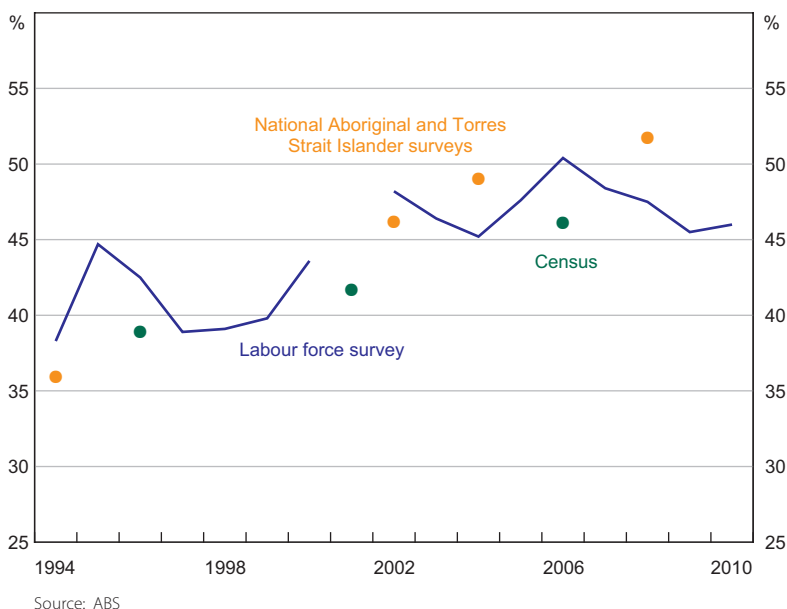


Source: ABS

## 7.5 Did a rising tide lift all boats?

A question that has arisen in other economies which have experienced sustained periods of strong growth is whether the 'rising tide has lifted all boats'. At least to some extent this occurred in Australia in the 2000s. First, Figure 18 provides data from a variety of sources on employment-to-population rates for the indigenous population. Each of the sources suggests that some increase has occurred between the 1990s and the 2000s; although obviously there is still a significant margin to close the gap to the non-indigenous population (Hunter 2010). Second, the significance of the jobless family problem declined. The fraction of families with children under 15 with no adult employed fell from 16.4 per cent to 9.8 per cent (Table A1, row 18). Third, some studies have suggested improved labour outcomes for the population group with low education attainment (see, for example, Kennedy *et al* (2009)).



**Figure 18: Indigenous Employment-to-Population Rate**

## 8. Unemployment

### 8.1 The rate of unemployment

Over the decade of the 2000s, the rate of unemployment fell by 1 percentage point. In the period from the end of 2001 until the GFC in late 2008 it declined by 2.8 percentage points. But this effect was offset by the downturn at the beginning of the decade where it rose by 0.8 percentage point, and during the GFC where it increased by 1.7 percentage points.

Table 8 reports the findings of a decomposition of the sources of change in the rate of unemployment for the whole decade and during these sub-periods. The difference between sub-periods where the unemployment rate increased and decreased can be seen to be primarily explained by differences in changes in the male and female full-time employment-to-population rate. During upswing phases, increases in the full-time employment-to-population rate contribute to decreasing the rate of unemployment, whereas in downturns, decreases in the full-time employment-to-population rate are the major cause of a higher rate of unemployment.

**Table 8: Sources of Change in the Unemployment Rate**  
 Seasonally adjusted, percentage points

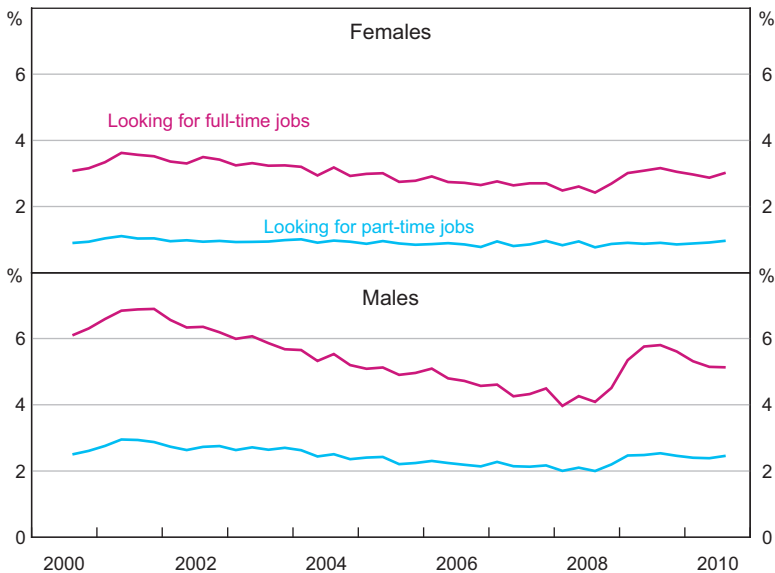
Change in unemployment rate	Effect of:					
	Males			Females		
	FTE/POP	PTE/POP	LF/POP	FTE/POP	PTE/POP	LF/POP
1993:Q3–2000:Q3	-0.7	-1.9	-0.5	-2.0	-2.9	+3.0
2000:Q3–2010:Q3	+1.3	-2.2	0.0	-0.8	-2.1	+2.8
2000:Q3–2001:Q4	+1.1	-0.7	-0.4	+0.9	-0.3	-0.5
2001:Q4–2008:Q3	-2.0	-0.5	+0.5	-2.3	-1.3	+2.7
2008:Q3–2009:Q3	+2.3	-0.9	-0.2	+1.1	-0.4	-0.1
2009:Q3–2010:Q3	-0.1	-0.1	+0.1	-0.5	-0.1	+0.7

Note: The decomposition is derived from:  $u_t \approx -\ln[\alpha_{mt}((FTE/POP)_{mt} \cdot (POP/LF)_{mt}) + \alpha_{mf}((PTE/POP)_{mf} \cdot (POP/LF)_{mf}) + (1 - \alpha_{mf})((FTE/POP)_{mf} \cdot (POP/LF)_{mf}) + (1 - \alpha_{mt})((PTE/POP)_{mt} \cdot (POP/LF)_{mt})]$  where  $u_t$  is the rate of unemployment,  $\alpha_{mf}$  = proportion of males in labour force at time  $t$ ,  $(FTE/POP)_{mf}$  and  $(PTE/POP)_{mf}$  are the full-time and part-time employment-to-population rates for males, and  $(POP/LF)_{mf}$  is the inverse of the labour force participation rate for males. The decomposition of the change in the rate of unemployment between periods  $t$  and  $t + 1$  is undertaken by sequentially varying components of the expression for the rate of unemployment (from period  $t$  to period  $t + 1$  values) in the order shown in the table.

Sources: ABS; author's calculations

A further perspective on the role of variability in full-time employment in explaining cyclical movements in the rate of unemployment is provided in Figure 19. It shows that it is fluctuation in the size of the group of unemployed looking for full-time jobs (mainly males) that is the main source of changes in the rate of unemployment.

**Figure 19: Unemployment Rate by Full-time or Part-time Job Seekers**

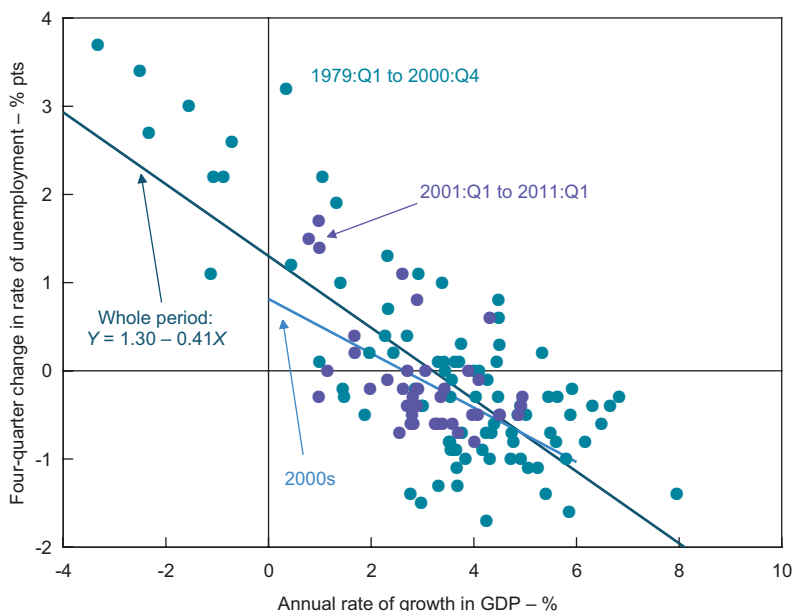


Note: Seasonally adjusted  
Source: ABS

## 8.2 Okun’s Law

To consider how the rate of unemployment has evolved with changes to growth in output, Figure 20 graphs Okun’s Law – showing the four-quarter change in the rate of unemployment and the annual rate of growth in GDP, using quarterly data from 1979:Q1 to 2011:Q1. A linear regression, reported in the figure, implies that the rate of unemployment is stabilised at a rate of GDP growth of 3.2 per cent; and that a 1 per cent increase in the rate of growth of GDP will cause a 0.4 percentage point reduction in the rate of unemployment (quite close to estimates by Hughes (2000) for the period from the mid 1970s to the end of the 1990s).

The figure also identifies separately the periods prior to and after 2000, in order to examine whether there might have been a change in the relation between changes to the rate of unemployment and GDP growth during the 2000s. Some clustering of observations for the 2000s below the regression line is evident, suggesting a change in the relationship.

**Figure 20: Okun's Law**

Source: ABS

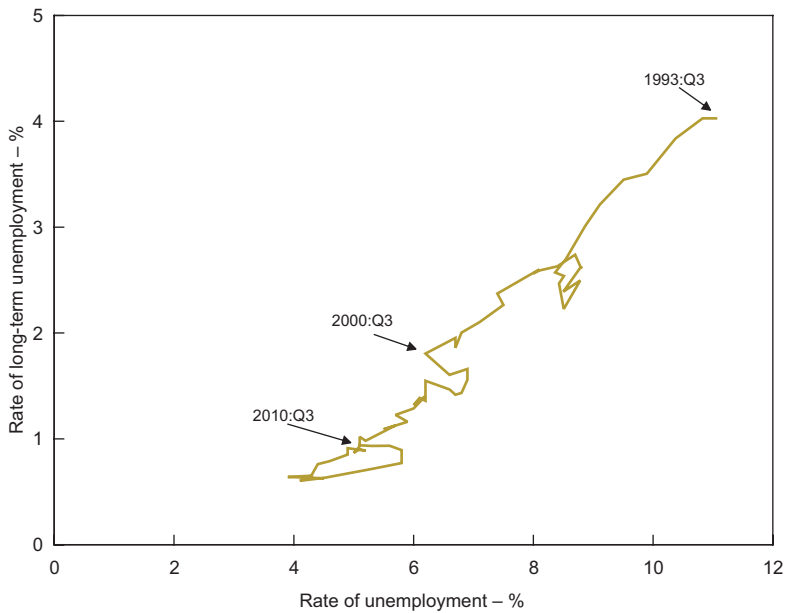
Extending the regression by including a dummy variable for the 2000s and an interaction of the dummy with the rate of GDP growth provides some limited support for a statistically significant change in the nature of Okun's Law in the 2000s. These extra variables are jointly significant at the 10 per cent level. They indicate that the stabilisation rate of GDP growth decreased to 2.7 per cent in the 2000s; and that the increase in the rate of unemployment from a given rate of GDP growth is generally lower. This shift is consistent with there being higher rates of employment growth in the 2000s due to favourable labour cost conditions; however, the effect represented by the Okun relation will also reflect the relatively high rate of growth in labour force participation in the 2000s.

### 8.3 Other dimensions – long-term unemployment and underemployment

Looking within and beyond the rate of unemployment is important for gaining a complete picture of the state of labour supply and labour demand, and for understanding the wellbeing of labour force participants. First, there is the issue of the proportion of unemployed who are long-term unemployed. Second, there is the question of whether the rate of unemployment provides a satisfactory measure of the underutilisation of labour.

The rate of long-term unemployment fell during the 2000s from about 1.5 per cent to less than 1 per cent (see Figure 21). The relation between the rates of unemployment and long-term unemployment remained stable in the 2000s and the 'loop' pattern that has characterised the relation during previous downturns (where changes in the rate of long-term unemployment lag changes in the rate of unemployment) is also evident in the downturns of the 2000s.

**Figure 21: Rates of Total and Long-term Unemployment**  
Seasonally adjusted

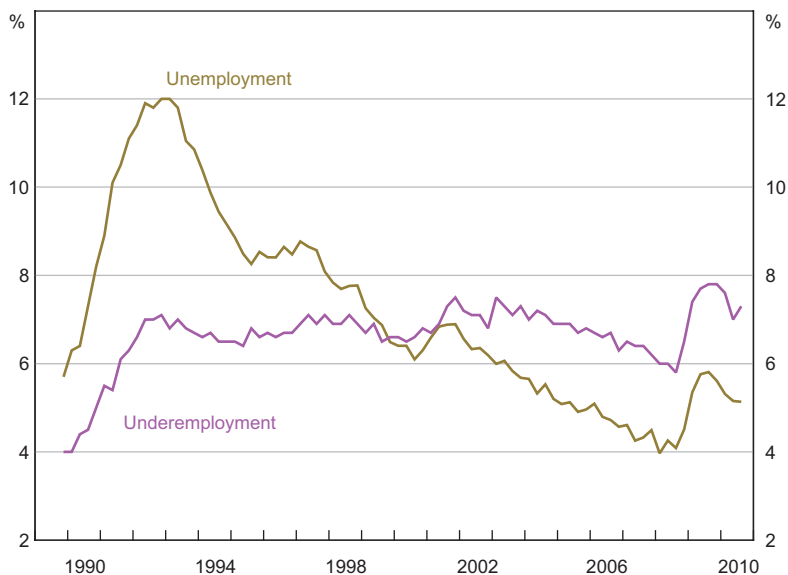


Source: ABS

The rates of underemployment and unemployment from the beginning of the 1990s recession onwards are shown in Figure 22. The rate of underemployment is the number of persons currently employed who want, and are available, to work more hours, expressed as a proportion of the labour force. It increased during the early 1990s, and since that time has remained relatively stable. Hence, the rate of labour underutilisation, calculated as the sum of the rates of unemployment and underemployment, has shown a weaker downward trend since the early 1990s than the rate of unemployment. In August 2010 the rate of labour underutilisation remained at 12.4 per cent. Underemployment is known to be concentrated disproportionately among the younger population (over 30 per cent for those aged 15 to 24 years) and among females (almost 60 per cent).<sup>4</sup>

4 Wilkins (2006) examines the main correlates of underemployment.

**Figure 22: Rates of Underemployment and Unemployment**  
Seasonally adjusted



Note: Measures of underemployment are defined in ABS (2011b)

Source: ABS

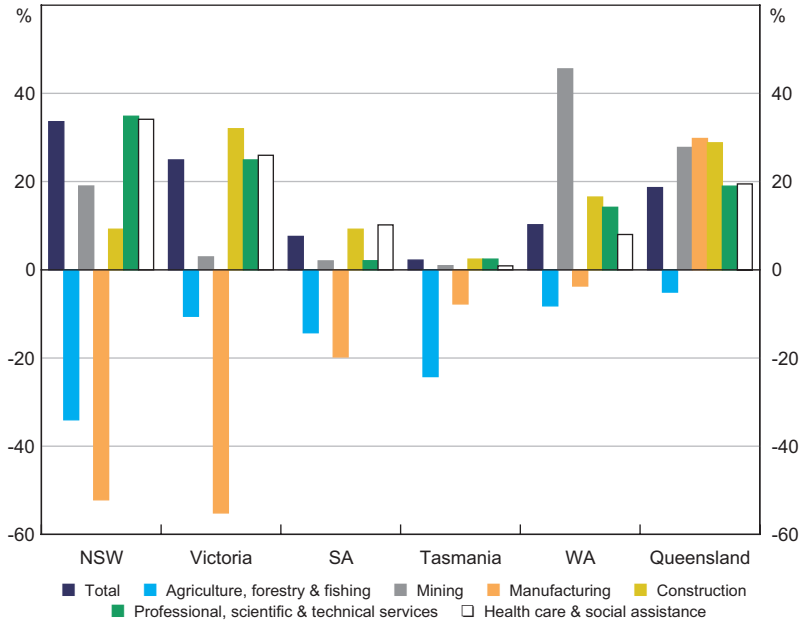
## 9. The State Dimension – Is There a Two-speed Labour Market?

### 9.1 The mining boom, services and state-level employment growth

Geographic concentration of the mining boom of the 2000s, particularly in Western Australia, Queensland and the Northern Territory, has meant that there has been considerable interest in state-level labour market outcomes.

Figure 23 provides one way of seeing how the industrial composition of employment by state has mattered for employment outcomes in the 2000s. It graphs the share of the change in total employment in selected industries by state from 2000 to 2010. Growth in mining and construction employment can be seen to have been disproportionately concentrated in Western Australia and Queensland, while the decline in manufacturing has been disproportionately concentrated in Victoria and New South Wales. Growth in employment in the professional, scientific & technical services and health care & social assistance industries, by contrast, has been roughly proportionate to the share of total employment in each state.

**Figure 23: Industry Employment by State**  
 As a share of total industry employment growth, August 2000 to August 2010



Source: ABS

To see how these changes have translated into changes in aggregate labour market outcomes, Table 9 shows changes in employment and labour force participation for the decade and sub-periods, distinguishing between non-mining and mining states.<sup>5</sup>

<sup>5</sup> Western Australia, Queensland and the Northern Territory are defined as 'mining' states. This is a useful simplification for trying to summarise state-level outcomes; Hughes (2008), however, does make the important point that the experience of the mining states has been far from identical.

**Table 9: Main Labour Market Outcomes  
by Non-mining and Mining States**

	2000:Q3 –2010:Q3	2000:Q3 –2004:Q3	2004:Q3 –2008:Q3	2008:Q3 –2010:Q3
Average annual rate of growth – %				
<b>Non-mining states</b>				
Employment	<b>1.9</b>	1.2	2.6	1.9
Labour force participation	<b>1.8</b>	1.1	2.3	2.2
Population	<b>1.6</b>	1.3	1.6	2.0
<b>Mining states</b>				
Employment	<b>3.1</b>	2.5	4.6	1.3
Labour force participation	<b>2.9</b>	2.1	4.1	2.2
Population	<b>2.6</b>	2.0	3.0	2.8
<b>Difference (mining – non-mining) – % pts</b>				
Employment	<b>+1.3</b>	+1.4	+2.1	–0.6
Labour force participation	<b>+1.2</b>	+1.0	+1.8	0.0
Population	<b>+1.0</b>	+0.7	+1.4	+0.8

Source: ABS

Employment, labour force and population all grew more strongly in the mining states compared with the non-mining states during the 2000s, with the largest difference being evident in the period from 2004 to 2008. Nevertheless, applying a decomposition analysis (reported in Table 10) finds that the increase in the employment-to-population rate in Australia of 3 percentage points from 2004 to 2008 is explained to equal extents by increases in the employment-to-population rates in the non-mining and mining states. The larger size of the non-mining states means that they need a smaller increase in their employment-to-population rate than the mining states in order to make the same contribution to increasing the aggregate employment-to-population rate.

Employment growth in the non-mining states in the 2000s mainly derived from strong growth in service sectors – such as health care & social assistance – and may also reflect spillover effects from the mining states (for example, Garton (2008) shows that differences in growth in final demand between mining and non-mining states is larger than differences in growth in gross state product).

During the GFC, the mining states experienced larger slowdowns in employment growth than the non-mining states. The decomposition analysis shows that all of the decrease in the aggregate employment-to-population rate of 0.7 percentage points in the GFC was due to the declining employment-to-population rate in the mining states.



**Table 10: Sources of Change in Employment-to-Population Rate**  
Percentage points

	2004:Q3 –2008:Q3	2008:Q3 –2010:Q3
Change in employment-to-population rate	+3.0	–0.7
<b>Change due to:</b>		
Change in non-mining employment-to-population rates		
NSW	+0.6	–0.1
Victoria	+0.5	0.0
SA	+0.2	0.0
Tasmania	+0.1	–0.1
ACT	+0.1	0.0
Change in mining employment-to-population rates		
WA	+0.6	–0.2
Queensland	+0.8	–0.4
NT	+0.1	0.0

Source: ABS

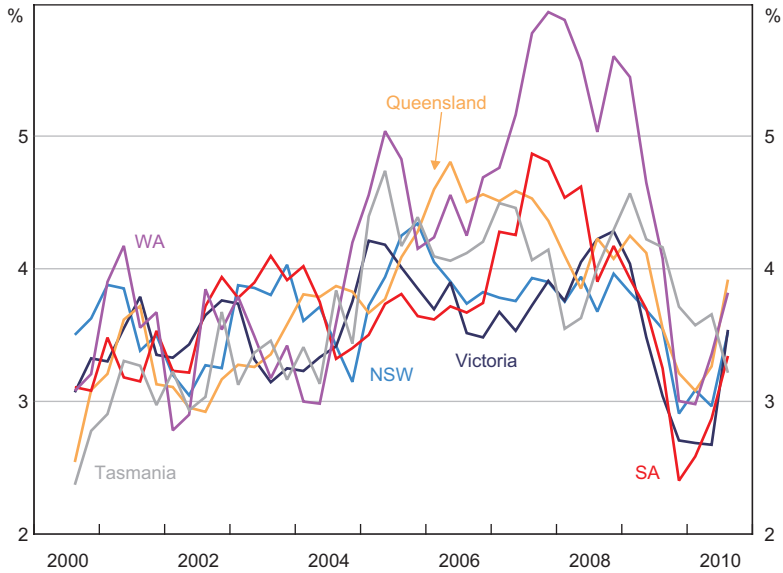
## 9.2 Did the mining boom cause a wage breakout?

Have differences in employment growth between the mining and non-mining states in the 2000s translated into differences in wage growth? Figure 24 shows the annual rate of growth in the labour price index (LPI) by state during the 2000s. Rates of growth were broadly comparable across the states until late 2004, after which point, until the end of 2009, wage growth in WA and Queensland was considerably in excess of that in other states. For example, from November 2004 to 2009, the LPI in WA increased by 25.5 per cent, compared with 19.9 per cent in NSW.

Having established that the mining states have had higher rates of wage growth in the second half of the 1990s, it is also of interest to ask whether these wage increases are 'excessive', or a departure from what might have been predicted to occur in the non-mining states. As a rudimentary way to explore this question, Figure 25 graphs the annual rate of growth in total employment and in the average LPI for mining and non-mining states using quarterly data from 2000:Q3 to 2010:Q3.

**Figure 24: Labour Price Index by State**

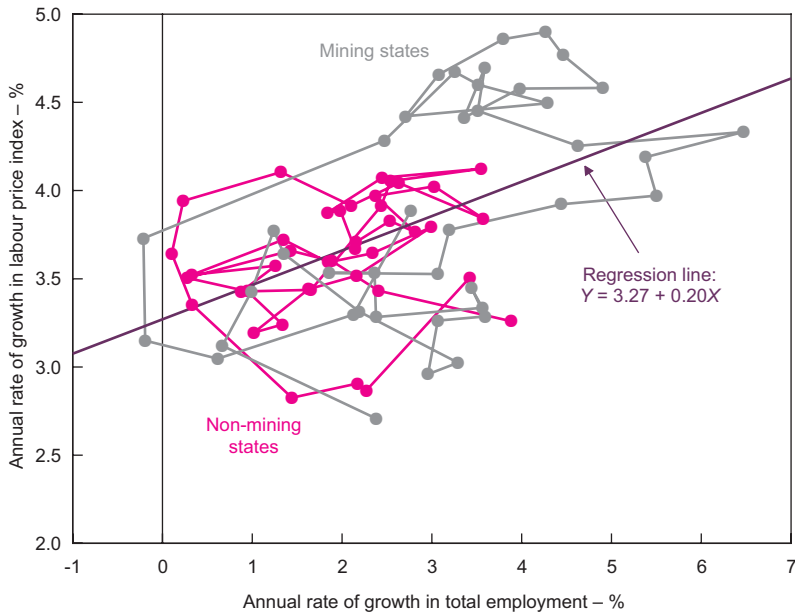
Annual growth



Source: ABS

**Figure 25: Labour Price Index and Total Employment by Mining and Non-mining States**

2000:Q3 to 2010:Q3



Source: ABS

Mining states have obviously had higher rates of employment growth and increases in the LPI (see also Kennedy, Luu and Goldbloom (2008)). However, a regression line estimated on the full set of observations appears to have observations from both mining and non-mining states fairly evenly divided above and below the line. Slightly more formally, introducing an interaction term for mining states into the regression, it is not possible to reject that the relation between wage growth and employment growth is the same in mining and non-mining states.

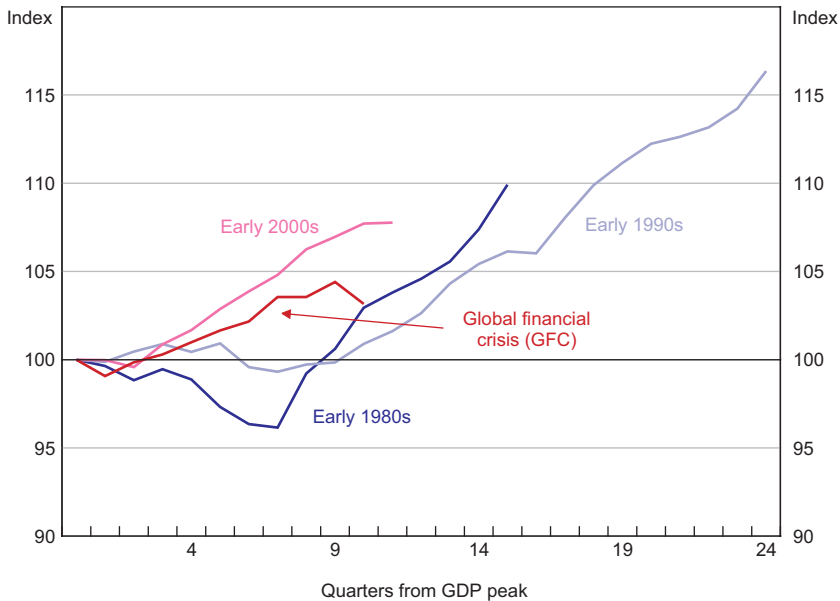
While mining states have had higher rates of wage growth than non-mining states, it appears that wage growth has been in proportion to the higher rates of employment growth in those states. Interstate labour mobility and immigration targeted at regional and skill shortages are likely to have moderated wage pressure in the mining states. For example, Connolly *et al* (2011) show that in 2009/10 457 visa holders accounted for 3 per cent of employment in the mining industry. What is also noteworthy about the pattern of wage changes is that the higher rates of wage increase in the mining states have not flowed on to the non-mining states.

## 10. What Happened in the Downturns?

### 10.1 The 2000s downturns – shorter and milder

In the 2000s the Australian economy experienced two main downturns; in 2000–2001 and 2008–2009. Neither of these downturns was as severe – either in depth or duration – as the recessions of the early 1980s and 1990s. This is evident from Figure 26 which displays the evolution of GDP during these four episodes.

**Figure 26: GDP During and After Downturns**  
 GDP peak = 100, seasonally adjusted

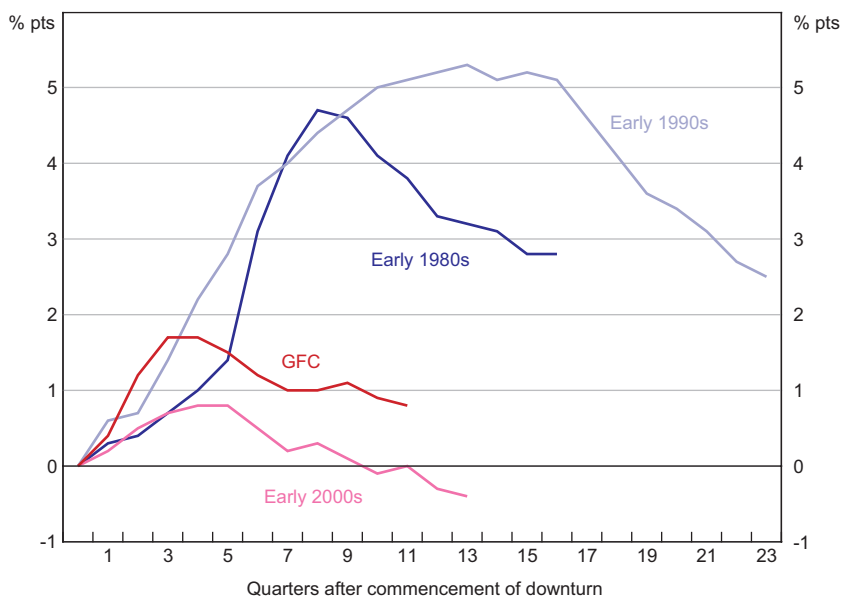


Notes: Early 1980s recession: 1981:Q2–1983:Q3; early 1990s recession: 1989:Q4–1993:Q3; early 2000s downturn: 2000:Q3–2001:Q4; GFC downturn: 2008:Q3–2009:Q3

Source: ABS

The shorter duration and smaller magnitude of downturns in the 2000s is reflected in what happened to the rate of unemployment (dated from the trough in the rate of unemployment). For the first four to five quarters during the downturns in the 2000s, it can be seen from Figure 27 that the rate of unemployment followed a quite similar pattern to the recessions of the 1980s and 1990s. But after that point, the rate of unemployment in the 2000s downturns began to decline, whereas it continued to increase in the earlier episodes.<sup>6</sup>

**Figure 27: Unemployment During and After Downturns**  
Dated from trough in unemployment rate



Note: Change in rate of unemployment; seasonally adjusted  
Source: ABS

## 10.2 Did the labour market adjust differently in the 2000s?

One interesting aspect of downturns in the 2000s is the way that adjustment happened. During downturns there is a decrease in the total hours worked in the economy. This decrease in total hours worked can come from a decrease in persons employed or a decrease in hours worked per person. To examine this adjustment, Table 11 decomposes changes in total monthly hours worked between the effects of changes in persons employed and changes in average monthly hours worked. This is done for each of the downturn periods, and also for the first eight quarters of recovery.

<sup>6</sup> Plumb, Baker and Spence (2010) note that when the evolution of the rate of unemployment is examined using the peak in GDP to date the beginning of downturns, the rate of unemployment was much slower to adjust to the downturn in GDP in the GFC than in previous episodes, which they argue is due to labour market tightness.

**Table 11: Change in Persons Employed and Hours Worked During and After Downturns**  
Dated from trough in unemployment rate, seasonally adjusted, per cent

	Change in total monthly hours worked	Change in persons employed	Change in average monthly hours worked	Share of change in total monthly hours worked due to change in average monthly hours worked
<b>Downturn</b>				
Early 1980s	-4.1	-2.0	-1.9	47.5
Early 1990s	-2.8	-2.2	-0.6	21.5
Early 2000s	-2.5	+0.7	-3.2	127.8
GFC	-2.5	+0.1	-2.6	104.8
<b>Recovery (8 quarters)</b>				
Early 1980s	+8.3	+6.1	+2.0	26.1
Early 1990s	+8.2	+8.0	+0.2	2.6
Early 2000s	+5.1	+4.4	+0.7	14.6
GFC <sup>(a)</sup>	+4.9	+4.6	+0.4	8.0

Note: (a) 7 quarters

Source: ABS

In the recessions of the 1980s and 1990s, most of the decrease in total monthly hours worked came from a decrease in employment. By contrast, in the 2000s the reduction in total monthly hours worked is entirely accounted for by reduced average monthly hours (in fact, total persons employed increased slightly in both downturns). In the recovery phase following each downturn almost all the upward adjustment in total monthly hours worked comes from an increase in persons employed – and this is common to all episodes.

An implication of the way employment and hours adjusted in the 2000s is that we observe decreases in average hours worked during each downturn, and these decreases are not subsequently reversed during the recovery phases.<sup>7</sup>

The greater role of adjustment in average hours worked in the 2000s also had consequences for how the excess supply of labour during downturns was manifested – in unemployment versus underemployment. In the 1980s recession the rate of unemployment increased by 4.7 percentage points compared with a 1.3 percentage point increase in the rate of underemployment. But in the 2000s downturns, the increases in the rates of unemployment and underemployment were, respectively, 0.8 and 0.7 percentage points in 2000–2001, and 1.7 and 2 percentage points in 2008–2009. Hence, reflecting the larger share of adjustment accounted for by average hours worked in the 2000s, increases in the rate of underemployment account for a larger share of the rise in the rate of labour underutilisation.

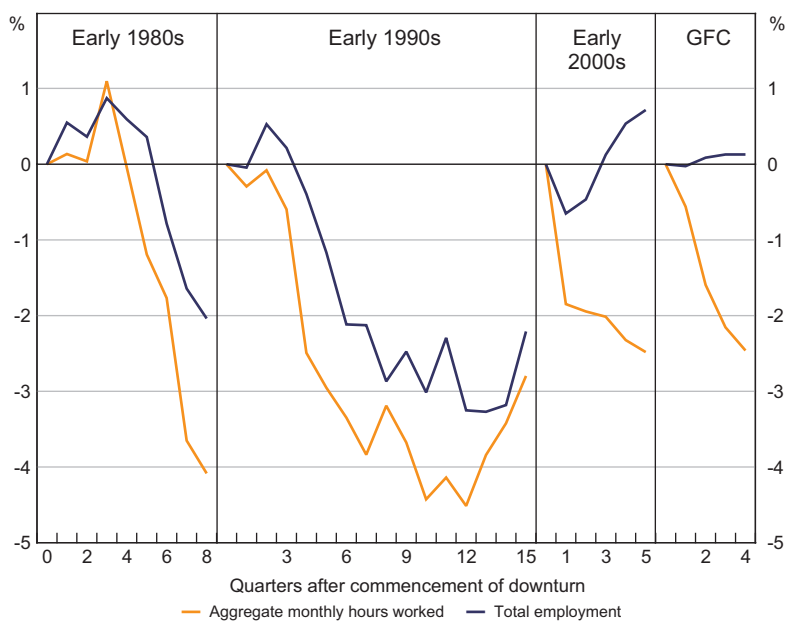
<sup>7</sup> Evidence on the size of adjustment in aggregate monthly hours is different if different start and end dates for the downturn are chosen. But the qualitative findings on differences in adjustment between the 2000s and earlier time periods remain – see ABS (2011a).

### 10.3 Why might adjustment have been different?

A possible explanation for why employment did not adjust in the 2000s downturns was their short duration. In the initial phase of downturns employers may seek to retain workers with firm-specific human capital, and instead adjust to lower demand by decreasing their employees' hours of work. If it eventuates that the downturn is of longer duration, then employers are forced to also decrease employment.

To address this explanation, Figure 28 graphs the percentage change in employment and total monthly hours worked by quarter during the four downturn episodes. In the early stages (first four to five quarters) of the 1980s and 1990s recessions, adjustment did happen to a greater degree via changes to hours worked than was the case later in those recessions. Hence it may be that some of the apparent change in how adjustment occurred during downturns in the 2000s was due to the short duration of those episodes.

**Figure 28: Total Employment and Hours Worked During Downturns**  
Percentage change



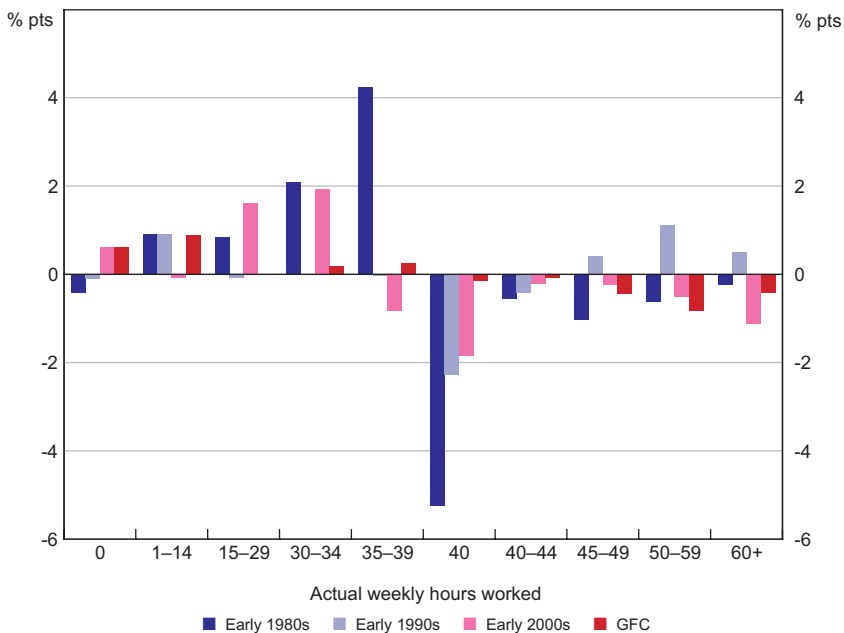
Source: ABS

At the same time, it does not seem that the 2000s downturns simply involved employers retaining the same group of workers and decreasing their hours of work. Wooden (2011), from analysis of HILDA data in the late 2000s, concludes that most of the decrease in hours worked in the GFC was due to the destruction of jobs with longer hours and creation of jobs with shorter hours, rather than employers adjusting the hours of continuing employees.

Figure 29 graphs the changes in the distribution of hours worked in each downturn. While not able to identify how changes to hours of work occurred, it does show that there were large-scale changes in the distribution of hours worked in downturns in the 2000s. In those downturns

there were decreases in the proportions of workers in all categories of longer weekly work hours (40 hours and more), and increases in the proportions working shorter weekly hours (34 hours and less). This compares with the 1980s where the main change in the distribution of hours was more minimal – away from working 40 hours per week towards working 35 to 39 hours. In the 1990s there was a shift towards working longer hours, and away from working 40 hours.

**Figure 29: Distribution of Hours Worked During Downturns**  
Change in share of employed persons



Source: ABS

Reforms to the industrial relations system, allowing employers greater flexibility in choosing their employees’ work hours, have been suggested as a further explanation for changes to how adjustment occurred in the 2000s (see, for example, Sloan (2011)). In this regard it seems important to note that there were changes to how adjustment occurred in both downturns in the 2000s. If industrial relations reform is the explanation, it must have been the reforms of the 1990s that mattered most. A movement away from longer hours may also have reflected workers seeking to adjust – being consistent with stated preferences that indicate those working longer hours are more likely to want to work fewer hours (see Connolly *et al* (2011) for evidence from the HILDA survey on workers’ preferences).

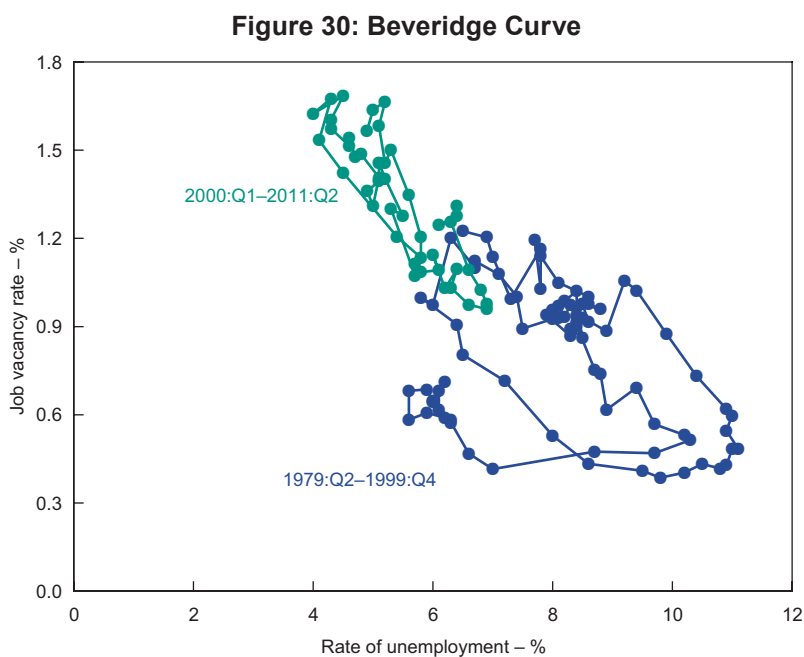
## 11. What do the Beveridge Curve and Phillips Curve Tell Us about the Labour Market in the 2000s?

How adjustment happens in the Australian labour market can also be examined using the Beveridge curve and the Phillips curve – the former providing a perspective on the efficiency of matching processes in the labour market, and the latter revealing the relation between labour demand and wage outcomes.

Questions which naturally arise about the 2000s are whether the mining boom and possible labour shortages might have caused a reduction in matching efficiency; and whether there is evidence of effects on wage-setting in Australia from reforms to macroeconomic policy and the industrial relations system, or increasing exposure to international trade.

### 11.1 Beveridge curve

A Beveridge curve graphing the relation between the rate of unemployment and the job vacancy rate in Australia from 1979:Q2 to 2011:Q2 (using quarterly data) is shown in Figure 30. Observations for the 2000s are distinguished from earlier observations.



Notes: Missing job vacancy observations for August 2008 to August 2009 interpolated using a weighted measure of ANZ job vacancy data, with weights derived from four quarters before and after the missing observations by taking the ratio of ABS and ANZ job vacancies in those time periods; seasonally adjusted

Sources: ABS; ANZ



To investigate the Beveridge curve relation in more detail, I estimated the following models:

$$\ln(u_t) = \alpha + \beta \ln(v_t) + \eta \ln ue_t + \phi(\text{Post2001/1}) + \varepsilon_t \quad (1a)$$

$$u_t = \alpha + \beta v_t + \delta (v_t)^2 + \eta \ln ue_t + \phi(\text{Post2001/1}) + \varepsilon_t \quad (1b)$$

Where  $u_t$ ,  $v_t$  and  $\ln ue_t$  are, respectively, the rate of unemployment, job vacancy rate and the long-term unemployed as a proportion of the labour force, and  $\text{I}(\text{Post2001/1})$  is an indicator variable, equal to one for the period post-2001Q:1 and zero otherwise.

Equation (1a) is a form of Beveridge curve that is often estimated (see, for example, Kennedy *et al* (2008)). Equation (1b) is a quadratic specification estimated to allow extra flexibility in the Beveridge curve functional form. Allowing extra flexibility seems important for considering whether any shift in the curve has occurred – since identifying a shift essentially involves out-of-sample prediction from the pre-2000 observations.

Findings from estimation of the Beveridge curve models are reported in Table 12. Results for both models, including just the vacancy rate and proportion of long-term unemployed as explanatory variables, are reported in columns (1) and (4). The explanatory variables have the expected signs. For example, the positive sign on the long-term unemployment variable indicates that decreases in the proportion of long-term unemployed in the 2000s would have moved the Beveridge curve inwards over the decade.

To examine whether the mining boom might have affected matching efficiency, a shift dummy variable for the post-2004:Q3 period was introduced. Findings are reported in columns (2) and (5) of Table 12. With the log specification, the shift variable suggests that the Beveridge curve moved inwards post-2004:Q3, whereas the quadratic specification suggests no change.

As it is difficult to be precise about when the mining boom might have begun to create significant extra demand in the labour market, I also experimented with shift variables for later periods. In these specifications the shift variable is almost always insignificant, and is always insignificant when a dummy variable for the quarters with imputed vacancy observations is included. For example, columns (3) and (6) report results from models including a shift variable for the post-2007:Q3 period.

Overall, my interpretation is that the Beveridge curve relation is likely to have shifted inwards due to decreases in long-term unemployment in the 2000s, but that there is little evidence of an outward shift coinciding with the mining boom. Hence, increases in the vacancy rate that occurred in the 2000s seem likely to mainly represent movements along the same Beveridge curve. The efficiency of job matching in the economy as a whole did not worsen appreciably in the 2000s, notwithstanding much discussion of skill shortages in this time (see Coelli and Wilkins (2008) for a summary of this discussion).

As a final exercise, I follow Kennedy *et al* (2008) in calculating a ‘natural rate’ of unemployment from the Beveridge curve (using the model in column (1) of Table 12 and assuming a vacancy rate of 1.2 per cent). I estimate that reducing the long-term rate of unemployment from about 1.5 to 1 per cent in the 2000s would have decreased the natural rate of unemployment by about 0.7 percentage point.

**Table 12: Beveridge Curve Regression Model Results**  
1979:Q2 to 2011:Q2

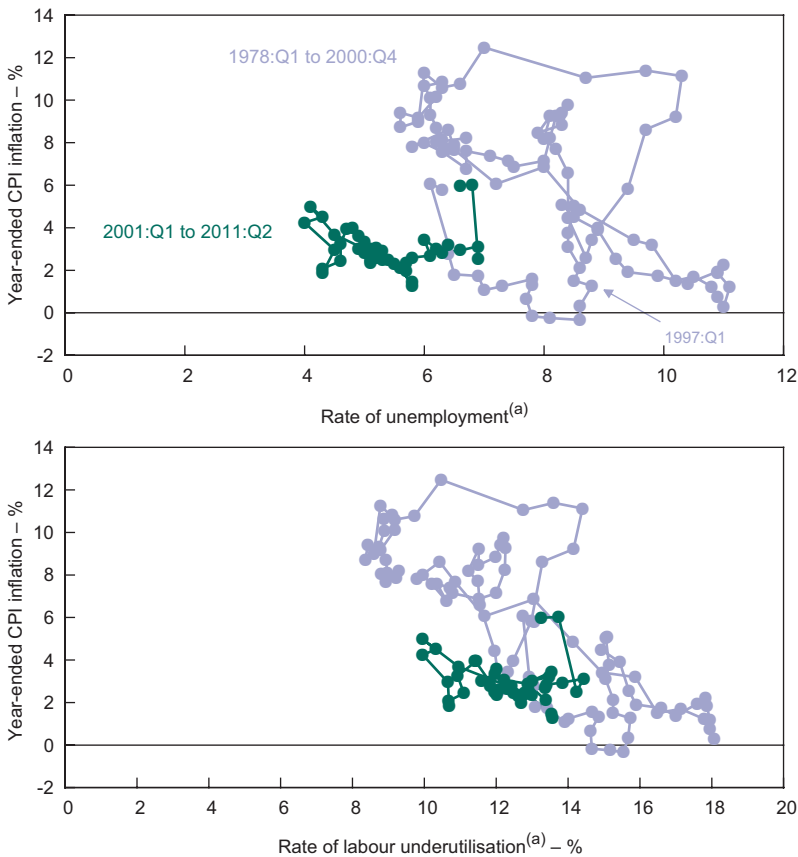
	Model 1a			Model 1b		
	(1)	(2)	(3)	(4)	(5)	(6)
Constant	1.49** (0.015)	1.53** (0.02)	1.50** (0.02)	6.39** (0.30)	6.13** (0.33)	6.22** (0.32)
$\ln(v_t)$	-0.22** (0.02)	-0.18** (0.02)	-0.21** (0.02)			
$v_t$				-3.39** (0.58)	-2.77** (0.68)	-3.02** (0.67)
$v_t^2$				0.88** (0.29)	0.46 (0.38)	0.64 (0.36)
$\ln v_{t-1}$	0.25** (0.01)	0.23** (0.01)	0.25** (0.01)	1.82** (0.06)	1.84** (0.06)	1.84** (0.06)
Dummy variable post-2004:Q3		-0.07** (0.02)			0.31 (0.18)	
Dummy variable post-2007:Q3			-0.3 (0.02)			0.25 (0.19)
Dummy variable for inputted vacancy rate observations (2008:Q3 to 2009:Q3)			0.04 (0.04)			0.15 (0.25)
Adjusted R-squared	0.93	0.93	0.93	0.95	0.95	0.95
Observations	129	129	129	129	129	129

Notes: Standard errors are shown in brackets; \* and \*\* indicate significance at the 5 and 1 per cent level, respectively.

## 11.2 Phillips curve

A Phillips curve graphing the relation between the annual rate of growth in the CPI and the rate of unemployment from 1978:Q1 to 2011:Q2 (using quarterly data) is shown in the top panel of Figure 31. There appear to be two parts to the graph – an inverse relation up until the latter part of the 1990s, and then a much flatter (or almost no) relation after that time.<sup>8</sup>

**Figure 31: Phillips Curve**



Note: (a) Seasonally adjusted

Source: ABS

To verify the visual impression, I estimated the following simple regression:

$$\Delta\text{CPI}_{t,t-4} = \alpha + \beta u_t + \chi I(\text{Post}1997/1) + \varphi I(\text{Post}1997/1) * u_t + \varepsilon_t \quad (2)$$

Where  $\Delta\text{CPI}_{t,t-4}$  represents year-ended CPI inflation,  $u_t$  is the rate of unemployment and  $I(\text{Post}1997/1)$  is an indicator variable, equal to one for the period post-1997:Q1 and zero otherwise. The results

<sup>8</sup> A similar pattern exists using the rate of change in average weekly earnings as the measure of inflation – see Figure A1.

from this model are reported in column (1) of Table 13. They confirm that there has been an inward shift and substantial flattening of the Phillips curve relation after the latter part of the 1990s.

Kuttner and Robinson (2008) have previously explored this issue and also find evidence of a flattening of the Phillips curve for Australia. They suggest firmer anchoring of inflation expectations (via the introduction of inflation targeting) and increasing exposure to international trade as possible explanations. Reforms to the system of wage-setting in Australia in the 1990s might also have affected the Phillips curve. For example, the introduction of enterprise bargaining and reductions in the extent of flow-on between workers in their wage increases could have moderated the inflationary effects of changes to labour demand.

Another possible explanation for the flattening relates to the measurement of labour demand. The divergent trends in the rates of unemployment and underemployment since the 1990s raise the question of whether the rate of unemployment is an appropriate proxy for demand pressure. Therefore, it seems sensible to undertake analysis of the robustness to alternative measures of demand pressure.<sup>9</sup>

The bottom panel of Figure 31 shows an alternative graph of the Phillips curve relation, using the rate of labour underutilisation as the proxy for demand. It is obvious that observations are now more clustered, and there is less evidence of a bifurcation of the relation from the latter part of the 1990s. To re-examine the question of whether there has been some shift in the Phillips curve relation, the rate of underemployment is included as an extra explanatory variable in Equation (2). The results are reported in column (2) in Table 13. The rate of underemployment is found to have a significant negative effect on inflation, and its inclusion in the model causes the structural change variables to be no longer significant.

In other results reported in Table 13 (columns (3) and (4)), I also include a lagged inflation term, and find the same pattern of results. In addition, I experimented with alternative time periods for structural change in the Phillips curve (for the 2000s only, and for sub-periods in the 2000s – such as the Work Choices era in column (5)) – and in each case found the same pattern of results.

The analysis of the Phillips curve therefore casts doubt on the suitability of the rate of unemployment as a proxy for demand pressures in the labour market. The increasing importance of hours adjustment in downturns, and hence the greater share of the cyclical response in labour underutilisation accounted for by underemployment, indicates that a broader measure of labour underutilisation may be appropriate.

9 For a similar analysis for an earlier period, see Dawkins and Wooden (1985) and Gregory (1986); and for a review of Phillips curve analysis in Australia, see McDonald (2002).

**Table 13: Phillips Curve Estimates**  
1978:Q2 to 2011:Q2

	(1)	(2)	(3)	(4)	(5)
Constant	17.76** (1.72)	15.89** (0.97)	3.10** (0.80)	3.83** (0.83)	3.85** (0.75)
$u_t$	-1.39** (0.14)	-0.38** (0.17)	-0.28** (0.08)	-0.16 (0.09)	-0.14** (0.05)
I(Post1997/1)	-11.63** (1.75)	-0.98 (0.50)	-1.86** (0.86)	-0.37 (1.00)	
I(Post1997/1) * $u_t$	0.81** (0.26)	-0.04 (0.23)	0.14 (0.12)	0.02 (0.09)	
Lagged inflation ( $\Delta CPI_{t-1,t-3}$ )			0.87** (0.04)	0.80** (0.04)	0.80** (0.04)
Rate of underemployment		-1.41** (0.17)		-0.30** (0.11)	-0.36** (0.08)
Dummy variable for 2006:Q1–2009:Q4 – I(2006/1–2009/4)					-0.27 (0.47)
I(2006/1–2009/4) * $u_t$					-0.03 (0.09)
Adjusted R-squared	0.63	0.75	0.93	0.93	0.93
Observations	133	133	133	133	133

Notes: Standard errors are shown in brackets; \* and \*\* indicate significance at the 5 and 1 per cent level, respectively

Using a broader measure of labour underutilisation suggests that the impression of a weakening relation between inflation and labour market demand using the rate of unemployment is in part due to mismeasurement of labour demand. In interpreting my estimates of the Phillips curve, however, it is also necessary to be aware that the rate of labour underutilisation will overcorrect for the effect of underemployment. This is because an unemployed person will have a large number of underutilised hours of labour, whereas an underemployed person will have much fewer under-utilised hours. But the rate of labour underutilisation weights each person equally.<sup>10</sup>

Hence, while mismeasurement of labour demand may explain some part of the movement in the Phillips curve since the late 1990s, it also seems likely that a weakening of the relation between inflation and labour demand pressure occurred during this time. Distinguishing more precisely the shift in the Phillips curve from the effect of mismeasurement, and exploring the reasons for the shift, seem important topics for giving a better understanding of the determinants of inflation in Australia.

## 12. Summary and Conclusion

The 2000s saw relatively strong growth in employment and labour force participation – at least by comparison with the 1990s. Rates of growth in employment and participation were highest in the period from 2004 to 2008, with downturns in 2000–2001, 2003–2004 and 2008–2009 (the latter associated with the GFC).

The rate of growth in aggregate employment was of course strongly related to patterns of growth in GDP. It also seems that the decline in real unit labour costs in the 2000s may explain the strong employment outcome.

Increases in labour force participation in the 2000s occurred due to increasing rates of participation for females aged 25 to 54 years, and males and females aged 55 years and above. Participation rates increased for both the Australian-born and immigrant populations (thereby reversing the pattern of decreasing participation rates for immigrants in the past 20 years).

Increased participation for females aged 25 to 54 years is likely to have largely been due to the flowthrough effects of increasing participation by cohort, but may also have been caused by household financial considerations. For the older population there is a large set of possible explanations and further work would be needed to address their relative importance. However, the fact that the rise in participation has been a common phenomenon among industrial economies indicates that the main explanations are likely to also be common across countries – such as the greater proportion of the workforce in less physically demanding jobs, or improved health. The rise in participation rates of immigrants is likely to have been due to an increase in the relative importance of skilled migration and using migration to deal with areas of labour shortage.

Significant changes in the composition of employment took place in the 2000s. First, there was a continuing trend towards female and part-time employment. Second, the shares of employment in mining and construction, professional, scientific & technical services, and health care & social assistance increased, while manufacturing and agriculture declined. Third (and somewhat related),

<sup>10</sup> The solution would be to use a volume-weighted measure of labour underutilisation. Unfortunately this is only available from the ABS for the 2000s.

the occupational composition of employment shifted towards jobs at the top and (to some degree) the bottom of the earnings distribution – management and professional jobs and carer jobs – and away from jobs in the middle of the earnings distribution such as numerical clerks and secretaries. Changes in the industrial and occupational composition of employment seem to reflect changes in the composition of GDP, and are also consistent with increasing use of IT-related capital substituting for workers doing ‘routine’ jobs.

Over the decade of the 2000s the rate of unemployment declined by 1 percentage point. For most of the decade the unemployment rate was falling, but increased in 2000–2001 and during the GFC of 2008–2009. Consistent with the downturns in GDP growth in the 2000s having been milder than in the 1980s or 1990s, the rate of unemployment increased by much less during these episodes. Increases in the rate of unemployment during the downturns in the 2000s were mainly associated with a decline in the full-time employment-to-population rate, whereas the part-time employment-to-population rate increased considerably throughout the decade.

The rate of long-term unemployment declined over the 2000s. In particular, the mildness of the downturns in the 2000s meant that long-term unemployment did not increase to account for the same proportion of unemployment or the labour force as was the case in the recessions of the 1980s and 1990s. This is likely to have implications for the capacity to reduce the rate of unemployment further in the coming decade.

There were also interesting developments to working hours during the 2000s. First, average hours of work declined by about 1.7 hours, after having been stable for the previous two decades. This was mainly caused by a decrease in the proportion of males working longer hours, and occurred within all one-digit industry and occupation groups. Second, much of the decrease in average hours worked was concentrated in the downturns during the 2000s. That adjustment in the downturn phases occurred via changes to average hours worked rather than the number of persons employed, which was a major departure from the experience of the recessions of the 1980s and 1990s.

The apparent role of changes to average hours worked in adjustment to downturns in the 2000s might be explained by the short duration of those episodes, with employers seeking to hoard labour to retain firm-specific human capital. A comparison with the longer recessions of the 1980s and 1990s provides some support for this view. Another possibility is that industrial relations reforms of the 1990s have allowed employers greater flexibility in how they adjust the total hours of their workforce.

The aspect of adjustment in the Australian labour market that attracted most attention in the 2000s was how the mining boom played out. The shares of the mining and construction industries in total employment increased, and growth in these sectors in 2004–2008 was important for explaining why aggregate employment growth occurred disproportionately in this phase of the 2000s. While the mining states increased their share of employment, growth in all states in service-related industries meant that non-mining states still accounted for about 50 per cent of total employment growth.

The mining boom was associated with high rates of growth in wages for mining workers and in the mining states in the latter part of the 2000s. But the increases that occurred were in proportion to rates of increase in labour demand and there was no general breakout in wage inflation. As well,

there is little evidence at the national level of labour shortages causing a decline in the efficiency of matching in the 2000s. Hence the institutional framework in the Australian labour market, and the use of immigration policy to address labour shortages, appear to have allowed the mining boom to be accommodated without causing major disruption.

From one perspective this might not be surprising. The mining sector is a small share of total employment, and so it could be argued that adjustment in the sector should happen without substantial effects on the overall Australian labour market. An alternative perspective, however, sees this outcome as a significant achievement. Previous episodes, such as the mining boom of the early 1980s, were associated with major periods of wage inflation. Not having this happen in the 2000s can therefore be considered a demonstration of how adjustment occurs differently in the Australian labour market today compared with 30 years ago.

The Phillips curve provides a more general way to study wage inflation. A first look at this relation gives an impression of a shift in the nature of wage-setting from the late 1990s onwards, with the Phillips curve moving inward and showing a decreased responsiveness of inflation to demand pressure. This impression turns out to partly reflect the measure of labour demand used. Including a broader measure of labour demand, that incorporates the increasing importance of underemployment as a component of labour underutilisation, shows less evidence of a shift. Nevertheless, it seems reasonable to conclude that some shift in the Phillips curve has occurred. This shift may reflect changes to macroeconomic policy, to the industrial relations system, or possibly increasing exposure of the Australian economy to international trade. A weakened relation between inflation and labour demand from the late 1990s onwards is consistent with the mining boom having had a minimal effect on wage inflation in Australia.

Consideration of the Beveridge curve and Phillips curve indicates that the natural rate of unemployment is likely to have decreased during the 2000s. Using the Beveridge curve model I estimate a decrease in the natural rate of 0.7 percentage points over the decade due to a decline in the proportion of long-term unemployed. An inward shift of the Phillips curve since the late 1990s, associated, for example, with changes to Australia's wage-setting system, is also consistent with a decrease in the natural rate having occurred. Hence, at the end of the 2000s, it appears that policy-makers in Australia can be aiming for a lower rate of unemployment than at the start of the decade.



## Appendix A

**Table A1: Key Labour Market Indicators**  
August 1980 to August 2010 (*continued next page*)

	1980	1990	2000	2010
(1) Aggregate employment-to-population rate <sup>(a)</sup>		61.0	62.5	63.9
(2) LFPR <sup>(a)</sup>		56.6	57.2	60.6
(3) Share of FT employment	83.6	78.7	73.1	70.1
<i>hours worked</i>	93.2	90.9	88.1	85.1
(4) Share of male employment	63.4	58.4	55.7	54.7
<i>hours worked</i>	70.4	66.0	63.6	61.7
(5) Lego labour market – coefficient of compositional change (CCC) <sup>(b)</sup>		0.063	0.056	0.030
(6) Manufacturing share of employment	15.8 <sup>(c)</sup>	14.4	12.1	8.9
(7) Mining and construction share of employment	8.7 <sup>(c)</sup>	8.7	8.7	10.7
(8) Industry employment – CCC <sup>(b)</sup>		0.041 <sup>(d)</sup>	0.072	0.073
(9) Share of 'mining state' employment – WA, Qld and NT	24.7	27.2	29.8	32.4
(10) State labour markets – CCC <sup>(b)</sup>		0.029	0.027	0.027
(11) Share of employment of workers aged 25–54 years	64.1	69.6	71.6	67.0
(12) Employment by age – CCC <sup>(b)</sup>		0.066	0.068	0.061
(13) Employment-to-population rate of:				
Australian-born	57.6	60.8	62.8	64.9
Immigrants	59.8	57.0	54.0	57.1
<i>Immigrant share of aggregate employment</i>	26.1	25.7	24.4	26.8
(14) LFPR of:				
Australian-born	61.2	65.2	67.0	68.1
Immigrants	63.8	61.8	57.8	60.3
<i>Immigrant share of aggregate labour force</i>	26.2	25.9	24.5	26.9
(15) Share of population with a bachelor degree or above	5.8 <sup>(e)</sup>	8.4	15.7	23.0
	(15+ years)	(15–69 years)	(15–64 years)	(15–64 years)
(16) Rate of unemployment <sup>(a)</sup>		7.4	8.5	5.1
(17) Per cent of long-term unemployed	19.9	20.6	26.0	18.1
(18) Share of families with children under 15 with no parent employed	8.0	12.9	16.4	9.8 <sup>(f)</sup>

**Table A1: Key Labour Market Indicators**  
August 1980 to August 2010 (*continued*)

	1980	1990	2000	2010
(19) Rate of labour underutilisation <sup>(a)</sup>		11.0	15.1	11.9 <sup>(f)</sup>
(20) Rate of underemployment <sup>(a)</sup>		3.6	6.6	6.8
(21) Annual average rate of growth in AWOTE – Full-time				
Real		0.20 <sup>(g)</sup>	1.45	1.85
Nominal		8.10 <sup>(g)</sup>	3.85	4.70
(22) Annual average rate of growth in LPI				
Real				0.90
Nominal				3.75
(23) Annual average rate of growth in real GDP per hour worked		1.30	2.15	1.40
<i>market sector</i>				1.75
(24) Weekly earnings full-time employees in main job – 80/20 percentile ratio				
Males – ratio	1.94	1.93	2.12	2.26
Females – ratio	1.87	1.86	1.89	1.96
(25) Female-to-male ratio of:				
Average weekly earnings for full-time employees in main job	77.8	79.2	79.6	79.6
Average adult ordinary time hourly earnings for non-managerial employees	87.9	90.5	91.8	90.0
(26) Share of employees having pay set by:				
Awards only			23.2	15.8
Registered collective agreements			36.8	45.3
Unregistered individual agreements			40.0	38.9
(27) Average weekly hours of work	35.8 <sup>(c)</sup>	35.9	35.7	34.0
(28) Per cent of males working 50+ hours	21.5 <sup>(c)</sup>	25.5	29.8	24.7
(29) Share of current job with duration less than 1 year	22.3	26.5	23.6	18.0
(30) Share of current job with duration more than 10 years	20.7	21.8	24.4	24.5
(31) Trade union density	49.0 <sup>(e)</sup>	41.0	24.7	18.3

Notes: (a) Average in previous decade

(b) Previous decade

(c) 1985

(d) 1985–1990

(e) 1982

(f) 2009

(g) 1981–1990

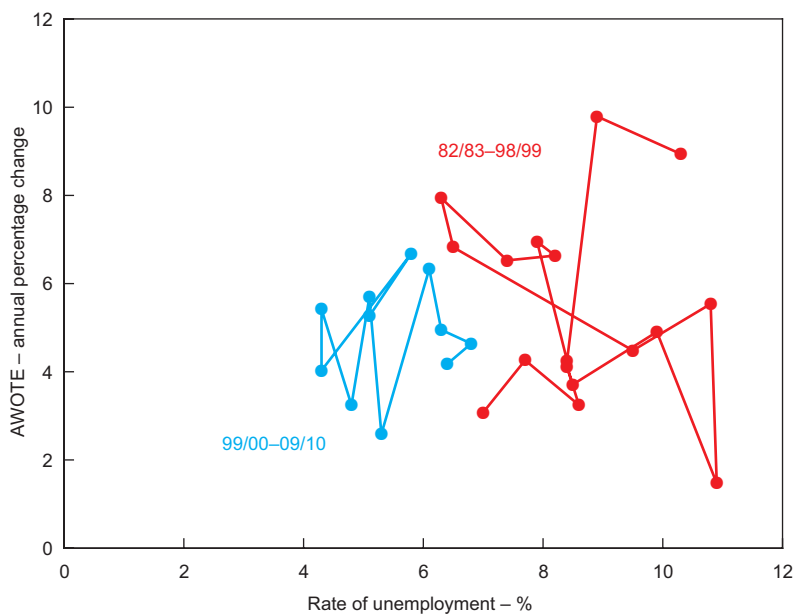
Sources: ABS; RBA

**Table A2: Occupation Composition of Employment and Hours of Work**  
Per cent

	2000:Q3	2010:Q3	2010:Q3 Share of employment taking account only of change in industry composition of employment
<b>Occupation</b>			
Manager	11.6	13.2	10.7
Professional	19.1	21.8	20.7
Technician and trade worker	15.3	14.9	15.2
Community and personal service	8.0	9.5	8.6
Clerical and administrative	16.8	14.5	17.2
Sales	10.2	9.9	9.9
Machinery operator and driver	6.9	6.4	6.7
Labourer	12.1	9.8	11.0
<b>Hours of work</b>			
0	4.5	5.5	4.6
1–14	12.2	11.9	12.4
15–29	12.7	14.4	13.0
30–34	6.8	8.5	7.0
35–39	15.0	16.1	15.0
40	15.1	14.4	15.1
41–44	4.8	4.2	4.8
45–49	8.3	7.7	8.4
50–59	10.3	9.9	10.2
60+	10.3	7.4	9.5

Source: ABS

**Figure A1: Phillips Curve**  
Wage growth and the rate of unemployment



Note: AWOTE is average weekly ordinary time earnings for full-time adult males

Source: ABS

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# Discussion

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## 1. Judith Sloan

### Introduction

Jeff Borland's paper represents a comprehensive and thorough analysis of the high-level developments in the Australian labour market in the first decade of the twenty-first century. He describes the decade as quiet, perhaps suggesting that it was boring. My take on the decade was that labour market developments in Australia during the 2000s should properly be assessed as 'exciting' – in the sense that the average rate of unemployment was much lower than the previous decade, the labour force participation rate increased overall and for particular groups, and the employment-to-population ratio reached historic highs.

While unemployment had averaged 8.8 per cent in the 1990s, the figure for the 2000s was 5.5 per cent. In fact, unemployment got down to 4 per cent at one point (in 2007) – a figure which had not been seen for several decades. And the number of employed persons grew at an average annual rate of 2.2 per cent in the first decade of the twenty-first century compared with 1.2 per cent in the 1990s.

Perhaps the most exciting development of all was the resilience of the Australian labour market to the economic downturn associated with the global financial crisis (in 2008–2009, in particular). Adjustment occurred almost entirely through average hours worked rather than the number of persons employed – a combination which was not paralleled in the sharp downturn that occurred in the early 1990s.

### Unit-record data

At the beginning of the paper, Borland refers to the growing importance of unit-record data sources, including longitudinal ones, as an important development of the 2000s. Unfortunately, Borland's analysis does not make use of any of these sources. Lest it be thought that mining unit-record data has little relevance to policy issues, there are in fact many topics that can be helpfully considered with these data.

Take the issue of the impact of minimum wages. If it is the case that low-paid workers stay in low-paid jobs year after year, then the equity argument for minimum wages is very different from the case where low-paid employment is a mere stepping stone to higher-paid jobs for many workers. Longitudinal unit-record data enable the researcher to estimate the fate of low-paid workers over time and the characteristics of the worker and other variables that determine these outcomes.

Similarly, the discussion of working hours is much enhanced by the use of unit-record data. There has been a noticeable increase in the extent of underemployment – which actually dates back to the late 1980s. When assessing the state of the labour market, it is appropriate to add



the rate of underemployment (weighted) to the rate of unemployment. But it is interesting to know whether or not workers remain in a state of wanting more working hours or whether the desire for more working hours is generally met within a relatively short time. The analysis of working-time patterns using HILDA data points to a lack of persistence in underemployment. By contrast, overemployment – where workers say they would prefer to work fewer hours – does seem to persist.

## Does labour market regulation matter?

The results of one of the important analytical exercises undertaken by Borland are presented towards the end of the paper. Using the rate of unemployment as the independent variable, Borland estimates the Phillips curve (curiously using CPI inflation rather than wage inflation) to test whether or not any structural break was evident in the 2000s. (The data span the period 1978:Q2 to 2011:Q2.) He concludes that ‘there has been an inward shift and substantial flattening of the Phillips curve relation after the latter part of the 1990s’ (p 207). He then goes on to ponder whether this result is due to reforms to the wage-setting system that had occurred in the 1990s.

Borland argues that the rate of unemployment is not a good proxy for the state of the labour market; he prefers an augmented measure which combines the rate of underemployment with the rate of unemployment. However, he is forced to use an unweighted version of underemployment as the data only provide annual observations on weighted underemployment. His results point to the rate of labour underutilisation having a significant negative effect on inflation but ‘the structural change variables [are] no longer significant’ (p 207). On this basis, at the Conference he concluded that there was little evidence of change in the nature of wage setting in the past decade.

There are a number of points that could be made about this analysis. The first is the decision to model the rate of consumer price inflation rather than the rate of wage inflation; the latter is more likely to be sensitive to the changing state of the labour market than the former. The second is that unweighted underemployment may be a misleading indicator if the proportion of additional preferred hours to actual hours changes over time. A final point is that irrespective of the modelling exercise, it is clear from the lower panel of Figure 31 that the 2000s experienced much lower levels of inflation for a given rate of labour underutilisation.

One of the reasons why this type of analysis is interesting is that the question is begged: do labour market regulations matter? Economists should be able to contribute to this debate. If they do not matter – say, in terms of unemployment and inflation – then there are few reasons why minimum wages should not be doubled, for instance, or employment protection laws further strengthened. Of course, most economists would balk at these propositions; rather, the argument is that there are limits beyond which labour market regulations will drive outcomes that are quite divorced from what otherwise would be market-driven outcomes. Hence, there would be economic losses associated with the impact of regulation. But where to draw the line in terms of defining ‘sensible’ labour market regulations? Indeed, how should labour market regulations be conceptualised and measured for the purpose of economic analysis?

These questions were beyond the scope of Borland’s paper. However, they are ones that should interest central bankers because the functioning of the labour market is one of the aspects of the economy on which they focus.

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## 2. General Discussion

The performance of the Australian labour market during the global financial crisis was a key issue taken up during the discussion. One participant made the point that, unlike during the downturns of the early 1980s and early 1990s, the fall in labour demand during the GFC was largely reflected in a decline in hours worked, rather than a large number of jobs disappearing. One view was that the expected length of a downturn was an important consideration, and since the slowdown towards the end of the 2000s was relatively short-lived, it was in the interests of both workers and employers not to break ties and shed jobs. This point was contrasted with the US experience, where the downturn during the GFC was more drawn out and there has been a larger shedding of jobs, despite the highly deregulated labour market. However, one participant noted that the downturn was not forecast to be short and another mentioned that labour shortages in Australia prior to the financial crisis could have made employers reluctant to break ties with existing employees.

A different participant disagreed, stating that evidence from panel data (HILDA) does not support the argument that existing employees had their hours reduced, showing no evidence of a direct substitution between heads employment and hours worked. They said that according to those data, there was a significant change in the composition of employment, suggesting that many jobs were lost during the crisis period but this was offset by jobs being created in industries that hired a large share of part-time workers.

It was also mentioned by one participant that various concerns relating to the changing labour market over the past 20 years have all surprised on the upside. First, worries that decreasing tariffs and increasing free trade would lower employment had not eventuated. Second, fears surrounding labour market regulation had not come to fruition. The participant stated that Australia had largely followed its own path in terms of labour market regulation (somewhere in between the US and European models) and that this had delivered positive outcomes. Third, increased immigration has had the opposite effect on unemployment to what was originally feared by some, with a large number of high human capital workers arriving in Australia and generating jobs for other workers ('we have been importing employers'). Fourth, it was mentioned that concerns over introducing equal rights and equal pay for females had been misplaced.

There was also substantial discussion on the prospects for the Australian labour market over the coming decade. It was mentioned by one participant that when unemployment fell below 5 per cent in the latter half of the 2000s, there was a noticeable pick-up in wage growth, suggesting that an unemployment rate of 4½ to 5½ per cent was perhaps the lowest rate that was sustainable. It was noted that for wage growth of around 4 per cent to be consistent with the inflation target, productivity growth would have to increase. One participant pondered what the current level of the non-accelerating inflation rate of unemployment (NAIRU) in Australia might be. One view was that over the 2000s it had probably fallen by around ¾ percentage point, suggesting that the unemployment rate could possibly decline without inflation increasing. However, if a labour underutilisation measure of demand was used in this calculation instead (to account for underemployment) there was less evidence of a fall in the NAIRU. An analysis of the Beveridge

## DISCUSSION

curve does not suggest there has been an increase in jobs mismatching as a result of the mining boom, with jobs better able to be matched over the 2000s due to a fall in the long-term rate of unemployment. Compositional change across states and between industries was similar between the 1990s and 2000s, and while wages did increase in Western Australia and Queensland as a result of the mining boom, overall wage increases were not transmitted to other states. This was seen as evidence that Australia has so far been able to accommodate the mining boom without a wage breakout (which was not the case following past booms in the terms of trade – a point also made in the paper by Connolly and Orsmond).

It was also highlighted during the discussion that active labour market policies (e.g. targeting local areas) were not very successful and that a combination of deregulation and policies that promoted growth were likely to deliver the best outcomes.

# Productivity: The Lost Decade

Saul Eslake\*

## 1. Introduction

'Productivity' is, at its simplest, a measure of how effectively or efficiently a workplace, a business or government agency, a region or a nation as a whole uses the resources at its disposal to produce goods and services which are in turn valued, in some way, by those who consume or use them. At the level of individual workplaces or firms, productivity measures are often expressed in terms of output per unit of a single factor of production, such as land or livestock (in agriculture), some measure of ore extracted (in mining), or, in manufacturing and services businesses, some measure of labour input such as person-hours. At more aggregated or economy-wide levels, productivity is usually expressed as a measure of value added (such as gross product) either per unit of labour input (labour productivity) or per unit of labour and capital services inputs (multifactor productivity). While, conceivably, other factors of production could be included in measures of multifactor productivity, including environmental factors such as water or energy, to date these have been extremely rare, but they may become more widely used as the policy focus on the use of finite natural resources (and their price) increases.

Economists have long recognised that productivity is a Good Thing (in the Sellar and Yeatman (1930) sense) as the most important source of improvements in material living standards. Book I of Smith (1937) is, arguably, a treatise on the contribution of advances in labour productivity achieved through better organisation of work ('the division of labour'):

[T]en persons ... could make among them upwards of forty-eight thousand pins in a day. Each person, therefore, making a tenth part of forty-eight thousand pins, might be considered as making four thousand eight hundred pins in a day. But if they had all wrought separately and independently, and without any of them having been educated to this peculiar business, they certainly could not each of them have made twenty, perhaps not one pin in a day; that is, certainly, not the two hundred and fortieth, perhaps not the four thousand eight hundredth part of what they are at present capable of performing, in consequence of a proper division and combination of their different operations. (Smith 1937, p 5)

Book II deals with the way in which the accumulation of capital contributes to higher labour productivity:

As the accumulation of stock is previously necessary for carrying on this great improvement in the productive powers of labour, so that accumulation naturally leads to this improvement. The person who employs his stock in maintaining labour, necessarily wishes to employ it in such a manner as to produce as great a quantity of work as possible. He endeavours, therefore, both to make among his

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workmen the most proper distribution of employment, and to furnish them with the best machines which he can either invent or afford to purchase. His abilities in both these respects are generally in proportion to the extent of his stock, or to the number of people whom it can employ. The quantity of industry, therefore, not only increases in every country with the increase of the stock which employs it, but, in consequence of that increase, the same quantity of industry produces a much greater quantity of work. (Smith 1937, p 260)<sup>1</sup>

Krugman (1992, p 9) wrote that '[a] country's ability to improve its standard of living over time depends almost entirely on its ability to raise its output per worker'.

This sentiment has been echoed more recently by Australia's most senior policy-makers and advisers. For example, Stevens (2009) identifies productivity as the only real basis for optimism about future income and more recently 'there is only one source of ongoing higher rates of growth of real per capita incomes, and that is higher rates of growth of productivity' (Stevens 2011), while Parkinson (2011, pp 11–12) observed that '[i]n the long run, productivity growth – producing more from the same inputs – is the only sustainable way for future generations to enjoy higher living standards'.

At the RBA Conference a decade ago, Australia's productivity performance was widely celebrated. Bean (2000, p 90) observed that '[u]nderpinning Australia's good economic performance over the last decade has been a high rate of productivity growth, both in historical terms and relative to other countries'. At the same Conference, Forsyth (2000, p 236) also noted that 'Australia's productivity growth had been amongst the most rapid [of a number of countries experiencing high productivity growth] in recent years'. Both authors attributed Australia's strong productivity growth performance largely to microeconomic or structural reforms, although Bean in particular warned that, on the basis of earlier UK experience with productivity-enhancing reforms, 'Australian policy-makers and households would be unwise to project the recent high rates of productivity growth into the future' (2000, p 101). Bean's note of caution was, as it turned out, especially perspicacious.

## 2. Australia's Productivity Performance in the 2000s

Australia's productivity performance, however measured, has deteriorated substantially since the late 1990s. In terms of simple decade-average comparisons:

- Labour productivity for the Australian economy as a whole grew at an average annual rate of 1.5 per cent over the ten years to 2009/10 (or 1.4 per cent per annum using the Australian Bureau of Statistics' (ABS) 'quality-adjusted' estimates for hours worked), compared with 2.1 per cent per annum over the ten years to 1999/2000, 1.4 per cent per annum over the ten years to 1989/90 and 2.8 per cent per annum over the ten years to 1979/80.
- Multifactor productivity for the Australian economy as a whole was unchanged over the course of the 2000s (or declined at a 0.2 per cent average annual rate using 'quality-adjusted'

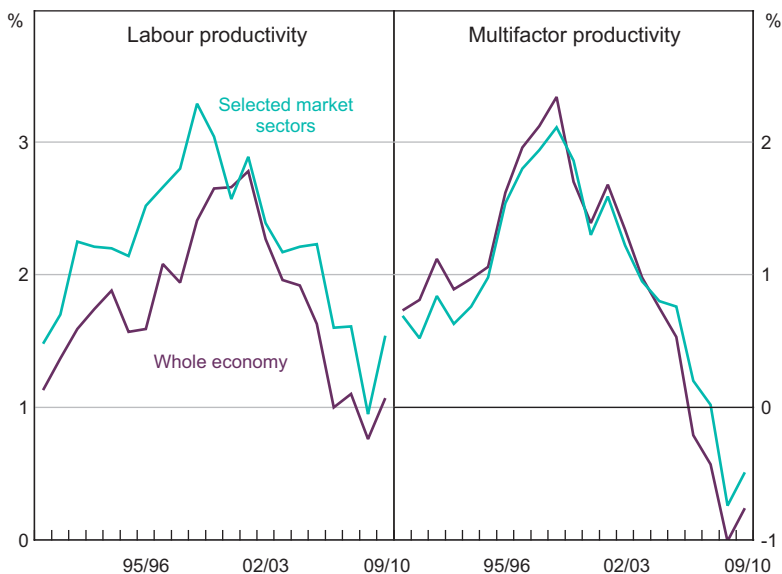
<sup>1</sup> Some of Smith's less admirable notions about the relative productivity of the manufacturing and services sectors continue to influence policy-makers' thinking today: '[T]he labour of a manufacturer adds, generally, to the value of the materials which he works upon, that of his own maintenance, and of his master's profit. The labour of a menial servant, on the contrary, adds to the value of nothing' (Smith 1937, Book II, p 314); compare 'I don't want to be Prime Minister of a country which doesn't make *things* any more' (Rudd (2007), emphasis added).

hours worked), compared with growth averaging 1.6 per cent per annum in the 1990s, 0.7 per cent per annum in the 1980s and 1.5 per cent per annum in the 1970s;<sup>2</sup>

- Labour productivity for 12 of the industry components of the 'market sector' (that is, excluding sectors in which productivity growth is notoriously difficult to measure, in particular public administration & safety, education & training, and health care & social assistance) for which the ABS has estimates going back before 1994/95 grew at an average annual rate of 1.9 per cent during the 2000s, compared with 2.6 per cent in the 1990s and 1.6 per cent in the 1980s; and
- Market sector multifactor productivity grew at an average annual rate of 0.2 per cent in the 2000s, compared with 1.4 per cent in the 1990s.

Growth in all the above measures of productivity deteriorated as the 2000s progressed (see Figure 1 which presents growth in the above four series over rolling five-year periods). In particular, multifactor productivity growth was *negative* during the second half of the past decade.

**Figure 1: Productivity Growth**  
Five-year rolling average



Note: 'Selected market sectors' are agriculture, forestry & fishing; mining; manufacturing; electricity, gas, water & waste services; construction; wholesale trade; retail trade; accommodation & food services; transport, postal & warehousing; information, media & telecommunications; financial & insurance services; and arts & recreation services

Source: ABS (2008b, 2010a, 2010b)

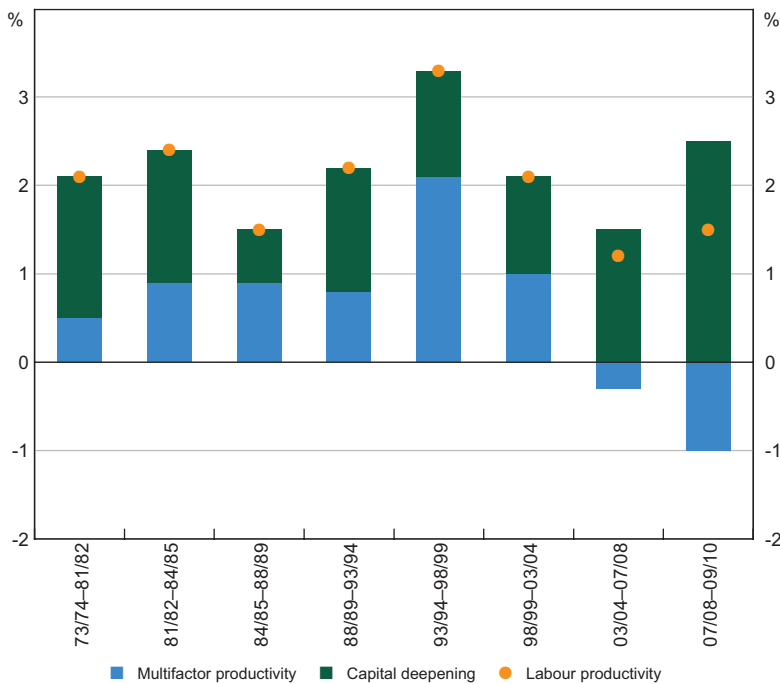
<sup>2</sup> The latest series of ABS estimates of multifactor productivity (ABS 2010a) goes back only to 1994/95. Hence, the rates of multifactor productivity growth cited for the 1990s, 1980s and 1970s have been derived from ABS (2008b, Table 13).

In order to abstract from the influence of the business cycle on measured productivity growth, trends in productivity are more appropriately compared across 'productivity growth cycles' (see, for example, Productivity Commission (2010, p 58)). These of course don't coincide neatly with calendar decades. Nonetheless, comparisons across these cycles tell a similar story:

- Growth in market sector labour productivity decelerated from an average of 3.3 per cent per annum over the productivity growth cycle which ran from 1993/94 through 1998/99, to 1.2 per cent per annum over the cycle which ran from 2003/04 through 2007/08 (or to 0.8 per cent per annum if the four additional market sectors for which the ABS publishes estimates from 1995/96 onwards are included), while in the as yet incomplete cycle, which began in 2008/09, labour productivity growth has averaged 1.5 per cent per annum.
- Growth in market sector multifactor productivity slowed from an average of 2.1 per cent per annum in the 1993/94 through 1998/99 cycle to –0.3 per cent per annum in the 2003/04 through 2007/08 cycle (or to –0.8 per cent per annum including the four additional market sectors), and has averaged –1.0 per cent per annum in the as yet incomplete cycle, which began in 2008/09.

As shown in Figure 2, productivity growth during the most recent completed cycle was, on either measure, the worst of any cycle since the 1970s.

**Figure 2: Productivity Growth Cycles**  
Market sector, annual average



Notes: Annual average growth over the period shown; productivity growth cycles are as defined by ABS; cycle since 07/08 is incomplete

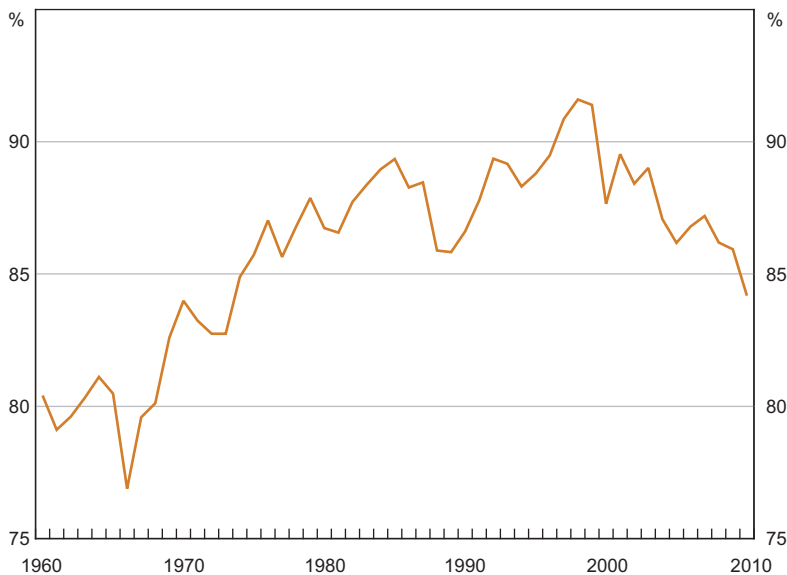
Source: ABS (2008b, 2010a, 2010b)

Australia has been by no means unique in experiencing a slowdown in productivity growth since the turn of the century. Of the 25 countries for which the OECD has estimates going back to 1990, only 4 experienced faster labour productivity growth in the 2000s than in the 1990s, those 4 being Israel, Switzerland, Turkey and the United States. And the decline in Australia’s labour productivity growth rate between the 1990s and 2000s was of the same magnitude – 0.8 percentage points – as the unweighted average for the 26 countries for which it is possible for such comparisons to be made.

However, whereas Australian labour productivity growth was in line with the (unweighted) OECD average in the 1990s, during the 2000s it was, at 1.3 per cent per annum (according to the OECD’s estimates), 0.5 percentage points below the unweighted OECD average and 0.2 percentage points below the weighted OECD average. Australia ranked 11th out of 25 OECD countries in descending order of labour productivity growth in the 1990s, and 17th out of 34 countries in the 2000s (see Table 1).

Using the United States as a crude proxy for ‘best practice’ in terms of labour productivity,<sup>3</sup> the level of Australian labour productivity declined from a peak of 91.6 per cent of the corresponding US level in 1998 to 84.2 per cent of the US level in 2010, more than reversing the 5 percentage point increase in this ratio which occurred between 1990 and 1998. The 2010 level of this ratio was the lowest since 1973 (see Figure 3).

**Figure 3: Australian Labour Productivity**  
As a per cent of US labour productivity



Note: Labour productivity here is real GDP (in 2010 US dollars) per hour worked  
Source: Conference Board (2011)

3 On the grounds that the United States has higher GDP per hour worked than any other OECD country except for Luxembourg and Norway, two small economies each with an unusually large proportion of the economy accounted for by a sector with intrinsically high levels of labour productivity, namely financial services and oil extraction, respectively.



**Table 1: Labour and Multifactor Productivity Growth Rates**  
Australia and other countries

	Labour productivity			Multifactor productivity		
	% per annum		Difference	% per annum		Difference
	1990 –2000	2000 –2010		1990 –2000	2000 –2009	
Australia	2.1	1.3	–0.8	1.1	–0.7	–1.7
Austria		1.2		1.1	0.4	–0.7
Belgium	2.3	0.5	–1.8	0.6	–0.5	–1.2
Canada	1.8	0.9	–1.0	0.5	–0.7	–1.1
Chile		2.6		0.7	–0.8 <sup>(a)</sup>	–1.5
Czech Republic		3.5		–0.7	1.9 <sup>(a)</sup>	2.6
Denmark	1.9	0.6	–1.3	0.4	–0.8	–1.2
Estonia		4.8		3.4	2.5 <sup>(a)</sup>	–0.9
Finland	3.0	1.5	–1.5	1.9	1.1	–0.7
France	2.0	0.8	–1.2	0.4	–0.4	–0.9
Germany	2.3	0.9	–1.4	1.4	0.1	–1.3
Greece	1.7	1.5	–0.2	0.1	0.0	–0.1
Hungary		2.9		0.8	0.9 <sup>(a)</sup>	0.1
Iceland	1.0	2.6	1.7	0.4	2.4	2.1
Ireland	4.7	2.0	–2.8	2.9	–0.7	–3.6
Israel	0.5	1.2	0.7	0.2	0.4	0.2
Italy	1.5	0.0	–1.5	0.5	–1.1	–1.6
Japan	2.1	1.6	–0.6	–0.1	0.2	0.3
Luxembourg	2.1	0.2	–1.9	0.9	–0.6	–1.5
Mexico		0.3		0.1	–0.7 <sup>(a)</sup>	–0.8
Netherlands	2.1	0.7	–1.4	0.7	0.1	–0.6
New Zealand	1.3	1.1	–0.2	0.1	–0.6	–0.7
Norway	2.8	0.7	–2.1	1.8	–0.9	–2.7
Poland		3.2		3.4	0.7 <sup>(a)</sup>	–2.7
Portugal	3.7	1.1	–2.5	0.1	–1.1	–1.2
Slovak Republic		4.5		2.6	3.6 <sup>(a)</sup>	1.1
Slovenia		2.6		1.2	0.9 <sup>(a)</sup>	–0.3
South Korea	5.6	4.3	–1.2	2.9	1.9	–1.0
Spain	1.4	1.1	–0.3	–0.1	–0.8	–0.7
Sweden	2.4	1.6	–0.7	0.9	0.2	–0.7
Switzerland	0.3	0.8	0.5	0.1	0.0	–0.1
Turkey	1.8	3.7	2.0	–0.8	–1.0	–0.2
United Kingdom	2.7	1.2	–1.5	1.4	–0.1	–1.5
United States	1.8	2.2	0.4	0.7	0.3	–0.4

Note: (a) 2000–2008

Sources: Conference Board (2011); OECD; author's calculations

Of the 28 OECD countries for which the Conference Board (2011) publishes data on what it calls 'total factor productivity' up to 2009, only 3 experienced faster multifactor productivity growth in the 2000s than in the 1990s (Israel and, perhaps counter-intuitively, Japan and, even more so, Iceland<sup>4</sup>). However, the decline in Australia's multifactor productivity growth rate as measured in the Conference Board database, of 1.7 percentage points (from 1.1 per cent per annum to -0.7 per cent per annum) was more than double the (unweighted) average for these 28 countries, and larger than any except those recorded in Finland, Ireland, Malta and Norway.

### 3. Causes of the Deterioration in Australia's Productivity Performance

#### 3.1 'Sectoral' explanations

Official explanations of the deterioration in Australia's productivity performance have tended to emphasise the contribution of especially sharp declines in productivity in three sectors of the economy: agriculture, forestry & fishing; mining; and electricity, gas, water & waste services ('utilities'). For example, the Productivity Commission (2010, p 68) estimates that these three sectors account for almost 80 per cent of the decline in multifactor productivity growth between the 1998/99 to 2003/04 and 2003/04 to 2007/08 growth cycles, a conclusion endorsed (at least initially) by the Australian Treasury (2009, pp 51–52). More recently, Treasury has retreated somewhat from this view: see, for example, Australian Government (2011, p 4-30) and Parkinson (2011, p 21).

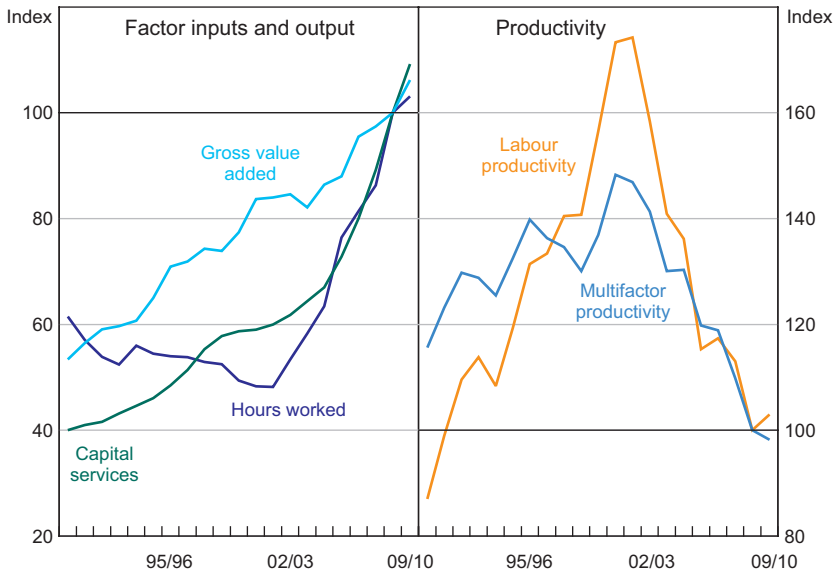
There's no denying that both labour and multifactor productivity have fallen sharply in the mining and utilities sectors over the past decade.

The mining sector has been gearing up for a huge expansion in response to the demand for energy and minerals (particularly those associated with steelmaking) from China and India. To this end, hours worked in mining have more than doubled over the past decade, while the real value of the sector's productive capital stock has increased by almost 80 per cent. Yet, largely reflecting the long lead times entailed in bringing modern mining projects to full production, the output (gross valued added) of the mining sector has risen by only 37 per cent over this period (see Figure 4). As a result, the level of labour productivity has declined at an average annual rate of 6.2 per cent since 2001/02 (or by 41 per cent in total); while the level of multifactor productivity has fallen at an average annual rate of 4.5 per cent since peaking in 2000/01 (or by 34 per cent in total). Once these projects reach full production, measured labour and multifactor productivity should rebound strongly, potentially reversing much of their decline over the past decade.

Another, possibly less transitory, drag on measured mining industry productivity arises from the fact that historically high prices for many metals have made it profitable to extract and refine low-grade deposits, which (by definition) require the application of more labour and capital in order to produce a given volume of ores or metals, and which would have remained untouched at lower prices.

<sup>4</sup> An illustration, perhaps, of the first part of Krugman's widely quoted aphorism that '[p]roductivity isn't everything, [even if] in the long run it's almost everything' (Krugman 1992, p 9).

**Figure 4: Mining Sector Productivity**  
2008/09 = 100



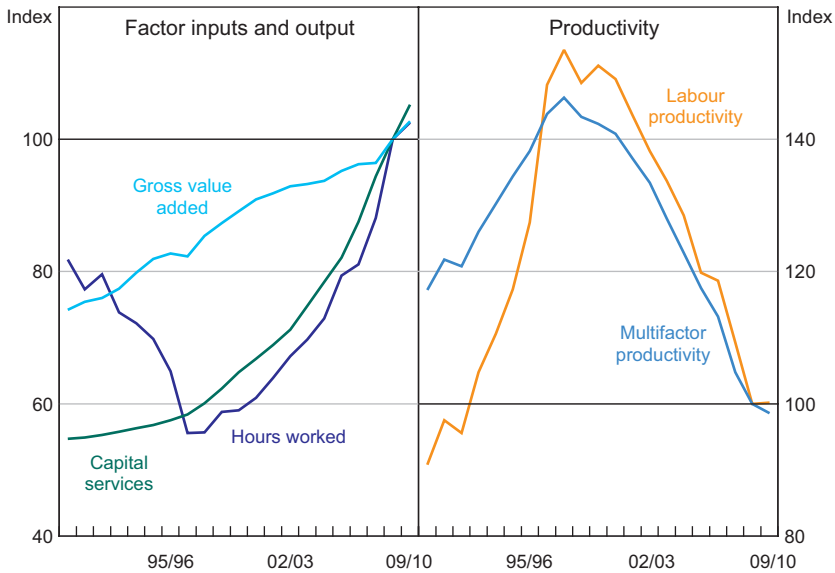
Source: ABS (2010b)

This inevitably detracts from measured productivity, even though it represents logical and profitable business for mining companies. This drag will persist for as long as metal prices remain high by historical standards. Indeed, Mudd (2009) argues that ore grades will continue declining indefinitely, and the amount of ‘overburden’ required to be removed in order to gain access, especially to coal and base metals, will continue to increase over time.

A different set of factors have resulted in similar trends in productivity in the utilities sector. This was a sector which recorded substantial productivity gains in the 1990s, largely as a result of reforms engineered by state governments. During the past decade, however, electricity and gas businesses have had to invest heavily in response to continued growth in demand (especially for peak load, which inevitably entails a large degree of ‘redundancy’ at non-peak times), to replace ageing transmission infrastructure, and to meet government-mandated renewable energy targets. Likewise, governments have undertaken significant investments in water infrastructure (including desalination plants in five states), with a view to guaranteeing security of supply in drought conditions, while simultaneously imposing restrictions on the use of water throughout much of the decade, which detracted from the output of water businesses without commensurate reductions in factor inputs.

Thus, in this sector, hours worked have increased by 73 per cent over the past decade, and the real value of the productive capital stock by 35 per cent, whereas output has risen by only 15 per cent. Correspondingly, labour productivity has fallen by 34 per cent (an average annual rate of decline of 4.0 per cent) and multifactor productivity by 31 per cent (3.6 per cent per annum) (see Figure 5).

**Figure 5: Utilities Sector Productivity**  
2008/09 = 100



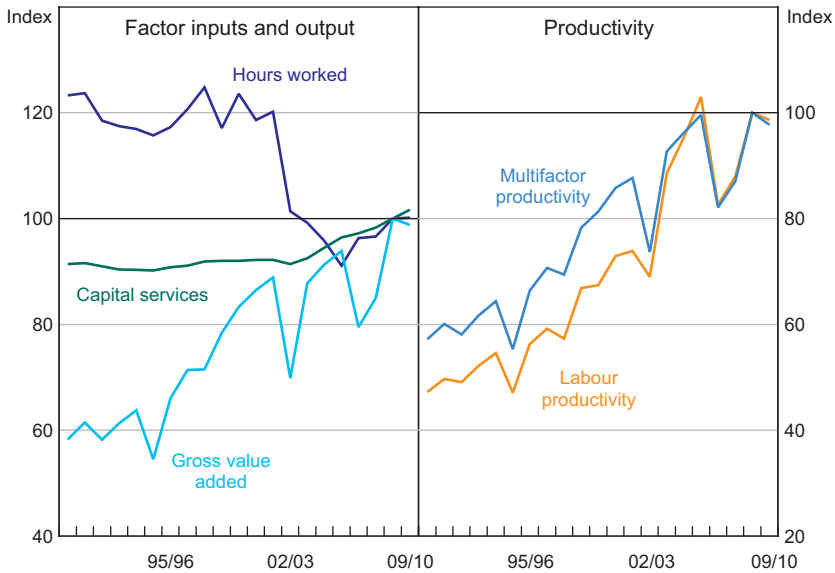
Source: ABS (2010b)

The output of the agriculture sector has obviously been affected by drought during the past decade, but it's not obvious that agricultural sector productivity has detracted from Australia's overall productivity performance over the past decade (see Figure 6). On the contrary, partly as a result of substantial labour-shedding in the early years of the decade, agricultural sector productivity rose at an average annual rate of 3.9 per cent over the 2000s, the second-fastest of any of the 16 industries making up the market sector, while multifactor productivity in agriculture rose at an average annual rate of 1.9 per cent, a more rapid rate than any other sector.

The mining and utilities sectors together have, over the past decade, employed about 19 per cent of Australia's non-housing capital stock and a little over 2 per cent of Australia's workforce, to produce about 11 per cent of Australia's overall output. On that basis alone, it seems *prima facie* implausible that these two sectors could have accounted for nearly all of the decline in Australia's productivity since the turn of the century.

However, this is not something which can be verified by direct reference to the measures of productivity published by the ABS, since these are, consistent with international practice, published in index number form, with both labour and multifactor productivity for each industry set to 100 in the base year of the national accounts. This provides the most accurate basis for estimating rates of productivity *growth* for each sector over time, especially when the numerator in the measure of productivity is derived from chain volume estimates of output. However, the use of index numbers precludes comparisons of the *levels* of productivity across different industries at any given point in time and the exclusion of particular sectors which are believed to be distorting economy- or market sector-wide productivity (in order to arrive at some measure excluding those sectors, analogous to exclusion-based measures of 'core' inflation or 'underlying' economic activity).

**Figure 6: Agricultural, Forestry & Fishing Sector Productivity**  
2008/09 = 100

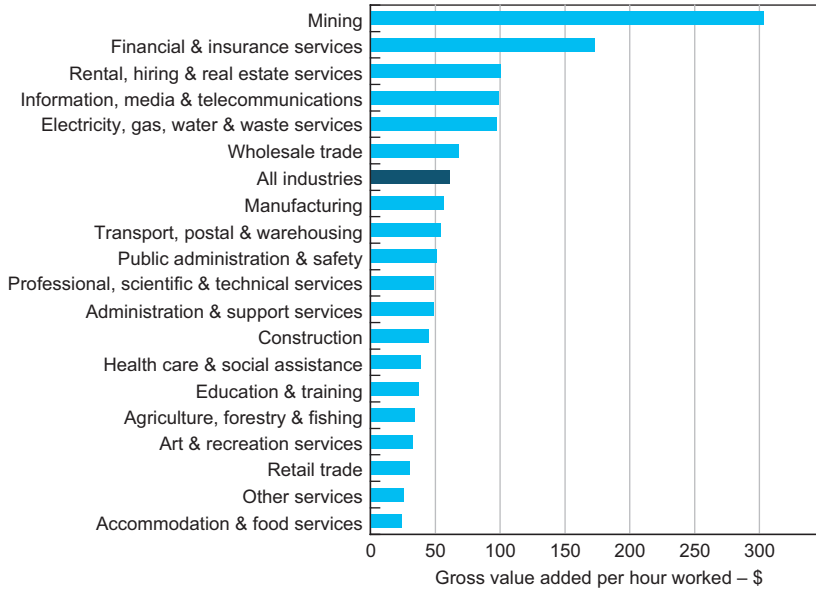


Source: ABS (2010b)

In order to circumvent this problem, Eslake and Walsh (2011) constructed 'dollar-denominated' estimates of labour productivity by industry sector. This required the derivation of estimates of actual hours worked by industry by multiplying the published figures for average weekly hours worked in each industry by those for employment in each industry, both of which are available for the middle month of each quarter. The resulting estimates were then averaged for each financial year, and multiplied by 52 to derive an estimate of annual hours worked in each industry.<sup>5</sup> These estimates of aggregate hours worked were then divided into the published estimates of gross value added (GVA) by industry to derive estimates of GVA per hour worked, or labour productivity. These estimates are shown for 2009/10 in Figure 7 below, while Figure 8 shows the behaviour of the measure of GVA per hour worked for the economy as a whole with the corresponding ABS index measure.

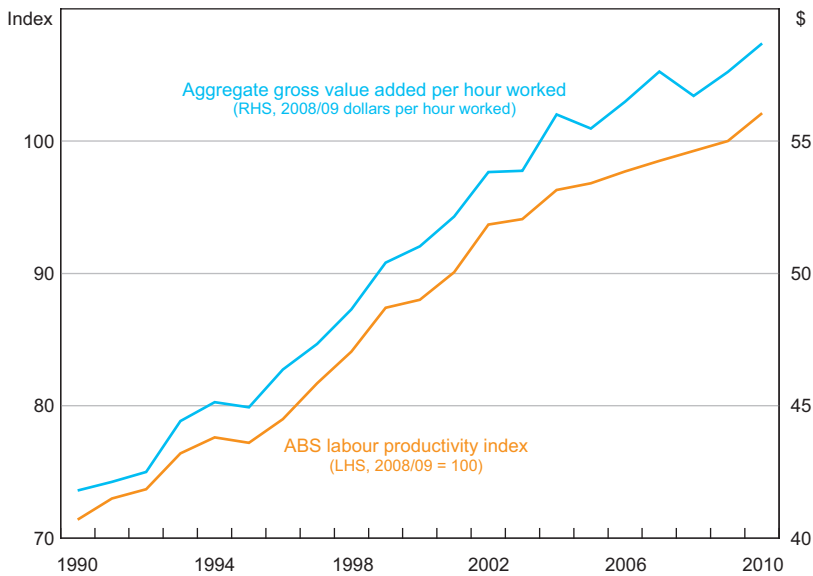
<sup>5</sup> To the extent that the hours worked in the survey week of the middle month of each quarter are unrepresentative of that quarter as a whole, the resulting estimates of total hours worked may be inaccurate. In practice, however, the behaviour through time of the resulting productivity estimates does not appear to be significantly different from that of the corresponding ABS index numbers.

**Figure 7: Labour Productivity by Industry**  
2009/10



Sources: ABS (2010b, 2011b); Eslake and Walsh (2011)

**Figure 8: Total Economy Labour Productivity**



Sources: ABS (2010a, 2010b, 2011b); Eslake and Walsh (2011)

The ordering of sectors by output per hour worked accords, in most cases, with what one would expect intuitively – that is, sectors which are intensive in their use of capital and/or skilled labour (such as mining, financial services, rental & hiring, IT & telecommunications, and utilities) have higher-than-average output per hour worked; while sectors which are relatively intensive in their use of unskilled labour (such as retailing, or accommodation & food services) have well-below average output per hour worked. There are a few apparent anomalies, such as education & training, or health care & social assistance, although since output in these sectors is in part measured by reference to labour and capital input, these need to be interpreted more cautiously.

Figure 9 shows estimates of both the 12- and 16-industry measures of market sector productivity, calculated as GVA per hour worked, including and excluding the mining and utilities sectors.

**Figure 9: Labour Productivity Growth Including and Excluding the Mining and Utilities Sectors**  
Five-year rolling average



Notes: 'Market sector' includes agriculture, forestry & fishing; mining; manufacturing; electricity, gas, water & waste services; construction; wholesale trade; retail trade; accommodation & food services; transport, postal & warehousing; information, media & telecommunications; financial & insurance services; rental, hiring & real estate services; professional, scientific & technical services; administration & support services; arts & recreation services; and other services. 'Selected sectors' excludes rental, hiring & real estate services; professional, scientific & technical services; administration & support services; and other services.

Sources: ABS (2008b, 2010a, 2010b); Eslake and Walsh (2011)

For the market sector (as presently defined by ABS) as a whole, labour productivity growth declined from a peak of 3.1 per cent per annum over the five years to 1999/2000 to 1.7 per cent per annum over the five years to 2009/10, a decline of 1.4 percentage points. Excluding the mining and utilities sectors, market sector labour productivity declined from 3.2 per cent per annum to 1.9 per cent per annum over the same interval, a decline of 1.3 percentage points. For the larger

group of 'selected sectors', labour productivity growth declined from a peak of 3.0 per cent per annum over the five years to 2001/02 to 1.2 per cent over the five years to 2009/10, a decline of 1.8 percentage points. Excluding the mining and utilities sectors, labour productivity growth for this group declined from 3.2 per cent to 1.4 per cent over the same interval, a decline also of 1.8 percentage points.

This suggests that the decline in labour productivity in the mining and utilities sectors accounts for less than 10 per cent of the decline in overall market sector productivity growth over the past decade – a considerably smaller contribution than suggested by the Productivity Commission's analysis referred to earlier (Productivity Commission 2010).

Given the rough-and-ready nature of these estimates, not too much precision should be attributed to this numerical conclusion. However, it does nonetheless suggest that the slowdown in Australian productivity growth has been broad-based rather than being largely the result of peculiar outcomes in a handful of industries.

This conclusion is supported by the observation that both labour and multifactor productivity growth have slowed in all but three of the sixteen sectors for which the ABS produces index-based estimates between the 1990s and 2000s. Those three sectors – construction, administration & support services, and arts & recreation services – account for 9.6 per cent of GDP and 11.2 per cent of GVA in industry.

The deterioration in Australia's (labour) productivity performance during the 2000s appears to have been more broadly based than in other comparable countries. Comparisons of productivity performance among countries at the industry level are complicated not only by the same measurement issues that pertain to comparisons of aggregate productivity (including that of the appropriate exchange rate) but also by differences in industrial classification systems.

The most readily available database allowing such comparisons to be made is the Groningen Growth and Development Centre's EU KLEMS (2009) database. The latest version of this database contains data only up to 2007. As summarised in Table 2, the data show that labour productivity growth in Australia slowed between 1990–2000 and 2000–2007 in 11 of the 15 broad industry groups used in EU KLEMS, compared with 7 in the United States, 9 in the euro area, 10 in the United Kingdom, 8 in Japan (for which the data is available only up to 2006), and 8 in Korea. Most other economies also experienced large declines in labour productivity growth in their mining and utilities sectors (almost as large in the United Kingdom as in Australia); but by comparison with the other economies shown in Table 2, Australia experienced particularly large declines in productivity growth in the wholesale & retail trade, transport & storage, financial services, public administration & defence, and education sectors.



**Table 2: Labour Productivity**  
Australia and other

Sector	Australia			United States		
	% per annum		Diff	% per annum		Diff
	1990 –2000	2000 –2007		1990 –2000	2000 –2009	
Agriculture, hunting, forestry & fishing	3.6	2.7	–1.0	2.6	4.5	1.9
Mining & quarrying	5.4	–6.1	–11.5	3.3	–3.1	–6.5
Manufacturing	1.9	2.7	0.8	4.1	5.4	1.3
Electricity, gas & water supply	6.0	–4.5	–10.4	3.6	2.5	–1.1
Construction	–0.2	3.3	3.5	–0.8	–4.3	–3.5
Wholesale & retail trade	4.0	2.0	–2.0	4.4	3.3	–1.0
Hotels & restaurants	1.0	2.0	1.0	0.5	0.5	0.0
Transport & storage	2.9	–0.5	–3.4	2.1	2.8	0.6
Post & telecommunications	5.8	5.2	–0.7	2.9	6.9	4.0
Financial intermediation	3.8	1.7	–2.1	2.7	2.6	–0.1
Real estate, renting & business activities	–1.3	1.3	2.7	–0.3	1.4	1.7
Public administration & defence	2.5	–1.0	–3.5	–0.1	0.8	1.0
Education	0.6	–1.0	–1.5	–0.4	–0.8	–0.4
Health & social work	1.1	1.0	–0.2	–1.5	0.8	2.2
Other services	0.4	0.2	–0.2	0.9	2.3	1.4
<b>Total</b>	<b>2.2</b>	<b>1.2</b>	<b>–1.0</b>	<b>1.6</b>	<b>1.9</b>	<b>0.3</b>

Sources: EU KLEMS (2009); author's calculations

**Growth by Sector**

economies

Euro area			United Kingdom			Japan			South Korea		
% per annum		Diff	% per annum		Diff	% per annum		Diff	% per annum		Diff
1990 -2000	2000 -2007		1990 -2000	2000 -2009		1990 -2000	2000 -2007		1990 -2000	2000 -2009	
4.8	1.6	-3.2	3.1	3.6	0.5	2.4	0.8	-1.7	5.5	6.4	0.9
4.4	1.9	-2.5	13.9	-2.0	-15.9	3.5	0.2	-3.3	5.7	6.3	0.5
3.0	2.6	-0.4	2.8	4.8	2.0	2.8	0.3	-2.5	6.1	7.5	1.4
4.4	2.7	-1.7	8.3	-0.5	-8.8	-0.6	1.3	1.9	6.0	6.4	0.4
-0.2	-0.2	0.1	1.9	1.3	-0.6	-0.5	1.2	1.8	3.7	6.4	2.8
2.0	1.1	-0.9	3.0	3.5	0.5	-0.5	1.2	1.8	4.3	5.3	0.9
0.1	-0.8	-0.9	0.3	1.3	0.9	0.5	0.5	0.0	4.8	-1.3	-6.1
3.2	1.3	-1.9	3.4	1.7	-1.7	0.2	0.3	0.1	1.5	-5.3	-6.8
6.2	6.2	0.0	13.0	4.3	-8.7	-1.9	-3.2	-1.3	-1.3	-5.6	-4.3
1.9	3.5	1.6	3.9	4.4	0.5	1.7	0.3	-1.4	8.5	4.4	-4.0
-1.2	-0.6	0.6	1.8	0.5	-1.3	1.6	-3.2	-4.8	7.8	6.8	-1.0
1.5	1.5	0.1	0.0	-0.2	-0.2	0.4	3.2	2.8	2.5	0.5	-2.0
0.3	-0.6	-0.9	0.1	-2.0	-2.2	2.0	4.9	2.8	5.1	7.8	2.7
0.5	0.6	0.1	2.4	1.2	-1.2	3.1	0.3	-2.9	7.4	1.2	-6.3
-0.2	-0.6	-0.4	1.3	-1.4	-2.7	3.0	-3.0	-6.0	3.8	5.3	-1.5
<b>1.8</b>	<b>1.2</b>	<b>-0.7</b>	<b>2.7</b>	<b>1.7</b>	<b>-1.1</b>	<b>2.2</b>	<b>2.0</b>	<b>-0.3</b>	<b>4.9</b>	<b>3.7</b>	<b>-1.3</b>

The Productivity Commission (2011) has recently fleshed out this relatively poor performance in the context of the retail sector, producing estimates suggesting that labour productivity in that sector in 2007 was some 38 per cent lower than in the United States, some 20–35 per cent below that in France, Germany and the United Kingdom, and only marginally higher than in Greece or Spain. The estimates also suggest that both labour and multifactor productivity growth in retailing had been significantly slower in Australia than in the United States.

The Commission concluded that ‘it appears likely that the size of the gap between Australia and the US has been increasing; nor has Australia made any significant gains in its position in regards to other leading countries’ (Productivity Commission 2011, p 67). Similarly, Daley and Walsh (2011) have argued that labour productivity in the Australian construction sector declined by half relative to its US counterpart between 1990 and 2005.

So, as Stevens (2011) observed recently, ‘it is now just about impossible to avoid the conclusion that productivity growth performance has been quite poor since at least the mid 2000s’.

### 3.2 Other possibilities

If the deterioration in Australia’s productivity performance isn’t primarily explained by sharp falls in productivity in a small number of sectors of the Australian economy, then what else could explain it?

It seems eminently plausible that at least part of the slowdown in productivity growth is attributable to the fading of the impact of the reforms which are widely agreed to have been a substantial driver of the acceleration in productivity growth during the 1990s. This was reaffirmed recently by the Productivity Commission, which stated that ‘the reforms of the latter part of the 1980s and the 1990s’ were the ‘prime candidate’ for the most ‘likely causes of the surge in productivity’ during the 1990s (Productivity Commission 2010, p 62), and the OECD (2010a, p 14), as well as (as noted earlier) by Bean (2000) and Forsyth (2000) at the RBA Conference a decade ago.<sup>6</sup>

To the extent that the reforms of the 1980s and 1990s prompted ‘step changes’ in the *level* of productivity – as may well have been the case with, for example, the privatisation of government monopolies or with at least some aspects of ‘competition policy’ – then the fading of what appeared at the time to have been an increase in the *rate* of productivity growth is unsurprising.

Indeed, this was precisely what Bean (2000, pp 98–99) suggested would turn out to be the case, predicting that ‘most of the structural reforms should primarily have a once-off level effect, although it may take some years to work through fully’. At the same conference, Quiggin (2000, pp 269–270) suggested that much of the apparent increase in measured productivity growth during the 1990s could be explained by measured (or unmeasured) increases in working hours and by increases in ‘work intensity’. To the extent that either of these suggestions are accurate (and they were contested by other participants at the conference – see Gruen and Shethra (2000, pp 275–276)), the increases in recorded productivity growth rates for which they accounted would also have been unsustainable.

It also seems highly plausible that at least part of the slowdown in productivity growth since the turn of the century is attributable to the absence of any significant productivity-enhancing

<sup>6</sup> Salgado (2000) is another useful study in this context.

reforms since that time (and that is, perhaps charitably, counting the reforms to the taxation system of 1999 and 2000 as 'productivity enhancing'). As Garnaut has observed:

There has been no successful major step in productivity-raising reform since the tax changes associated with the introduction of the GST in 2001 ... Economic policy since the GST has been characterised by change rather than productivity-raising reform. The use of independent analysis and transparent discussion of policy reform has become rare ... [A]ttempts at major reform that had the potential to raise productivity and incomes, but failed comprehensively ... poisoned the soil for further reform for a considerable while. (Garnaut 2010, pp 7–8)

In particular, the workplace relations reforms introduced by the Howard Government under the title Work Choices in its last term in office were not, primarily, 'productivity enhancing'. With the exception of the changes to 'unfair dismissals' procedures, they did not entail a significant degree of further labour market deregulation, but rather provided for a change in the level of government responsible for the regulation of the labour market, and to some extent in the purposes for which that regulation was pursued. To the extent that it had succeeded in one of its stated objectives of increasing the participation in employment of people with limited skills, it would have (at least initially) detracted from measured labour productivity (although that would not, by itself, be a reason for objecting to the elements of Work Choices intended to bring about that result).<sup>7</sup>

The dearth of productivity-enhancing reforms since about 2000 is clearly in part attributable to changes in the political environment, including a diminution in the enthusiasm of both major political parties for continuing reforms of the type pursued in the 1980s and early 1990s once the politically 'easiest' reforms (what management consultants typically call the 'low-hanging fruit') had been accomplished, and once what remained was seen as more politically 'challenging', including to important elements of the 'core constituencies' of both sides of Australian politics.<sup>8</sup> Changes in voting behaviour – particularly in rural and regional areas, but also in areas such as western Sydney – made both major political parties more sensitive to the views of those who perceived themselves (not always inaccurately) as 'losers' from the reforms of the 1980s and 1990s. The lack of enthusiasm for productivity-enhancing reforms since about 2000, on the part of both political leaders and the public at large, also seems in part attributable, paradoxically, to the generally more prosperous economic circumstances of the last decade.

The reforms of the 1980s and 1990s were to a significant degree prompted by the economic vulnerabilities exposed by the persistence of high inflation and unemployment since the mid 1970s, the decline in Australia's terms of trade during the 1970s and 1980s, and two severe recessions occurring within less than a decade, which prompted the then leaders of both sides of Australian politics to 'embrace ... the free market agenda and its gradual application as the solution to Australia's underlying problems' (Kelly 1992, p 660), and an at least tacit, if not wholehearted, acceptance of that agenda on the part of the Australian electorate at large.

By contrast, the past decade has been one of almost uninterrupted growth in economic activity, employment and household disposable income, lower unemployment than at any time since the mid 1970s, sound public finances (especially by comparison with other advanced

<sup>7</sup> For more on this point, see Eslake (2006).

<sup>8</sup> For example, newsagents, pharmacies, farming interests and the traditional professions (for the Liberal and National Parties), and public sector unions (for the Labor Party).

economies), relatively low and stable inflation, relatively low and stable interest rates, a generally rising exchange rate (something widely seen among the broader population as a short-hand summary of international investors' views of Australia's economic performance) and (perhaps most importantly in this context) a dramatic reversal of the downward trend in Australia's terms of trade which had prevailed throughout most of the 20th century.

Garnaut (2005, p 3) speaks of 'a Great Complacency that descended upon the country after a decade of exceptional economic growth ... As a community, we accepted the excellent economic performance as evidence that we had changed enough'. More recently, Stevens (2011) has noted that 'past periods of apparently easy affluence, conferred by favourable international conditions, probably lessened the sharpness of our focus on productivity'.

This 'diminished focus' on productivity over the past decade has not been confined to the public policy arena. As the profit share of Australia's national income has increased to unprecedented levels during the past decade (apart from the period immediately after the global financial crisis), businesses have in general attached less importance to the pursuit of productivity gains at the enterprise or workplace level (which is, after all, where the decisions that actually lead to higher levels of productivity are formulated and executed, if at all). A survey conducted by Telstra (2010) found that, among over 300 organisations each with over 200 employees:

- only 42 per cent measure their productivity, have specific productivity targets and know what they are, while 25 per cent don't measure their productivity at all;
- only 22 per cent believe that they can accurately measure productivity benefits when considering investment decisions; and
- only 34 per cent of firms assign individual responsibilities for productivity improvements.

As with the diminished enthusiasm for productivity-enhancing reforms at the political level, this low emphasis on the measurement of, and accountability for, productivity at the enterprise level is to at least some extent understandable. Productivity-enhancing change in individual workplaces is often disruptive and unpleasant; both for those on the 'receiving end' of that change and those (typically 'middle managers') who have to communicate it to those affected and implement it. When making such changes is no longer a matter of survival – as it was for many businesses in the 1990s – it is not surprising that the appetite for making them has diminished.

It is also to some extent inevitable, and consistent with both historical experience and the contemporary experience of other countries, that as the Australian economy moved closer to 'full capacity' in the second half of the 2000s, a situation characterised by (among other things) increasing shortages of skilled labour and the emergence of 'bottlenecks' in key areas of infrastructure provision, measured productivity would deteriorate – irrespective of whether political and business leaders had maintained their earlier enthusiasm for productivity-enhancing change in either public policy-making or business decision-making.

Another important and, in this context, pertinent development of the past decade has been the increasing volume of legislation and regulation in reaction to corporate scandals, various actual or perceived threats to 'security', and other more quotidian aspects of life.

A common belief underpinning this legislation and regulation appears to be that it is both possible and desirable to eliminate various kinds of risk (to life, to property, to public order and safety, to

people's savings, to standards of corporate or private behaviour, and so on) through additional legislative or regulatory action, irrespective of the probabilities attached to those risks, irrespective of the adequacy of already existing legislation or regulation to that end, and irrespective of the costs of seeking to eliminate those risks relative to the benefits of doing so.<sup>9</sup>

Much of this legislation and regulation has required the employment of additional staff, the acquisition of additional capital equipment or the costly modification of existing buildings and infrastructure, without resulting in the production of any additional (measured) goods or services, and often with the incidental effect of diverting the time and attention of other people from activities that would have otherwise resulted in the production of additional goods and services.

In other words, whatever public or private benefits that have been procured through legislation and regulation of this type have inevitably come at some cost in terms of productivity.

Of course, such costs may well be seen by many as an example of where, in Krugman's famous aphorism, 'productivity isn't everything': but that is not to deny that such costs have been real.

Nor has Australia's experience in this regard been unique, although when one looks beyond the realm of aviation security to other aspects of business and personal life, the quantum and reach of 'risk-averting' legislation and regulation may well have been more pervasive in Australia than in many other advanced economies.

Although difficult to verify in any empirical manner, there is considerable anecdotal evidence suggesting that the increased recourse to legislative and regulatory means of eliminating various types of risks has prompted business owners and managers to devote increasing proportions of their time and attention to compliance and risk management activities, and to have become less willing to take on some of the risks inevitably associated with decisions to undertake organisational change, enter new markets, develop new products or services, or engage in other forms of productivity-enhancing innovation.

One illustration of this may be the apparent decline in Australia's *relative* take-up of new technologies. In the second half of the 1990s, Australia typically ranked behind only the Nordic countries and the United States in various (objective and subjective) measures of the penetration or diffusion of new information and communications technologies. By the end of the past decade, however, Australia's ranking had slipped to, typically, between 15th and 22nd, behind not only the United States and Nordic countries but also a large number of Western European countries, a growing number of Asian economies, Canada and Israel (see Table 3).

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9 See, for example, Mueller and Stewart (2011) for a cost-benefit analysis of the aviation security measures adopted in the United States (and to a very large extent emulated in Australia) after the terrorist attacks on New York and Washington on 11 September, 2001, and subsequent actual or attempted terrorist incidents around the world.

Table 3: Country Rankings in Surveys of Innovation Performance

Survey	Global Competitiveness Report – Innovation	Global Innovation Index	Benchmarking EU & US Innovation and Competitiveness	The Innovation and Imperative in Manufacturing	Innovation: Transforming the Way Business Creates	How Canada Performs – Innovation
Top ranking economies:	1. US	1. Iceland	1. Singapore	1. Singapore	1. Japan	1. Switzerland
	2. Switzerland	2. Sweden	2. Sweden	2. South Korea	2. Switzerland	2. Ireland
	3. Finland	3. Hong Kong	3. Luxembourg	3. Switzerland	3. US	3. US
	4. Japan	4. Switzerland	4. Denmark	4. Iceland	4. Sweden	4. Japan
	5. Sweden	5. Denmark	5. South Korea	5. Ireland	5. Finland	5. Sweden
	6. Israel	6. Finland	6. US	6. Hong Kong	6. Germany	6. Germany
	7. Taiwan	7. Singapore	7. Finland	7. Finland	7. Denmark	7. UK
	8. Germany	8. Netherlands	8. UK	8. US	8. Taiwan	8. Netherlands
	9. Singapore	9. NZ	9. Japan	9. Japan	9. Netherlands	9. Finland
	10. Denmark	10. Norway	10. Netherlands	10. Sweden	10. Israel	10. France
	11. Canada	11. US	11. France	11. Denmark	11. Austria	11. Denmark
	12. South Korea	12. Canada	12. Ireland	12. Netherlands	12. France	12. Belgium
	13. Netherlands	13. Japan	13. Belgium	13. Luxembourg	13. Canada	13. Austria
	14. UK	14. UK	14. Germany	14. Canada	14. Belgium	14. Canada
	15. Belgium	15. Luxembourg	15. Canada	15. UK	15. South Korea	<b>15. Australia</b>
	16. Luxembourg	16. Germany	16. Austria	16. Israel	16. Norway	16. Italy
	17. Iceland	17. Belgium	<b>17. Australia</b>	17. Austria	17. Singapore	17. Norway
	18. Norway	<b>18. Australia</b>	18. Czech Republic	18. Norway	18. UK	
	19. France	19. Ireland	19. Estonia	19. Germany	19. Ireland	
	20. Austria	20. South Korea	20. Spain	20. France	20. Italy	
	<b>21. Australia</b>	21. Austria	21. Hungary	21. Malaysia	<b>21. Australia</b>	
	22. Ireland	22. France	22. Lithuania	<b>22. Australia</b>	22. NZ	
Year:	2010–2011	2009–2010	2009	2009	2007	2010
Source:	World Economic Forum	INSEAD	ITIF	The Boston Consulting Group	Economist Intelligence Unit	The Conference Board of Canada

Although some dimensions of Australia's innovation effort – for example, gross expenditure on research and development (R&D) as a percentage of GDP – have improved over the past decade, in many others Australia still falls well short of OECD 'best practice':

- only 2.4 per cent of Australian firms introduced one or more product innovations that were new to international markets in 2008/09, compared with 10 per cent of Japanese firms, between 20–35 per cent of European firms, and even 20 per cent of New Zealand firms;
- only 9.6 per cent of Australian firms introduced one or more product innovations that were new to their domestic market in 2008/09, a slightly better figure than that for German firms of 7.4 per cent, but below the 10–15 per cent figures common for firms from other European economies, 25.3 per cent for Japanese firms, and even 15.4 per cent for New Zealand firms; and
- by contrast, Australian firms are much more likely to modify or adopt products or processes that already exist in domestic markets, which 'might contribute to specialisation of existing markets [but] it will not necessarily create or confer any "first mover" competitive advantage' (DIISR 2011, p 26).

Australian business investment in intangibles is also relatively low by OECD standards, at 5.9 per cent of GDP in 2006, lower than all but three of the sixteen countries (Italy, Slovakia and Spain) for which these data were available, and substantially below the United States (12.0 per cent), Japan (11.1 per cent), Canada (9.8 per cent) and the UK (9.7 per cent) (OECD 2010a).

Although Australia's relatively low ranking on these comparisons may be partly a function of the structure of its economy (with a relatively small manufacturing sector, and relatively high levels of foreign ownership in R&D-intensive sectors such as pharmaceuticals) or its scale and distance from other major markets, the comparisons with Canada (whose economic structure is in many ways similar to Australia's) and New Zealand (which is considerably smaller, and more remote, than Australia) caution against these being the sole explanations.

It would be wrong to suggest that there is any single, or overwhelming, 'cause' of Australia's poor productivity performance over the past decade. But there seems to be little doubt that the broader economic and political environment (one in which there has been little pressure on either policy-makers or individual firms to pursue productivity-enhancing structural or organisational change) has been of critical importance. As Parkinson (2011, p 22) put it, 'the root causes of Australia's present productivity performance are embedded in the decisions of the last decade'.

#### 4. Consequences of the Deterioration in Australia's Productivity Performance

As noted earlier, the connections between productivity growth and improvements in (material) living standards have been long established in the economics literature. Yet it is not immediately apparent that the deterioration in Australia's productivity performance during the 2000s has as yet had serious consequences for the living standards of Australian citizens. Real household disposable income rose at a 4.1 per cent average annual rate over the decade ended 2009/10, compared with 2.5 per cent per annum during the 1990s, 2.3 per cent per annum during the 1980s and 2.1 per cent per annum during the 1970s, while real household net worth rose at a 5.8 per cent annual rate over the ten years to June 2010 (notwithstanding the losses suffered during the global

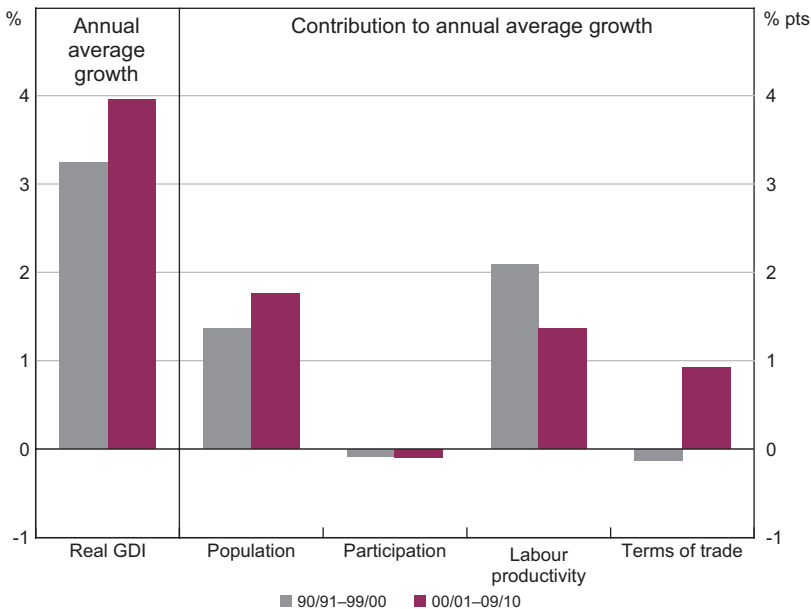


financial crisis) compared with 5.1 per cent per annum over the preceding decade. Reflecting this, real household consumption spending rose at a 3.4 per cent average annual rate during the 2000s, slightly above the 3.3 per cent annual rate during the 1990s.

The apparent contradiction between falling productivity growth rates and rising material living standards can be explained by noting that, during the 2000s, the consequences of Australia’s declining productivity growth rate were offset (for most of the decade) by a rising population growth rate and (insofar as gross domestic income (GDI) rather than GDP is used as a measure of national income) by the surge in Australia’s terms of trade to their highest sustained level in at least 140 years.

As shown in Figure 10, growth in real GDI averaged 4.0 per cent per annum over the decade to 2009/10, compared with 3.2 per cent per annum over the previous decade. Of the former figure, labour productivity growth contributed 1.4 percentage points, down from 2.1 percentage points in the 1990s. Declining average labour force participation subtracted 0.1 percentage points from real GDI growth in both decades, while population growth contributed 1.8 percentage points to the average annual rate of real GDI in the 2000s, 0.4 percentage points more than during the 1990s. The terms of trade gains boosted real GDI growth by an average of 0.9 percentage points per annum during the 2000s, in contrast to the 0.1 percentage point deduction from real GDI growth on average during the 1990s which resulted from a deterioration in Australia’s terms of trade.

**Figure 10: Real Gross Domestic Income**



Note: Real gross domestic income (GDI) is real GDP adjusted for changes in terms of trade

Source: ABS (2010a)

There is a very strong echo here of Australia's experience during the 1950s, 1960s and early 1970s. Then, as during the past decade, the consequences of a rather ordinary (by international standards) productivity performance were obscured by the combination of rapid population growth (the result, in turn, of the post-war baby boom common throughout the world, and Australia's own post-war immigration program) and the benefits to Australia (both through terms of trade gains and increases in production capacity) arising from the urbanisation and industrialisation of what during this period became our largest export market (namely, Japan). But when the post-war population boom came to an end (in the early 1970s) – and shortly afterwards Japan more or less 'caught up' with US and Western European levels of per capita GDP and the commodity intensity of its economy subsequently began to decline – the consequences of Australia's poor productivity performance for Australians' living standards became more readily apparent in the form of weaker average economic growth rates, and persistently high inflation and unemployment.

The same fate could await Australia in the decade ahead now that population growth has begun to slow, as demographic change erodes labour force participation rates and average hours worked, and if, as both Treasury and Reserve Bank forecasts presume, Australia's terms of trade have reached their peak.

Indeed, Parkinson (2011, p 15) argues that 'the rate of improvement in the living standards of Australians, at least that part measured by incomes, has already begun to deteriorate, even with the sustained and unprecedented rise in the terms of trade'.

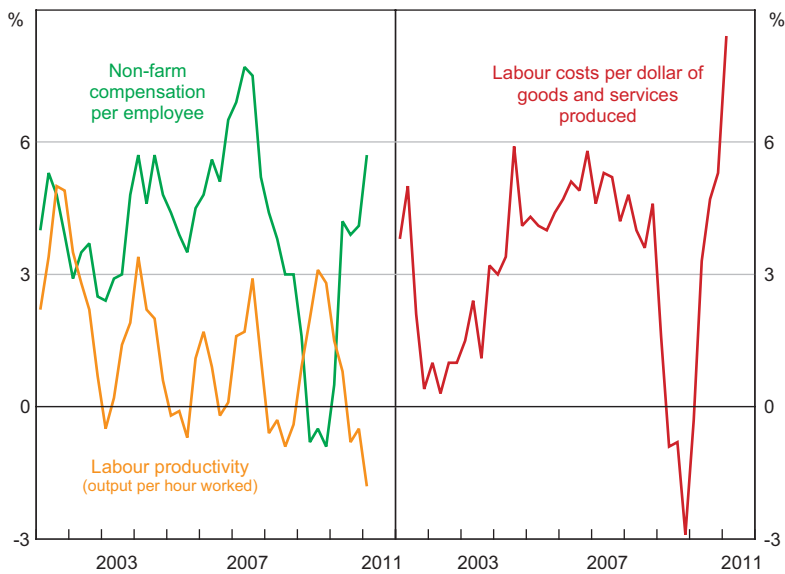
Another important consequence of Australia's persistently poor productivity performance is a greater propensity to inflation, even under outcomes for wage growth that would not, historically, have been regarded as ominous from that perspective. As shown in Figure 11, the combination of growth in average compensation per non-farm employee of more than 5½ per cent over the year to the March quarter 2011 (a figure which is high by the standards of the past two decades but by no means unprecedented) with a fall in labour productivity of 1¾ per cent over the same period has resulted in unit labour cost growth of almost 8½ per cent, the fastest since the late 1980s.

Given the role played by unit labour costs in most contemporary models of the inflationary process,<sup>10</sup> this is a clear warning sign of upward risks to inflation emanating from this source despite the continued moderation (by historical standards) evident in other measures of wage growth.

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<sup>10</sup> See, for example, Norman and Richards (2010).

**Figure 11: Employee Compensation, Labour Productivity and Unit Labour Costs**  
Year-ended percentage change



Source: ABS (2011a)

## 5. What (If Anything) Is To Be Done?

Keynes (1919, p 220) attributed to Lenin the assertion that ‘the best way to destroy the Capitalist System was to debauch the currency’, although there is no evidence that Lenin actually did say this. Lenin did, however, ask ‘What is to be done?’ in a pamphlet written to explain ‘the difference between the amateurish methods which satisfy the Economists, and the organisation of revolutionaries which we hold to be indispensable’ (Lenin 1961, preface).

Without in any way endorsing his methods, Lenin’s question seems an appropriate one with which to conclude this discussion of Australia’s productivity performance over the past decade. What is to be done about Australia’s deteriorating productivity performance?

It’s by no means inconceivable that the answer to this question could be ‘nothing’. Indeed, historical precedent strongly suggests that Australians, and their political representatives, will feel no great compulsion to embrace a program of productivity-enhancing economic reforms for as long as the mining boom – and the various channels through which the income generated by that boom is recycled and redistributed throughout the Australian economy – delivers continued growth in incomes and high levels of employment.

It is also possible that the difficulties now being encountered by sectors of the economy which are adversely affected by some of the side-effects of the mining boom, in particular the rising exchange rate (something which did not occur to the same extent, if at all, during previous commodities booms) will prompt businesses in those sectors, of their own volition, to place

a much higher priority on productivity-enhancing organisational and other changes at the enterprise or workplace levels, as a matter of survival, without any need for public policy changes.

But if Australian policy-makers were to decide to seek public policy solutions to the problems posed now or for the future by Australia's deteriorating productivity performance, what might those look like?

At the outset, it is important to keep in mind that productivity improvements occur as the result of decisions taken by and implemented in enterprises and workplaces, not as the direct result of public policy initiatives.

Public policy initiatives can contribute to improving Australia's productivity performance to the extent that they:

- increase the incentives facing the owners or managers of enterprises (including government agencies themselves) to make productivity-enhancing changes (to the goods and services they produce, or the way in which they are produced);
- increase the ability of owners or managers of enterprises to implement productivity-enhancing changes once they have decided to make them (or, alternatively, reducing the barriers and obstacles to implementing productivity-enhancing change); or
- facilitate the movement of factors of production from existing uses to ones in which they can be combined in ways that result in higher levels of productivity overall.

As Parkinson has commented, '[w]e do ourselves, and the nation, a disservice if we target reform efforts only on the same areas as we have in the past' (Parkinson 2011, p 24). Many of those past reforms were, intrinsically, once-off in their nature: tariffs, once reduced to minimal levels, can't be cut again; government monopolies, once privatised, can't be privatised again (unless they've been renationalised in the meantime); and markets, once deregulated, can't be deregulated again (unless the deregulation has been only partial, and there's a good case for going further).

## 5.1 Regulatory reform

However, there are many areas of the Australian economy that have, mainly for political reasons, remained largely insulated from competitive pressures of the sort that, in other sectors, have acted as strong incentives for the pursuit of productivity-enhancing structural and organisational change. These include, international aviation, agricultural marketing (other than grains), pharmacies, newsagents, private sector service professions (such as law, medicine and architecture), and services sectors dominated by public sector agencies (such as health and aged care, education, public transport and law enforcement).

Some of these are, admittedly, relatively small as a share of output or employment, while others (in particular the service delivery sectors just mentioned) are both large themselves, and important 'enablers' for other sectors of the economy. One of the key obstacles to the pursuit of productivity-enhancing reforms in these areas is the widespread (and bipartisan) belief that there is a linear correlation between the number of people employed in delivering these services and the quality of them, notwithstanding the absence of any empirical evidence in support of that belief (for example, between staff-student ratios in schools and student outcomes, or between police numbers and crime rates).

Banks (2010, p 15) has suggested that ‘the productivity enhancing reforms that deserve some priority right now are those that can reduce business costs and enhance the economy’s supply-side responsiveness, while being fiscally parsimonious’. Specifically:

- reducing any government assistance to industry ‘not justified by genuine market failures’;
- government procurement, including defence procurement favouring high-cost local production without any obvious social benefit;
- infrastructure projects that do not demonstrably yield a social benefit;
- human services programs where benchmark data suggest scope for more cost-effective delivery (in particular health services); and
- regulatory constraints on adaptability and flexibility at the enterprise level, particularly those impacting on the markets for labour and capital, and key infrastructural inputs such as transport, energy, telecommunications and water.

Banks lays particular emphasis on industrial relations and the labour market, pointing out that:

Whether productivity growth comes from working harder or working ‘smarter’, people in workplaces are central to it. The incentives they face and how well their skills are deployed and redeployed in the multitude of enterprises that make up our economy underpins its aggregate performance. It is therefore vital to ensure that regulations intended to promote fairness in Australia’s workplaces do not detract unduly from their productivity ... If we are to secure Australia’s productivity potential into the future, the regulation of labour markets cannot remain a no-go area for evidence-based policy making. (Banks 2010, p 16)

The Productivity Commission’s recent draft report on retailing noted that closing the productivity gap between Australia and countries such as the United States ‘will require greater workplace flexibility so that employers and employees can work cooperatively and creatively together, to deliver the required productivity improvements’ (Productivity Commission 2011, p 287). The report also suggested that ‘some aspects of the [Fair Work] system may be inhibiting the adoption of flexibility enhancing provisions’ in retailing workplace arrangements (pp 306–307), and observed that the workplace flexibility provisions in the ‘Fair Work’ system appear to have been used to place ‘greater emphasis on strategies for developing family-friendly workplaces, rather than productivity’ (p 319).

Of course, the scope for regulatory reform extends well beyond the workplace relations framework. The OECD’s recent review of Australian regulatory practices describes Australia as ‘one of the front-running countries in the OECD in terms of its regulatory reform practices’ (OECD 2010c, p 16) and observes that ‘[i]n general the Australian States demonstrate regulatory management practices that are among OECD best practice’ (p 17).

Nonetheless, the Business Council of Australia (BCA) argues that ‘significant reforms ... are needed in all jurisdictions to improve their regulatory process’ (BCA 2010, p 9), and the OECD itself notes in a separate publication the need for further reforms in infrastructure regulation, and also that Australia’s barriers to foreign direct investment are the seventh highest in the OECD (OECD 2010b, pp 99 and 47). Policy-makers and regulators have continued to respond to new social or economic issues with ‘knee-jerk regulatory solutions’, as the Regulation Taskforce (2006, p 148) reported to the Howard Government. Hence, as the BCA urges, ‘[t]here needs to be a comprehensive model

that incorporates both prospective and retrospective reforms to prevent bad regulation from being made in the first place' (BCA 2010, p 4).

There are also still examples where outright deregulation ought to be more actively considered. For example, Abelson (2010, p 41) demonstrates that the removal of restrictions governing entry into the Sydney taxi industry (for which there are 'few efficiency or social reasons') could produce benefits 'in the order of \$265 million per annum', with even greater productivity and service benefits if accompanied by reform of the 'anti-competitive control of the taxi radio networks over all taxi operators'. Similarly, the Productivity Commission (2011, pp 269–284) has recently highlighted the potential benefits of the removal of remaining restrictions on retail trading hours.

## 5.2 Taxation reform

Tax reform could play an important role in improving Australia's productivity performance. Australia's personal and business income tax systems (and state land and payroll tax systems) are littered with exemptions and concessions which confer favourable treatment on particular groups of taxpayers, particular forms of business organisation, or particular types of economic activity at the expense of others, leading to household and business investment decisions often being excessively influenced by tax considerations rather than their intrinsic merit (which must be to the detriment of productivity, among other things).

The Henry Review of Australia's tax system urged that 'Australia should configure its tax and transfer architecture to promote stronger economic growth through participation and productivity' (Australia's Future Tax System Review Panel 2009, p xviii). Unfortunately, many of the Review's recommendations to that end were promptly ruled out – by both sides of politics – for transparently political reasons.

## 5.3 Skills and infrastructure

To the extent that Australia's poor productivity performance over the past decade reflects past under-investment, or poorly targeted investment, in skills formation and in infrastructure, some combination of more and better targeted investment in these areas will contribute to improved productivity performance, albeit with lags that are inevitably protracted. These two areas have been key elements of the current Australian Government's 'broad ranging and extensive productivity agenda' (Australian Government 2011, p 4-32).

Yet despite the continuing upward trend in the proportion of the Australian working-age population with formal educational qualifications, it is not at all clear that the quality of Australian human capital has increased significantly.

The OECD concluded, earlier in the decade, that 'skill upgrading has played, at best, a modest role in GDP growth per employed person' in Australia (and also in Canada, the Netherlands, New Zealand and the United States) (OECD 2003, p 37). An ABS survey undertaken as part of an OECD study of adult literacy and life skills found that 46 per cent of Australians aged 15–74 lacked the minimum prose and document literacy skills, 50 per cent lacked the minimum numeracy skills, and 70 per cent lacked the problem-solving skills 'required for individuals to meet the complex demands of everyday life and work in the emerging knowledge-based economy' (ABS 2008a, p 5).

It has been recognised for some time that younger Australians from lower socio-economic backgrounds tend to lag at least one year behind the Australian average, and more than two years behind students in the highest socio-economic quartile (OECD 2010b, p 139). The results from the latest OECD Programme for International Student Assessment (PISA) suggest that the performance of Australian 15-year-old students has declined significantly over the past decade, despite a 33 per cent real increase in public expenditure, and a 54 per cent real increase in private expenditure, on education during this period (Jensen 2010).

By comparison with schools and higher education, the vocational education and training (VET) sector attracts little public attention. Yet there is evidence that the effectiveness of the training provided by this sector is variable, and that this sector is characterised by low completion rates in occupations that regularly appear on national skills shortages lists (Australian Government 2008, p 4-20).

It is widely accepted that Australia's infrastructure, particularly in transport, is inadequate for many of the requirements of Australia's growing economic, personal and social needs, and that this is in part due to under-investment in infrastructure in the 1980s and 1990s. However, as the OECD notes, it also reflects 'weak co-ordination between public infrastructure development and fiscal management' and a 'lack of co-ordination between the various levels of government, and between jurisdictions at the same level', so that '[i]nfrastructure spending decisions are frequently taken with no regard for national priorities' (OECD 2010c, p 95).

The solution to these weaknesses is not simply more spending on infrastructure, especially if that spending is as unco-ordinated and with as little regard for national priorities as in the past. It is of no less importance to the objectives of higher levels of productivity or faster productivity growth that better use is made of existing infrastructure, including through rational pricing regimes, and through avoiding ill-conceived regulation that detracts from the efficiency with which existing infrastructure is used (for example, by arbitrary and knee-jerk reductions in speed limits on roads, or 'security' procedures entailing excessive or unnecessary delays in the movement of goods and passengers through airports).

## 5.4 Innovation

It is widely accepted, and not just by economists, that '[i]nnovation can increase productivity through the creation of higher value products, more efficient production processes, more effective workplace organisation and opening up new markets' (DIISR 2011, p 8). The fact that, as noted earlier, Australia's innovation effort falls well short of OECD 'best practice' on many dimensions, thus suggests the potential for improvements in Australia's innovation effort to contribute to higher levels of productivity and faster rates of productivity growth.

In this area, no less than in any others, it is important to emphasise that productivity growth happens as a result of decisions being taken and implemented by the owners and managers of individual enterprises (and government agencies), and that the role of public policy is to improve the incentives facing those owners and managers to undertake productivity-enhancing innovations, and to remove obstacles to the undertaking of such innovations where they have been inadvertently created by past public policy interventions.

This is not simply a matter of more generous tax concessions for business R&D expenditures, or higher levels of public expenditure on R&D. As Dodgson *et al* argue, '[m]odern innovation policy has to recognise, explicitly, that market mechanisms can be used effectively ... as devices that permit flexibility, selection and change in a complex-evolutionary economic system' (Dodgson *et al* 2009, p 33).

Among the issues that could be usefully considered in this domain are:

- the extent to which Australia's competition laws inhibit the kind of collaboration among firms in the same industry which overseas experience suggests is an integral part of the innovation process in many industries;
- the extent to which the treatment of options by the Australian taxation system inhibits the ability of 'start-up' companies to attract and retain talented staff, or to attract institutional investment; and
- the extent to which what appears to be a highly legalistic approach on the part of many Australian universities to intellectual property rights inhibits the transfer of knowledge between those undertaking 'pure' or 'basic' research in higher education institutions to innovative entrepreneurs.

## 6. Conclusion

Although Australia's economic performance during the 2000s has been impressive on many dimensions, especially by comparison with that of other advanced economies, productivity is not among them. Australia's productivity performance over the past decade has been, to put it mildly, poor – both by Australia's own historical standards, and by contemporary international standards.

The consequences of this poor productivity performance have not, as yet, become widely apparent, because they have been masked by a combination of faster population growth (until recently) and the most sustained upswing in Australia's terms of trade in over a century.

Together with a weakening of an earlier, widely shared consensus around the need for ongoing economic reform that is perhaps the inevitable result of what has now been the longest period of more-or-less uninterrupted economic growth in more than a century, accompanied by falling unemployment, rising real incomes (which have in turn been fairly widely distributed), and rising personal wealth (for most of the past two decades), the sense that sustaining high rates of productivity growth is an important objective both for Australia as a whole and for individual businesses has declined substantially.

It may well be that an end to this period of comparatively easy prosperity – at least for sectors of the Australian economy that are adversely affected by some of the side-effects of the mining boom, or by the more frugal behaviour of Australian households, and possibly for the broader Australian economy if the global economy enters a renewed downturn with limited means on the part of economic policy-makers in the major advanced economies to ameliorate using the tools that have become customary over the past 70 years – will prompt a renewed focus, both among policy-makers and business leaders, on the objective of raising both the level of productivity and the rate of productivity growth.

If not, then it is unlikely that retrospective evaluations of the performance of the Australian economy over the 2010s, or the 2020s, will be as flattering as those of the past two decades.



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# Discussion

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## 1. Michael Plumb

The paper by Saul Eslake provides a thorough discussion of issues relating to productivity growth in Australia over the 2000s. Following a brief discussion of why productivity is important, the paper provides evidence of a fairly broad-based slowing in multifactor productivity growth across a range of countries over the 2000s, but argues that this slowing has been more pronounced in Australia. While the relatively weaker productivity growth in Australia can partly be attributed to developments in the mining and utilities sectors (see below), it is argued that the slowing in Australia's productivity growth has nevertheless been broad based across industries. The paper cites a number of reasons for this: the fading impact of reforms in the 1980s and 1990s, such as deregulation of the labour and financial markets; the dearth of productivity-enhancing reforms in the 2000s; reduced emphasis on productivity due to generally prosperous economic conditions; deterioration in productivity growth as the economy moved towards full capacity; increased regulation; and a decline in Australia's relative take-up of new technologies. It is argued that the deterioration in Australia's productivity performance will act as a drag on living standards and place upward pressure on inflation, and a number of policy responses are outlined (see below).

My discussion of the paper covers three issues:

1. Is there a silver lining to the slowing in measured productivity growth since the 1990s?
2. Potential catalysts for higher productivity growth.
3. The consequences for inflation of weak productivity growth.

### Is there a silver lining?

While being careful not to downplay the negative implications of weak productivity growth, it is worth asking if there are any positive aspects to the factors associated with the decline in *measured* productivity growth in Australia over the 2000s. I would like to expand upon three areas touched on in the paper: developments in the mining industry; developments in the utilities industry; and the decline in the unemployment rate to a relatively low level.

In the case of the mining industry, sharp increases in commodity prices since the middle of the decade have made it profitable to extract some lower-quality deposits.<sup>1</sup> This has contributed to lower productivity because extracting lower quality-deposits requires more labour and capital to produce relatively little additional physical output. Also, while the significant expansions of mining capacity currently underway should eventually be reflected in rapid growth in mining output and productivity in the medium term, they may be associated with falls in measured productivity in the short term, reflecting disruptions to production associated with expansion

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<sup>1</sup> For a discussion of mining industry productivity, see Topp *et al* (2008).

and the lags between the initial investment and the subsequent increase in output. While the profitable extraction of lower-quality deposits and expansion of capacity can be regarded as positive economic developments in the mining industry, they may have contributed to a decline in measured productivity in the mining sector, at least in the short term.

Part of the explanation for the decline in productivity in the utilities sector may also be associated with lumpy investment. In recent years a significant amount of investment and employment growth has occurred in various parts of the utilities industry, following a period of under-investment, in order to maintain existing infrastructure or to improve the reliability of supply systems. Moreover, shifting patterns of consumption, particularly the large run-up in ‘peak’ demand for electricity, has required investment in peak supply capacity and upgrading of distribution infrastructure that produces only relatively little additional output, even though this output does attract high prices.<sup>2</sup> Although greater reliability of supply is generally beneficial (e.g. the counterfactual could be brownouts during periods of peak demand for electricity), it does not translate into higher utilities output relative to the additional inputs, and therefore may contribute to a decline in measured productivity. Another example is the building of desalination plants in order to improve the reliability of water supply during drought periods.

It is also possible that the trend decline in the unemployment rate to a relatively low level, which has obvious social and economic benefits, may have contributed to slower growth in measured productivity over the 2000s. For example, those workers drawn from the pool of long-term unemployed may have lower productivity on average, at least initially, due to factors such as skill atrophy during their absence from employment. As lower productivity workers enter employment, average measured productivity declines, all else equal. In a broader sense, however, aggregate labour utilisation in the economy has risen, as there has been an increase in the proportion of *available* workers making a contribution to GDP. This latter effect is not captured in measured productivity, which is a technical efficiency measure of output per hour worked, rather than output per *available hours*. The decline in unemployment has occurred alongside a significant increase in the labour force, reflecting both population growth and a rise in the participation rate, suggesting that there has been a substantial reduction in unutilised labour. This is a good economic outcome, although it may have contributed to lower productivity growth at the margin.

## Potential catalysts for higher productivity growth

What can be done to improve Australia’s productivity performance? The paper outlines a number of potential policy reforms, including: industry-specific reforms; improving the regulatory environment; taxation reform; skills development; improving infrastructure; and encouraging firm-level innovation. The relative merits of these proposals are discussed in the paper and elsewhere so will not be addressed in these comments, but it is worth emphasising that any proposal needs to be scrutinised in terms of its potential costs and benefits, rather than implementing reform for reform’s sake.

Another question worthy of posing is whether there is likely to be an improvement in Australia’s productivity performance, irrespective of public policy action. For example, one explanation for the moderation in productivity growth in the 2000s is that the long period of economic expansion

<sup>2</sup> For a discussion of developments in the utilities industry, see Plumb and Davis (2010).

in Australia and the rise in the terms of trade have weakened incentives for governments, firms and workers to pursue productivity-enhancing reforms. That is, strong growth in incomes, profits, employment and government revenue have reduced the incentives to implement changes that improve productivity. Recently, however, economic conditions in various Australian industries have become more challenging – for example, in parts of manufacturing, retail and tourism – and firms in these industries may be compelled to undertake productivity-enhancing changes. An improvement in productivity growth in these industries would provide some support for the ‘reduced incentives in good economic times’ explanation for the slowing in productivity growth in Australia in the 2000s.

## Consequences for inflation of weak productivity growth

The paper makes the important point that persistently weak productivity growth generates a greater propensity for inflation. For a given rate of growth in nominal wages, lower labour productivity growth gives rise to faster growth in nominal unit labour costs, defined as the labour costs associated with producing a unit of output. Faster growth in unit labour costs exerts upward pressure on inflation. From the perspective of an inflation-targeting central bank, the link between inflation, wage growth and productivity growth is critical.

Since the mid 2000s, the consumer price index (CPI) has grown at an average annualised rate of around 3 per cent – around ½ percentage point higher than over the first part of the inflation-targeting period (Table 1). To analyse the drivers of this pick-up, the goods and services for which prices are measured in the CPI can be divided into two categories:

- Non-tradable items, whose prices are heavily influenced by domestic factors, such as unit labour costs and margins (although the latter are difficult to measure). Non-tradable items include housing, utilities, education, health, personal services and child care, and comprise around 60 per cent of the CPI by weight.
- Tradable items, whose prices are heavily influenced by world prices and the exchange rate. These items include petrol, motor vehicles, clothing & footwear, traded foods, furniture, household appliances and other consumer durables.

The pick-up in CPI inflation since the mid 2000s has mostly reflected higher non-tradables inflation, which has averaged 3¾ per cent since 2005, compared with 3 per cent over 1993–2004 (note that non-tradables inflation began to rise in the early 2000s). Tradables inflation was also a little higher in the latter period, but has only averaged around 2 per cent since 2005.

The pick-up in non-tradables inflation has at least partly reflected faster growth in nominal unit labour costs, which have grown at an average annualised rate of around 3½ per cent since 2005, double the pace recorded over 1993–2004. Faster average growth in nominal unit labour costs since 2005 (relative to 1993–2004) has been driven by:

- A pick-up in annualised nominal wage growth of around ½ percentage point.
- A decline in annualised labour productivity growth of around 1½ percentage points.

This analysis suggests that relatively weak productivity growth in Australia has contributed to the pick-up in inflation since the mid 2000s, via its impact on nominal unit labour costs. Growth in

**Table 1: Consumer Prices, Wages and Productivity**  
Annualised growth, per cent

	1993–2004 <sup>(a)</sup>	2005–current	Inflation-targeting period
CPI	2.5	3.1	2.7
Non-tradable prices	3.0	3.8	3.3
Tradable prices	1.8	2.1	1.9
Unit labour costs <sup>(b)</sup>	1.7	3.6	2.4
Average earnings	3.9	4.4	4.1
Wage price index	3.4	3.9	3.6
Labour productivity	2.0	0.6	1.5

Notes: (a) Consumer price indices exclude interest and are adjusted for the tax changes of 1999–2000; data begin in March 1993, consistent with the commencement of inflation targeting, except wage price index data which commence in September 1997

(b) Due to measurement issues, unit labour costs growth does not precisely equal the difference between average earnings and productivity growth

Source: ABS

unit labour costs over this period has mostly been above a rate that is consistent with Australia's medium-term inflation target of 2–3 per cent (the exception being the temporary sharp decline in the period following the North Atlantic financial crisis). This has been masked somewhat by the moderate pace of tradables inflation since the early 2000s, primarily reflecting the appreciation of the exchange rate, which has contributed to aggregate inflation outcomes consistent with the target. With the nominal exchange rate already around its post-float high, there is a risk in relying on continued disinflationary pressure from a further appreciation. Also, it is worth emphasising that it is the *change* in the exchange rate, not the level, that matters for inflation, so the disinflationary impetus will wane even if the exchange rate stays around the current high level.

To achieve nominal unit labour cost growth that is consistent with the medium-term inflation target (assuming constant margins), there are two channels:

- Nominal wage growth that is below the pace observed over the several years prior to the North Atlantic financial crisis. This might involve a change in expectations for wage increases, an increase in unemployment, or some combination thereof.
- Faster productivity growth. This would enable slower growth in unit labour costs for a given pace of nominal wage growth.

The second of these channels allows for a greater improvement in living standards in the long run.

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## 2. General Discussion

A number of different issues were raised during the discussion. On the topic of Australia's poor productivity performance over the past decade, one participant suggested that the absence of a recession in the 2000s could be one explanation, since recessions are typically associated with a period of creative destruction, followed by improvements in productivity. This factor, coupled with shortages in the supply of labour and labour hoarding by firms, was thought to be important in explaining the slowdown in multifactor productivity. There was also discussion on the issue of why firms maximising their profit may not necessarily increase productivity. One view was that while firms may not measure productivity explicitly, productivity growth should be an outcome of good business decisions, although a lack of competition may also explain why firms' decisions had not delivered higher productivity. Also on this point, a participant thought that more time should be given to understanding firm behaviour and the implications for productivity. In the past, enterprise bargaining agreements had often referred to improving productivity and one participant questioned whether this was still the case. It was suggested that a study of enterprise agreements could shed light on this topic.

Another participant presented the view that measurement errors in estimating productivity between the 1990s and 2000s had likely reversed in sign but were still important. The participant felt that there was little slowdown in productivity to explain in the latest decade because the surge in productivity during the 1990s existed only in mismeasured data, and was illusory.

Another point raised during the discussion was that measured productivity was not adjusted for risk, and it was not clear to participants that achieving the highest level of productivity in an economy was appropriate if such an outcome can only be brought about through limited regulation and greater risk (developments in the finance industry in United States during the 2000s were seen as a precautionary tale here). A combination of slightly less productivity but also fewer risks was seen as, potentially, a preferable outcome and that the risk/productivity trade-off had perhaps been taken too far in the risk-taking direction. Participants also noted that in the United States relatively high productivity growth had been associated with the majority of the gains accruing to a small fraction of the population, and that higher inequality was not a desirable outcome for society.

The issue of regulation and the impact of government policies on productivity was also a key theme of the discussion. One participant outlined three factors at the firm or enterprise level – incentives, flexibility and capability – as representing a useful framework for thinking about how policy can influence productivity. Another participant suggested that impediments to productivity growth could be the result of the difficulty in getting important productivity-enhancing reforms (e.g. reforms dealing with transportation or the environment) through the Council of Australian Governments process and different regulators of state and national markets.

Finally, one participant raised the question of whether or not the current weakness in productivity was likely to be temporary. It was mentioned that a big increase in mining output was in the pipeline, which could see a boost to productivity going forward (particularly since mining does not employ a large share of the labour force).





# Housing in Australia in the 2000s: On the Agenda Too Late?

Judith Yates\*

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## 1. Overview

This paper reviews Australia's housing market in the 2000s for the RBA's decadal review of the Australian economy. In considering the issues to cover, previous reviews seemed a sensible starting point, but proved otherwise.

The 1990 review of the 1980s scrutinised the role of discretionary policies, paid tribute to the virtues of the market and highlighted the importance of financial deregulation (Grenville 1990, p 2). It covered money and finance, saving, the labour market, unemployment and inflation, the balance of payments and the long-term decline in the terms of trade. Housing was not on the agenda.

The 2000 review of the 1990s highlighted Australia's economic 'miracle' and praised Australia for surviving the 1997 Asian financial crisis. This was attributed to 'a serendipitous mix of good luck, judicious macroeconomic management and effective structural reforms' (Bean 2000, p 110). Topics differed little from those covered a decade earlier. Again, housing was not on the agenda.

During the 2000s, however, housing put itself on the agenda. Increased interest in housing was reflected in academic literature, in media commentary and in government and industry concerns. At the macroeconomic level, the start of the decade brought the chicken and egg problem of rising house prices and increasing housing debt. This raised concerns about the impact of increasing housing debt on macroeconomic stability and generated considerable analysis of wealth effects. Debates over whether policy in general, and monetary policy in particular, should respond to significant changes in asset prices followed. By the middle of the decade, the key macroeconomic debate turned to the issue of whether the unprecedented worldwide increase in house prices constituted a housing bubble. By the end of the decade, for much of the developed world the 'bubble question' had been answered (although not necessarily for Australia). Debates over central bank intervention, however, remained and the focus shifted to the role of housing and

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\* School of Economics, University of Sydney. The author thanks Tony Richards for his generosity in reworking some of his data for use in this paper and RBA staff for their constructive comments on an earlier version.

housing finance institutions, both in precipitating a global financial crisis (GFC) and in preventing future crises.<sup>1</sup>

Alongside the implications of rising house prices that put housing on the economic agenda were issues that also put it onto the political agenda. Political concerns arose from reduced access to housing for aspiring home owners and from significant housing affordability problems faced by lower-income households. These concerns have been reflected in a number of ways. In 2003, for example, the government of the day asked the Productivity Commission to undertake an inquiry into first home ownership and set it the task of: determining affordability for home-buyers in recent years; evaluating the major causes of changes in affordability; and identifying government policy initiatives to improve affordability and the efficiency of housing markets (Productivity Commission 2004, p xiii). At the same time, a Prime Ministerial Task Force on Home Ownership was established with a similar brief. A few years later, under a new government, a Senate Select Committee was established to inquire into housing affordability in Australia, with the task of reporting on the barriers to home ownership. The reports from each of these inquiries highlighted key demand drivers affecting affordability and raised issues about the supply side of the housing market. In 2008, the National Housing Supply Council was established to identify ways of ameliorating obstacles, and otherwise improve the supply response, with a focus particularly on the factors affecting the supply and affordability of housing for households in the lower half of the income distribution.

This paper suggests it was a mistake to leave it until the end of the 2000s to include housing on the decadal review agenda because the fundamental problems that made house price-watching a national pastime and put housing on the political agenda in the past decade began well before 1990. Leaving it until the 2000s has resulted in a focus on cyclical issues rather than on these fundamental, structural issues.

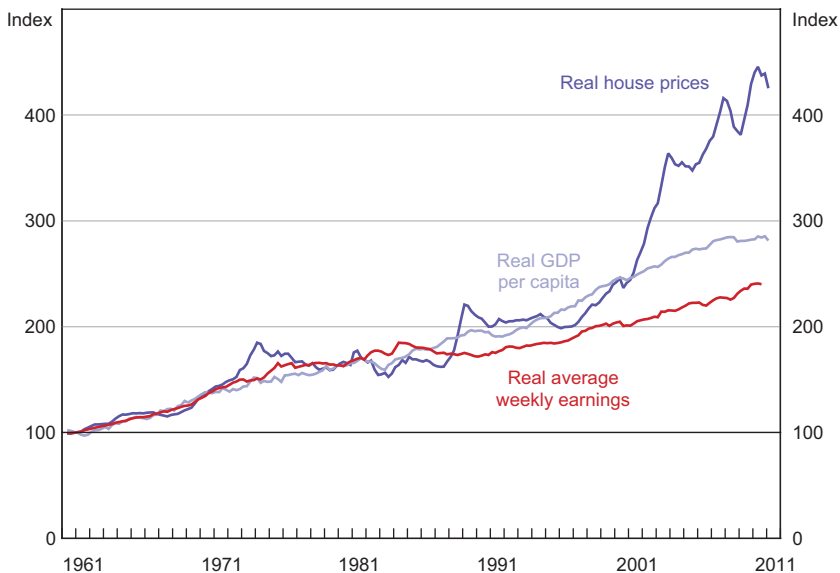
Section 2 provides a brief overview of the literature on the house price boom observed in Australia from the mid 1990s until the mid 2000s, focusing specifically on the demand-side factors that contributed to the boom. Section 3 examines questions of sustainability of the associated increase in household debt and considers the impact of the increase in net wealth on the economy. Section 4 considers the supply side of the housing market in terms of the factors affecting the cost of providing housing, and the sluggish response of supply to increases in demand that has contributed to real house price increases. Section 5 examines some of the outcomes of the changes in house prices and housing markets that put housing on the agenda in the 2000s. It develops the argument that the significant housing problems in Australia are structural rather than cyclical and suggests that Australia's housing system might be structurally unsustainable (as defined below).

1 Many of these issues were raised in the annual RBA conferences during the 2000s. In 2003, for example, considerable attention was paid to asset price bubbles and to their causes, as well as to the wealth effects associated with rising asset prices (and particularly with rising housing prices) (see, for example, Bean (2003), Case, Quigley and Shiller (2003) and Simon (2003)). Some of this discussion was developed further in the 2005 Conference on 'The Changing Nature of the Business Cycle' with the paper by Shin (2005) that countered the general tenor of the Conference by pointing to the potential for the financial system to amplify rather than dampen business cycles. The 2006 Conference on 'Demography and Financial Markets' highlighted the role of housing assets (and equity withdrawal) in meeting retirement needs. The 2007 and 2008 Conferences highlighted the role of housing and housing finance institutions in the GFC and its aftermath. The issue of central bank intervention was returned to in 2010 in the 'Reserve Bank of Australia 50<sup>th</sup> Anniversary Symposium' (see, for example, Cagliarini, Kent and Stevens (2010, p 23–24)). Most of these issues are covered below.

## 2. The Boom in House Prices

Between 1995 and 2005, real house prices in Australia increased by more than 6 per cent per year, with an average annual increase of almost 15 per cent from 2001 to 2003. This was well above the average annual increase in the 20 years to 1995 of just 1.1 per cent and the 50-year average (from 1960 to 2010) of 2.5 per cent per year.<sup>2</sup> These data are illustrated in Figure 1 and contrast with the significantly slower growth in GDP per capita and average earnings over much of the period.

**Figure 1: Real House Prices, GDP per Capita and Earnings**  
1960/61 = 100



Sources: Abelson and Chung (2005); ABS; Australian Treasury; REIA

Compared with other advanced economies, Australia is often reported as having experienced relatively rapid growth in real house prices over the past 20 years or so (see, for example, Tumbarello and Wang (2010)). Between 2000 and 2004, Australia had the third highest rate of house price inflation among OECD countries, ranking behind only the Britain and Spain (The Economist 2011). During this long house price boom, much was written – both in Australia and elsewhere – about the factors that contributed to the rapid increase in real house prices from the mid 1990s. For Australia, this material is comprehensively covered by the Productivity Commission in their report on first home ownership (Productivity Commission 2004).<sup>3</sup>

<sup>2</sup> Abelson and Chung (2005) suggest that approximately two-thirds of this increase is a 'pure' price increase and one-third is presumed due to quality increases. For access and affordability issues covered later in this paper, it is the combined effect rather than the pure price effect that is relevant.

<sup>3</sup> Much of this was based on the Reserve Bank submission to the inquiry (RBA 2003).

## 2.1 Underlying demand fundamentals

Globally there is widespread agreement that real house prices have been driven by demand fundamentals underpinned by supply constraints. Demand factors are considered here; supply factors are considered in Section 4. On the demand side there have been a number of contributing factors: real household incomes increased; disinflation meant that nominal interest rates have fallen and borrowing capacity increased; deregulation and financial innovation meant that finance is more readily available; taxation systems generally encouraged investment in housing; and increases in household wealth served to reinforce underlying demand pressures. In many countries these demand pressures have been affected by demographic factors (such as changes in the age structure of the population) and, particularly in Australia, added to by high population growth (primarily as a result of high migration).

Tsatsaronis and Zhu (2004), Girouard *et al* (2006) and André (2010) provide empirical analyses of a number of these fundamental demand factors as they relate to house price growth in OECD countries over a relatively long period of time.<sup>4</sup> As Miles and Pillonca (2008) highlight, however, the relative importance of these factors varies between countries and most empirical studies leave a considerable amount to be explained. A number of studies have also assessed the relative magnitude of their effects for Australia. Earlier Australian studies of house price determinants highlight the role of income and demographic factors (see, for example, Bourassa and Hendershott (1995) and Abelson *et al* (2005)); later studies focus on interest rate and wealth effects (see, for example, Otto (2007) and Fry, Martin and Voukelatos (2010)). In broad terms, the same determinants have been shown to affect demand for owner-occupied housing and demand for investment housing (see, for example, Kohler and Rossiter (2005)).

Aggregate econometric analyses, however, can only give some insights into the factors that affect house prices. Problems arise for a number of reasons: the factors that affect house prices are complex and can vary over time; there are difficulties in measuring key variables (such as expectations); and there can be problems in capturing the impact of structural shifts in key fundamental determinants, particularly when there are lags before their impact is felt. It is also difficult to capture the impact of changes at a sub-aggregate level that might occur slowly over time, such as structural changes that affect the spatial distribution of the population, changes in the distribution of income or changes in housing preferences.

## 2.2 Structural changes in demand fundamentals

Despite these problems, there is agreement that a major source of stimulus to the dramatic increase in the rate of real house price inflation from the mid 1990s was the impact of financial deregulation (see, for example, Bean (2003, p 66) and Edey (2003, p 191)), which is generally seen as a structural change in an underlying factor that facilitates demand. The combined effect of an increase in the willingness of lenders to finance an increase in demand (associated with increased competition from new entrants into the housing loan market) and of a second structural change arising from the decline in nominal interest rates (associated with the decline in inflation to a

<sup>4</sup> Girouard *et al* (2006, Table 3) also provide a comprehensive overview of studies of house price determination undertaken in the first half of the 2000s. Andrews (2010), Andrews, Caldera Sánchez and Johansson (2011) and Caldera Sánchez and Johansson (2011) add supply factors. This is covered further below.

generational low) was one of the few housing-related issues that was raised in either of the decadal reviews of 1990 or 2000. Of specific concern was the extent to which these changes increased borrowing capacity and contributed to a substantial lift in household debt in the 1990s (Stevens 1997; Gruen and Stevens 2000, p 51).

Ellis (2006) describes how financial deregulation promoted greater competition and product innovation and, through reduced interest margins and increased finance availability, increased borrowing capacity and boosted housing demand. Ellis (2005) provides more detail on how the deregulation-induced increase in availability of finance was enhanced by a disinflation-induced reduction in borrowing constraints for standard credit foncier mortgage instruments. The question of whether the increase in demand represented a once-off shift to a new and higher equilibrium level of effective demand for housing arising from structural change in the housing finance system, or whether it was the start of a house price bubble, received considerable attention.

An issue which received less attention is the question of whether the standard mortgage instrument remains the most appropriate under the conditions of increasing volatility and uncertainty that have characterised housing markets in the past decade. Miles and Pillonca (2008, p 171) returned to proposals that were first raised in the 1970s with the onset of high inflation and suggested that indexed instruments based on consumer or house price inflation would be seen by long-term investors as a useful addition to the existing pool of securities.<sup>5</sup> Caplin *et al* (2003) proposed a form of equity finance to achieve a similar goal. If such instruments were to be developed in Australia, some of the debates over house price measurement during the decade would need to be resolved (see Hansen (2006) and Prasad and Richards (2006) for a discussion of some of the issues involved).

Many of the studies indicated above highlighted the effective (or user) cost of housing services and the effective returns available from investment in housing as key economic drivers affecting housing demand. User costs are affected by the way in which housing is treated by the tax system but also by house price inflation and, more specifically, by the way in which inflationary expectations are formed. In the past decade the tax-privileged status accorded to owner-occupied housing by its exemption from the capital gains tax in the mid 1980s has remained unchanged. However, changes to the treatment of capital gains in 1999 affected returns available from investment in rental property and particularly from highly geared investment, as highlighted in the Henry Report (Australia's Future Tax System Review Panel 2009, p 69). An increase in investor demand arising from the 1999 changes to the tax system was identified by the then Governor of the Reserve Bank of Australia as a key factor contributing to the boom at the start of this period (Macfarlane 2003, p 10).

Increases in both housing wealth and inflationary expectations arising from increases in housing prices also contributed to changes in demand during the period from the mid 1990s. These issues are covered below.

<sup>5</sup> Coleman (2001) suggested there was no demand for such instruments because there was no demand for counter-cyclical asset price insurance.

### 2.3 House price bubbles and expectations

Whether or not the mid 1990s surge in real house price inflation represented a once-off shift to a new equilibrium house price trend (and, implicitly, to a permanent increase in housing wealth) underpinned much of the subsequent debate about house price bubbles.<sup>6</sup>

The question of whether housing prices in Australia have been above their fundamental value for much of the past decade (and if so, by how much) is one about which there is little agreement. Varying assessments have been made. There is some agreement that, at the peak of the 2003–2004 boom, the housing market was overvalued (Bodman and Crosby 2004, p 178; Fry *et al* 2010, p 476). Bloxham, Kent and Robson (2010, p 29) note that housing market developments were a contributing factor to the timing of the 2002–2003 increase in interest rates. As yet, however, there is less agreement on post-2008 house prices. An OECD report suggested that there was a certain degree of overvaluation in Australia in 2008 (André 2010, p 18). On the other hand, the International Monetary Fund (IMF) changed their assessment of a valuation gap in excess of 20 per cent in 2008 (IMF 2008, Box 3.1) to one of no evidence of a significant overvaluation in 2009 (IMF 2009, p 21), to an overvaluation of 5 to 10 per cent in 2010 (Tumbarello and Wang 2010, p 10). To a large extent, these changing estimates reflect changing econometric specifications regarding underlying fundamentals. They highlight the imprecision in estimating fundamental values and the difficulty of separating fundamental or structural determinants of real house prices from cyclical factors.

Bubble protagonists have tended to rely on two key arguments to support their claim: the first depends on the role of expectations (covered briefly here); the second on what was seen as an unsustainable increase in household debt (covered in Section 3).

Much of the seminal work on the potential reinforcing impact of inflationary expectations on the demand for housing was undertaken in the early years of the decade by Case and Shiller (see, for example, Shiller (2000) and Case and Shiller (2003)). Case and Shiller (2003) provided evidence to suggest expectations were affected by recent experience rather than being based on fundamentals. After the long house price boom from the mid 1990s, US home-buyers typically had expectations that, contrary to what might be expected on the basis of fundamentals, prices would continue to show double-digit annual price growth over the next 10 years, apparently with only a modest level of risk.

In their analysis of the relative roles of fundamentals and psychology in explaining US house price dynamics, Mayer and Sinai (2007) similarly found that behavioural conjectures (specifically, backwards-looking expectations) were the most important determinants of house price dynamics.<sup>7</sup> However, they also suggested that one difficulty in decomposing house price variation into so-called rational and behavioural factors is the lack of a widely accepted model of house prices that combines local determinants, such as supply constraints, with aggregate demand fundamentals such as those discussed in this section (Mayer and Sinai 2007, p 3). In the same way that backward-looking expectations can reinforce demand fundamentals, so too can the increase

6 Case and Shiller (2003, p 299) defined a bubble as arising when excessive public expectations of future price increases cause prices to be temporarily elevated.

7 Their 'fundamental' or rational benchmark presumed forward-looking expectations and incorporated a user cost measure based on long-term mortgage interest rates and static long-run real appreciation rates (following Himmelberg, Mayer and Sinai (2005)).

in household wealth brought about by increases in real house prices. This arises because of the way this facilitates additional borrowing for both owner-occupied and investment housing by those who already own their own homes (see, for example, La Cava and Simon (2005)). The impact of this on the structural factors alluded to in the introduction are covered in the final sections of the paper.

### 3. Household Debt and Housing Wealth

As housing prices increased, so too did household debt, although there is an element of endogeneity in the relationship between these variables. The previous section highlighted the role of increased borrowing capacity in contributing to increasing housing prices. However, increasing dwelling prices also meant that households were required to take on increased debt to finance increasingly costly housing. Questions about the impact of this increase in debt and whether this should be a matter of concern are the focus of this section. Two sets of related issues arose during the decade. The first set, which tended to receive more attention at the start of the decade, relates to whether the increase in debt was sustainable. The second set, which arose later, relates to the impact of the increase in net worth associated with the increase in debt.

#### 3.1 Sustainability of rising household debt

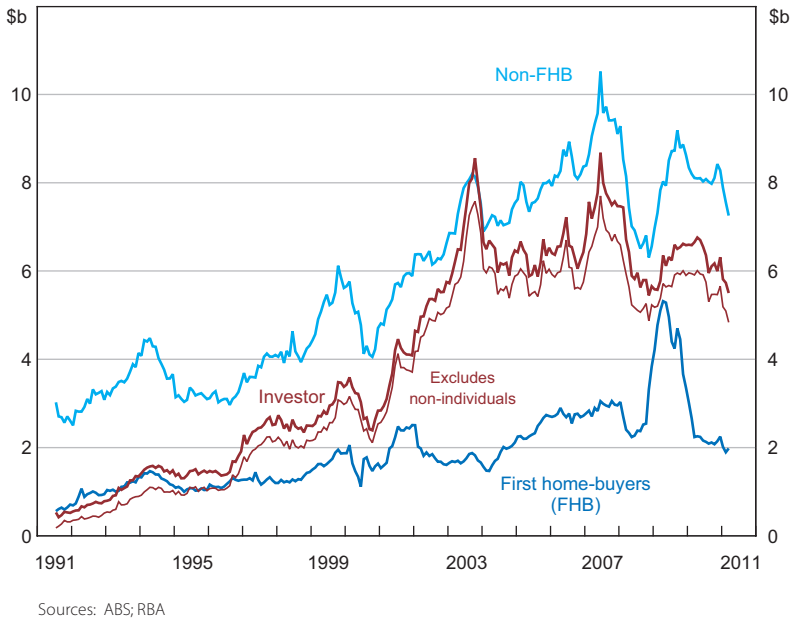
Concerns with rising household debt were driven in part by the disproportionate growth in loans to investors and in part by the growth in low deposit and low documentation loans from non-conforming lenders.<sup>8</sup> Figure 2 illustrates the growth in lending over the period that contributed to a significant increase in the ratio of debt to household disposable income from the mid 1990s to the mid 2000s. The increase in the debt-to-income ratio is illustrated in Figure 3.

At the time, Macfarlane (2003) argued these trends were unlikely to represent an increase in risk because the lower inflation environment after the mid 1990s period meant that nominal interest rates were less likely to move as much as they did in the past. This response focused on the interest rate risk faced by households, where the dominant loan was a variable rate loan. However, he also recognised other countervailing risk factors including: the impact of lower inflation on the time taken to erode household debt; increased innovation that allowed mortgaged households to increase their debt more readily; and the increase in borrowing for investment rather than consumption purposes (Macfarlane 2003, pp 9–11). Of particular concern was the transfer of risk to investors associated with the increase in investment in multi-unit dwellings, and the use of ‘off-the-plan’ sales for these dwellings. The significant lags between approval and completion of such dwellings were seen as having the potential to contribute to the emergence of a ‘hog cycle’ and, therefore, to increased volatility in dwelling prices and in investment demand. The sharp rise in the gearing ratio of investors was seen as indicating an increase in the number of investors concerned with capital appreciation and tax minimisation. Aggregate gearing in the housing sector, however, remained low as can be seen by the debt-to-asset ratio in Figure 3.

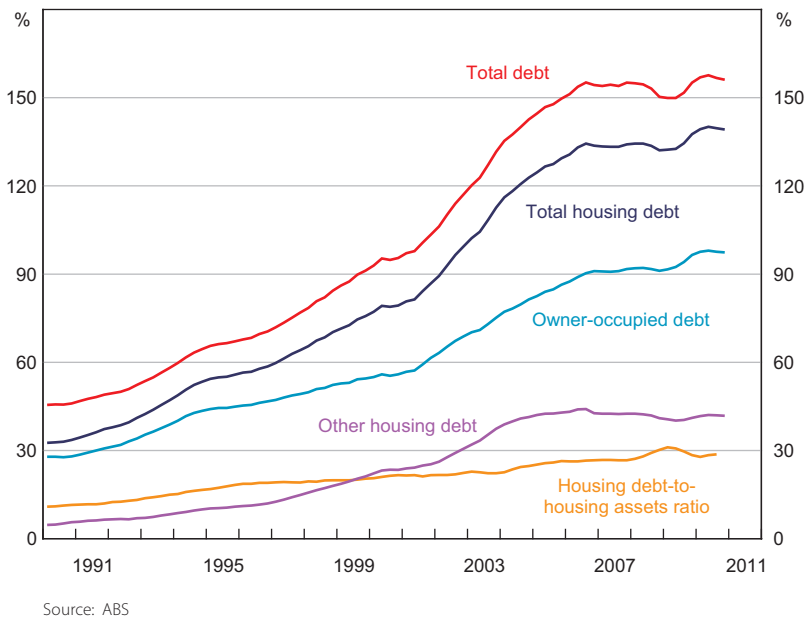
8 Increased borrowing for investment in residential property at the start of the 2000s was generally seen as a result of increases in demand (triggered by the tax incentives to negatively gear when capital gains are high) and an increase in supply (triggered in part by increased financial innovation and in part by increased competition from outside of the banking sector). The extent of official interest in rising household debt can be gleaned from the number of papers and speeches emanating from the Reserve Bank during 2001 to 2003.



**Figure 2: Housing Loan Approvals**  
2010 dollars, seasonally adjusted



**Figure 3: Household Liabilities**  
Per cent of household disposable income



Despite this, concerns continue to be expressed (see, for example, Keen (2009)). At the time, Debelle (2004) highlighted the possibility that the rise in debt would make the household sector more sensitive to negative shocks to the economy and that household incomes and consumption spending would be more sensitive to changes in expectations of future income. Debelle also recognised that this sensitivity was likely to depend on the distribution of debt.

Subsequent disaggregate analyses reinforced Macfarlane's sanguine assessment of concerns about debt by showing that the vast majority of investors were high-income and high net worth households that had considerable capacity to manage these risks (see, for example, Kohler and Rossiter (2005) and Wilkins and Wooden (2009)).

Potential problems did (and do) arise, however, for a relatively small number of vulnerable households that hold excessive debt. A study of mortgage defaults in Australia undertaken by Berry, Dalton and Nelson (2010) highlights the fact that, even if the economy at large is protected from negative impacts associated with an increase in household debt, not all individual households are so protected. The study identifies vulnerable debt holders as having neither high income nor high wealth. They are disproportionately younger, low to moderate income couple households that borrowed in order to gain access to owner-occupied housing, not for investment purposes. They borrowed (disproportionately from non-bank lenders) with high loan-to-valuation ratios and high repayment-to-income ratios and often at a time when interest rates were increasing. For many, the initial contributory causes for default were a 'loss of income', 'too much debt' and 'interest rates too high' but 'illness or accident in the household' and 'relationship breakdown' were also important (Berry *et al* 2010, p 23).<sup>9</sup>

This raises an issue that has received remarkably little attention in the literature on housing in Australia in the 2000s: that of the role of mortgage insurance for borrowers – although Gans and King (2003) made an early, useful contribution.

### 3.2 Impact of increased net worth

One of the reasons why increasing household debt was treated with some equanimity was that it was associated with even greater increases in household wealth. This raised different questions: this time about the impact of rising net wealth on the macroeconomy. Much of this focused on the relation between rising net wealth and the decline in the savings ratio that occurred from the mid 1990s to the mid 2000s, although Gizycki and Lowe (2000, p 187) did suggest the increased exposure of the household balance sheet to market-linked investments made a larger share of household wealth subject to the risk of price bubbles. However, they downplayed the potential sensitivity of consumption to changes in asset prices because of a perception that new sources of debt finance created opportunities for consumption smoothing (pp 206–208).

The coincidence of rising net wealth and rising household consumption stimulated a number of empirical studies that provide broad support for the basic theoretical claim that an increase in both housing and financial wealth leads to an increase in consumption. However, there is less agreement about the relative importance of these effects and disagreement over the channels

<sup>9</sup> Although these results were based on a relatively small survey, they are supported by international evidence (see, for example, Ford (2006)). The Berry *et al* study followed a House of Representatives (2007) report that found little evidence of widespread poor lending practices but expressed concern about predatory practices of some non-conforming lenders.

through which wealth effects operate. Yates and Whelan (2009) review this literature.<sup>10</sup> Their study showed the greatest response to increased wealth in Australia came from the baby boomer cohort of home owners, who are not income constrained (unlike the young) and who are still actively adding to their wealth (unlike the old). This finding has potentially important macroeconomic implications, particularly in light of the subsequent slowdown of the economy. It shows that the impact of an unanticipated increase in housing wealth on household consumption is not insignificant, particularly for the cohort that is now middle-aged. It raises concerns that any subsequent slowdown in house price growth may reduce both the capacity and the willingness of the baby boomer generation to maintain their current levels of consumption. If housing wealth effects are symmetric, so that the size of the impact of a decrease in wealth is the same as that for an increase in wealth,<sup>11</sup> then the finding reinforces concerns that a financial accelerator will exacerbate any economic downturn. It also highlights the potential that wealth effects have to add to the increase in volatility already introduced by the shift towards debt financed investment in housing.

This work suggests that the debate over whether the rise in house prices during the mid 1990s to mid 2000s can be attributed to a structural shift in fundamentals or whether it has a strong transitory component (a speculative bubble) is critical. If it proves to be dominated by a structural shift in fundamentals, an equally important question is whether the underlying trend in real house prices that was in place before the mid 1990s will be maintained. The Government's third Intergenerational Report (IGR) suggests that population growth and real income per capita (two of the key demographic and economic fundamentals that underpin housing demand) are projected to increase over the next 40 years at only a marginally slower rate than in the past (Australian Government 2010, p 5). Whether this continued pressure on housing demand will result in a sustained increase in real house prices will depend critically on supply-side issues.

#### 4. Supply-side Issues

Supply-side issues relate both to the factors affecting the cost of providing housing and to the responsiveness of supply to demand shocks in both the short and the long run. While house price dynamics and the broad underlying and cyclical demand-side factors that contributed to rising house prices in the 2000s were very much on the agenda during the decade, only some aspects of the supply side of the market received the same attention.

Both the Productivity Commission (2004) and the National Housing Supply Council (NHSC 2009, 2010) have provided comprehensive overviews of factors affecting the cost of supplying housing and of the barriers that limit supply responses in the short run. Less attention, however, has been paid to supply responses in the longer run.

<sup>10</sup> They also outline three key transmission mechanisms identified in the literature and summarise the rationales given for them. Both Richards (2008, p 28) and Yates and Whelan (2009, pp 6–7) raise the question of whether increases in housing wealth do make the nation as a whole better off. This argument is based on the claim that any increase in housing wealth will increase the opportunity cost of the services provided by housing. Higher house prices are thus offset by an increase in the (actual or imputed) cost of housing consumption. However, this holds only if home owners live in their dwellings indefinitely. Because households do not live indefinitely and because not all households are home owners or are consuming their desired level of housing services, there are strong distributional effects of increases (or decreases) in house prices. For every current home owner made better (worse) off, a future home owner or a renter is made worse (better) off.

<sup>11</sup> Recent work by Case, Quigley and Shiller (2011) suggests this is so.

## 4.1 Cost factors

Only a few of the key contributors to the cost of producing new dwellings (broadly, construction, finance and land costs) have been given much attention in the past decade. There has been general agreement that cyclical issues can arise with shortages of skilled labour, particularly for multi-unit construction where there is competition for the higher skill levels required from other sectors (such as the mining sector). Availability of finance also has been a concern for the development industry post GFC (NHSC 2010, p 114).

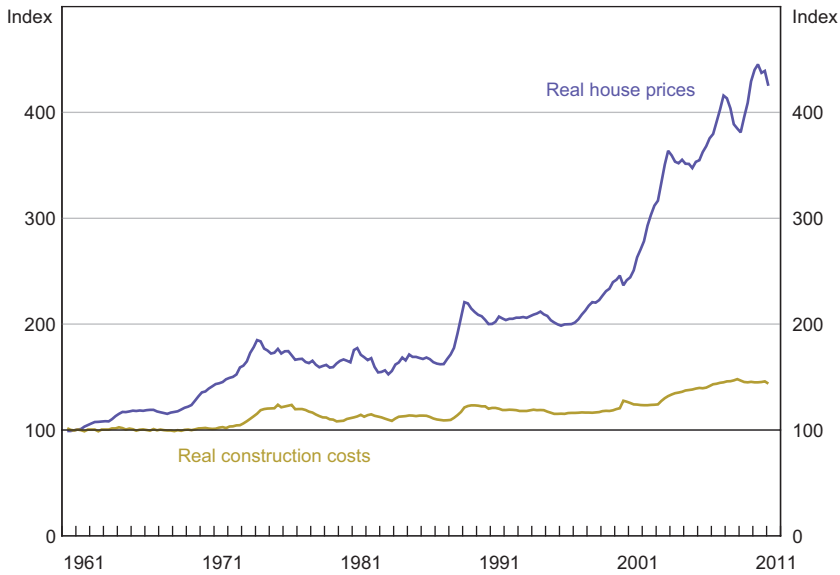
There is less agreement over longer-term concerns with the impact of taxes, infrastructure charges and regulations. Developers and the housing industry generally have argued that taxes and charges add to the cost of supply to new home buyers. Others have suggested they are passed back to the owners of raw land. The central point of difference between these two extremes is the question of the elasticity of land supply.<sup>12</sup> One point of agreement, however, is the need for certainty regarding these charges. Gurran, Ruming and Randolph (2009, p 94) suggest that, in response to variable and uncertain planning costs, 'developers choose to avoid certain local government areas, reduce development activity, postpone land acquisition, or target higher market segments to overcome issues associated with uncertain and lengthy assessment and approval processes'.<sup>13</sup> They also suggest that uncertainty contributes to a reduction in the ability of smaller operators to remain competitive, with a resultant increase in concentration and reduction in competition in the development industry.

The most significant driver of increasing costs, however – and one over which there is no debate – has been land costs and, particularly, urban land costs. This is reflected in increases in the level of land prices in a specific location and in land price gradients in the major capitals (see, for example, Productivity Commission (2004); Wood *et al* (2007); Richards (2008) and NHSC (2009)). The increasing contribution made by land prices to the overall price of housing is illustrated in Figure 4. This shows the increasing divergence between the price of established houses (which includes land) and the construction cost of new dwellings (which excludes land). Some of the increase in both dwelling prices and construction costs reflects increased costs associated with larger dwellings and higher quality construction (resulting from higher demand for housing services from a more affluent population), but the increasing differential is driven by increasing land costs.

12 The Henry Review (Australia's Future Tax System Review Panel 2009, Chapter E4) provides a stylistic comparison of these two extremes but does not provide any supporting evidence about supply elasticities. Differences of opinion also arise as to how different types of infrastructure should be paid for and who benefits from its provision. Gurran (2007) provides an excellent overview of the issues involved.

13 An example of the issues that Gurran (2007) highlights is given in NHSC (2010, p 56).

**Figure 4: Real House Prices and Construction Costs**  
1960/61 = 100



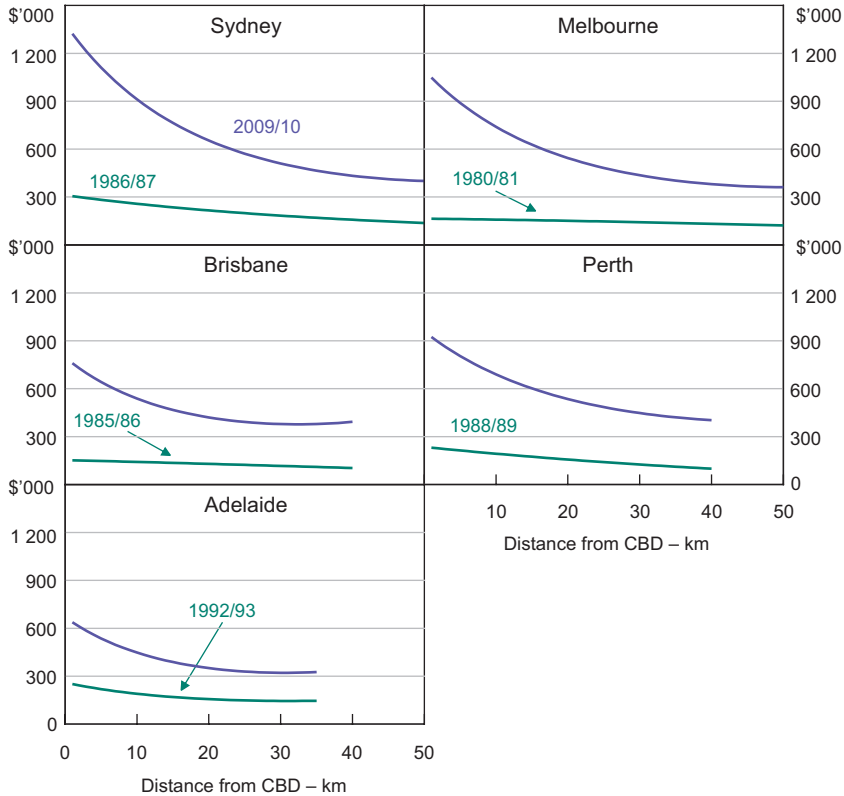
Sources: Abelson and Chung (2005); ABS; Australian Treasury; REIA

Figure 5 shows that the changing pattern of dwelling price gradients within major urban areas over time is consistent with the greatest pressure being felt where land is most scarce. This outcome is consistent with urban economic theory which suggests that higher residential land values in central locations arise from increasing access costs as distance from the centre increases.

In theory, the value of land at the urban fringe should reflect its opportunity costs in agricultural use and remain relatively constant. However, as the data in Figure 5 suggest, this has not been the case. One explanation is that the data reflect dwelling rather than land prices and higher prices reflect the higher cost of increases in dwelling size over time. A second is that the house price data embody infrastructure charges that have been passed on to consumers. A third explanation is that developers have artificially constrained supply by hoarding land. This is consistent with Gurrans’s (2007) suggestion that uncertainty regarding planning charges and regimes has reduced competition in the development industry.<sup>14</sup> Richards (2008, p 34) points to the creation of economic rents as a result of problems with the complexity of the development process.

<sup>14</sup> Long lead times in the land supply pipeline and resultant high holding costs (NHSC 2009, pp 41–54) could add to pressures that force smaller developers out of the industry.

**Figure 5: Real House Prices by Distance from the CBD**  
2009/10 dollars



Source: Anthony Richards, reworking data from Kulish, Richards and Gillitzer (2011)

In urban areas, the changing relation between the cost of land closer to the CBD and land at the fringe has been a key factor in many of the long-standing debates over the relative desirability of fringe development compared with urban consolidation. These are manifested in debates over whether urban growth boundaries unduly constrain the supply of land and whether infill development can offset the cost of rising land prices (see, for example, Productivity Commission (2004, pp 130–137)). Goodman *et al* (2010) provide a recent overview of some of these debates. The Senate Select Committee on Housing Affordability (2008, Chapter 5) provides a range of views. Buxton and Taylor (2011, p 6) suggest the influence of regulatory planning measures on land prices is variable and inconclusive.<sup>15</sup>

Recent reports have highlighted a gradual transition in Australian attitudes towards housing, with an increasing proportion of households stating they would be prepared to give up the traditional house and land package for a higher-density dwelling if they could live in an area that provided better access to transport and amenities (Kelly, Weidmann and Walsh 2011), or if they could own

<sup>15</sup> Since this paper was written, Kulish *et al* (2011) have released their study of the determinants of some aspects of the structure of cities, including the price of land and housing. Of particular interest are zoning policies that limit housing density. Their model suggests that zoning limits on the amount of housing built close to the CBD increases the overall footprint of the city and results in higher housing prices.

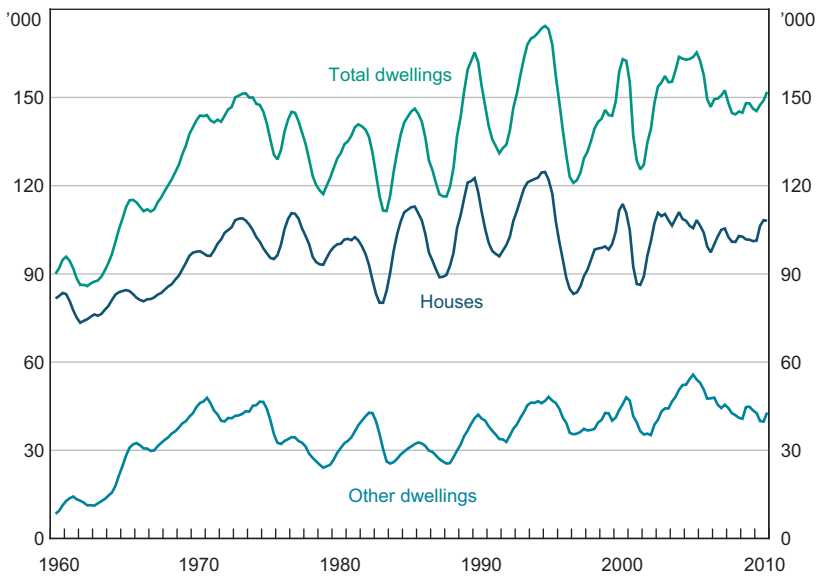
rather than rent (Ipsos Mackay, cited in West (2011)). These changes imply a greater need for infill development. One issue with infill compared with greenfield development, however, is that the short-run supply response can be slower for many of the reasons that make it more costly to build multi-unit dwellings than separate houses (NHSC 2010, Chapter 6). There also have been considerable debates over the extent to which increased dwelling density can improve housing affordability (see Goodman *et al* (2010, pp 18–22) for an overview of the Australian literature).

## 4.2 Supply responses

The greenfield versus infill debate tends to focus on where to build additional dwellings to meet demand from an increasing population, but an increasing population is not the only source of increased demand (as highlighted in Section 2). New construction supplies the additional dwellings needed for a growing population; investment in the existing stock contributes to meeting increased demand from current households.<sup>16</sup>

Over the decades prior to the 2000s, the rate of new construction in Australia showed strong cyclical tendencies with a general upward trend in production at least until the mid 1990s. Since then, cycles have dampened and production has slowed, as can be seen in Figure 6.

**Figure 6: Annual Dwelling Completions**



Source: ABS

<sup>16</sup> New entrants need not occupy new dwellings. Filtering processes often mean that established households move into new, higher-quality dwellings while new entrants move into the newly vacated existing stock.

Traditionally cyclicity in dwelling construction has been attributed to a stock adjustment cycle where there are significant lags in supply responses to fluctuations in demand. Early studies supported this stock adjustment view (see, for example, Downes, Louis and Lay (1994, p 26)). More recently, however, Berger-Thomson and Ellis (2004) suggested that, in general, extrinsic cyclicity (attributable to demand responses to the cyclicity of Australian interest rates in the 1980s) was dominant. By implication, the reduced volatility in construction in the 2000s could be attributed to the reduced volatility in interest rates.

This still leaves unanswered the question of why dwelling commencements have failed to keep pace with increases in underlying demand despite rising house prices. This lack of responsiveness of supply to demand pressures increasingly has been seen as an issue in official circles (see, for example, Richards (2009) for a Reserve Bank of Australia perspective and Kennedy (2010) for a Treasury perspective). Sluggish supply responses are generally attributed to planning or regulatory constraints (see, for example, Glaeser, Gyourko and Saks (2005) and Barker (2008)) but there is little systematic evidence on whether these increased in the 2000s in Australia.<sup>17</sup> Improvements to planning processes may speed up short-run responses to increasing demand but the question still remains about the ability of such changes to increase long-run supply elasticities in light of the pressures that increasing urbanisation imposes on urban land prices.

In their pioneering study of supply elasticity in the Sydney housing market from 1991 to 2006, Gitelman and Otto (2010) estimate that the aggregate (long-run) housing supply curve for Sydney is relatively inelastic (with an elasticity of 0.36) and that supply elasticities vary within the city, increasing with distance from the centre (with elasticities that range from 0.26 to 0.43). They also find strong evidence that the long-run aggregate elasticity of supply declined from 1991–1996 to 2001–2006. Estimates of changes in land supply gradients for both Sydney and Melbourne suggest that similar results would apply for Melbourne. Gitelman and Otto compare their results with those reported for the United States which indicate only 6 of 45 cities studied have supply elasticities less than unity (Green, Malpezzi and Mayo 2005, p 336; Gitelman and Otto 2010, p 10).

Their supply elasticity results for Sydney are broadly consistent with a long-run price elasticity for new housing supply in Australia of 0.5 given in a number of recent OECD reports (Andrews *et al* 2011, p 26; Caldera Sánchez and Johannsson 2011, p 14).<sup>18</sup> Ball, Meen and Nygaard (2010) show that elasticity estimates are sensitive to the degree of spatial disaggregation employed and are lower at a sub-national rather than a national level.<sup>19</sup> They point specifically to the difficulty of incorporating the local characteristics that dominate the supply side into national models.

17 A recent Productivity Commission research report on planning, zoning and development assessments (Productivity Commission 2011) suggests some relaxation of constraints at the end of the decade but does not provide systematic information about whether constraints have been more or less restrictive in the 2000s compared with the 1990s. Gitelman and Otto (2010) provide an example of a considerable reduction in constraints over the decade in relation to local government constraints. The NHSC (2009, p 125) shows government charges on broadhectare developments increased in the three largest capital cities from the mid 1990s to mid 2000s but they also increased from the mid 1980s to mid 1990s.

18 Gitelman and Otto (2010) analyse the (net) increase in the number of dwellings over time. The OECD studies analyse total new dwelling investment and so include both expenditure on new housing and on alterations and additions. A contrary view can be found in Berger-Thomson and Ellis (2004), who suggest that supply in Australia appears to be quite elastic but their estimates cover data from the 1960s rather than being constrained to the past two decades.

19 They also give a number of reasons as to why there is little agreement in the international literature about supply elasticities. In part, this arises because of different methodological approaches that have been undertaken and modelling pitfalls that arise, particularly in relation to the inclusion of land costs since these are likely to be endogenous. It also arises because of variations in the availability and quality of data.



Illustrative of these are 'the physical suitability of the land for development; the extent and nature of existing development; and planning controls' (Ball *et al* 2010, p 263).

These difficulties notwithstanding, if the long-run supply of housing is inelastic because of the inherent scarcity of urban land, then any increase in demand will add to dwelling prices.

### 4.3 Supply shortages

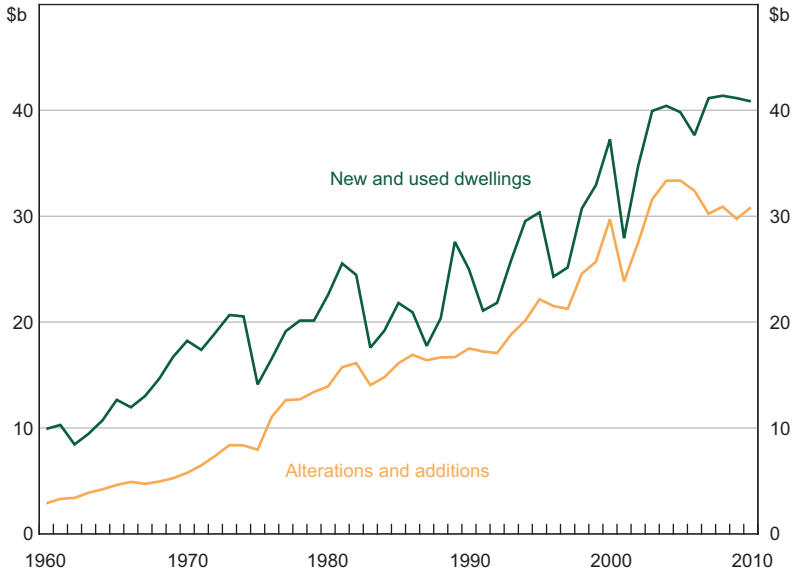
Sluggish supply responses to demand shocks are seen to have contributed to an overall housing shortage in Australia in the past decade, estimated by the National Housing Supply Council to be around 180 000 dwellings at the end of the decade (NHSC 2010, p 71). Such claims are based on comparing estimates of increases in underlying demand (driven by demographic change) with estimates of net additions to supply. There is, however, some disagreement over the existence or size of a supply shortage. Some of this arises from an unwillingness to accept that effective demand differs from underlying demand and that some households are willing and able to own a second home.<sup>20</sup> Some, however, recognise that a housing shortage is likely to generate a market response (such as increased prices or a reduced rate of household formation) which will reduce effective demand (see, for example, Ellis (2010, p 2)). Lack of effective demand by new entrants into the housing market because of affordability constraints associated with rising house prices can provide a further explanation of why there might be a sluggish supply response in relation to commencements in Australia (see, for example, Richards (2009, p 25)).

On the other hand, by increasing the size and quality of the existing housing stock, increases in effective demand by established owners who are willing and able to pay for more housing add to affordability pressures. This increased demand is reflected in increases in investment in existing dwellings (through alterations and additions). Demand from financially unconstrained households also contributes to increases in the size and quality of newly constructed dwellings since the repeat buyer market is larger than the first-home buyer market. Figure 7 shows that, during the 2000s, gross investment in dwellings has been maintained (in real terms) at the peak levels reached at the start of the decade (although the upward trajectory has slowed since the mid 2000s). The upgrading of existing dwellings through alterations and additions, at least until the mid 2000s, also increased more rapidly than investment in new dwellings.

Battelino (2009, p 38) notes improvements in quality and increases in dwelling size, as well as an increase in the ratio of the number of dwellings to the number of households (through holiday homes or second homes), which is a further manifestation of an increase in effective demand from established owners. He points to these factors as explanations of why there can be an apparent shortfall in the number of dwellings required at a time when investment in housing is at an all-time high.

20 Most of this source of disagreement is expressed in the blogosphere, but see also Wilkinson (2011). These concerns also ignore the fact that some unoccupied dwellings are for sale and make an essential contribution to the efficient operation of the house trading market. In the private rental market, vacancy rates of less than 3 per cent are regarded as being indicative of a 'tight' market. Throughout much of the 2000s, rental vacancy rates in most capital cities have been well below this. A similar rate is likely to be relevant for the sales market.

**Figure 7: Dwelling Investment**  
Chain volume measures, as at June



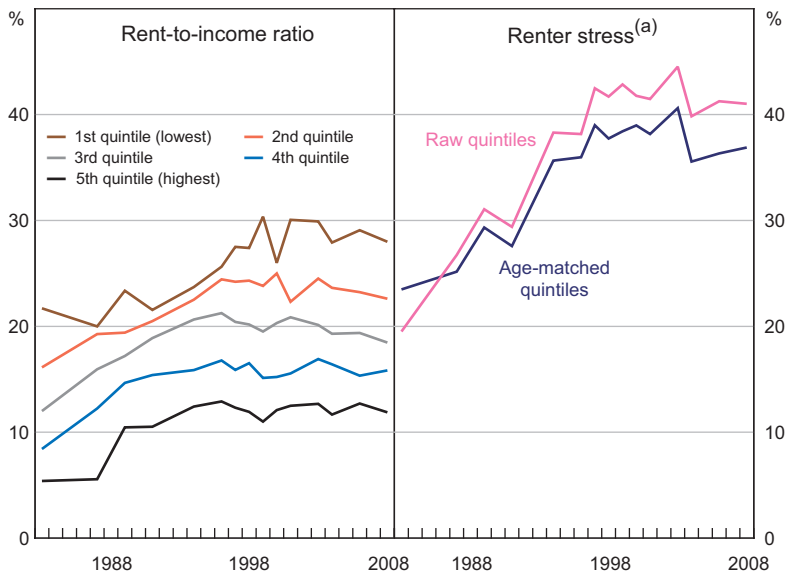
Source: ABS

#### 4.4 Rental supply and affordability

Although there might be some debate over the size and impact of housing shortages at an economy-wide level, there has been little debate over one impact of such shortages. There has been a significant shortfall of rental housing available for lower-income households that have been unable to gain access to home ownership. This has contributed to increasing housing affordability problems for lower-income private renters. Richards (2008, p 28) has shown that, from the early 1980s, rent-to-income ratios have risen across the income distribution with the greatest increases occurring for those in the lowest two quintiles. This has resulted in a considerable increase in the proportion of lower-income renter households in rental stress (paying more than 30 per cent of their income in meeting their housing costs).<sup>21</sup> These results are reproduced in Figure 8. These data also show that affordability issues rose most dramatically from the mid 1980s to the mid 1990s. They have remained at these higher levels throughout the 2000s. Rental stress has increased and remains high for renters in the lowest income quintile for whom rental housing is the only housing option available.

<sup>21</sup> Gabriel *et al* (2005) provide an overview of the literature on the various affordability measures in common use and highlight many of the issues that arise. Limiting stress measures to households in the bottom two quintiles avoids some of the problems that arise in determining whether high housing costs in relation to income arise from choice or necessity. Higher-income renters (or purchasers) can afford to pay more than 30 per cent of their income in meeting their housing costs and still have sufficient income available to meet their non-housing needs. A shortage of rental housing affordable to lower-income renters suggests that, for many in this group, high housing costs reflect no choice.

**Figure 8: Rental Affordability**  
By income quintile



Note: (a) Proportion of households in the bottom two income quintiles, whose rental costs are more than 30 per cent of gross income

Source: Richards (2009)

Considerable work has been done on estimating the shortage of low-rent supply over the past decade (see, for example, (NHSC 2009, 2010)). In its latest report, the National Housing Supply Council estimated a shortage of almost 500 000 private rental dwellings that are both affordable and available for households in the bottom two quintiles of the income distribution (NHSC 2010, p 105). This shortfall for low-income households has been exacerbated by increasing real rents in what had been affordable dwellings and by their loss to the owner-occupied market (Yates and Wood 2005). It has also been worsened by the failure of the supply of social rental housing to keep pace with the growth in the number of low-income households (NHSC 2010, p 89). Additional pressures have arisen from the displacement of lower-income households from inexpensive rental dwellings by moderate- or higher-income households that traditionally met their needs in the owner-occupied market but now no longer can access home ownership or prefer not to (Yates and Wulff 2005).

Wood, Ong and Stewart (2010, p 230) analyse some of the tax factors that may have contributed to the loss of low-rent dwellings in the private rental market. They show that, while the returns from investment in rental property are high, they are biased in such a way that 'low tax bracket investors will only invest in relatively low value rental housing that attracts rents that are high relative to property values'. The asymmetric treatment of rents and capital gains results in tax clientele effects that push up rents relative to property values at the low end of the rental market. Their analysis suggests that, if the rate of real house price growth slows, then higher returns will be sought through (more heavily taxed) rental yields. In other words, if the factors that have kept real rent inflation relatively low over the past few decades are no longer present, then rents will

rise relative to dwelling values (as was observed in the period following the 2004 slowdown in dwelling prices).

## 5. Too Late on the Agenda?

In the introduction to this paper, it was suggested that the 2000s were too late to put housing on to the agenda. It has been too late if housing affordability is to be returned to the levels enjoyed when home ownership grew to its current level of around 70 per cent; too late if home ownership is to be retained at that level; and too late if housing costs for lower-income households are to return to past affordability levels.

This assertion is based on the argument that the housing trends observed in the 2000s were underpinned by structural drivers that began to have their impact two decades earlier and that the effects of the cyclical shocks experienced in the 2000s may exacerbate the impact of these trends.<sup>22</sup> One reason for making this assertion is that the GFC-induced focus on cyclical concerns about sustainability, and particularly those related to mortgage foreclosures, may have detracted attention from what might be regarded as a more substantive question about the longer-term or structural sustainability of Australia's housing system.<sup>23</sup> Based on the Brundtland report definition of a sustainable economic system of some 25 years ago, a sustainable housing system can be defined as one in which future generations have access to housing on the same cost conditions in relation to income as past generations. This applies both at the point of entry into the housing market for first-home buyers and to ongoing costs for both owners and renters. One of the requirements of such a system is that there is no increase in housing stress (that is, in the proportion of lower-income households paying more than 30 per cent of income to meet housing costs). As above, the focus remains on lower-income households (in the bottom two quintiles of the income distribution) because their housing outcomes are more likely to reflect constraint rather than choice, and because high housing costs often leave them with inadequate resources to meet their non-housing needs, resulting in financial stress.<sup>24</sup> This section examines some of the implications of the structural and cyclical changes in housing markets that have taken place over the past few decades.

### 5.1 Declining access to home ownership

In the post-war period, when economic and demographic factors combined to generate a period of unprecedented economic growth, home ownership grew rapidly to its current level of around 70 per cent by about 1960. Prior to the 1970s, a household on average weekly earnings had a borrowing capacity that was more than adequate to fund the purchase of a median price dwelling. The foundations of this high and stable home ownership rate began to be challenged

22 Montalti (2011) presents a similar view.

23 Background material to this section is developed more fully in Yates *et al* (2008). Structural sustainability is defined as that which ensures 'the housing needs of the present generation can be met without compromising the ability of future generations to meet their own needs'.

24 This simplification ignores the possibility that many households who pay less than 30 per cent of their income in meeting their housing costs face additional pressures (such as high transport costs) because of their attempts to keep housing costs 'affordable' or because they have significant non-housing costs (as can be the case with families with children). Affordability is not a clear-cut concept. Dodson and Sipe (2008) provide an affordability measure that takes energy as well as housing costs into account. This highlights the pressures faced by households who move to the fringes of the major capital cities in search of affordable housing.

from about the mid 1980s with an emerging divergence of house prices in relation to income and, specifically, with the emergence of a deposit gap between what a household on average weekly earnings could afford to borrow (based on a 30 per cent repayment-to-income ratio) and median house prices.

This growing gap for a household on average earnings can be attributed to a number of factors. Pressures on demand (and housing prices) arose from social change in the 1970s, which resulted in an increase in female workforce participation, an increase in the number of two-income households and an increase in borrowing capacity for many households.<sup>25</sup> During the 1980s, economic incentives to invest in owner-occupied housing were increased by its exemption from the capital gains tax introduced in 1986. Borrowing capacity in the mid 1980s, however, was constrained by the front loading problem created by the interaction of high nominal interest rates and high inflation with credit foncier mortgages. Figure 9 suggests a switch from a negative to positive deposit gap during the 1970s and shows a clear upward trend since then after a decade-long improvement during the 1990s.<sup>26</sup>

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25 Social change also resulted in an increase in the number of single-parent households with incomes considerably below average weekly earnings.

26 Some caution is needed in interpreting the data presented in Figure 9 because of difficulties in obtaining reliable data for the period covered. Median house prices for first-home buyers are based on Housing Industry Association data from the mid 1980s and have been supplemented with data from various sources prior to this. Average weekly earnings are used as a proxy for median household income. The deposit gap illustrated does not take into account the possibility that, prior to deregulation in the 1980s, borrowers may not have been able to obtain all of their loan at the advertised rate and would have had to supplement this with a second mortgage at a higher interest rate. Thus, the deposit gap may be understated prior to the mid 1980s. It also does not take into account transaction costs, which add to the measured gap and are likely to have increased over time. The general point made by Figure 9, however, remains.

**Figure 9: Deposit Gap**  
As a multiple of average annual income



Notes: Borrowing capacity based on the standard bank variable rate for housing loans, a 25-year loan and repayments set at 30 per cent of (full-time adult) average weekly earnings; see also footnote 26

Sources: ABS; Housing Industry Association; RBA; author's calculations

Even during the 1990s, the size of the deposit gap meant that a household needed to have access to at least the equivalent of its annual income (in addition to the amount needed to pay for transaction costs) in order to purchase a median priced dwelling. By the 2000s, this had risen to four times annual income. Over time, the average income entry point for access to home ownership has increased. Figure 10 highlights this by showing how the income needed to service the average first-home buyer loan has increased more rapidly than average annual earnings since the mid 1990s.

This increasing constraint on access to housing finance for modest income households has had a number of effects. In the first place, it has encouraged marginal first-home buyers to borrow the maximum permitted by their lender. This exposes them to an increased risk of being pushed into housing stress if either interest rates increase or their household income falls (either through unemployment or through taking time out for child-bearing and rearing). In the second place, it has meant that low- to moderate-income households have been squeezed out from the housing finance market.

**Figure 10: Income Required to Service an Average FHB Loan**  
2010 dollars



Note: Based on same borrowing capacity assumptions as in Figure 9

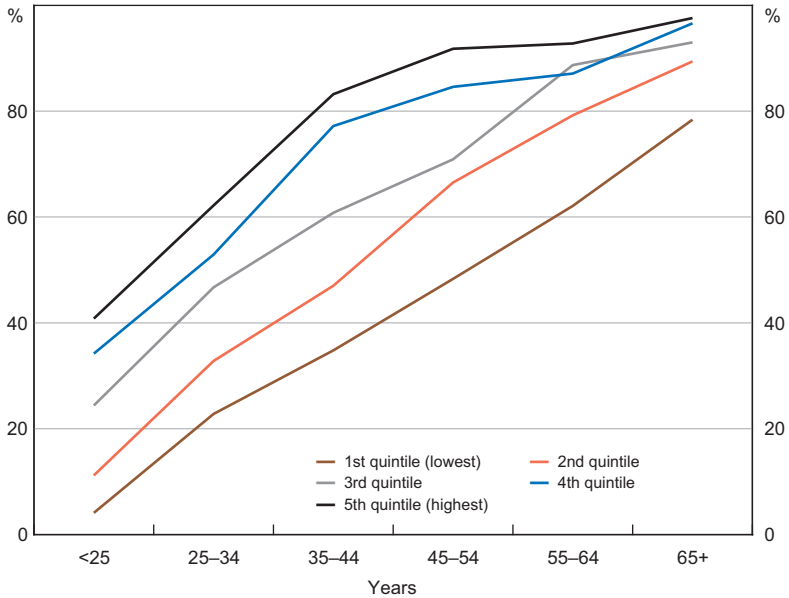
Sources: ABS; RBA; author's calculations

Access to home ownership has been possible for lower-income households only if they have access to some form of wealth (for example, through assistance provided by parents or from the government) or if they are prepared to purchase dwellings well below median price. In this circumstance there can be a trade-off between purchasing a lower-cost home and accessibility to work, services and social relationships (see, for example, Burnley, Murphy and Jenner (1997, p 1125)). Wood *et al* (2007) show the retreat of affordable housing to the metropolitan periphery where employment opportunities are relatively weak, and access to public transport and other key urban services is relatively poor. In their performance report for 2010, the Council of Australian Governments (COAG) reported that only 27.5 per cent of dwellings were affordable for households at the 60 percentile of the income distribution (which puts them above the average income benchmark used in Figure 10) (COAG Reform Council 2010, p 59).<sup>27</sup> These constraints are often used to explain why many younger households are ‘choosing’ to rent in more desirable locations.

<sup>27</sup> They also suggest that less than 5 per cent were accessible for households at the 30th percentile of the income distribution in 2007/08. Richards (2008) quotes a slightly greater figure of 30–35 per cent of transacted dwellings being affordable for the median household in the 25–39 year age group in four of the major capital cities. All of these estimates are likely to overestimate the size of the stock affordable to lower-income households as they ignore the possibility that the limited stock of low-cost dwellings could be purchased by households with greater repayment capacities (such as higher-income owners or investors).

Home ownership rates for young households have declined steadily from the mid 1980s.<sup>28</sup> While there are undoubtedly lifestyle reasons that contribute to this outcome, the constraints on access that limit the home ownership choices open to younger households is an obvious factor that has played a part. For each age group, the incidence of home ownership increases significantly with household income (and, conversely, for each age group, the household income of owners is considerably higher than that of renters). Figures 11 and 12 illustrate these differences.<sup>29</sup>

**Figure 11: Home Ownership Rates by Age and Income Quintile**  
2007/08



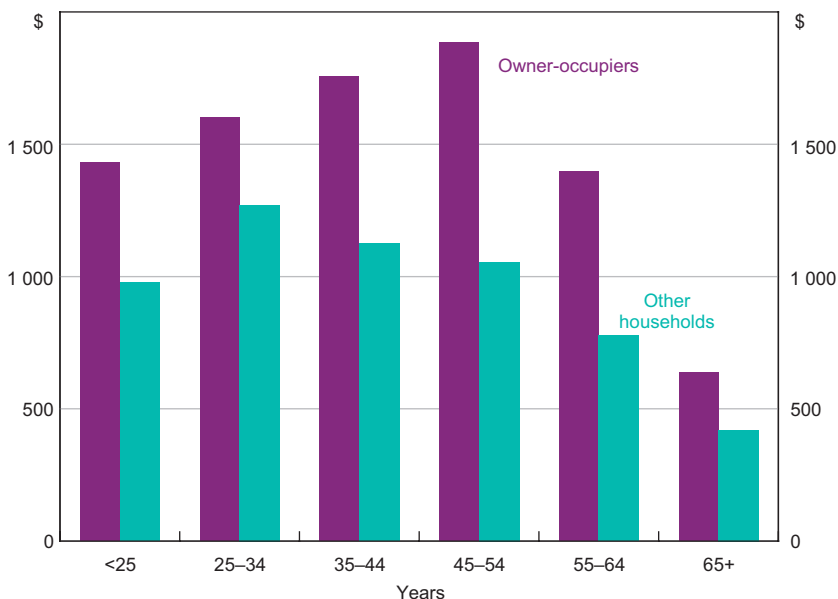
Source: ABS, Survey of Income and Housing 2007-08

28 For households in the prime household formation of 25–34 years old, home ownership rates declined from 61 to 51 per cent in the 25 years from 1981 to 2006 (for more details and data for other age groups, see Yates *et al* 2008, p 18).

29 Some of this difference can be attributed to differences in household structure and (often) number of earners in the households. However, comparisons of equivalised incomes which allow for household structure give similar results. Gross income is reported here as the most common base used in most affordability or stress measures.



**Figure 12: Household Income by Age and Tenure**  
2007/08, 2010 dollars per week



Source: ABS, Survey of Income and Housing 2007-08

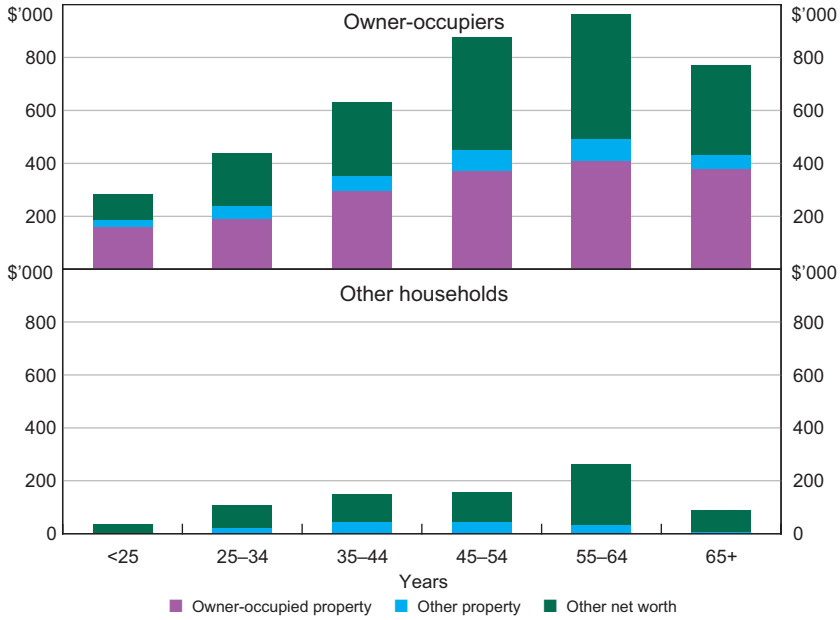
## 5.2 Implications of declining access for first-home buyers

One of the implications of the reduction in home-ownership rates among younger households in the two decades before the house price increases from the mid 1990s is that those who remained renters missed out on the increase in housing wealth that resulted from that boom. Figure 13 highlights the extent to which owner-occupation is a major component of household wealth for all ages.

Although based on cross-section rather than cohort data, Figure 13 reflects the conventional life-cycle pattern of household net worth. Net worth increases and then declines with age. It also shows that renters excluded from increases in housing wealth do not have other forms of wealth to compensate. Owner-occupiers not only own all of the owner-occupied housing wealth, they also own most of the wealth in investment housing and most non-housing wealth. Figure 13 highlights the extent to which those baby boomer households (born from 1945 to 1960 and in middle age in 2005/06) who were able to become home owners (most likely in the 1970s or 1980s and no later than the 1990s) have the greatest holdings of all forms of wealth. Households who have not been able to gain access to home ownership have relatively little wealth of any sort.

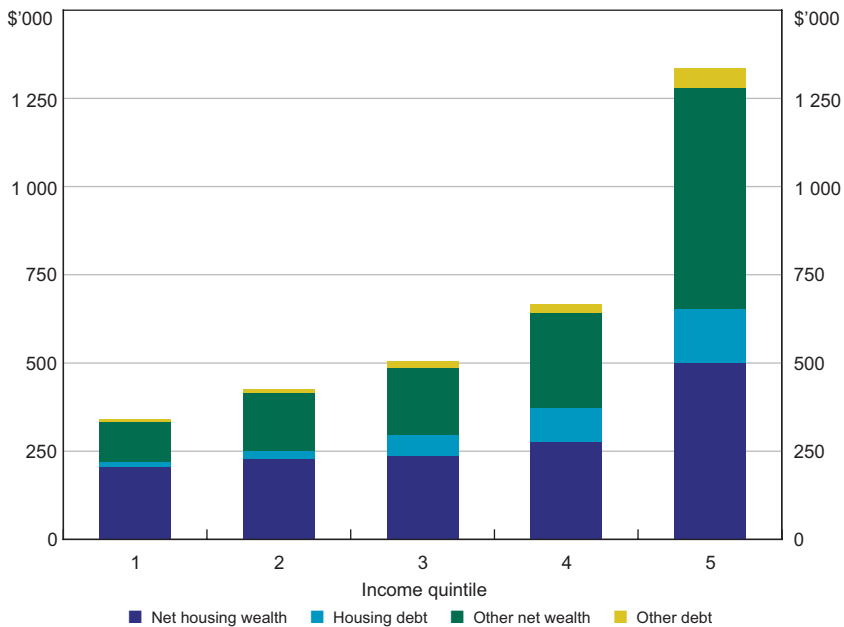
Figure 14 shows the extent to which household wealth is held by households in the top income quintile (with a gross household annual income of over \$100 000 at the time of the survey in 2005/06 and equivalent to over \$115 000 in June 2010 dollars). Figure 14 also reinforces a point made in Section 2: namely, that high-income and high-wealth households hold most of the household debt, including housing debt on owner-occupied and investment housing.

**Figure 13: Net Household Worth by Age and Tenure**  
2005/06



Source: ABS, Survey of Income and Housing 2005-06

**Figure 14: Household Wealth by Income Quintile**  
2005/06, 2010 dollars



Source: ABS, Survey of Income and Housing 2007-08

This inequitable distribution is made worse by generous tax concessions to owner-occupied housing. These concessions are also reinforced by the exemption of owner-occupied housing from the asset tests in retirement. Table 1 shows total tax expenditures to owner-occupiers amounted to around \$45 billion in 2005/06. It also shows that assistance is perversely provided, with the greatest assistance going to high-income and high-wealth households. The distribution of assistance provided by tax concessions to owner-occupiers is reinforced by those to rental investors.

Yates (2010) shows that the assistance provided to owners is equally perversely distributed by age, with older, high-income households – with significant equity in owner-occupied property – receiving far greater benefits than younger households with low housing equity. While imputed rent is less than interest costs (which can occur until housing equity reaches a critical point), younger households are disadvantaged when purchasing a dwelling compared with investors with the same income and housing wealth characteristics because of their inability to deduct mortgage interest costs. In the short run, it is cheaper for low-income, low-wealth households to rent as investors can keep rents below financing costs because of the returns available from geared rental investment (Wood, Stewart and Ong 2009, p 61).

The combined impact of increases in income (due to rising living standards), increases in wealth and generous tax concessions to higher-income households provides one explanation of why established households have increased their demand for housing. This is manifest both in the form of consumption demand for increased services from owner-occupied housing (met by relocating to a more expensive dwelling or by upgrading their existing dwelling through expenditure on alterations and additions) and in the form of investment demand for housing assets (met through increased investment in owner-occupied housing and/or rental housing). In both cases, mortgage finance helps render this demand effective.

As highlighted by Table 1, established households have distinct advantages over current renters or marginal first-home buyers. They have significant net wealth holdings and, in the main, higher incomes. As such, they have a considerably greater capacity to pay than do new or would be entrants in the housing market. Connolly and McGregor (2011) show an increasing share of owner-occupied loans were taken out by high-income households between 2001 and 2009.

**Table 1: Tax Expenditure by Tax Base and Household Income Quintile**  
2005/06

	Gross household income quintile \$ per week						Aggregate tax expenditure \$ billion
	1	2	3	4	5	All	
Gross household income	285	623	1 048	1 595	2 967	1 304	
<b>Income tax base</b>							
<i>Owner-occupied housing</i>							
CGT exemption	23	41	57	79	161	72	29.8
NIR exemption	21	29	23	16	31	24	6.9
<i>Rental housing</i>							
CGT discount	1	4	6	11	30	10	4.2
Tax benefit of negative gearing <sup>(a)</sup>	7	38	39	47	73	54	1.2
NIR exemption	10	8	7	8	17	9	1.2
<b>Consumption tax base</b>							
<i>Owner-occupied housing</i>							
GST exemption of imputed rents <sup>(b)</sup>	15	15	16	17	20	17	4.8
<i>Rental housing</i>							
GST exemption of actual rents <sup>(b)</sup>	8	11	14	16	21	13	1.6
<b>Wealth tax base</b>							
<i>Owner-occupied housing</i>							
Land tax exemption	3	4	4	6	28	9	3.5
<b>Total tax expenditures</b>							
Owner-occupied housing	62	89	100	118	240	122	45.0
Rental housing <sup>(a)</sup>	26	61	66	82	141	86	8.2

Notes: Capital gains tax (CGT); net imputed rent (NIR); goods and services tax (GST)

(a) Weekly benefit from negative gearing is averaged over only those investor households with negative rental income

(b) GST exemption of imputed rents and rent averaged, respectively, only over owner-occupied and rented households; all other benefits are averaged over all households

Sources: ABS; Yates (2010, pp 87 and 93)

One of the financial innovations that contributed to increased availability of finance for some households was the shift away from a simple ‘rule of thumb’ 30 per cent ratio to the use of a measure based on a residual or net income surplus (House of Representatives 2007, pp 6–7). In 2007, just prior to the GFC, higher-income earners (on double average weekly earnings) and modest-income households with no children were permitted repayment ratios of up to 40 or 50 per cent of gross household income. The 30 per cent ratio, however, remains for a single-earner household with two children on the equivalent of average weekly earnings (see RBA (2005, pp 43–44) and also Yates (2007, p 6)).<sup>30</sup> Use of a higher repayment-to-income ratio for higher-income households creates an institutional bias towards disproportionately greater loans for higher-income households who wish to increase their expenditure on housing (and therefore adds to effective demand pressures on housing). Such capacity is enhanced by the ability of those borrowing for investment purposes to write off their interest costs against taxable income from any source (as occurs when investors negatively gear). It is further enhanced by lending practices that give discounts to those who borrow large amounts.<sup>31</sup> If lending institutions respond to the GFC by increasing the security required for a housing loan (or if they are required to do so to meet Basel III requirements) this bias in favour of existing owners of housing will be reinforced.

### 5.3 Implications for housing costs for non-home owners

One of the concerning issues associated with the decline in home ownership among younger households, the sustained demand for housing from established households, and the displacement of marginal first-home buyers from the housing market by rental investors, is the impact that these trends may have on the future housing costs of those remaining in the private rental sector. The data presented in the previous section highlighted the decline in the supply of affordable rental housing over the past few decades, the increase in housing costs for lower-income renters and the increasing levels of rental stress in the private rental market. Modelling work undertaken in Yates *et al* (2008) suggests that, even if rents remained at the levels they were in relation to income in 2001, as the population ages a higher proportion of households will be in rental stress because of the past decline in home ownership rates among the young. Traditionally, the reduction in housing outlays as mortgages are paid off has meant that home ownership has provided a hedge against rising living costs for households in retirement. Households who have been unable (or even unwilling) to gain access to home ownership are denied this protection.

From the mid 1990s, rents have not risen in line with house prices because investors have been able to generate adequate returns by a combination of tax incentives and high capital gains during the long housing price boom. As argued above, it is likely that much of this growth reflects a once-off response to a structural shift in fundamentals (and, in particular, to the impact of financial deregulation and to the decline in interest rates associated with a decline in inflation). Any return of dwelling price inflation to the past long-term rate consistent with underlying fundamentals will reduce the tax benefits investors obtain from negative gearing and reduce the returns available from capital gains. Returns on residential investment, instead, will be sought from the rental yields

30 Bank websites provide estimates of maximum allowable loans only. There is no guarantee that such loans will be provided. The calculations in Yates (2007) are for a 25-year standard variable rate mortgage with monthly repayments and apply to first-home buyers with no outstanding household debt and with a single earner contributing to household income.

31 John (2011) in the *Sydney Morning Herald* on 30 May suggested that borrowers taking out a loan of more than \$250 000 can obtain a discount of around 70–75 basis points, with even greater discounts available for still larger loans.

on property. If renters are unable to afford higher rents, investors will leave the market and the supply of affordable rental dwellings will decline further.

## 6. Conclusions

The broad outcomes outlined above raise a number of concerns about the sustainability of Australia's housing system into the future. Higher house prices have favoured older generations at the expense of younger. The increasing wealth in the hands of home owners will add to the factors that exclude non-home owners from home ownership. These factors are reinforced by lending criteria biased towards high-income and high-wealth older households, as well as by the current structure of tax concessions that are biased significantly in favour of those who have significant equity in their own home and who borrow in order to finance investment in rental property. Increasing demand pressures will result in structural increases in dwelling prices as supply costs increase because of an innate scarcity of land. Attempts to ameliorate the impact of rising urban land costs by greater use of multi-unit construction in infill sites are moderated by the higher costs of such construction (and by higher land assembly costs).

Housing affordability is an issue that goes well beyond the problems of access to home ownership for a number of reasons. It can have an impact at the macroeconomic level. The potential that fluctuations in dwelling prices have to add to economic instability through wealth effects and through volatile investment behaviour has been touched on above. A lack of affordable housing also has the potential to affect the productive efficiency of the economy if employers are unable to obtain labour because of a spatial mismatch between housing and labour markets or because of increased congestion costs when workers are forced to travel long distances to their places of employment. Berry (2006) covers some of the literature on these issues. In addition to its impacts on the economy, housing affordability is an issue because of the impact it has on individuals (see, for example, Burke and Pinnegar (2007) for evidence of the hardships experienced and compromises and trade-offs made to cope with them) or through the externalities associated with these impacts (see, for example, Bridge *et al* (2003) for a systematic review of non-shelter outcomes).<sup>32</sup>

Housing affordability problems have been an emerging issue for a number of decades but resulted in housing being put on the agenda in the 2000s. These affordability problems have the potential for adding to the disparities of income and wealth that have contributed to their emergence. Increasing disparities between home owners and non-home owners contribute to the lack of intergenerational equity defined above as a hallmark of a sustainable housing system.

Bean's observations in 2000 that Australia's survival of the 1997 Asian financial crisis in part could be attributed to effective structural reforms cited in the introduction to this paper concluded with the assertion that 'economic miracles have a tendency to turn sour just when everyone is celebrating them'. There is a danger that, by not having placed housing on the agenda at the time when structural problems in Australia's housing system were beginning to emerge, Australia has lost the opportunity to undertake the structural reforms needed to provide affordable housing for all and that its current economic miracle will turn sour when viewed through a housing lens.

<sup>32</sup> Both direct and indirect impacts of housing affordability problems are outside the scope of this paper. Burke and Pinnegar (2007) provide detailed evidence of the impact of affordability problems on both renters and marginal home purchasers. Bridge *et al* (2003) provide evidence of the impact on non-shelter outcomes related to effects in or on labour markets, education, health, community viability and social cohesion.

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# Discussion

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## 1. Bill Evans

It is a great privilege to have been invited to be a discussant at this prestigious Conference. The last RBA Conference I attended was in 2003 when the topic was 'Asset Prices and Monetary Policy'. Many of the conclusions from that Conference around the potential impact of asset prices on economies were quite prophetic given the subsequent events in the global economy. For me, this Conference therefore represents a hard act to follow but the papers are of a very high standard and useful insights abound.

I much enjoyed Judy Yates's comprehensive coverage of the developments in Australia's housing market in the 2000s. She has referred to an amazing body of research on the issue and her bibliography is a valuable record of the debate over that period.

As a banker in Australia, we have great interest in the housing market. Mortgages represent 60–65 per cent of a bank's assets, so the outlook for growth and asset quality in this market is critical for Australian bankers. When we look at the housing market we always have two important questions in mind:

1. What is the outlook for prices?
2. How will the gap between demand and supply evolve in the future?

In one critical sentence in the conclusion to the paper, Judy provides me with her answers to these questions: 'Increasing demand pressures will result in structural increases in dwelling prices as supply costs increase because of an innate scarcity of land' (p 289). She is arguing that ongoing demand pressures will ensure that the gap between demand and supply is likely to remain, and as supply costs increase due to land scarcity so too will prices.

Appropriately, the paper considers demand and supply issues in sequence. On the demand front we are given a careful analysis of why demand was strong in the 2000s. A number of factors explained this robust demand: attractive taxation arrangements; buoyant price expectations; a structural fall in inflation, which permanently lowered interest rates and interest rate expectations; rising incomes and wealth; financial deregulation leading to a structural increase in the supply of credit and a narrowing of spreads; and high population growth.

On the supply front the following forces are discussed:

1. availability of finance to developers (particularly since the global financial crisis);
2. costs of producing new dwellings, such as construction, finance and land costs, of which urban land costs are the most significant (this is best illustrated by the divergence between construction costs and prices of established dwellings); and
3. longer-term concerns, including taxes, infrastructure charges and regulations.

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Ongoing upward adjustments to prices, which reflect supply price inflation and excess demand, might be an acceptable long-run equilibrium but this tells us little about the short-term outlook – surely an issue of considerable concern when considering the housing market.

The paper poses the key question of ‘why dwelling commencements have failed to keep pace with increases in underlying demand despite rising house prices’ (p 275).

Indeed, in studies by the International Monetary Fund, the long-run price elasticity of supply for housing in Australia has been estimated at around 0.5 per cent; lower than in other countries.

While the paper discusses affordability, particularly in the context of rents, I do not think it goes far enough in discussing it in terms of its significant role in explaining the dynamics of price changes and the demand/supply imbalance. In this light, I would have liked the paper to have pursued the issue of housing affordability more vigorously.

The ‘elephant in the room’ when discussing Australia’s housing market is international comparisons of price-to-income ratios. On some measures, Australian cities and regions are among the least affordable markets in the world. At Westpac, we have considered a range of housing definitions (including apartments, semi-detached and fully detached) and income measures (such as average weekly earnings and median incomes), along with the ongoing shift toward families having two incomes. The conclusion from that work is that house prices in Australia are expensive, although not as expensive as indicated by some of the crude measures used in some studies.

Further, our affordability measures do indicate that, relative to the United States and the United Kingdom, Australia’s affordability has deteriorated significantly. If we feed those affordability measures into the paper’s concept of demand, the confident assertion of ‘increasing demand pressures’ might need to be qualified. Affordability will impact both effective demand and underlying demand. It will impact effective demand as some groups who cannot afford a home won’t even try; while it might affect underlying demand by impacting family formation and immigration as potential citizens are discouraged by high dwelling prices. After adjusting demand for these factors and noting that the explanations in the paper for the boost to demand in the 2000s (such as financial deregulation, the permanent fall in inflation and inflationary expectations, and tax changes) are unlikely to be repeated, the optimistic outlook for demand might be overstated.

What if affordability has been so squeezed in Australia that effective demand is, in fact, not increasing? There seems to be an absence of new structural factors, such as financial deregulation, permanently lower interest rates, tax changes or competition among lenders, which might give a boost to demand. If we begin to question effective demand, then the imbalance between supply and demand may not be as wide as implied in the paper. In fact, constrained affordability might mean that effective demand is below supply, with a downward price adjustment being necessary to restore equilibrium.

My view is that the answers to the two questions I posed at the beginning – on the outlook for prices and demand/supply imbalance – needs a much more detailed analysis of the state of affordability in the current market. More attention should have been given to that issue in an otherwise admirably comprehensive paper.

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## 2. General Discussion

Much of the discussion focused on the issue of whether or not housing was overvalued in Australia. One participant thought that while there were signs that this was possibly the case in 2003 and 2004, this was not the case now. However, other participants noted that Australian house price-to-income ratios and house price-to-rent ratios are high compared with other OECD countries and relative to history. Key structural reforms such as the introduction of inflation targeting and deregulation are often cited as explanations for the increase in prices, yet other countries with lower valuation metrics also experienced these reforms. One participant described the relatively high level of house prices in Australia as an equilibrium outcome of high population growth (and limited appetite for society to increase population density) and poor public infrastructure. It was also mentioned that while it was not clear that housing was overvalued in Australia, this does not mean that house prices cannot fall. Another participant also stressed that the fact that relatively high house prices have persisted does not mean they are no longer an issue.

Housing was also recognised as a key sector in the economy either as a potential origin of a shock or as a sector that could amplify a shock originating elsewhere. For example, a significant international shock could reduce incomes and with it confidence and domestic demand, causing superannuation fund wealth and house prices to fall. Another potential risk was thought to be a policy change in China, such as a significant reduction in the number of exit visas issued which could lead to a fall in demand for student housing in Australia.

There was also substantial discussion on policy initiatives relevant to the housing market. It was mentioned by one participant that housing has been an area of significant policy failure in Australia. For example, they thought that policies designed to increase the home ownership rate, particularly for low-income households, had been largely unsuccessful. It was mentioned that although the United States did have some success in increasing the home ownership rates of low-income households, this turned out to be unsustainable. Australia's policies, on the other hand, were claimed to have failed from the start, with policy benefits going to those who could already afford to buy a house. Also, the halving of capital gains tax was considered inappropriate, making negative gearing more lucrative as a way to avoid tax, not just defer it. It was also mentioned that these structural policy failures are difficult to remove. Another participant, however, noted that a positive effect of the favourable tax treatment of investor housing is the extra incentive to add to the rental housing stock.

Another key question highlighted during the discussion was how to increase the supply of housing in Australia. A big part of the problem was thought to be high land prices, which would suggest that policies should look towards either lowering the amount of land per dwelling (increasing population density) or increasing the supply of well-located land (which would mean investing in transport infrastructure). One participant cited survey results from the Grattan Institute which suggested there was a greater preference for higher-density living given its proximity to services than the existing housing stock would imply. A different participant mentioned, however, that this survey did not consider tenure of residence, which was an important factor in household decisions. A policy measure suggested by one participant to make housing more



## DISCUSSION

affordable was to remove the land tax exemption for owner-occupied housing. This would lower the incentive for building on big blocks of land and help to reduce supply pressures. Another participant stressed the importance of getting structural issues right. They stated that, while housing is a major consumption good for low-income households, it seems to no longer be a major public policy issue, with the public and community housing stock declining. It was pointed out that improving transport infrastructure was important but it also has to be affordable; poor transportation infrastructure can impact on the productivity of low-paid workers if they have to travel long distances to work. Further, on the supply side, it was suggested that affordable rental housing in good locations has to be put in place to help low-income households, while measures to limit demand were also important.

It was also mentioned during the discussion that, although the move to inflation targeting and lower interest rates reduced cash flow constraints making repayments more affordable for a given loan size, it also contributed to an increase in average loan sizes relative to income which has increased the real cost of debt. Further, with lower inflation, the real value of debt is not eroded as quickly and so households have higher debt for longer. The increase in the cost of debt repayments was cited as a possible explanation for recent weakness in consumption. One participant also highlighted that wealth effects were an important channel through which developments in the housing market can influence household consumption, saying that house price movements impact the wealth of two-thirds of the population.

Finally, the intergenerational nature of housing was also raised during the discussion. If housing is not consumed in retirement and is passed on to offspring, then the younger generation does not face an affordability problem (although they may have to wait to own a home). But it was also mentioned that there is a serious equity issue here: descendants of those who do not own their own house are likely to have difficulty entering the housing market. This channel was said to reinforce wealth inequalities within society.

# The Australian Financial System in the 2000s: Dodging the Bullet

Kevin Davis\*

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## Abstract

The global financial crisis (GFC) occupied only a quarter of the decade of the 2000s but, because of its severity and implications for future financial sector development, dominates the decade. The Australian financial system coped relatively well with the GFC, raising the question of whether there was something special about its structure and prior evolution which explains that experience. This paper reviews Australian financial sector performance and development over the decade, then provides a more detailed overview of the Australian GFC experience and its implications, and considers explanations for the Australian financial sector resilience.

## 1. Introduction

The Australian (and global) financial system entered the first decade of the millennium preparing for a systems crisis, in the form of the Y2K computer scare, which on 1 January 2000 passed without event. But towards the end of the decade, the financial sector was faced with, arguably, its most serious systemic crisis ever, which the Australian financial system and economy weathered relatively well compared with advanced nations in the northern hemisphere.<sup>1</sup> While the GFC occupied only one-quarter of the past decade (from mid 2007), it prompts the questions which this review must seek to answer. Was there something about the structure and evolution of the Australian financial system which explained its resilience in the face of the crisis; and was that resilience due to lower risk-taking by the banking sector in the lead up to the crisis? Did the distribution of risk within the financial system facilitate adjustment to the shocks encountered? What role can be attributed to government and regulatory responses following the onset of the crisis?

In order to place the developments of the 2000s in context, this paper is structured as follows. First, overall macroeconomic and flow of funds trends are reviewed. Second, the overall picture of financial sector growth and structure in the 2000s is briefly reviewed in Section 3.<sup>2</sup> Then, because of the important role of regulation in financial sector evolution, Section 4 examines the major regulatory developments and influences on the financial sector prior to the GFC. Section 5 examines important developments in the financial sector in more detail. Section 6 outlines how the GFC

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\* I am grateful to staff of the Reserve Bank and to Eli Remolona and participants at the RBA Conference for comments, but sins of omission and commission are my responsibility. Kevin Davis is Professor of Finance at the University of Melbourne and Research Director at the Australian Centre for Financial Studies. Email: kevin.davis@australiancentre.com.au.

1 The World Economic Forum Development Report increased Australia's financial system ranking from 11th internationally in 2008 to 2nd in 2009, partly in response to Australia's experience during the financial crisis. See Roubini and Bilodeau (2010).

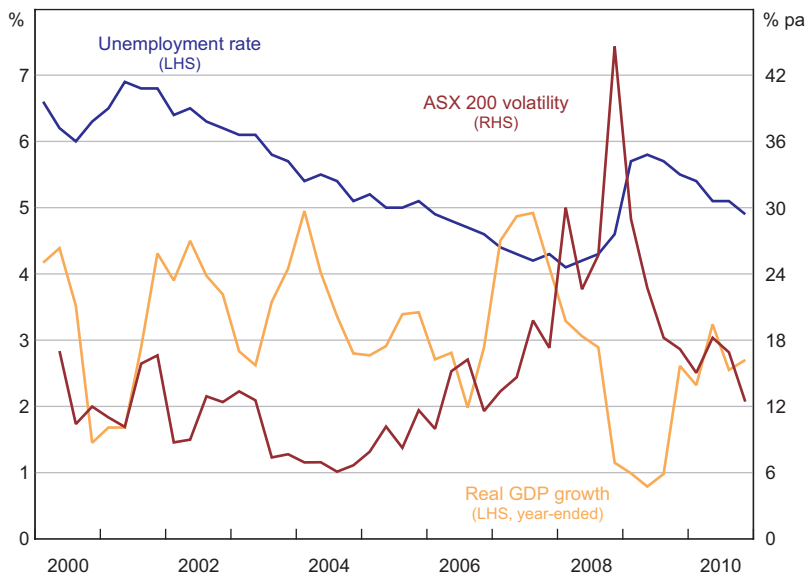
2 See Ryan and Thompson (2007) and Donovan and Gorajek (2011) for comprehensive reviews.

affected Australian financial markets and regulatory responses to that. Section 7 discusses the fallout from the GFC in terms of financial regulation and Section 8 draws on the prior discussion to address the questions posed above regarding Australian financial sector resilience. Section 9 focuses upon end of decade issues and Section 10 concludes.

## 2. The Economic and Financial Background

The 1990s, reviewed by Gizycki and Lowe (2000), were marked by serious financial dislocation and substantial banking sector losses at the start of the decade, from which a gradual recovery occurred throughout the decade. In contrast, the 2000s were relatively tranquil until the severe dislocation of the GFC, although the start of the 2000s was marked by two disruptive events. One was the global ‘tech stock’ boom and bust which, apart from adverse stock market consequences and failures of a number of new ‘tech’ stocks, had limited implications for Australia. The other was the collapse of the major insurance company HIH in 2001, which created significant economic disruption and led to government compensation of policyholders. Otherwise, a generally tranquil financial environment (in a period sometimes referred to globally as the ‘great moderation’) persisted for some time into the 2000s, reflected in declining unemployment, good output growth, and low stock market volatility as shown in Figure 1.

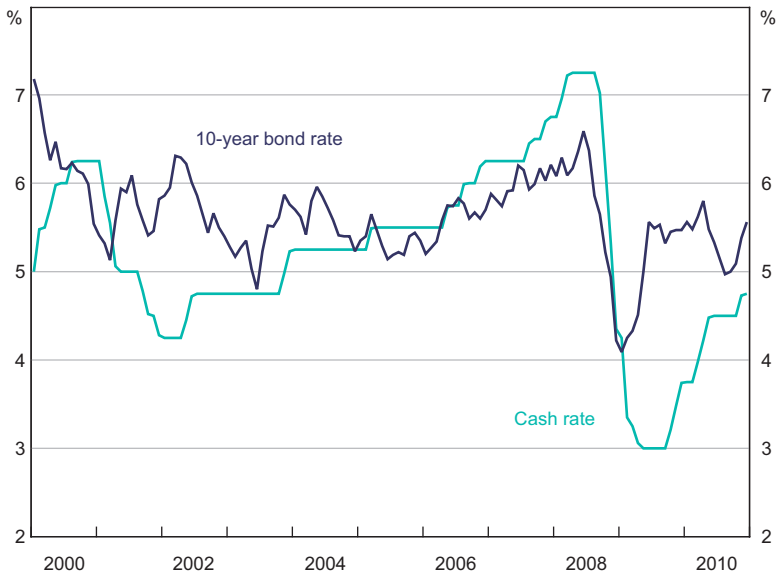
**Figure 1: Unemployment, Output and Stock Market Volatility**



Note: Volatility is an end-month figure based on an historical 90-day estimation period  
 Sources: RBA; Securities Industry Research Centre of Asia-Pacific (SIRCA) on behalf of Thomson Reuters, TRTH database

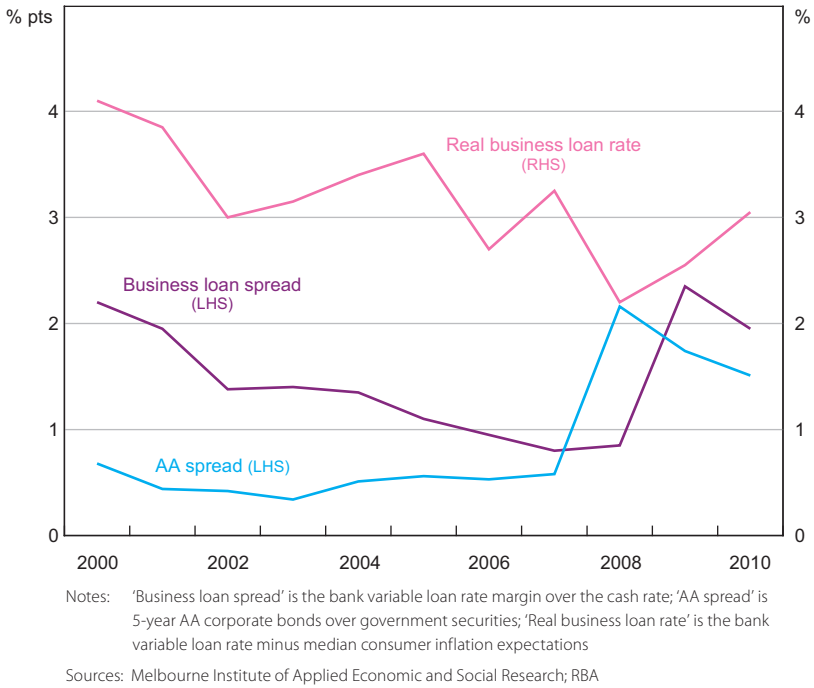
However, that period sowed the seeds of excessive lending, leverage, underpricing of risk, and inadequate governance and regulation internationally, which contributed to the GFC. Similar trends in market risk premia and risk-taking were evident in Australia, and the monetary authorities exercised a degree of monetary restraint, reflected in the increases in the cash rate after 2002 as shown in Figure 2. As Figure 2 also demonstrates, longer-term rates did not respond to the hikes in the cash rate, while Figure 3 illustrates how risk premia in business and corporate funding rates declined, with the real expected cost of loan funds trending down somewhat from around 4 per cent, despite the increasing short-term cash rate.

**Figure 2: Interest Rate Behaviour**



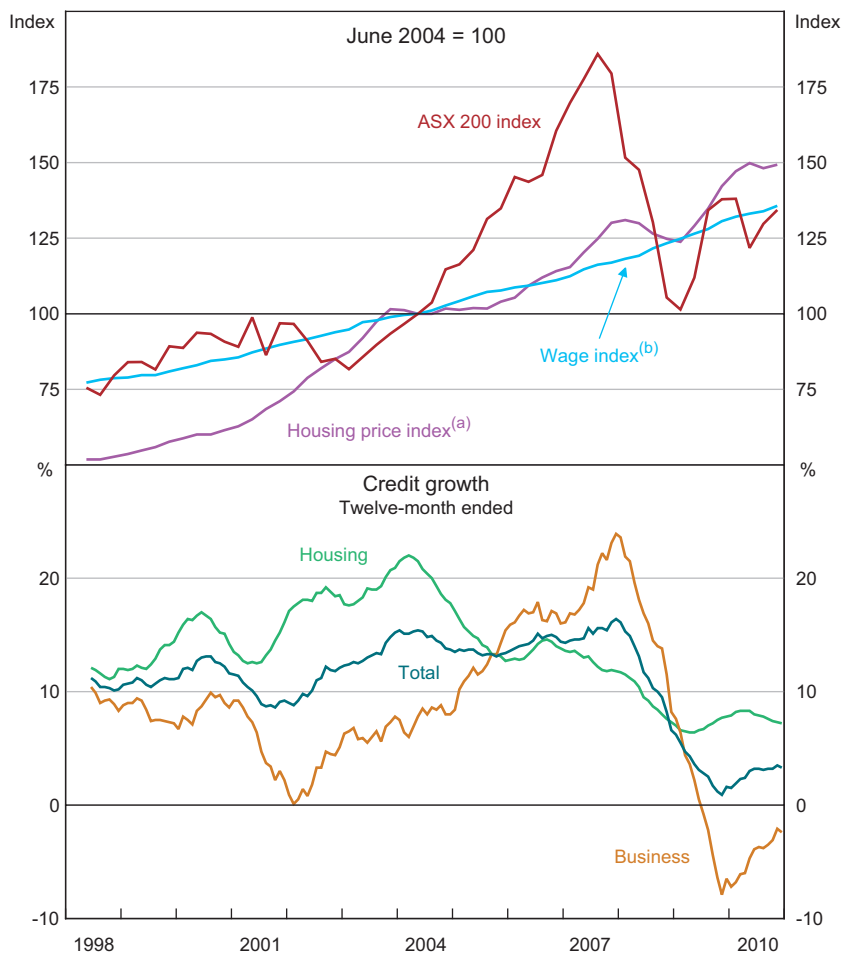
Source: RBA

**Figure 3: Corporate and Business Loan Spreads**



That period of relative tranquillity was also accompanied by a boom in asset prices reflected in stock and house prices, and in strong credit growth as shown in Figure 4. While the GFC led to substantive declines in stock prices from the record high in November 2007, house prices continued to climb. There was ongoing commentary<sup>3</sup> about a possible housing price bubble, but housing prices relative to wages had increased only modestly after 2003 (following a significant boom prior to that time). Substantial deleveraging by both businesses and households saw a marked decline in the rate of credit growth following the onset of the GFC.

<sup>3</sup> For example, 'Global House Prices: Rooms with a View' (*The Economist*, 9 July 2011, p 68) estimated that Australian housing prices were 50 per cent overvalued at the end of 2010.

**Figure 4: Asset Prices, Wages and Credit Growth**

Notes: (a) Established houses; weighted average of eight capital cities; break in series at 2004

(b) Average weekly ordinary time earnings

Sources: ABS, RBA

### 3. Financial Sector Growth, Structure and Development in the 2000s

It is useful to ask the question of how the Australian financial system differed from those overseas prior to the onset of the GFC. While all financial systems are different and have idiosyncratic features, at an aggregate level the structure and scale of the Australian financial system is not markedly different from that of other high-income countries. The banking sector plays the key role in financial intermediation, and the stock market is well developed, while bond markets play a lesser role in financing.

Table 1 highlights some apparent differences. The first is relatively lower bank deposits and assets as a ratio to GDP for Australia, which may reflect a number of influences. One would be a higher proportion of household assets in pension funds (superannuation) – over 70 per cent of GDP at the start of the decade – and the resulting growth of the funds management sector (the fourth largest in the world). That could be expected to be reflected in a higher use of capital markets; however, this is not apparent in Table 1. Another could be a larger role for ‘shadow banking’ (non-prudentially regulated financial institutions engaged in fund raising, lending and other financial services), although, as will be shown later, this seems not to be the case.<sup>4</sup> Alternatively, historically low household savings rates, coupled with high investment, may have led to this outcome, which is consistent with the heavy reliance of banks, through most of the decade, upon international wholesale market funding. This offshore financing has been an important component of net capital inflow reflecting a persistent current account deficit on the balance of payments, although subdued bank lending and increased deposit growth at the end of the decade saw offshore funding decline somewhat (DeBelle 2011).

Second, while the private bond market appeared to be of average size by 2007, this primarily reflected growth in securitisation and the Kangaroo bond market (Australian dollar domestic issues by foreigners) rather than corporate issues. Third, reflecting the strong government fiscal position, the public sector bond market was relatively small by international standards.

**Table 1: Australian Financial System Characteristics**  
Ratio to GDP

	2000		2007	
	OECD	Australia	OECD	Australia
Bank deposits	0.82	0.62	1.00	0.85
Bank assets	1.00	0.87	1.31	1.14
Loans from non-resident banks (amount outstanding) <sup>(a)</sup>	0.76	0.14	1.08	0.17
Private bond market capitalisation	0.35	0.27	0.54	0.57
Public bond market capitalisation	0.43	0.20	0.44	0.13
Stock market capitalisation	1.00	1.00	1.04	1.47

Notes: OECD figures are (unweighted) averages for other high-income OECD countries

(a) The lesser reliance on loans from non-resident banks primarily reflects financing patterns within Europe

Source: World Bank, ‘Financial Structure Database’, November 2010

<sup>4</sup> In fact shadow banking appears substantially smaller than in the United States (RBA 2010a).

One potentially important difference in financial systems prior to the GFC lies in the apparent concentration of lending by Australian financial institutions towards real estate as shown in Table 2. Given the role played by real estate lending in the emergence of the GFC (residential in the United States and commercial property and property development elsewhere),<sup>5</sup> the absence of similar problems in Australia suggests differences in the level of exposure of banks to property prices, perhaps associated with conservative lending and regulatory arrangements.

**Table 2: Loan Composition**  
2009, per cent of total loans

	<b>Residential real estate loans</b>	<b>Commercial real estate loans</b>
Australia	59.1	11.7
Canada	32.5	3.2
Germany	16.9	5.8
Italy	15.6	8.8
Russian Federation	5.8	6.3
South Africa	34.9	9.7
South Korea	20.8	19.1
Turkey	10.7	0.8
United Kingdom	14.5	5.0
United States	38.0	19.0

Note: Differences in treatment of securitised loans and other reporting differences mean that cross-country comparisons should be treated with caution

Source: IMF, 'Financial Soundness Indicators' (indicators I29 and I30)

On most indicators, the Australian financial system continued to grow in relative size during the decade. Figure 5 presents several indicators. The contribution of the financial sector to GDP increased from 8.9 per cent in 1999/2000 to 10.3 per cent in 2009/10, making it one of the largest sectors.

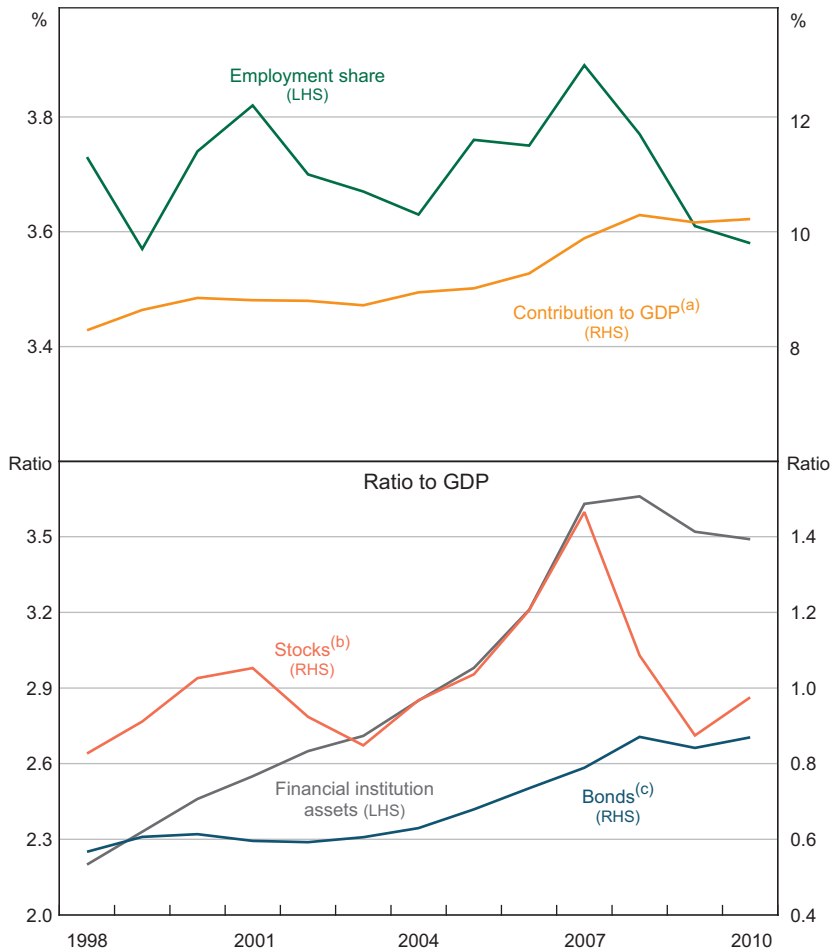
The increased contribution to GDP was not due to an increasing share of employment. Instead, employment in the financial services industry remained relatively stable over the same period at around 3¾ per cent of total employment (although declining a little towards the end of the decade). Significant advances in technology and telecommunications provide part of the explanation for this.

The increase in GDP contribution was substantially less than the increase in financial intermediation as measured by total assets of financial institutions as a multiple of GDP. This increased from 2.5 at June 2000 to 3.7 at June 2008, after which it declined slightly due to the decline in stock prices (and the impact of that on total assets of superannuation funds).

5 See Ellis and Naughtin (2010).



**Figure 5: Measures of Financial Sector Size**



Notes: (a) Calculated using financial and insurance services industry gross value added  
 (b) Refers to stock market capitalisation  
 (c) Refers to bonds issued in Australia

Sources: ABS, RBA

Two complementary explanations can be advanced for the greater growth in the ratio of financial institution assets to GDP than in its contribution to GDP. One is the increasing complexity of the financial sector and a longer 'value chain' (such as superannuation fund assets including bank-issued debt which finances bank lending) or cross-holdings of assets within the sector. A second is that value added per unit of financial institution asset holdings has declined over time, reflecting changes in the composition of activities of the sector (such as if bank intermediation involves higher value added per dollar of assets than in the case of superannuation, or if housing loans involve less value added than other loans), changes in financial technology, or the effects of competition. The latter two of these factors would reflect either technological gains or pressures

from increased competition being passed on to customers, such that lower value added (profits plus wages) is associated with any given scale of assets and intermediation. While this does not sit comfortably with ongoing debates about excessive profitability and remuneration in the finance sector, these alternative explanations have not been examined in depth as yet.

The growth in financial institutions exceeded, but was not at the expense of, growth in direct finance, and one potential explanation lies in the fact that much of that growth was in superannuation and managed funds which invest in capital market securities rather than intermediating *per se*. Financial markets also increased in size, as can be seen from Figure 5, which shows that equity market and bond market capitalisation increased relative to GDP (at least until the onset of the GFC). Increased issuance (particularly of longer-dated securities) by banks, government and non-resident issuers has seen bond market capitalisation increase since 2007.

Table 3 illustrates the growth in turnover in debt, currency and equity markets, and highlights several key features. First, turnover in bond markets, which are primarily over-the-counter (OTC), far exceeds that in the exchange-traded (ASX) equity market despite the substantially larger size of the latter. Second, more turnover occurs in the derivative markets than the physical markets, and the relative importance of the bond and interest rate derivatives market increased throughout the decade.

**Table 3: Financial Markets Activity**

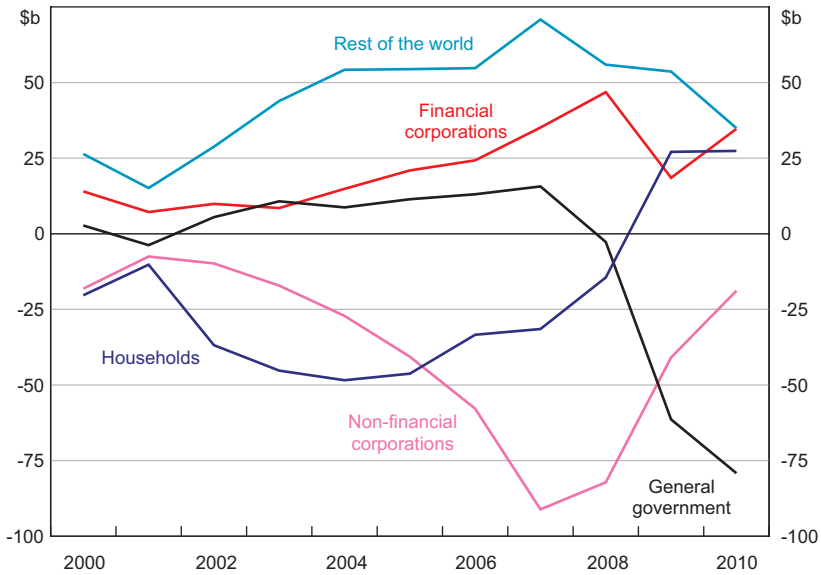
Year	Turnover \$ billion			Derivative market turnover as a share of total Per cent		
	Debt	Currency	Equities	Debt	Currency	Equities
1999/2000	20 690	16 548	902	57	66	60
2004/05	47 073	34 831	1 756	63	72	54
2009/10	57 242	40 981	2 992	80	64	56

Source: AFMA, 'Australian Financial Markets Report', various issues

An important influence on financial sector evolution is the pattern of net lending and borrowing by the various sectors in the economy. Figure 6 provides an overview of trends throughout the decade and illustrates:

- the shift of the household sector from net borrowers to net lenders towards the end of the decade with offsetting changes for the government sector;
- the increase in borrowing by the corporate sector until the advent of the GFC and the subsequent decline in borrowing associated with deleveraging; and
- the continual net lending by the rest of the world reflecting the current account deficit of the balance of payments.

**Figure 6: Sectoral Net Lending**



Source: ABS

Compulsory superannuation and tax incentives for voluntary contributions to superannuation were a major influence upon financial sector structural development during the decade, although, as Table 4 indicates, this was reflected in only a modest increase in the share of institutional superannuation funds in total financial institution assets.<sup>6</sup> Three factors underlie that outcome. First is the decline in the value of equities since November 2007, which is also relevant to the decline in managed funds since that time. Second is the growth of self-managed super funds (SMSFs), which are not included in Table 4. Third is that banks used offshore and domestic wholesale market borrowings to grow their assets (resident deposits financed around 57 per cent of resident assets on average throughout the decade).

As Table 4 illustrates, life offices assets (other than superannuation assets managed by them) stagnated. The demise of endowment and other policies involving a savings component is relevant in this regard, but may also reflect community attitudes towards costs and benefits of insurance, prompting concerns in some quarters about widespread underinsurance, to which automatic provision of a level of basic life insurance cover through superannuation funds may contribute. The other major development was the decline in the securitisation sector after the onset of the GFC in 2007.

6 Donovan and Gorajek (2011) provide a comprehensive overview of developments in financial structure during the decade.

**Table 4: Assets of Australian Financial Institutions**

	<b>Authorised deposit- taking institutions</b>	<b>Registered financial corporations</b>	<b>Life offices</b>	<b>Superannuation</b>
<b>\$ billion</b>				
Dec 1999	731.1	129.2	166.4	258.9
Dec 2005	1 502.9	167.6	185.9	537.0
Dec 2007	2 223.6	223.8	208.4	833.2
Dec 2010	2 739.8	165.1	187.4	946.5
<b>Per cent of total</b>				
Dec 1999	46	8	10	16
Dec 2005	49	5	6	18
Dec 2007	51	5	5	19
Dec 2010	59	4	4	20
	<b>Managed funds</b>	<b>General insurance</b>	<b>Securitisation vehicles</b>	
<b>\$ billion</b>				
Dec 1999	142.4	62.6	55.6	
Dec 2005	277.3	103.6	193.8	
Dec 2007	367.1	134.0	260.8	
Dec 2010	288.7	133.0	138.4	
<b>Per cent of total</b>				
Dec 1999	9	4	3	
Dec 2005	9	3	6	
Dec 2007	8	3	6	
Dec 2010	6	3	3	

Source: RBA

Table 4 also highlights the small and declining role of institutions which would be included in the 'shadow banking' sector. Registered financial corporations<sup>7</sup> include finance and leasing companies and money market corporations (such as merchant banks and investment banks) that are not prudentially regulated. At the end of the decade there were around 350 such companies with only a 4 per cent share of financial institution assets. Perhaps the outstanding feature to be drawn from Table 4 is the dominant role of prudentially regulated financial institutions (authorised deposit-taking institutions (ADIs), insurers and super funds) in the Australian financial sector – particularly when activities of their subsidiaries operating in other parts of the financial sector are also recognised.

<sup>7</sup> As required to be registered under the *Financial Sector (Collection of Data) Act 2001*.

## 4. Financial Sector Regulation Prior to the GFC

In their review of the Australian financial system in the 1990s, Gizycki and Lowe (2000) listed financial liberalisation as one of two recurring themes of that decade, and commented that ‘financial liberalisation looks to have been much more successful than appeared to be the case a decade ago’ (p 180). There is little dispute that deregulation has contributed to improved economic growth and development, but after the GFC several of the features they pointed to, such as increased competition and growth of new debt and risk management products, are being reassessed in terms of their implications for financial stability, and investor and consumer protection. An international agenda of stronger regulation, especially of banks, commenced in the late 2000s, and substantial reforms involving stronger bank regulation and enhanced investor and borrower protection were in train at the end of the decade.

Just prior to the start of the decade, a number of regulatory and legislative changes had been introduced or initiated, following the report of the Wallis Committee in 1997 (Financial System Inquiry 1997). Foremost among these was the restructuring of regulatory arrangements involving the creation of a specialist prudential regulator, the Australian Prudential Regulation Authority (APRA), in 1998, with responsibilities for supervising banks and other ADIs, insurance, and superannuation funds, separate from the Reserve Bank. The RBA retained responsibility for monetary policy, financial stability and oversight of the payments system. The restructured securities and markets regulator, the Australian Securities and Investments Commission (ASIC), was given responsibility for capital markets, corporate conduct, and consumer protection in matters related to the finance sector (with conduct of the stock market undertaken by the ASX in a self-regulatory role<sup>8</sup>). The operational independence of both APRA and ASIC was affirmed later in the decade in 2007, following the Review of the Corporate Governance of Statutory Authorities and Office Holders (the Uhrig Review), when the Government set out explicit statements of ‘Expectations of Regulators’ to which ‘Statements of Intent’ were produced in response.

The merits of this allocation of regulatory responsibilities, including the separation of APRA from the RBA, were put to the test later in the decade, but also at the start when a major insurance company (HIH) failed on 15 March 2001, prompting a Royal Commission. Underpinning the Wallis Committee recommendations was the view that there would be less expectation that APRA (without the resources of the central bank) would compensate customers of a failed financial institution. In the event, the Government introduced the HIH Claims Support Scheme, providing compensation of up to \$640 million for policyholders, effectively undermining this view and entrenching community expectations of implicit government guarantees of prudentially regulated institutions. In 2006, a survey commissioned by the RBA found that 60 per cent of individuals believed that the Government would provide at least partial compensation in the event of a failed bank.<sup>9</sup>

While some part of the regulatory failure involving HIH could arguably be attributed to a shortage of insurance expertise within APRA and lack of resourcing following its creation, the governance

8 At the end of the decade (effective 1 August 2010), responsibility for securities market supervision and surveillance was taken over by ASIC, reflecting potential conflict of interest problems from the planned entry of new trading platforms in competition with the ASX, and removing any ambiguity about responsibility for enforcement.

9 Reported in RBA (2006).

structure of APRA was also changed with the replacement of the non-executive Board with a three-member Executive Committee. The role of the Council of Financial Regulators (comprising APRA, ASIC, the RBA and Treasury) was also enhanced. It is widely argued that one beneficial consequence of this experience was a more assertive supervisory culture in APRA<sup>10</sup> which, together with lingering memories among bankers of the early 1990's experience, helped Australia subsequently avoid the worst of the GFC.

Another important regulatory development early in the decade was the implementation of the Corporate Law Economic Reform Program (CLERP), which commenced in 1997 and led to the introduction of a number of legislative changes over the subsequent seven years designed to improve the financial infrastructure. Changes included reforms to accounting standard-setting arrangements, audit independence, directors' duties and corporate governance requirements, fund raising and takeover procedures, corporate disclosure requirements, compliance arrangements, provisions for electronic commerce, and shareholder rights.

Two particular changes had significant impact. The *Managed Investments Act 1998* removed the role of independent trustees for managed funds and introduced the concept of a single 'responsible entity', thereby facilitating the growth of fund management companies offering a variety of managed investment products and structures. Underpinning that change appeared to be a concern that division of responsibilities made allocating responsibility a difficult task in cases of failure. The changes, however, arguably increased the risk of failure (as discussed later).

The other component of the CLERP reforms directly affecting the financial sector was the *Financial Services Reform Act 2001* (FSRA). This introduced a single licensing regime for financial products,<sup>11</sup> a single regime for regulating financial services (investment advice), and licensing of exchanges and clearing and settlement facilities. It also imposed requirements for disclosure of fees and introduced a national dispute resolution system.

ASIC recently described the approach to financial services regulation (FSR) developed from these reforms in the following way:

The fundamental policy settings of the FSR regime were developed following the principles set out in the Financial System Inquiry Report 1997 (the Wallis Report). These principles are based on 'efficient markets theory', a belief that markets drive efficiency and that regulatory intervention should be kept to a minimum to allow markets to achieve maximum efficiency. The 'efficient markets theory' has shaped both the FSR regime and ASIC's role and powers. (ASIC 2009, p 4)

This has meant that the approach to investor protection adopted in the non-prudentially regulated sector has been based upon the three building blocks of disclosure, education and advice. Valentine (2008) provides a critique of this approach, arguing that it had demonstrably failed. While disclosure is mandated in the form of prospectuses for securities and product disclosure statements (PDSs) for other financial products, the complexity and size of these documents (partly driven by issuers wishing to reduce potential liability from inadequate disclosure) has limited their usability by investors.

10 Including tighter regulatory capital requirements for insurers implemented before the release of the Royal Commission report and the development of the PAIRS (Probability and Impact Rating System) and SOARS (Supervisory Oversight and Response System) framework in 2003 (Littrell and Anastopoulos 2008).

11 Although the definition of financial products did not include credit products such as loans.

Financial literacy standards have also been called into question, prompting Government initiatives in this area through the establishment of a Financial Literacy Foundation. ASIC was subsequently given responsibility for promotion of financial literacy in July 2008.<sup>12</sup>

The FSRA also required licensing of financial advisers who, arguably, could assist individuals in financial decision-making.<sup>13</sup> By the end of the decade, there was substantial disquiet about incentive structures within that industry and conflicts of interest.

Valentine (2008) also argues that the extent of active enforcement by ASIC was limited. While AFS (Australian Financial Services) license holders were required to be members of an external dispute resolution scheme, such as the Financial Industry Complaints Service (FICS), the ability of individuals to afford to pursue legal action for claims above the \$100 000 cap involved in that scheme left investors exposed. Over the decade, the role of class actions and litigation funders of such actions also increased dramatically,<sup>14</sup> including actions against financial advisers, who were required under legislative changes to the Corporations Law in 2007 to take out adequate professional indemnity insurance. Also, in 2008, a single Financial Services Ombudsman was created out of a number of separate financial sector Ombudsman schemes.

Depositors in ADIs have, in the absence of any explicit deposit insurance scheme,<sup>15</sup> traditionally been 'protected' by prudential regulation undertaken by APRA (and its predecessors) and through the 'depositor priority provisions' of the *Banking Act 1959*. Under those latter provisions, Australian depositors have first priority over the Australian assets of a failed bank, effectively precluding banks from issuing liabilities secured against their assets.

At the start of the decade, the Basel Committee on Bank Supervision had commenced work on the new Basel Accord (Basel II), which was ultimately implemented in Australia on 1 January 2008.<sup>16</sup> This involved important changes to the prudential regulation of banks, including capital charges for operational risk, and risk weights assigned to various asset classes (and customers) that vary depending on whether the bank undertaking the lending was regulated under the proposed standardised or the internal ratings-based (IRB) approaches. Under the latter approach, large 'sophisticated' banks can use their internal risk models in the calculation of risk-weighted assets (RWAs) and capital requirements. The architects of Basel II anticipated an outcome involving different minimum aggregate capital requirements across banks, with an incentive, in the form of a lower capital charge, for banks judged to have acceptable advanced risk management systems. The major Australian banks invested large sums over the decade in upgrading their risk management systems and data in order to be classified in that category, and Australia and New Zealand Banking Group (ANZ), Commonwealth Bank of Australia (CBA) and Westpac were accorded both advanced IRB and advanced measurement approaches (AMA) status for the implementation date (with Macquarie meeting the foundation IRB and AMA requirements). Following its 'rogue

12 ASIC's consumer website [www.moneysmart.gov.au](http://www.moneysmart.gov.au) gives details of activities.

13 Credit rating agencies were exempt from the requirement for an Australian Financial Services License (AFSL) until ASIC introduced such a requirement from 1 January 2010 if information was provided to retail investors. One consequence was that those entities stopped retail investors accessing information on their Australian websites.

14 This was facilitated by a High Court endorsement of litigation funding in 2006 and an ASIC exemption in 2009 of such activities from classification as a managed investment scheme. Lim (2011) provides details.

15 Davis (2004) provides details of past arrangements.

16 IMF (2010) provides a review.

trader' foreign exchange trading losses of \$360 million in early 2004,<sup>17</sup> National Australia Bank (NAB) was not initially approved to operate under the IRB approach (but has subsequently been approved).<sup>18</sup>

At the end of the decade, in response to the GFC experience, a new version of the Basel accord – Basel III – was being introduced, involving much higher capital requirements and more risk sensitivity. While the GFC experience led some to question the wisdom of relying on internal bank risk management models for prudential regulation, the attempt at better aligning the risk weights for regulatory capital with those involved in internal bank economic capital risk measurements, which started under Basel II, was not changed. What did change was the recognition that historical risk measurements based on the 'great moderation' were inappropriate and that regulatory capital needed to increase relative to economic capital.

The Reserve Bank began a program of payments system reforms in the early 2000s, focusing initially on card payment systems (Bullock 2010), where network characteristics create access issues. The structure of interchange fees and customer pricing had meant that consumers were typically using credit rather than debit cards (eftpos) for transactions, even though the costs associated with the latter were generally lower. Scheme arrangements also meant that merchants were precluded from discriminating between cards either in terms of acceptance or through differential pricing. By reducing and aligning interchange fees for debit and credit cards, and providing greater merchant discretion, a substantial increase in the relative use of debit cards has eventuated. Much later in the decade (2009), the RBA implemented reforms to the methods of charging for ATM transactions (Filipovski and Flood 2010), involving direct charging of customers using 'foreign' ATMs, replacing the previous interchange fee arrangements.

The Australian Government's attempt to develop a consistent framework for taxation of financial arrangements (TOFA), which began in 1999 in response to the Review of Business Taxation, has progressed slowly and was still underway at the end of the decade. Differences between domestic and international taxation arrangements, which can create impediments for the development of the domestic financial services industry, have also been reviewed. One example has been the tax treatment of managed funds, whereby withholding tax arrangements have inhibited the export of funds management services (i.e. Australian managers managing offshore financial assets for foreign investors). Some changes to these arrangements were announced in May 2008 aimed at enhancing the competitive position of Australian-based fund managers in competing for international business, and further recommendations were made at the end of the decade by the Australian Financial Centre Forum (2009).

17 These were dwarfed by its losses of \$2 billion earlier in the decade from an investment in a US mortgage servicing company (Homeside) which, however, attracted relatively little publicity.

18 In a departure from past experience, the report by APRA (and also one by the accounting firm PricewaterhouseCoopers) into the rogue trader experience were made public by NAB. Later in the decade, ANZ made public a report on its internal review into its involvement with the failed Opes Prime margin lending and broking firm. More generally, banks began publishing required Basel II Pillar 3 risk disclosures on their websites.



## 5. Financial Institutions and Markets during the Decade

Among issues identified by Gizycki and Lowe (2000) in their review of the Australian financial system during the 1990s as warranting explicit attention, were the changing nature of household balance sheets, profitability and competition in financial markets, and the drift towards intermediation via capital markets rather than traditional intermediation. Those issues remained important during the 2000s and, together with bank funding arrangements, bond market development, growth and developments in funds management and superannuation, and corporate finance issues, are topics discussed in the following sections as relevant for understanding the Australian experience during the GFC.

### 5.1 The bond markets

Table 5 summarises the evolution of the Australian bond markets during the 2000s. Several features stand out. First, non-financial corporate domestic issuance was relatively small, and while international issuance was larger, it was not particularly large relative to that by corporates in comparable overseas countries. Second, banks were substantive issuers both domestically and overseas, with issuance increasing during the GFC aided by the Government Debt Guarantee Scheme.<sup>19</sup> Third, the supply of (particularly Australian) Government debt was limited due to the strong fiscal position, with the Australian Government going so far as to conduct a review of the future of the Commonwealth Government Securities (CGS) market in 2002–2003, which decided that its retention was necessary.<sup>20</sup> Fourth, securitisation grew rapidly up until the GFC, with both international and domestic demand then drying up such that the stock of residential mortgage-backed securities (RMBS) on issue fell (as did the stock of short-term asset-backed commercial paper (ABCP)).<sup>21</sup> Fifth, the Kangaroo bond market grew rapidly until the GFC.

19 The increased share of banks in international issuance, at the expense of corporate and government issuers, has been a common trend internationally: see <<http://www.bis.org/statistics/secstats.htm>>.

20 However, Treasury note issues ceased in 2002 and were not resumed until 2009.

21 ABS figures indicate an increase due to internal 'self-securitisations' by banks in order to create precautionary balances of securities which could be used in repo transactions at the RBA in extreme circumstances.

**Table 5: Australian Bond Market Developments**

\$ billion outstanding

Month:	Mar 2000	Mar 2005	Mar 2008	Mar 2010
<b>Corporates</b>				
Australia	16	38	47	41
Rest of the world	31	68	83	115
<b>Banks</b>				
Australia	21	45	90	168
Rest of the world	67	172	257	366
<b>State government<sup>(a)</sup></b>				
Australia	49	59	65	139
Rest of the world	25	24	33	16
<b>Government</b>				
Australia	79	58	58	127
Rest of the world	2	1	1	1
<b>Securitisers</b>				
Australia	25	72	118	86
Rest of the world	18	64	74	38
<b>Rest of the world</b>				
Australia	9	44	108	123
Rest of the world	na	na	na	na

Notes: Excludes short-term securities

(a) Central borrowing authorities

Sources: ABS; RBA

For corporate, bank, and securitiser debt, the distribution of holders (domestic versus international) was generally similar to the distribution of issuance shown in Table 5, but with somewhat more international holdings. But for government issues, foreign holdings were substantially greater, having increased over the decade until around half of the total federal and state central borrowing authority issues (and two-thirds of federal issues) were held by foreigners as at September 2009. The turnover in the CGS market had also declined to around five times per annum, and at that time around one-quarter of domestic investor bond holdings were from overseas issuers,<sup>22</sup> including around half of the Kangaroo bonds on issue. Notably, the growth of the fund management sector in Australia was not associated with growth in corporate bond issuance, which might have been expected. That is reflected in the focus of Australian superannuation funds on equity investments,<sup>23</sup> such that throughout the decade they had a relatively low 6–7 per cent of their asset portfolios in domestic bonds (and around 4–5 per cent in short-term one-name paper).

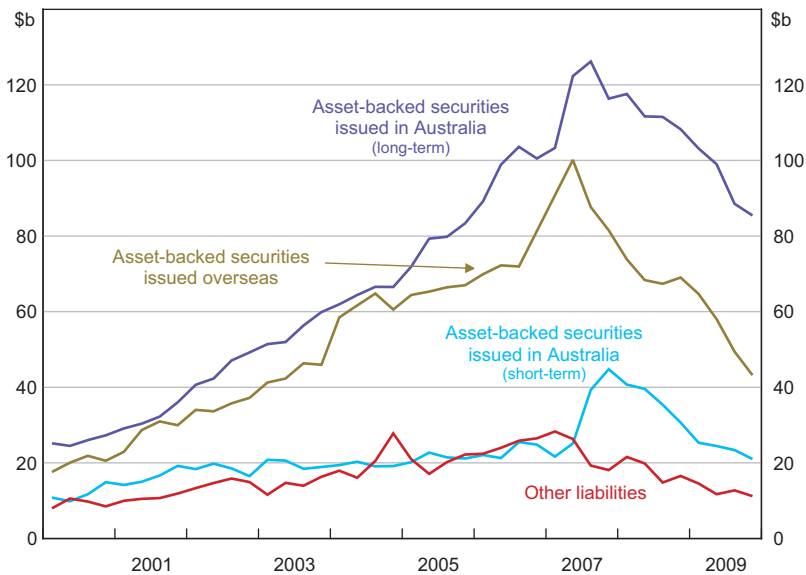
<sup>22</sup> This figure is biased downwards by the inclusion of self-securitisations in ABS statistics for bond holdings.

<sup>23</sup> OECD (2010) estimated that Australian pension funds were the most heavily invested in equities of 21 developed countries examined, with a portfolio share of 54.4 per cent, which was approximately twice the average of the other countries.

Overall, Australian issuers (primarily financial institutions) made greater use of international bond markets than domestic bond markets, such that Australia's relative use was around twice that of other comparable countries. While persistent balance of payments deficits help explain this difference at the aggregate level, the composition suggests that Australian financial institutions appear to have focused primarily on fund raising for themselves for on-lending rather than facilitating direct borrowings by corporates in either domestic or international bond markets. On the other hand, Australian corporates appear well-served in terms of access to the international syndicated loans market, with around 2 per cent by value of syndicated loans globally originating out of Australia in the second half of the decade.

The securitisation market, whose growth since the 1990s had been a major contributor to increasing competition in housing loan markets,<sup>24</sup> was one of the hardest hit by the GFC (Figure 7), with investor demand falling away even for low-risk issues such as Australian RMBS. It is also noticeable that other liabilities (including warehouse funding of mortgages yet to be securitised) also declined during that period, with those entities without a substantial deposit-based balance sheet experiencing difficulties in obtaining warehouse loans or liquidity facilities to back up commercial paper issuance. Even with the support of the Government's Australian Office of Financial Management (AOFM) investment program (discussed later), new public issues remained low until the end of the decade.<sup>25</sup>

**Figure 7: Securitisation Debt on Issue**



Source: ABS

<sup>24</sup> Kirkwood (2010).

<sup>25</sup> There has been some recovery more recently.

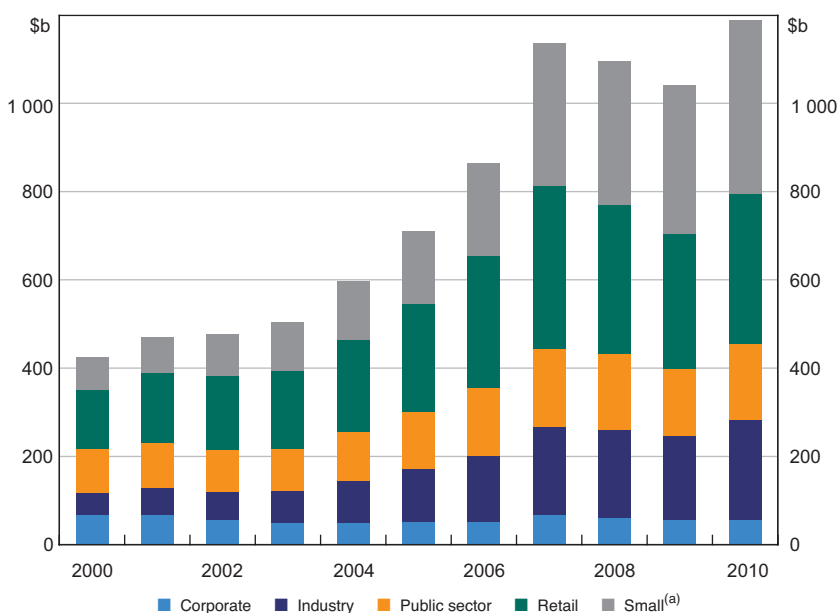
Three questions arise from this brief review of bond market trends. First, why are Australian corporates relatively low issuers of debt? Second, why is Australian financial institution debt issuance into international markets relatively high by international experience? Third, why are holdings of debt securities by Australian superannuation funds relatively low? These questions are taken up in the following sections.

## 5.2 Superannuation and funds management

A dominating feature of the development of the Australian financial sector during the 2000s has been the continued growth of superannuation. One consequence of the introduction of compulsory superannuation has been increased household savings and wealth as Connolly (2007) shows, as well as changing its mix towards managed funds at the expense of bank deposits.

A key feature of this growth has been the emergence of new, large financial institutions, in the form of industry funds,<sup>26</sup> together with the proliferation of small SMSFs. Figure 8 shows that SMSFs became the largest part of the superannuation industry by asset size by 2010; indeed, they doubled in number to over 428 000 over the decade. In contrast, other types of superannuation funds declined in number due to mergers. Corporate funds declined from over 3 000 to under 300, while industry, retail and public sector funds all roughly halved in number. In terms of assets, industry funds grew more rapidly than the other types of institutions.

**Figure 8: Superannuation Fund Assets**



Note: (a) Small funds are overwhelmingly comprised of self-managed superannuation funds

Source: APRA

<sup>26</sup> These are not-for-profit funds, initially formed to manage retirement savings of workers in specific industries with trustee boards appointed by employer representatives and trade unions.

Underpinning the growth of superannuation assets were a number of policy influences during the decade. First, compulsory contributions under the Super Guarantee Charge increased to 9 per cent of wages at July 2002. Second, in the May 2006 Budget, the Government introduced its 'Simpler Super' changes. Fundamental tax changes at the retirement stage involved the removal of Reasonable Benefits Limits and the application of a zero tax rate to retirement income for retirees over the age of 60. At the contribution stage, concessional (tax advantaged) and non-concessional contribution limits were specified, with initial transition arrangements allowing substantial short-term contributions prior to the complete introduction of the contribution caps. The substantial growth in the size of superannuation assets in the year ending June 2007 (and an unusually high increase in the number of SMSFs in that year) partly reflect the greater tax effectiveness of super (and opportunities to exploit that), with the decline in subsequent years largely reflecting negative returns due to stock market declines.

Competition within the superannuation industry and the industry's performance have been matters for debate throughout the decade. When compulsory superannuation was initially introduced, contributions for workers (who were not members of corporate or other funds) were directed to the industry funds specified under the relevant awards. This lack of choice, and impediment to competition, was rectified by the *Superannuation Legislation Amendment (Choice of Superannuation Funds) Act* passed on 23 June 2004, which gave workers the choice of fund. While relatively few have utilised that choice option (except when changing jobs), one consequence has been a trend towards industry funds becoming 'public offer' funds in order to accept members working in industries outside of the fund's original remit, and increasing potential for competition between the funds.

In general, there has been limited involvement of most individuals with superannuation, and this is reflected in the number of 'lost' superannuation accounts and the large number of multiple accounts arising from individuals working at different times across different industries. In this regard, it is perhaps surprising that the part of the sector most likely to involve financially aware members, the retail fund sector (funds operated by financial institutions for profit, and open to all), where members might be more likely to vote via 'exit', appears to have performed relatively poorly after controlling for different asset allocation. APRA (2008) undertook a detailed study of large superannuation fund performance over the period 2001 to 2006, which indicated that the apparent underperformance of retail funds could be due to higher fees.

In 2009, the Government commissioned the Cooper Review of superannuation, which focused upon governance, efficiency, structure and operations of the sector. Reflecting the lack of member involvement, the Review's final report (Super System Review Panel 2010) issued in mid 2010 recommended that a low-cost default option 'MySuper' be required of all funds to cater for non-involved members. It also proposed a package of measures – 'SuperStream' – aimed at enhancing better use of technology and productivity in the industry. One anticipated consequence is further consolidation of the sector in order to achieve economies of scale.

One consequence of the growth of the superannuation industry has been concurrent growth in the funds management sector to become the fourth largest in the world. Much of the investment of superannuation funds is made indirectly, and at March 2007 (for example) around 45 per cent of the \$1 trillion funds under management by investment managers was from superannuation

funds, with another 10–15 per cent each from insurance companies, public unit trusts (managed funds), and other (wholesale) unit trusts. Only around 5 per cent came from overseas sources, an issue focused upon by the Australian Financial Centre Forum (2009) Report, which made recommendations for tax reform to promote the export of fund management services.

The large insurance companies, major banks and government fund managers (such as the Future Fund, QIC and the Victorian Funds Management Corporation (VFMC)) are the largest participants in the sector (although small by world standards – all being outside the largest 100 managers worldwide). At August 2007 there were over 10 000 funds offered by 248 fund managers. The large banks and insurers dominate the retail funds management sector and Hall and Veryard (2006) estimated that at 2006 the banks' share of retail funds under management was 40 per cent. They also, through their dealer groups, dominate the financial advice industry, as well as the provision of accounting and technology systems (platforms or wraps) through which investors are directed by the financial advisers to investment products manufactured by those institutions. The remuneration arrangements, incentive structures and potential conflicts of interest involved became a major policy issue at the end of the decade (and are addressed later).

Two other features of the growth in funds management deserve mention. One is the growth in hedge funds in Australia, most structured as unit trusts and mutual funds rather than the limited partnership form common overseas, but which are taxed as an entity in Australia. While much of the initial growth was from funds from individuals (who can also invest in similar entities listed on the ASX), the use of hedge funds by superannuation funds has been growing. In early 2007, there were estimated to be 87 hedge fund managers operating offering 180 hedge funds, of which 51 were funds primarily investing in offshore entities. At June 2006, the sector had around \$60 billion under management, but growth stagnated after the onset of the GFC and assets at September 2010 were estimated to have fallen to around \$50 billion (Donovan and Gorajek 2011).

Also reflecting the growth in funds under management has been the growth of Custodians, which at June 2010 had \$1.7 trillion assets under custody for Australian investors (up from around \$0.6 trillion at the start of the decade). While most were international firms, the largest custodian for Australian investors was a subsidiary of NAB. Among the other services provided, Custodians play a key role in the securities lending business, an activity which came to public attention in the latter part of the 2000s when securities lending by superannuation funds (earning them a fee) was seen by many as inappropriate since it could facilitate short selling of the very stocks which the funds held but were lending.<sup>27</sup>

### 5.3 Competition in Australian financial markets

Concerns about competition in Australian financial markets have been a common theme throughout this and past decades, often prompted by the extent of concentration in the Australian banking market, but also by movements in fees and interest rates and bank profit levels.

The link between concentration and degree of competition is tenuous, and a high level of banking sector concentration is relatively common internationally (Davis 2007). Table 6 shows banking concentration in Australia as measured by the share of the four major banks in certain markets.

<sup>27</sup> Its inappropriate use as a framework for margin lending arrangements (discussed later) also came to prominence during the GFC.

Two noticeable features stand out. First, the declining share in both asset and deposit markets up until 2007 was subsequently reversed – much of which can be explained by the acquisition of (the then fifth largest bank) St. George Bank by Westpac in December 2008.<sup>28</sup>

**Table 6: Concentration Ratios**

	March 2000	March 2004	March 2007	March 2010
<b>Total resident assets</b>				
All banks – \$b	700	1 107	1 650	2 351
Share of four majors – %	65.4	68.5	64.8	73.4
<b>Amount securitised</b>				
All banks – \$b		57	110	71
Share of four majors – %		24.4	23.2	29.7
<b>Gross loans and advances</b>				
All banks – \$b		730	1 064	1 534
Share of four majors – %		71.8	71.0	78.1
<b>Total deposits</b>				
All banks – \$b	392	605	843	1 252
Share of four majors – %	63.9	68.2	62.2	75.5
<b>Number of licensed banks</b>	<b>50</b>	<b>53</b>	<b>54</b>	<b>56</b>

Source: APRA

Further consolidation has occurred amongst building societies and credit unions, with the number of credit unions approximately halving over the decade to 112 at December 2009 and the initially small number of building societies also declining slightly to 11.

Much attention is paid to competition in the housing mortgage market, where the growth of mortgage originators and securitisation observed in the 1990s continued into the first half of the 2000s, and was seen by many as putting pressure on bank margins and loan interest rates. That effect was particularly noticeable in the 1990s when the margin between the standard variable housing loan interest rate and the RBA target cash rate fell from over 400 in 1993–1994 to 170 basis points by mid 1997. Thereafter, however, the spread remained relatively stable (at 180 basis points) until the start of 2008 when banks adjusted rates to widen the spread over the official cash rate, reflecting higher cost of funding and a re-evaluation of credit risk. The spread increased to 290 basis points by the end of 2009.

This suggests that competition was occurring via other mechanisms. One was the proliferation of special rates, the discounts on which Fabbro and Hack (2011) suggest gradually increased to around 60–70 basis points by mid 2007. Another mechanism was by way of compression of bank interest rate margins, by around 75 basis points from the start of the decade until the

<sup>28</sup> The 2010 figures are, arguably, biased downwards because Bankwest, which was taken over by CBA in October 2008, still retains a separate banking licence.

GFC (although this also reflects an increasing asset share of relatively lower interest rate housing loans).<sup>29</sup> Another potential indicator of competitive forces in the market lies in the extent of housing loan refinancing (although some part of this may reflect households taking out larger loans from alternative lenders in order to extract equity and increase leverage). The proportion of loan approvals which represented refinancing had increased markedly during the 1990s, stabilised at around 20 per cent (by number) in the late 1990s and then resumed its upward trend to reach around 30 per cent until near the end of the 2000s. And from around 12.5 per cent at the start of the 2000s, securitisation's share of housing credit steadily increased to around 22.5 per cent before the GFC struck in 2007.

A further indicator which has been used in relation to the level of competition between banks has been the level of profits, with public perceptions of insufficient competition influenced by the sheer dollar size of announced profits of the major banks. However, others (including RBA (2010b)) have pointed to bank profit rates as not appearing excessive relative to either overseas banking systems (excluding the GFC experience) or other Australian industry sectors. Over the decade, the accounting return on equity of the major banks hovered around the 15 per cent mark.

Given the breadth of activities of the major banks across the entire financial sector, aggregate profit figures may disguise the degree of competition and profitability in different market segments. The Australian banks are also important participants in such areas as wealth management and broking activities, and have some significant activities outside Australia (notably New Zealand). They are providers of basic products (loans, deposits, etc), manufactured investments (securities, warrants, etc), funds management services (mutual funds and superannuation), and advisory and transactions services, including provision of management systems. An alternative measure of performance which can be examined is the ratio of the market value of equity to its book value, with values in excess of unity indicating that the market perceives the entity as being able, or having prospects of being able, to generate higher returns than required by providers of equity capital. For the Australian banks, the market-to-book ratio varied throughout the decade around an average of approximately 2, but increased strongly between 2005 and 2007 to 3, before declining to between 1 and 1.5 at the end of the decade. While this may be indicative of an ability to earn above normal profits, similar market-to-book ratios existed prior to the financial crisis in other international banking markets (Stevens 2009).

But international comparisons are extremely hazardous, and the perception exists that Australian banks have been highly profitable by international comparison (both prior to and during the GFC). The International Monetary Fund (IMF), for example, provides estimates of bank return on equity (ROE) for advanced economies among its financial soundness indicators, with Australia having (on its figures) an average ROE over the six years to 2010 of 23.4 per cent, compared to an average for the other 30 countries of 11.4 per cent.<sup>30</sup> In contrast, the RBA submission to the Senate Economics References Committee Inquiry into Competition within the Australian Banking Sector (RBA 2010b) presented comparisons of profitability across large banks in Australia, Canada, the euro area, the United Kingdom and the United States, indicating no substantive differences prior to the GFC.

29 Reductions in operating cost structures, and compression in credit spreads prior to the GFC (with highly rated banks raising funds and lending to lower-rated borrowers), are also potentially relevant factors.

30 For the three years from 2005 to 2007, Australian bank average ROE was estimated as 27.9 per cent compared to an average for the other countries of 16.9 per cent. See <<http://fsi.imf.org/docs/GFSR/GFSR-FSITables-April2011.xls>>.



Throughout the decade, the four pillars policy remained in effect, preventing mergers between the four major banks. Whether this restriction on the market for corporate control affects bank proclivity towards risk-taking, with benefits for financial stability, is an unanswered question. So too is the question of whether the concentration which prompts the four pillars policy creates such franchise value as to inhibit excessive risk-taking. While the four pillars policy has traditionally been linked to banking (deposit and loan) market concentration, the dominance of the Big Four across other parts of the financial sector was reflected in the opposition by the Australian Competition and Consumer Commission (ACCC) at the end of the decade to the takeover of the wealth management and life insurance company AXA by one of the majors (NAB) on the grounds of adverse effects on competition in the wealth management industry (particularly as a supplier of investment platforms).

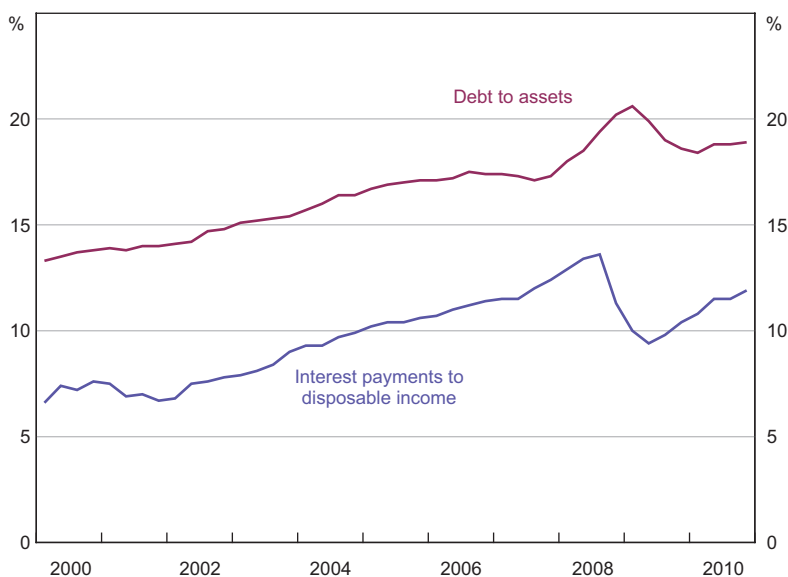
The number of foreign banks operating in Australia increased from 50 to 59 over the decade, but only a small number were incorporated as subsidiaries within Australia – and thus able to provide competition in retail loan and deposit markets. Nevertheless, initiatives such as the development of internet-only deposits by some of those entrants, aggressive marketing and expansion (until the onset of the GFC) and involvement in securitisation provided a substantial spur to competition in deposit and loan markets. More substantive effects could be seen in securities markets and investment banking where foreign banks were major players in the industry league tables as lead managers or arrangers for equity and debt issuance, mergers and acquisition, and in funds management and custody.

Towards the end of the decade, the ASX's (near) monopoly of the market for listing and trading of equities and derivatives came under challenge, with an application by Chi-X to set up a competing trading platform.<sup>31</sup> While that application was not approved until after the end of the decade, the ASX was also facing competition through the growth of other trading arrangements such as 'dark pools' and internal crossings of stock by brokers. Within the broking industry, the growth of online, low cost, retail broking services (including services provided by the major banks such as 'E\*Trade' and 'CommSec') increased competition, contributing to some consolidation within the broking industry.

## 5.4 Household balance sheets, risk-taking and investor protection

Throughout the 2000s, the high and increasing level of household leverage and exposure of investments to market risk was a continuing theme of RBA *Financial Stability Reviews*. The trend is shown in Figure 9, with a decline in the ratio of interest payments to disposable income in 2008 reflecting the marked decline in official interest rates at that time, and a more gradual, but temporary, decline in debt relative to assets, reflecting increased household savings and deleveraging following the GFC.

31 Notably, however, other providers of exchange services (such as the National Stock Exchange and the Australia-Pacific Exchange) had failed to make significant headway.

**Figure 9: Household Leverage Ratios**

Source: ABS

There are a number of hypotheses which can be advanced to explain greater household leverage, which Kent, Ossolinski and Willard (2007) note was a common trend internationally, and in Australia involved a shift from a quite low level by international standards at the start of the 1990s (Macfarlane 2003). One is that it is consistent with financial deregulation facilitating greater household borrowing and lending consistent with life-cycle financing needs. A second is that household attitudes to risk-taking have changed. A third is that changed economic conditions (lower inflation and real interest rates, low unemployment and economic stability) enabled households to take on greater leverage by, for example, removing the negative tilt over time in real repayments associated with standard mortgages (Ellis 2006). While the resulting changes in household leverage may be benign (and reflecting a new 'equilibrium' balance sheet), the concern arises that they may also be predicated on inappropriate household expectations or excessive competition for borrowers by financial institutions which could expose the economy to systemic shocks.

Table 7 illustrates the movements in major components of household balance sheets over the decade, illustrating the greater exposure to market and property price risk up until the GFC. Some part of that trend (and the subsequent decline) reflects the movements in equity and property prices during the decade. But also important are government policies towards taxation and superannuation which have induced individuals to take on increased financial risk. The Henry Review (Australia's Future Tax System Review Panel 2009, Chart A1–19) illustrates the preferential tax treatment given to investments in superannuation, property and equities relative to fixed income investments such as bank deposits, and these are magnified (as are the risks) by the

tax deductibility of interest on debt used to leverage those investments.<sup>32</sup> Financial product manufacturers have capitalised on those tax distortions to produce retail financial products (including many listed on the ASX, such as instalment warrants) which package the borrowing and risky investment into one product, sometimes adding a capital protection component. Margin lending, also enabling investors to undertake leveraged share investments grew strongly from around \$6.5 billion in mid 2000 (with under 85 000 clients) to \$41.6 billion with 248 000 clients in December 2007, but subsequently halved to \$21.7 billion at December 2009. The significance of property investments as a component of household asset portfolios is reflected in lending for residential investment properties comprising around 30–35 per cent of total loan approvals.

**Table 7: Household Balance Sheet Characteristics**

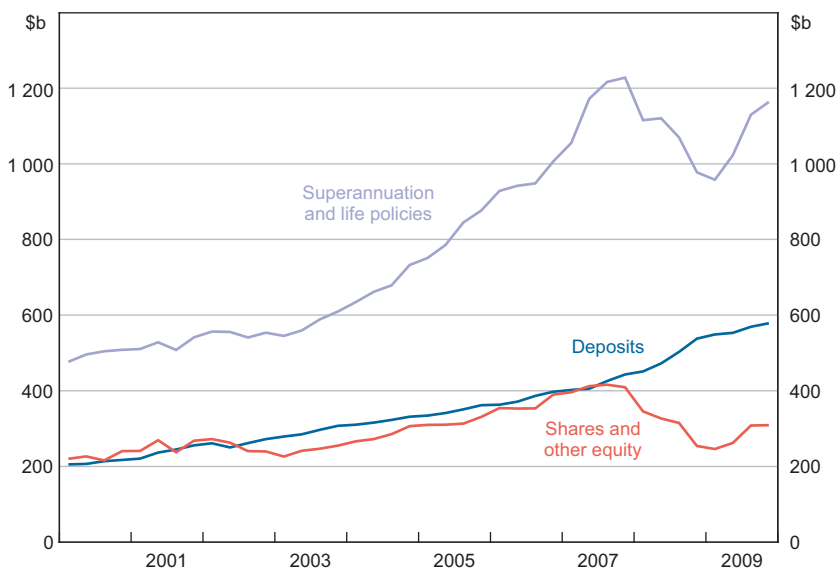
	June 2000	June 2007	June 2010
<b>Ratio to financial assets</b>			
Deposits	0.18	0.17	0.25
Superannuation	0.53	0.57	0.57
Shares	0.20	0.18	0.11
Liabilities	0.42	0.51	0.61
<b>Ratio to total assets</b>			
Dwellings	0.53	0.56	0.60
Liabilities	0.17	0.20	0.22
Financial assets	0.40	0.39	0.36
<b>Total assets – \$ billion</b>	<b>2 820</b>	<b>5 882</b>	<b>6 671</b>

Sources: ABS; RBA

Figure 10 illustrates the growth in household superannuation assets relative to bank deposits and the decline in the value of those superannuation assets, and of holdings of equities and mutual funds, during the GFC.

Allied to this increased exposure to market risk is the increased exposure of financially unsophisticated individuals to complex, often unsuitable, financial products and incentives for producers and distributors of financial products and financial advisers to promote such products. During the decade, highly leveraged products such as contracts for difference (CFDs) were strongly marketed by producers of those products, including the ASX which developed and introduced an exchange-listed CFD in late 2007. Further high-risk products introduced on the ASX and available to retail investors included credit-linked notes structured as unit trusts and listed private equity funds, as well as the vast array (over 4 000 at the end of October 2007) of warrant products involving implicit leverage.

<sup>32</sup> While borrowing is prohibited for superannuation funds, use of internally leveraged products such as instalment warrants has been permitted for SMSFs, provided that there is no recourse back to the super fund.

**Figure 10: Household Financial Assets**

Source: ABS

Investment structures and business models also exposed investors to risks of which they may not have been fully aware. Unlisted property and mortgage trusts were one example in which highly illiquid assets were financed by investor funds that could supposedly be withdrawn on demand or with short notice. Another example was the marketing of capital 'guaranteed' products, where the guarantee was only as good as the credit standing of the entity providing the guarantee.

Arguably, Australia has been a world leader in applying *caveat emptor*, based on disclosure requirements, as a policy strategy for regulation of financial products for the household sector, and it should be acknowledged that prior to the GFC there were relatively few instances of systemic problems affecting the household sector. Failures of financial and property development companies Westpoint, ACR and Fincorp in the middle of the decade received significant press but only involved some 20 000 investors. But sufficient instances of excessive, badly advised, household risk-taking were brought to light during the GFC to prompt a parliamentary inquiry (PJCCFS 2009), and led to regulatory changes at the end of the decade.

Over the course of the 2000s the affordability of housing generally declined (prompting a Senate Select Committee Inquiry on Housing Affordability in Australia in 2008), with Australian house prices becoming, on some measures, among the highest in the world. The extent to which elevated house prices reflected fundamental supply and demand influences or overvaluation is open to debate, although econometric analysis by Fry, Martin and Voukelatos (2010) suggested that by 2008 there was only a relatively small element of overvaluation.

Despite widespread public debate throughout the 2000s about the level of mortgage stress, household risk-taking and leverage, and housing affordability, it is difficult to find hard evidence

of widespread problems persisting at the end of the decade.<sup>33</sup> Connolly and McGregor (2011) use data from the Household, Income and Labour Dynamics in Australia (HILDA) Survey<sup>34</sup> to note that while initial housing loan-to-income ratios increased over the decade from around 225 per cent to over 300 per cent, the ratios fell quite substantially within a few years of taking out the loan. And following the GFC, debt-to-income ratios tended to stabilise or decline.

Some government policies are, arguably, creating potential problems for future decades. Government tax and superannuation policy has encouraged the growth of SMSFs, of which there were over 400 000 (and growing) at June 2009. Apart from concerns about the ability of SMSF trustees to invest wisely (Sinclair 2009), the risks associated with ageing and cognitive decline of individual trustees, and consequent ability to manage the fund (as well as the administration costs associated with small balances) in the decumulation (retirement) phase, are yet to come home to roost (Covick 2007).

A second potential longer-term problem arises from policy changes enabling retirees to opt for tax-free withdrawals by way of lump sums or via account-based (allocated) pensions (in which the individual maintains an account invested (tax free) in earning assets and has considerable flexibility in the rate at which funds can be withdrawn from the account). The potential for longevity risk to lead to ultimate reliance on the government age pension is significant, and these arrangements are also one likely contributor to the demise of the lifetime annuity market.

## 5.5 Bank funding and capital

Australian bank funding patterns have reflected two main factors. One is the imbalance between household borrowings and deposits (which can be seen in Table 7), partially reflecting the important role of superannuation as a recipient of household savings, but also the incentives which the tax system provides for leveraged investments by individuals. The other is the need for financing of the ongoing Australian balance of payments deficit, where bank offshore borrowings have played a major role (Henry 2011). Also important have been regulatory capital requirements in the form of the Basel Accord, as well as the limited development of domestic bond markets such that corporate funding has largely occurred through bank balance sheets. But there are substantial size-related differences in bank funding patterns, reflecting abilities to access particular types of funds and incentives to do so.

Throughout the 2000s, Australian banks have used deposits to fund approximately half of their portfolios, as shown in Table 8 which presents information on a consolidated basis (including offshore activities). The importance of international debt funding is readily apparent, as is the reliance on debt and short-term security issuance.<sup>35</sup> Figure 11 shows changes in the composition of funding for the domestic books of the Australian banks.<sup>36</sup> Prior to the GFC there had been a decline in the role of deposit funding, and an increasing role for offshore funding. The share of

33 While 23 000 non-business related personal bankruptcies in 2009/10 corresponds to around 1 per 400 households, over half of these are attributed to reasons other than unemployment and excessive use of credit.

34 Information on the HILDA Survey is available at <<http://melbourneinstitute.com/hilda/>>.

35 The marked decline in the role of bank bill acceptances reflects a relative decline in their use in business financing in the first part of the decade (together with a decline in the relative share of business credit) followed by a subsequent tendency for banks to retain accepted bills on balance sheet rather than discounting them into the market.

36 These figures do not include operations of overseas branches or subsidiaries.

household deposits in total deposits also exhibited a downward trend. As a share of total liabilities, household deposits were in the range of 20–30 per cent, indicating the exposure of Australian bank funding to wholesale debt markets and non-retail depositors. Following the onset of the GFC these trends appear to have reversed, with an increase in deposit funding, less reliance on overseas funding, and a greater share of household deposits as shown in Figure 11.

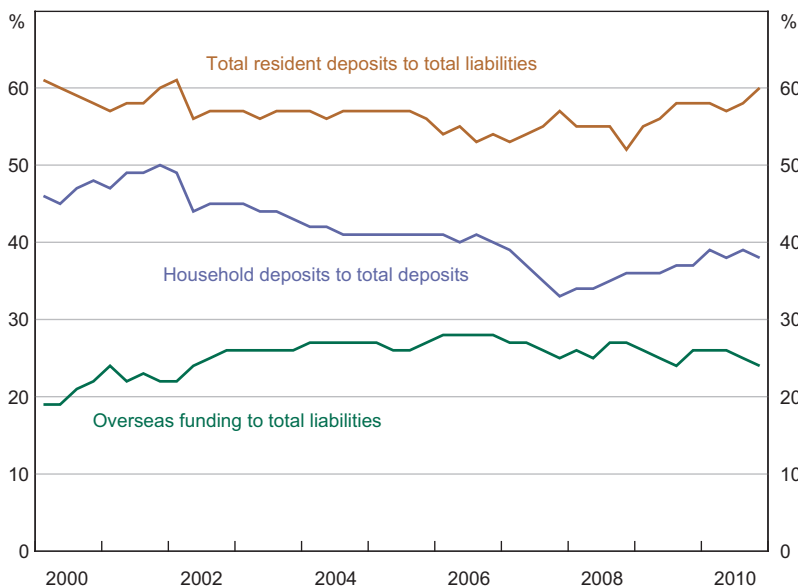
**Table 8: Australian Bank Liabilities**  
Per cent of total

	December 1999	December 2006	December 2009
Deposits	49	43	47
Bonds, etc issued offshore	7	12	13
Bonds, etc issued in Australia	3	4	5
One name paper issued offshore	3	6	3
One name paper issued in Australia	8	8	6
Long-term loans and placements	1	1	1
Short-term loans and placements	4	2	4
Acceptance of bills of exchange	6	3	1
Derivatives	3	4	4
Equity	14	17	14
<b>Total – \$ billion</b>	<b>731</b>	<b>1 659</b>	<b>2 315</b>

Note: These figures are market value, and relate to consolidated balance sheets

Source: ABS

There are substantial differences in funding patterns between the types of banks as shown in Table 9. The non-major domestic banks have relied heavily on securitisation as a method of competition. Foreign branches have relied more heavily on non-deposit funding (and are largely precluded from accessing the retail market).

**Figure 11: Bank Deposit Funding Ratios**

Notes: Australian bank domestic books; series break for overseas funding at June 2002

Sources: ABS; APRA

**Table 9: Bank Funding and Assets**  
December 2009

	Major four	Other domestic	Foreign subsidiaries	Foreign branches
Number of banks	4	9	9	34
Total resident assets – \$m	1 586 130	199 378	99 497	153 120
Outstanding principal balance of securitised assets – \$m	12 132	42 709	1 142	na
Total deposits – \$m	867 764	114 152	54 230	56 700
Deposits from households – \$m	314 850	48 842	28 617	557
Assets-to-deposits ratio	1.8	1.7	1.8	2.7
Securitisations-to-assets ratio	0.01	0.21	0.01	0.00

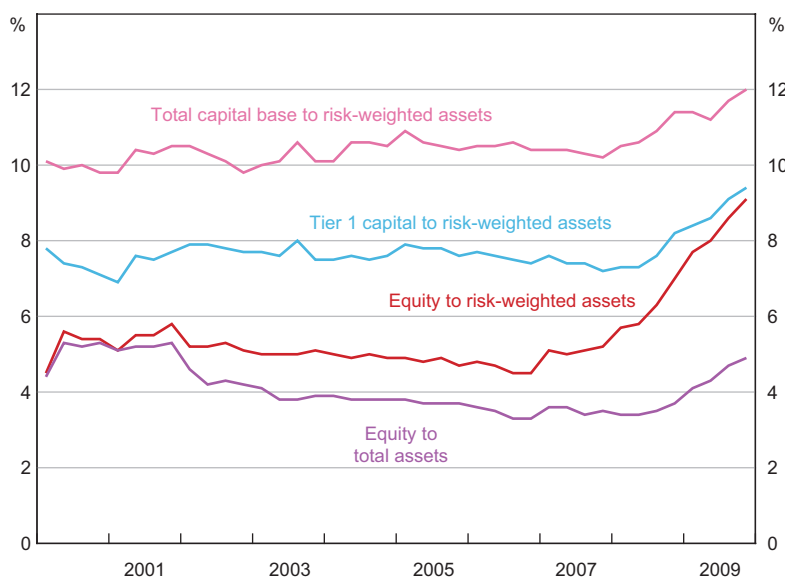
Source: APRA

Figure 12 shows aggregate trends in Australian bank capitalisation. The gradual decline in the ratio of equity to assets until the GFC is noticeable (in common with international trends), as is the widening gap between total capital and equity (as ratios to RWAs), reflecting the increasing use of hybrid securities as capital. Both of these trends were reversed after the onset of the GFC, with substantial equity raisings by Australian banks more than offsetting reduced use of hybrid capital instruments, and the introduction of Basel II at the start of 2008 causing a drop in calculated

RWAs. As a result, both the ratio of equity to assets and equity to RWAs increased substantially. It is also worth noting that in comparing Australian bank-reported capital ratios with those overseas, different treatments of allowable capital components and risk weights in Basel II create substantial differences. Thus, for example, at September 2008, ANZ Bank reported that if its capital ratios were calculated according to the UK Financial Services Authority (FSA) approach or the Canadian Office of the Superintendent of Financial Institutions (OSFI) approach, the Tier 1 to RWAs ratio would have been around 2 percentage points higher.<sup>37</sup>

At the end of the decade, following the GFC, Australian bank funding patterns had become more conservative, involving higher equity capital levels, more reliance on domestic deposits and lengthened maturities of wholesale funding.

**Figure 12: Bank Capitalisation Ratios**



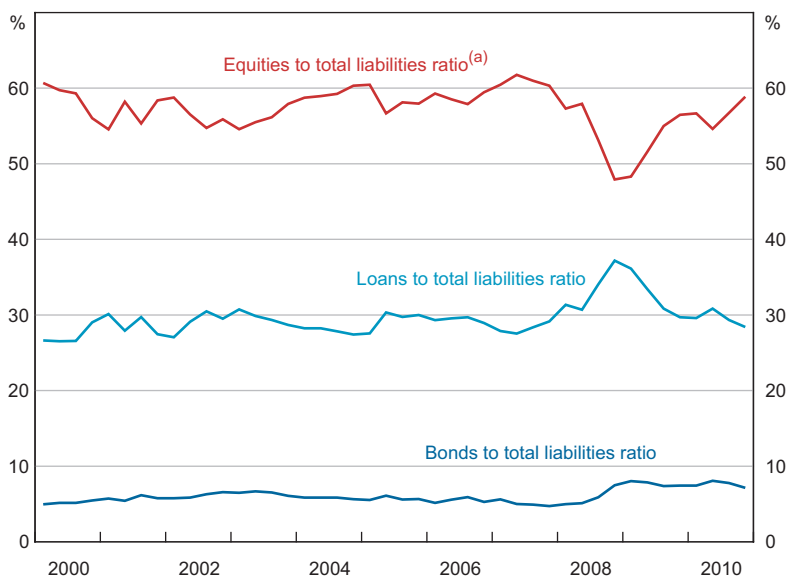
Source: APRA

## 5.6 Corporate financing

Since the introduction of the dividend imputation tax system, Australian corporate financial management has, in aggregate, been characterised by relatively low leverage and high dividend payout ratios, reflecting the reduced interest tax shield and value placed on distributed franking credits by Australian shareholders. Figure 13 illustrates the small proportion of corporate debt accounted for by bond issuance relative to loans. In aggregate there was little variation over the decade, except for the temporary increase in leverage in 2008 reflecting the substantial decline in equity values, which was rectified by subsequent equity raisings, reduced dividend payouts and some recovery in stock prices.

<sup>37</sup> See 'Comparison of ANZ Tier 1 and Core Capital Ratios to FSA and OSFI'. Available at <[http://www.anz.com/aus/shares/toolkit/Basel-II/Pdf/Capital\\_comparisons.pdf](http://www.anz.com/aus/shares/toolkit/Basel-II/Pdf/Capital_comparisons.pdf)>.



**Figure 13: Corporate Liability Structure**

Notes: (a) Non-financial corporations  
 (b) Equities measured at market value

Source: ABS

However, as Black, Kirkwood and Shah Idil (2009) show (for listed companies), that aggregate picture hides significant diversity across sectors, with real estate and infrastructure companies relying heavily on raising funds externally, and resources and other non-financial companies raising most funding from internal sources. Prior to the advent of the GFC, real estate and infrastructure companies in particular increased their leverage in response to relatively benign economic conditions and low credit spreads in borrowing and debt markets. Subsequently, this contributed to substantial problems during the GFC. Investment banks, such as Macquarie and Babcock and Brown, were at the forefront of developing and managing innovative structures such as infrastructure (and property) funds, often involving issuance of stapled securities of units in a non-operating trust and equity and/or debt of an associated operating company. In some cases, this model had characteristics of private equity, with several operating businesses being the assets held by the trust and managed by boards chosen by the sponsoring manager, with unit holders in the trusts having virtually no say in governance of either the trust or the operating businesses.

Until the GFC this business model proved highly successful in generating substantial annuity style fee income for the sponsoring companies. It also provided opportunities for the sponsoring companies to profit by purchasing assets and selling them at higher values into the trust (perhaps justified by increased value asserted to be associated with the new management). But it relied on substantial leverage, and upward revaluations of the untraded assets enabled increased borrowings to generate cash which could be distributed to investors in the fund, causing some commentators to liken the structures to a Ponzi scheme. Development of these structures was facilitated by the introduction of the single Responsible Entity (RE) model in the *Managed*

*Investments Act 1998*, which removed the role of trustees. Such a structure has merit in the case of transparent structures such as equity trusts, where there is limited scope for adverse pricing of management and operational services and independent valuations of underlying assets are readily available. However, its suitability for more complex arrangements, including where liquid assets of several trusts get commingled with those of the RE is questionable.<sup>38</sup>

The increased cost of debt, market distrust of leveraged structures, and concerns about overvalued assets arising from the GFC saw a number of large investment finance companies operating such business models lose market confidence and struggle for survival.

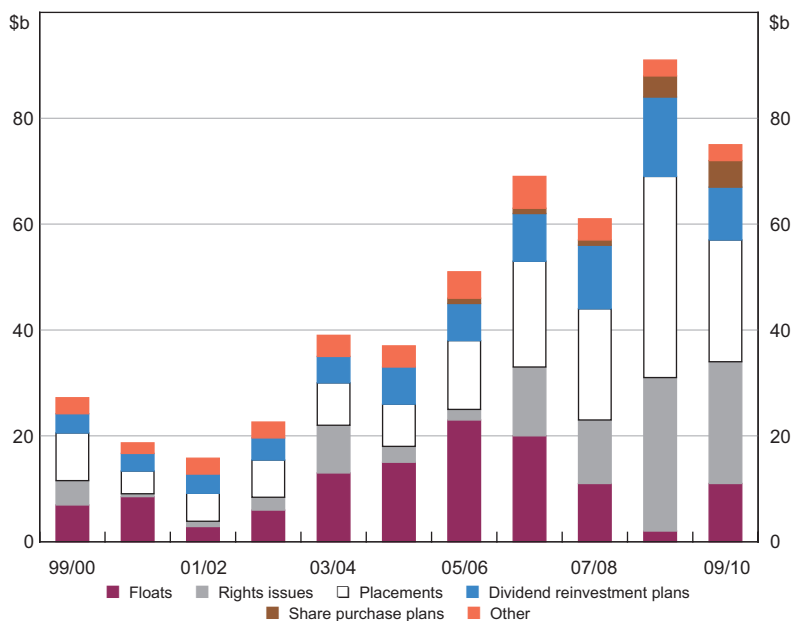
The Australian private equity sector also increased in size and significance around the middle of the decade,<sup>39</sup> with proposed takeovers of two very large Australian companies (Qantas, unsuccessfully, and Coles) bringing this sector to public attention and prompting a parliamentary inquiry (Senate Standing Committee on Economics 2007). To some observers, the participation of current executives in such buyouts caused concerns about priority of duties to existing shareholders. Deals of around \$16 billion were completed in 2006, compared with an average over earlier years of around \$2 billion. A relatively small part of the industry takes the form of venture capital, with leveraged buyouts (at high levels of leverage, much of it borrowings from foreign banks) ultimately creating problems for some participants during and after the GFC. Funds raised by private equity (venture capital and leveraged buyouts) were over \$17 billion in the second half of the decade, over three times the amount for the first half, although inflows declined in the last two years of the decade. Superannuation funds were significant investors.

Another concern surrounding merger and acquisition activity which emerged during the decade involved governance issues. The use of schemes of arrangement in mergers grew substantially with over 40 per cent of the 146 mergers in the 18 months to July 2009 being achieved via this mechanism (CAMAC 2009). These require a lower level of target company shareholder agreement (75 per cent versus the 90 per cent holding required for compulsory acquisition) for a takeover, although CAMAC saw no reason to recommend change to this particular feature.

Figure 14 shows the pattern of external equity financing by listed companies during the decade, and several features can be noted. First, substantial declines in equity raisings occurred twice during the 2000s, the first associated with the bursting of the 'tech bubble' in the early years of the decade, and the second with the onset of the GFC. Equity raisings increased strongly in 2008/09, as companies attempted, despite depressed equity prices, to deleverage their balance sheets, given the problems and higher spreads in debt markets – although a large proportion of those raisings were by the Australian banks focused on building up their capital bases. However, the initial public offering (IPO) market, which had grown strongly during the middle of the decade, exhibiting substantial underpricing of new issues associated with such IPO waves, collapsed as it had done in the earlier period.

38 The issue of dealing with failures of REs was considered in PJCCFS (2009) and CAMAC (2011) is also considering this issue.

39 RBA (2007) provides an overview and analysis of potential issues.

**Figure 14: ASX Capital Raisings**

Note: 'Other' comprises calls on contributing shares, exercises of options and employee share schemes, etc

Source: Australian Financial Markets Association

A further feature of capital raisings was the substantial increase in rights issues, often involving non-renounceable issues at a significant discount to the prevailing market price. Such issues can lead to dilution of small shareholders not wishing to participate, and for whom the transactions costs of selling existing stock to participate and maintain a constant level of holdings are excessive.

As noted earlier, Australian companies have not been substantial issuers of bonds – either in domestic or (with the exception of the banks) in international markets. Hybrid instruments have, however, been relatively popular, and prior to the GFC there were a number of issues, most of which were variants upon the converting preference share structure introduced in the 1990s, often involving reset arrangements. These were structured to look like debt securities, converting into a fixed value of equities at some date, possibly with some upside exposure to the issuer's stock price. Many of the issuers were financial institutions for whom the permanent capital raised met regulatory capital requirements. At the end of 2005 there were 56 such securities listed on the ASX with a market value of \$19.8 billion (around half as large as corporate bonds on issue).<sup>40</sup> Following the onset of the GFC, most such securities suffered substantial price declines reflecting the increase in credit spreads on 'debt-like' instruments and new issues were few.

One other feature of corporate capital management during the decade which deserves mention was the proliferation of share buybacks by listed companies. While the majority by number were on-market repurchases, over the period 2000–2007 there were 47 off-market repurchases with a

<sup>40</sup> Information sourced from JBWere, The Acronym, 12 December 2005.

market value of \$11.9 billion. These were typically for significant proportions of outstanding equity and, because of the tax treatment of the repurchase amount as being mostly franked dividend and a small deemed sale price for capital gains tax purposes, they were generally transacted at below current share market prices. Motivation for these transactions can be found in the obvious tax advantages for participating shareholders, the willingness of companies to increase leverage over that period, and the beneficial signalling effect on share prices which announcements of such capital management initiatives generated. Again, with the onset of the GFC, corporate deleveraging, and some uncertainty about future tax treatment,<sup>41</sup> this activity dried up.

## 6. The GFC and the Australian Financial System<sup>42</sup>

Early indications that Australia would not be immune from the onset of the GFC emerged with the failures of two substantial Australian hedge funds (Basis and Absolute Capital) in July 2007 and the announcement of financing problems of the large securitiser RAMS Home Loans (which had only recently been floated on the ASX) in August 2007. Credit spreads began to rise from their previous low levels, and banking sector uncertainties were reflected in an increase in demand for holdings of exchange settlement account (ESA) balances at the RBA. The RBA reacted to the increased demand by adjusting the supply of ESA balances to avoid undue pressure on the cash rate (Debelle 2008). However, private market spreads (such as the 3-month bank bill swap rate (BBSW) to overnight indexed swap (OIS) spread) had increased from the previous level of 5–8 basis points to around 25–50 basis points (reflecting credit and liquidity risks) and remained at such elevated levels for the remainder of the decade.

The RBA also expanded the range of repo-eligible securities to include bank paper with more than one year to maturity in September 2007, and RMBS and ABCP in October 2007 (subject initially to the securities not being issued by the bank seeking financing via repos). Very quickly, however, in response to worsening markets, the RBA announced that self-securitisations would be acceptable, inducing banks to internally securitise housing loans in order to have additional securities available for use in repo transactions if required. The terms for which repos were undertaken also increased substantially, and from late 2007 onwards, the majority of repos involved private sector securities. With repo rates being determined by auction, the cost of funding via this mechanism jumped substantially relative to OIS (Kearns 2009).

In fact, direct exposure to (what was then referred to as) the sub-prime crisis was relatively limited. Australian banks had relatively little exposure to collateralised debt obligations (CDOs) and other toxic products, although the exposure of a significant number of local councils and other direct investors was noted by the RBA in its September 2007 *Financial Stability Report*. Rather, the transmission process to the Australian financial sector and economy was largely indirect, with spillovers from weaknesses in international markets affecting local markets and institutions, and ultimately exposing some weaknesses in financing patterns in parts of the Australian economy.

The closure of international securitisation markets hit Australian securitisers hard, and while domestic issuance continued for a time, ultimately domestic markets also froze. Australian banks, relying heavily on international wholesale financing found their cost of funding increasing,

41 Recommendations by the Board of Taxation (2008) had not been implemented as at mid 2011.

42 For overviews of the Australian experience in the GFC, see Brown and Davis (2008, 2010).

leading them to pass higher funding costs onto borrowers. The global economic slowdown and uncertainties led to downward re-ratings of corporate borrowers and the eventual global stock market collapse was rapidly reflected in Australian stock prices.

In the first phase of the GFC, prior to the failure of Lehman Brothers in September 2008, it was primarily higher borrowing costs and depressed equity and asset prices that exposed a number of problems. A number of large listed financial and property investment companies found that their highly leveraged, complex, business models were unsustainable. Companies such as Centro, Allco, and MFS, which had borrowed extensively to purchase property and other assets to hold or to sell into the (leveraged) managed funds they had created, failed or entered restructuring arrangements.<sup>43</sup>

The position was complicated by other weaknesses which were exposed in Australia's financial markets. One such weakness was the growth of margin lending arrangements based on a securities lending model in which legal title of the securities involved was transferred to the lender, exposing the borrower to counterparty risk. The failures of broking firms Opes Prime and Lift Capital using this model brought this to light, and the seizure of securities by banks that had financed those broking firms imposed substantial losses on the borrowers. While the banks, concerned to minimise reputational damage arising from these associations, have negotiated some compensatory settlements, many of the borrowers were substantial shareholders and directors of small listed companies, and the disruption to share registers led to temporary trading halts. A more substantial, general, problem emerged on 28 January 2008 when ASX settlement had to be suspended due to the failure of a broker (Tricom) to be able to redeem securities that it had previously lent and which were required for settlement of market transactions.

Significant margin lending by substantial shareholder-directors of companies created the risk that speculators would short sell the stock in the hope that price declines would lead to margin calls and forced sales, further depressing the price and making the short-selling strategy profitable. The publicity given to these events meant that attention was paid to short-selling arrangements, and it was discovered that market participants had interpreted requirements to report short sales to the ASX quite loosely (including not reporting short sales when securities had been borrowed), such that it had been substantially under-reported.

The second stage of the crisis, commencing in September 2008 and marked by the failure of Lehman Brothers, led to much greater intervention and actions by government and regulators.

First, concerns about short selling and its effects on equity prices (particularly of banks and consequent effects on confidence) led, similar to a number of overseas countries, to the imposition of a general ban on short selling on 21 September 2008. The ban was subsequently limited to financial stocks on 19 November and ultimately removed on 25 May 2009.

Second, the RBA entered foreign exchange swaps with the US Federal Reserve, aimed at providing US dollar liquidity to Australian banks and other banks' foreign operations in Australia, enabling them to access US dollars via repurchase transactions with the RBA using domestic securities as collateral.

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<sup>43</sup> Sykes (2010) provides an overview of a number of these failures.

Third, in September 2008 the RBA introduced a term deposit facility with rates set by auction, enabling banks wishing to hold risk-free RBA liabilities to do so for maturities up to 14 days. In November 2008, it further extended the range of securities in which it would undertake repos to include most AAA-rated Australian dollar-denominated securities.

Fourth, in late September 2008, responding to the collapse of the RMBS market, and concerns that this source of competition to major banks in the housing loans market would not recover, the Government announced (and subsequently expanded) an \$8 billion scheme whereby the AOFM would be a cornerstone investor in selected new RMBS issues.

Fifth, the announcement by some overseas governments of guarantees over their banks led the Australian Government to introduce on 12 October 2008 a guarantee on bank deposits (with an optional fee-based scheme for deposits over \$1 million introduced a few weeks later) and a wholesale funding guarantee scheme for Australian banks. The deposit guarantee announcement overtook the planned introduction of the Financial Claims Scheme which had been scheduled for legislation that week, but with a planned cap on insured deposits of \$20 000. Australian banks made substantial use of the debt guarantee scheme with the amount on issue reaching a peak of \$157 billion before the scheme was terminated to new issuance at the end of March 2010. While the Government received substantial income from the guarantee fees, the guarantees appeared underpriced relative to those charged by overseas governments, and regional banks have argued that the pricing disadvantaged them relative to the major (AA-rated) banks. In May 2009, the Australian Government also announced a guarantee scheme for state government debt, to offset competitive disadvantages faced by the state central borrowing authorities in competing in debt markets with federally guaranteed bank debt.

Sixth, the Government announced a substantial fiscal stimulus program in October 2008 and other measures in subsequent months which amounted to \$90 billion over four years (Senate Economics References Committee 2009, Chapter 2). Some fiscal proposals, including a planned 'Ozcar' scheme to replace the departure of two major car dealer financiers from the market, never came to fruition (and were mired in political controversy, as were some other specific measures). The extent to which the fiscal stimulus contributed to Australia avoiding a 'recession' versus the strength of the resources boom helped by the strength of Australia's major trading partner, China, remains open to debate.

These actions meant that Australian financial markets coped relatively well during the crisis period, but there were still substantial difficulties – primarily outside of the banking sector.

First, unlisted property and mortgage funds which had been facing significant redemption requests found this situation aggravated by the deposit guarantees, and many were forced to suspend redemptions (with limitations on withdrawals extending, in many cases, into the next decade). At the end of the 2000s, there was approximately \$20 billion in such frozen funds.

Second, the general decline in asset prices meant that many individuals were faced with substantial declines in the value of their superannuation accumulation or allocated pension accounts, creating problems for those in or near retirement. In response to this, the Government reduced the size of the minimum pension (as a proportion of the account balance) which needed to be taken from allocated pension accounts in the hope that this would facilitate a rebuilding of account balances when (if!) stock markets recovered.

Third, substantial difficulties were exposed in the financial advice industry, particularly with the collapse of the advisory firm Storm Financial, which had encouraged investors to take out loans on their dwellings and use available savings, including withdrawals from superannuation balances, to set up highly leveraged margin accounts for share investments.

Fourth, further failures of financial and investment companies occurred with substantial losses to investors, raising questions about business models permitted by legislation, particularly for the operations of managed funds. Failures of a number of Agribusiness Managed Investment Schemes in early 2009 (including Timbercorp and Great Southern) as well as the listed investment bank Babcock and Brown fall into this category. Because under the *Managed Investments Act* there is no requirement for a separate trustee, conflicts of interest can abound for a responsible entity where assets without independent observable market prices are bought by the promoters to sell into a managed fund, which in turn contracts to buy services from entities related to the responsible entity (Brown, Davis and Trusler 2010).

A more general consequence of the GFC was the impact of higher credit spreads in international wholesale markets on bank funding costs and the flow through of these, and increases in domestic deposit costs as banks increased competition for such funds, into bank loan (particularly housing) interest rates. These changes primarily reflected the increase in bank funding costs over this period (Fabbro and Hack 2011), although political and public opinion was not convinced of that argument. Notably, the increase in the spread was relatively lagged for housing loans, reflecting pricing based on the average historical cost of funds (such that the higher marginal cost of new or rollover funding only gradually increased the average), and also public relations and political sensitivities of discretionary increases in variable housing rates. This is likely to have also contributed to the lack of recovery of the securitisation market, where new loans must be priced off the marginal cost of funding in wholesale markets.

## 7. The GFC Regulatory Fallout

The GFC, and regulatory responses to it, have led to substantial review of previous approaches to financial regulation, both at the domestic and international levels, with the latter being driven by the G-20. And because Australia, like most other nations, is committed to the multinational approach, regulatory changes arising out of that process will impact upon the Australian financial system. Foremost among those changes are the new Basel III capital and liquidity requirements, involving higher quantity and quality of bank capital, together with measures focusing upon executive remuneration.

One important implication is the effect of the Government's guarantee of bank liabilities introduced at the peak of the crisis. Previously perceived implicit guarantees were replaced by explicit ones. And while the scaling back of (free) deposit guarantees to \$1 million imposed a limit on explicit guarantees, that action is likely to have reinforced perceptions among Australian depositors that Australian banks are 'too big to fail'. The Financial Claims Scheme introduced in October 2008 is a closed resolution scheme, in which APRA compensates insured depositors and then is first claimant upon the assets of the failed institution, with an ex-post levy on ADIs proposed should a shortfall of assets lead to losses for APRA. The deposit cap is due to be reviewed

by October 2011, and a cap in the range of \$100 000 to \$250 000 has been proposed by the Council of Financial Regulators (Australian Government 2011).

While there had been many calls for a wide-ranging 'Son of Wallis' Review of the Financial System to be held (with the Wallis Committee having suggested that such a review was warranted every decade), that had not occurred, with many arguing that the extent of international regulatory changes following the GFC warranted deferral of any such review. However, there have been many other reviews, consultations and inquiries, particularly near the end of the decade. Senate Economics Committees undertook inquiries into: the National Consumer Credit Protection Bill 2009; Aspects of Bank Mergers; and Bank Funding Guarantees. The Parliamentary Joint Committee on Corporations and Financial Services inquired into Financial Products and Services in Australia (the Ripoll Inquiry) and into Aspects of Agribusiness Managed Investment Schemes, and the House Standing Committee on Economics completed an inquiry into Competition in the Banking and Non-banking Sectors in November 2008. The Senate Economics References Committee commenced another inquiry into Competition within the Australian Banking Sector in 2010.

The Ripoll Inquiry (PJCCFS 2009) was prompted by significant failures of financial advisers and firms providing financial services and products to retail customers. It made a number of recommendations including: a requirement for financial advisers to have an explicit fiduciary duty to clients; investigating ways to cease payments from product manufacturers to financial advisers; and investigation of a statutory last resort compensation fund for investors. Prior to this, ASIC had introduced its 'investing between the flags' approach to educating financial consumers about risk. Reflecting concerns about counterparty risk of investors to manufacturers of financial products, ASIC had also introduced an 'if-not-why-not' disclosure approach for products such as debentures. Under this approach, product providers whose business models and practices deviated from an ASIC 'good practice' template were required to disclose why that was appropriate. It can be asked whether such reliance on disclosure will work, and why an alternative approach of legislating to preclude high risk business structures and practices is not followed.

The apparent causes of the recent woes of a number of large Australian financial and investment companies, stock market disruption and securities lending debacle, cast some doubt on the overall success of CLERP in enhancing Australia's financial infrastructure. Complex, opaque, corporate structures were allowed to flourish, involving poor governance arrangements, less than optimal accounting arrangements, and auditors' judgements being called into question. Regulatory oversight of securities firms engaged in margin lending and stock lending was inadequate, and stock market investors had been, for a long time, misinformed about the incidence or level of short selling. While Australian investors generally escaped significant exposure to the most 'toxic' financial products, there were many examples of poor product design and investment advice arrangements which ultimately impacted adversely upon investors.

The reforms introduced by CLERP have been widely advertised as delivering a 'best practice' corporate law structure. There has, however, been very little serious empirical research aimed at identifying what the outcomes and economic benefits of the CLERP reforms have been. That said, however, it can be argued that Australia's capital markets performed better in the GFC than was the case in many other countries in terms of losses to investors, credit market outcomes, and market integrity and stability.



At the start of the new decade there were two major Government regulatory initiatives announced. The ‘Competitive and Sustainable Banking System’ reforms included *inter alia* proposals to: ban exit fees on home mortgages; take action on interest rate price signalling; and allow covered bond issuance. The other was the ‘Future of Financial Advice’ (FOFA) reforms announced on 26 April 2010 in response to the Ripoll Report. These included introducing:

- a ban on commissions being paid by financial product providers to advisers;
- an adviser-charging regime involving up-front determination of fees on either a time basis or as a percentage of (non-leveraged) funds under management; and
- a statutory fiduciary duty for financial advisers.

Reflecting concerns about the effectiveness of disclosure documents, in June 2010 the Government provided for the use of short form PDSs of no more than eight pages for super and managed investment scheme (MIS) products (four pages for margin loans), with prescribed sections, and links to information outside the PDS. (The *Corporations Act* also requires the PDS to ‘describe, in the form of a summary the risk level of the option’). There has also been legislation to allow short form retail bond prospectuses.

The National Consumer Credit Protection Bill 2009 introduced the National Consumer Credit Code replacing the state-based Uniform Consumer Credit Code. New licensing arrangements for lenders were introduced and a number of requirements, such as ensuring that credit granted was suitable for the borrower’s circumstances, were tightened.<sup>44</sup> The Corporations Legislation Amendment (Financial Services Modernisation) Bill 2009 introduced new requirements for trustee companies, retail debenture and promissory note issues, and included margin lending as a financial product covered by the FSRA.

The Cooper Review of Superannuation (Super System Review Panel 2010) is also relevant in several regards, particularly since superannuation is the main form of financial investment for most individuals. Cooper’s proposals included permitting superannuation funds to provide simple financial advice and requirements that a default (‘MySuper’) option be provided.

## 8. Australia’s Financial Resilience during the GFC

Three specific questions were posed in the introduction regarding possible causes of Australia’s financial resilience during the GFC.

*Was there some feature of Australia’s financial sector which prevented excessive risk-taking by Australian financial institutions?* Internal governance characteristics are one possible factor. Inherent conservatism induced by memory of the banking crisis at the start of the 1990s may have been another, inducing lower risk lending and limiting exposures. Australian banks generally hedged the foreign currency risk associated with their foreign borrowings and property-related lending was generally well secured. Unlike the 1980s experience following deregulation, there was no significant decline in lending standards. Legal penalties for unconscionable lending, and the predominance of on-balance sheet lending, and retention of risk, for housing by major banks, were relevant factors here. It may also be argued that the high level of banking sector concentration

<sup>44</sup> Phase 1 regulations announced in June 2010 related primarily to licensing and responsible lending, while phase 2 proposals announced in July 2010 included consideration of credit card offers and regulation of fringe lending.

and resulting 'franchise value' created disincentives to put high profitability at risk by excessive risk-taking.

External influences may also have been important influences upon risk-taking, although arguably the role of stock market discipline was tempered by the *Banks (Shareholdings) Act 1972* limitation on a 15 per cent maximum equity stake, and the four pillars policy preventing merger activity. On the other hand, these legislative constraints may have facilitated board (if not managerial) entrenchment and greater resulting conservatism. In principle, deposit and debt markets could have exerted discipline against excessive risk-taking, if depositors believed that their funds were at risk and subordination of debt holder claims due to depositor preference increased monitoring.

Another external influence is regulation. The 'twin-peaks' model adopted just prior to the start of the decade created a specialist prudential regulator (APRA) and a specialist corporate, markets and financial services regulator (ASIC). Such specialisation, allied with information sharing and co-operation through the Council of Financial Regulators (including also the Reserve Bank and Treasury) may have facilitated more effective prudential regulation and prevention of excessive risk-taking. The fact that prudential regulation embraced institutions holding a very large proportion of financial sector assets should also be noted.

Also important is the strength of prudential supervision, with the collapse of the major insurance company HIH at the start of the decade (which involved significant economic and financial dislocation and embarrassment for APRA) arguably inducing a tougher approach to prudential regulation. Henry (2011, p 14), for example, argues that Australian banks 'have benefited from years of rigorous supervision by better than world-class financial regulators'.<sup>45</sup>

Yet another factor may have been the overall structure of financing in the economy. With (major) Australian banks borrowing extensively offshore (helping to finance Australia's current account deficit) and able to profitably use those funds for housing and other domestic lending there were limited incentives to invest in ultimately 'toxic' assets. Doing so, such as by expanding into investments in CDOs, would have required further offshore borrowings, with potentially adverse effects on existing sources of funds.

*Did the distribution of risks in the economy facilitate adjustment to the shocks encountered?* Gizycki and Lowe (2000) noted the changes in the balance sheet of the household sector during the 1990s, together with the growth of market-linked investments. That has become increasingly relevant with the continued growth of defined contribution (accumulation) superannuation. Combined with a *caveat emptor* approach (subject to disclosure requirements on issuers of securities and financial products) towards securities market regulation, substantial risk-taking by investors outside the prudentially regulated sector existed, and declines in asset prices thus impacted perhaps more directly upon end users rather than financial intermediaries than was the case elsewhere. Also relevant is the nature of risk sharing between banks and their customers, with the predominant use of variable-rate lending enabling shocks to the cost of bank funding to be generally passed on to borrowers. And while there were notable exceptions, the lower leverage of the Australian corporate sector (due to the dividend imputation tax system reducing, if not

<sup>45</sup> In 2005 the IMF conducted a Financial Sector Assessment Program (FSAP) of Australia and, while noting several vulnerabilities, gave the country's financial sector a good rating.

eliminating, the interest tax shield of debt) may have reduced credit risk and enabled the corporate sector to adjust more readily to the increased cost and reduced availability of credit.

The Reserve Bank (RBA 2010a) also points to the relatively small share of the finance sector accounted for by shadow banking (non-prudentially regulated institutions) which, in conjunction with their lower levels of leverage and trading, are suggested to have led to less transmission of shocks. The relatively low level of collateralised asset financing involving 'repo' financing (as used by US investment banks) meant that a 'liquidity loss and margin spiral' (Brunnermeier 2009) was not induced by initial asset price declines. While a number of non-prudentially regulated, leveraged, institutions experienced similar such pressures (leading to some failures and freezes on redemptions), the markets for their assets were generally illiquid. And while domestic interbank markets exhibited stress, the high concentration and relatively small number of major participants may have contributed to less 'network' uncertainties.

Also important for the adjustment process was the underlying strength of the economy, with strong demand for commodity exports being one factor contributing to economic growth and less potential for credit losses.

*What role did regulatory and policy responses play in ameliorating the effects?* The rapid and substantive actions taken by the Reserve Bank to adapt system liquidity arrangements to meet increased demand for liquidity have been outlined earlier, and had the effect of preventing a liquidity crisis from emerging. Similarly, the Australian Government's actions in October 2008 in providing debt guarantee facilities and a deposit guarantee for banks limited the potential disruption to bank funding and its cost that may have otherwise occurred. As regards fiscal policy, Australia was fortunate in having had a prior period of substantial budget surpluses, leading to a low public debt position, and providing scope for significant fiscal stimulus. And the prior period of relatively tight monetary policy meant that the Reserve Bank was able to rapidly lower interest rates, which had the effect of partially offsetting the increase in credit spreads on overall borrowing costs.

It is difficult, if not impossible, to determine the relative contributions of all of these factors. And it would be incomplete not to attribute some role to 'luck' and timing. At least one bank had taken on a moderate exposure to CDOs and there was substantial ongoing marketing of such products to a range of investors. Had the onset of the crisis been later, exposures may have been larger and Australia may have not been so able to 'dodge the bullet' of the GFC.

## 9. End of Decade Issues

Entering the second decade of the millennium, there are several issues which are relevant for the future evolution of the financial sector.

*Banking sector risk and financial stability.* Prompted by the GFC experience, much greater attention is being paid globally to systemic risks and stability and the role played by financial sector structure and characteristics as determinants. While the Australian financial system exhibited resiliency in the GFC, it has several characteristics which could raise concerns among observers not cognisant of the details of those characteristics.

One such feature is that Australian banks have had a relatively heavy reliance on international wholesale funding, reflected in a high assets-to-deposits ratio on the Australian balance sheet. A second is that the sector is dominated by the four majors whose similar funding patterns could expose them (and the Australian financial system) to risk of contagion from, or common shocks to, investor perceptions of bank safety. The third is that the asset portfolio structure of Australian banks is, by international standards, heavily weighted towards residential property lending.

The Australian banks, towards the end of the 2000s, reduced reliance on international wholesale funding, and substantially increased their equity capital. Moreover, the slowdown in credit growth post the GFC (see Figure 4) has reduced bank funding requirements and thus their demands upon international capital markets. Although asset portfolios are heavily weighted towards residential lending, this is not a particularly high risk, despite concerns of some commentators about overvaluation of residential property. Loan-to-valuation ratios have remained relatively conservative; responsible lending requirements inhibit unwise lending, and the full recourse nature of loans reduces borrower incentives to default and, potentially, the loss given default. Consequently, arrears statistics remain low, and banks have regularly passed stress tests premised on substantial property price declines and retained high credit ratings.<sup>46</sup> At the end of the decade, the four major banks were among only nine large banks in the world to have an AA or better credit rating.

*Implementation and consequences of Basel III.* At the end of the decade, the Basel Committee released its proposals for new capital and liquidity requirements. The former involve, *inter alia*, more and better quality capital. While Australian banks were well placed to meet such requirements, reflecting substantial capital raisings after the onset of the GFC, the requirements imply some increase in the cost of bank intermediation. Consequently, they may prompt banks to develop capital market funding alternatives for corporate customers, and may create incentives for the development of non-prudentially regulated 'shadow banking'.

Potentially even more significant were the liquidity requirements announced by the Basel Committee in December 2009. The Net Stable Funding Ratio requirement and the Liquidity Coverage Ratio requirement<sup>47</sup> are likely to also create incentives for development of capital markets and alter flow of funds patterns in ways yet to be discerned.

*Deposit insurance.* Also requiring resolution was the status of the Financial Claims Scheme (deposit insurance) and the government guarantee scheme for bank debt. The latter was terminated in May 2010 (by which time some banks were finding it cheaper to issue non-guaranteed debt), but transitioning from the \$1 million cap on insured deposits to a lower level remained to be done,<sup>48</sup> and longer-term implications for competitiveness and growth of non-guaranteed competitors for retail funds is yet to be fully appreciated.

*Securitisation.* The future of the AOFM cornerstone investor arrangements, which had supported a number of issues, remained to be decided, and there were some calling for the introduction

46 Direct exposure of Australian banks to a sovereign debt crisis is also reportedly low.

47 The relatively small stock of government securities available to serve as high quality liquid assets has meant that a complementary fee-based liquidity facility at the RBA for banks to meet the requirement is to be developed.

48 As previously noted, proposals for a cap between \$100 000 and \$250 000 were released in May 2011 (Australian Government 2011).

of some form of government guarantees for RMBS (generally citing Canadian, but rarely the US Fannie Mae and Freddie Mac, experience). Following much debate, the Government approved limited issuance of covered bonds as an alternative form of securitisation – partly because there were less problems with this type of securitisation during the GFC, but primarily because of its potential as an alternative funding source for Australian banks. Draft legislation was released in March 2011, involving necessary amendments to depositor preference legislation which had previously been argued to remove the need for deposit insurance. Implications for bank funding patterns, traditional securitisation, and bond market development remain to be seen.

*Australia as a financial centre.* While the Australian financial sector is large, it could be argued that it was primarily domestically focused, despite one of the largest fund management sectors in the world, substantial international debt issuance by securitisers (at least prior to the ravages of the GFC), and major banks active as borrowers in international capital markets and with some substantial offshore subsidiaries. International trade in financial services was relatively low (Australian Financial Centre Forum 2009), and there was limited management of international funds by domestic fund managers, reflecting a variety of tax and other impediments. In that environment, and with the growth of the Asian region and financial sectors posing challenges to the regional importance of the Australian sector, the Government was considering responses to the recommendations of its Australian Financial Centre Forum taskforce report.

## 10. Conclusion

The 2000s opened with optimism about the future of the financial system. Financial liberalisation appeared to have ultimately brought benefits of efficiency and innovation without threatening financial stability. Investor protection mechanisms based around disclosure, education and advice were perceived to be sufficient, and greater risk-taking by households was viewed with caution, but not alarm. Compulsory (and tax incentives for) superannuation savings were expected to enhance long-term savings and wealth accumulation, as well as encouraging capital and (particularly) bond market development. Competition in financial markets appeared to be improving, particularly through the growth of securitisation. A newly designed and implemented ‘twin peaks’ regulatory structure held promise of an effective, coherent regulatory model.

At the end of the decade, the GFC experience had cast doubts upon many of these perspectives, with the possible exception of the merits of the regulatory structure – although even there the merits of continued separation of the prudential regulator from the central bank was being questioned on the basis of interrelationships between ‘micro’ prudential regulation with financial stability and ‘macro’ prudential regulation concerns.<sup>49</sup> A rethinking of what constitutes better financial regulation was underway (and *more* regulation was a common populist thought) and the merit of reliance upon a *laissez faire* strategy of education, disclosure and advice for protection of investors and consumers of financial services was under challenge. While superannuation had grown substantially, questions were being asked about whether governance arrangements, investment strategies and operational efficiency were delivering adequate performance.

<sup>49</sup> Some commentators, for example, FINSIA and Access Economics (2009) also questioned whether the increased integration and interrelationships between financial institutions and financial markets meant that the division of regulatory responsibilities between APRA and ASIC warranted review.

Possibly the most significant development was the increased emphasis on financial stability – something which grew throughout the decade (with the RBA producing its first *Financial Stability Review* in 2004) and was brought to prominence with the GFC. Re-adjusting financial regulation to promote financial stability, including by affecting the structure and inter-linkages within the financial sector, without impeding socially valuable financial innovation and efficiency, was the main challenge facing the coming decade.

Gizycki and Lowe (2000) ended their review of the 1990s experience by noting three policy issues which they expected to be important over the next decade. These were: ensuring competition in financial markets; investor protection and identifying systemic risks; and the appropriate responses of monetary and prudential policy. Sometimes, no matter how much things change, they remain the same!

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# Discussion

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## 1. Eli Remolona\*

Kevin Davis tells the story of the Australian financial system in the 2000s, and he tells it comprehensively. The story is told in several parallel narratives. There is a narrative on the economy, a narrative on the financial sector, a narrative on regulation and a narrative on financial institutions and markets. This is a masterful account, and any economist will be well advised to consult these narratives before running an econometric analysis of the Australian financial system.

As Kevin tells his story, one hears portentous music in the background. There is a boom in asset prices, and this may end in a bust. The four big banks depend on bond markets abroad to raise funds, while the small banks rely heavily on securitisation. Households enjoy incentives for leveraged investments and for risk-taking. Yet at the end of the story, nothing really bad happens. Somehow the Australian financial system emerges from the global financial crisis of 2008–2009 without serious injury. The crucial question is how come?

A good place to look for evidence is in credit growth in Australia. In Figure 4 of the paper, Kevin shows such growth for housing credit, business credit and total credit. Up until the end of 2007, credit growth and its various components were quite strong, with growth in business credit exceeding 20 per cent by the eve of the global financial crisis. Such credit growth does slow down during the crisis, but it is because of a contagion of risk aversion from global financial markets rather than because of any systemic financial distress within Australia.

From credit growth alone, it is hard to tell *ex ante* whether lending and borrowing in Australia were excessive. Kevin's story is a sequel to one by Phil Lowe on the financial system in the 1990s (Gizycki and Lowe 2000). Phil went on to write another paper, this time with Claudio Borio of the Bank for International Settlements, which offers a useful way to look more closely at the issue of excessive credit. Borio and Lowe (2002) estimate the trend in the ratio of credit to GDP for several countries by using a one-sided Hodrick-Prescott filter. They find that when deviations from that trend exceed a certain threshold, a banking crisis becomes likely. Borio and Drehmann (2009) have since updated that analysis to include data up to 2008. They also construct similar deviations from trend for real property prices. They find that their credit-to-GDP gaps and real property price gaps serve as useful early warning signals of whether a banking system becomes a victim of the global financial crisis.

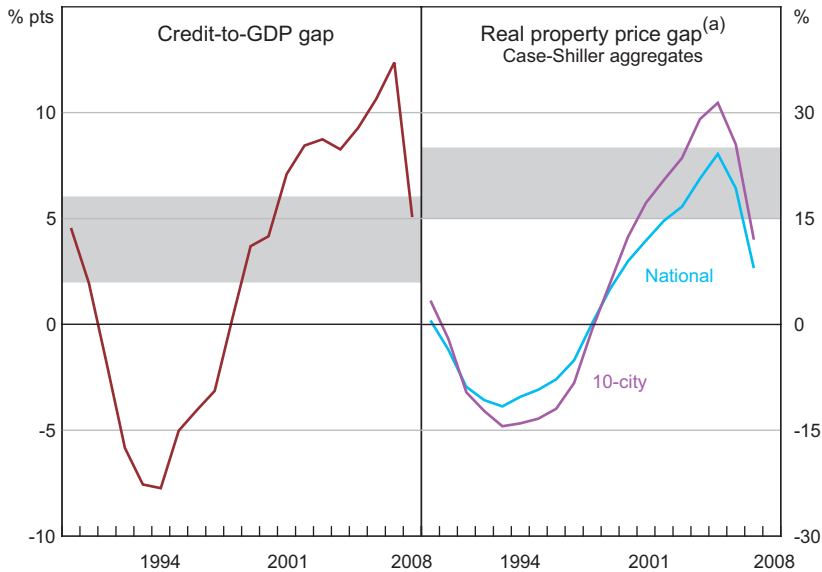
To demonstrate the Borio-Lowe-Drehmann indicators, consider first the case of the United States. As shown in Figure 1, between 2001 and 2008, the credit-to-GDP gap exceeded 6 per cent, the top of the specified threshold range. The real property price gaps, based on two Case-Shiller indices,

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\* Bank for International Settlements.

were in or above the threshold range between 2002 and 2007. Sure enough, the US financial system ended up in a crisis that reached global proportions.

**Figure 1: Crisis Indicators – US Credit and Property Price Gaps**

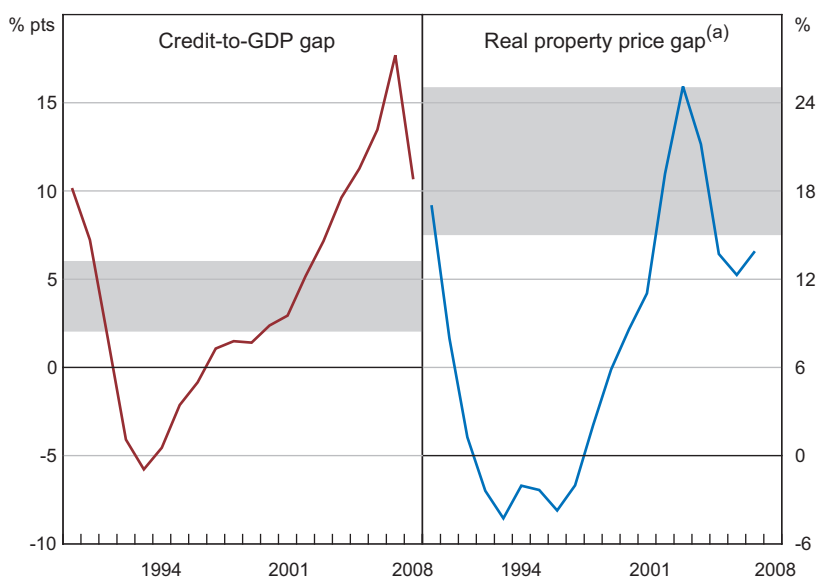


Notes: Shaded areas refer to the threshold values for the indicators: 2–6 percentage points for credit-to-GDP gap and 15–25 per cent for real property price gap; gaps are deviations from the trend, where trend is estimated using a one-sided Hodrick-Prescott filter with lambda set to 1 600

(a) Weighted average of residential and commercial property prices with weights corresponding to estimates of their share in overall property wealth

Source: Borio and Drehmann (2009)

In the case of Australia, those indicators also sent out danger signals but the result was different. As shown in Figure 2, the credit-to-GDP gap also exceeded the specified threshold range for a period before the crisis, while the real property price gap was in the threshold range for a few years. The outcome here, however, was completely different from that in the United States. In Australia, the global crisis was kept at bay. Informed narratives of these episodes suggest that the difference was not so much in the quantity of credit as in the quality of credit. Lending standards in the United States, especially in sub-prime mortgages, evidently deteriorated markedly in the period leading up to the crisis.

**Figure 2: Crisis Indicators – Australian Credit and Property Price Gaps**

Notes: Shaded areas refer to the threshold values for the indicators: 2–6 percentage points for credit-to-GDP gap and 15–25 per cent for real property price gap; gaps are deviations from the trend, where trend is estimated using a one-sided Hodrick-Prescott filter with lambda set to 1 600

(a) Weighted average of residential and commercial property prices with weights corresponding to estimates of their share in overall property wealth

Source: Borio and Drehmann (2009)

In various parts of the paper, Kevin offers several reasons for the difference in outcomes between Australia and the United States. Because Australian mortgages tend to be written with variable rates, households rather than banks bear the interest rate risk. The shadow banking sector was relatively small in Australia. The four pillar policy for banks created franchise value that inhibited the big banks from risk-taking. The memories of the problems of the 1990s and of the collapse of HIH Insurance were still fresh. The Twin Peaks model of bank regulation and securities markets oversight worked very well. The responses of the Reserve Bank of Australia at the onset of the global crisis were decisive, including the steps it took to restore liquidity to the repo market.

While all these reasons are highly plausible, I believe the difference in bank supervision and financial market regulation deserves more emphasis. Charles Goodhart (2010, p 173) said, 'Any fool can make banks safer'. Indeed, it is not about how good the bank supervisors are. It is about their attitudes with regard to systemic risk and the efficiency of markets. Over the years, in the United States and Europe, banks' activities in financial markets were increasingly given the benefit of the doubt. The belief that such markets were always efficient held more and more sway.

The difference in attitudes is discernible in the various statements made on the eve of the global financial crisis. In the United States, the lack of alarm at the Federal Reserve is striking. The Federal Reserve in July 2007 said:

## DISCUSSION

Large investment banks active in the securitization of subprime mortgages suffered modest hits to their earnings, and their CDS spreads are considerably higher than at the beginning of the year. To date, most large depository institutions appear to have been less affected by the subprime difficulties, in part because of their greater diversification and generally limited subprime lending activity. (Federal Reserve 2007, p 22)

For its part, in April 2007, the International Monetary Fund appeared even more dismissive of systemic risks:

This weakness [the deterioration in the US subprime mortgage market] ... is not likely to pose a serious systemic threat. Stress tests conducted by investment banks show that, even under scenarios of nationwide house price declines that are historically unprecedented, most investors with exposure to subprime mortgages through securitized structures will not face losses. (IMF 2007, p 7)

Contrast the above statements with that made by the Reserve Bank of Australia, which has a mandate for financial stability, in March 2007:

A decidedly more pessimistic view is that the current favourable environment is inexorably sowing the seeds of its own demise ... [T]he longer the underestimation of risk continues, the greater the imbalances in the system are likely to become, and hence the greater the potential for disruption when the correction takes place. (RBA 2007, p 2)

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## 2. General Discussion

At the forefront of the discussion was the question of why Australia's financial system performed comparatively well during the global financial crisis. Following on from a point made during the discussion of the Kearns and Lowe paper, one participant highlighted that Australian banks held good quality assets on their books and so were less exposed when the crisis intensified and the

value of some assets fell sharply. It was mentioned that this was similar to how Australia avoided the 'tech wreck' in the early 2000s, in that Australia did not have a large number of information technology firms starting up during that period. One participant thought luck and timing were relevant factors for Australia in both episodes. In particular, it was said that there were some signs of low-quality structured products entering the Australian market just prior to the collapse of Lehman Brothers, and that if the collapse had occurred later, then the story for Australia could have been different. Another participant mentioned that the funding model of the big investment banks in the United States would not have been permitted by Australian regulators.

Still on this issue, another key reason for Australia's relatively good economic performance during the crisis period highlighted by one participant was the timing of the housing cycle in Australia. House prices had lost momentum before the mid 2000s and so were not increasing in the years immediately prior to the GFC. Further, during 2003–2004 the RBA had highlighted that high leverage and borrowing for investing in property were growing risks in the housing market. The role of the floating Australian dollar as a key shock absorber for the economy was also discussed as a beneficial structural feature of the Australian financial system, as were the RBA and APRA. One participant thought smaller targeted interventions by policy-makers during the crisis were also useful, such as the fiscal stimulus directed at first-home buyers which was argued to have supported house prices. Another participant, however, emphasised that more empirical evidence needs to be provided before the success of such policies can be judged appropriately.

While the performance of Australia's financial system during the global financial crisis did compare favourably to those in the United States and Europe, it was suggested that it was far from smooth sailing. The failures in agribusiness and other non-prudentially regulated areas were highlighted, noting that there was significant financial dislocation that hurt investors in Australia. Importantly, however, these failures did not feed back into the rest of the financial system.

Looking to the future, one participant questioned whether or not the equity exposure of superannuation funds in Australia was likely to be a source of instability. Another participant thought a potential risk for the financial system is that banks might start to look to expand into international markets in order to increase revenues if domestic credit growth remains subdued for a prolonged period.



# Wrap-up Discussion

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## 1. John Edwards

### The Mining Boom and the Productivity Slowdown

The eight papers presented at this Conference illuminate the major economic issues and events of the 2000s in Australia. Many of these issues continue to present challenges to policy in the new decade, so the Conference has not only helped us to understand where we are coming from, but also where we are, and where we are going.

There has been agreement I think that it was on the whole a pretty good decade for Australia. It's true, as a number of the papers reminded us, that output growth was on average slower in the 2000s than in the 1990s. It's also true that productivity growth was slower than in the preceding decade. And while the rise in wealth during the decade was formidable, by the end of the decade household wealth was markedly lower than it had been some years earlier.

Yet Australia avoided the recession in many advanced economies at the beginning of the decade, and also avoided much of the damage from the global financial crisis (GFC) at the end of the decade. As a result, Australia's performance compared with other economies improved, even while its performance compared with the previous decade deteriorated. Australian output expanded by a little over one-third in the 2000s compared with four-tenths in the 1990s. But whereas Australian growth outpaced the United States by only one-tenth in the 1990s, Australian GDP growth in the 2000s was double US GDP growth over the period.<sup>1</sup>

The broad story of the decade was, as Jonathan Kearns and Phil Lowe point out in their paper, divided into two overlapping halves. The first half was dominated by the resumption of a housing boom from the previous decade. The second was characterised by much higher prices for Australian coal and iron ore, the GFC, and the sharp change in the composition of growth still evident today.

In these comments I want to talk a little about the mining boom, and a little about productivity.

### Different deflators, different stories

One preliminary observation is that the way the contributors to the Conference evaluated the decade was influenced to some extent by the choice of deflators. This is largely, though certainly not entirely, because the change in the volume of mining output over the decade was relatively small compared with the change in its value. Mining volume increased by a little over a third over the decade, while the value of mining output increased two and a half times.

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1 Comparing the change in real GDP between 2000:Q1 and 1990:Q1, and 2010:Q1 and 2000:Q1 for the two economies.



Partly because of that gap, nominal GDP very nearly doubled over the decade, while real GDP increased by only a little over one-third. There was also a big gap between the GDP deflator and the consumer price index (CPI), for similar reasons. Over the decade, the GDP deflator rose by a little over 40 per cent, while if we exclude the impact of the goods and services tax (GST) the CPI rose by a little over 30 per cent.<sup>2</sup>

Using real GDP we miss most of the increase in the value of exports, which has affected profits and wages and taxes. We can instead use nominal GDP, which perhaps gives a better sense of the rise in incomes. But this measure also includes an element of general inflation, which has not added to real incomes. It also fails to include much of the impact of price changes in imports, since imports are not part of domestic output.

The Australian Bureau of Statistics (ABS) real gross domestic income (RGDI) and real net national disposable income (RNNDI) measures, which take into account the impact of higher export prices and lower import prices in increasing the purchasing power of Australian incomes, offer yet another way to measure income changes. Over the decade RGDI increased by 48 per cent and RNNDI by 42 per cent. By switching deflators for imports and exports, these measures make real imports look smaller and real exports bigger. But we need to bear in mind that these measures do not correspond to an increase in consumers' purchasing power over their own shopping basket. The changing terms of trade have not substantially affected the cost of food or housing or education or health care, or of most other services provided to Australians. Nor has the improvement in the terms of trade increased the value of savings, unless we assume the improvement persists for quite a long time.<sup>3</sup>

The choice of deflators is highly relevant to evaluating the change in real wages, an issue remarked on by Jeff Borland and by Kearns and Lowe. As Kearns and Lowe point out, nominal wages cannot increase faster than productivity plus inflation, if the profit share is stable. However the 'inflation' we are referring to here is the GDP deflator, not the CPI. If nominal wages rise less than the deflator plus productivity, the profit share will rise. This is exactly what had been happening for many years. If the profit share is rising it is difficult to argue that wage increases are causing inflation. The same logic explains the wide gap between the very modest growth of real wages from an employer's point of view (nominal wages deflated by the GDP deflator) and the quite reasonable growth of real wages from the employee's point of view (nominal wages deflated by the CPI).

## The mining boom

The main issue I want to talk about is the extent to which the story of the Australian economy over the decade, and particularly in the second half of the decade, is primarily about a response to a terms of trade shock.

The paper by Kearns and Lowe demonstrates the significance of the rise in commodity prices and the terms of trade shock. The paper by Ellis Connolly and David Orsmond presents some different ways of assessing its magnitude.

<sup>2</sup> Increase in the CPI calculated from 2000:Q3 to 2010:Q3 to exclude the impact of the GST.

<sup>3</sup> Deflating the increase in the value of nominal GDP by the change in the CPI over the decade, however, would give an even higher increase in the measure of 'real' GDP than would RGDI.

The objective of the Connolly and Orsmond paper is to tell us something about what is happening rather than what should be happening, so it is not unwisely prescriptive about the underlying theory. A sharp rise in commodity prices increases the price of these goods relative to non-traded goods, so there is a rise in the real exchange rate. The price of imports should fall relative to domestic production. In response to the price movements we would expect to see labour and capital move into the export sectors with higher prices, and we would expect to see imports increase relative to domestic substitutes. Overall we would expect to see rising domestic incomes, both from the higher exchange rate and also from additional exports.

But we also know that the relative magnitudes of these effects are difficult to predict and untangle. Substitution between domestic production and imports may see non-tradables output falling, but the income effect may be enough to overwhelm the substitution effect.

Much depends on the specific character of the industries involved, and here the Connolly and Orsmond paper is particularly valuable. They estimate that the mining industry is 80 per cent foreign-owned, so we know that 80 per cent of dividends and 80 per cent of the increased value of the assets created by higher prices or reinvested profits belongs to non-residents. Also, the industry employs 2 per cent of the Australian workforce and much of the capital equipment used in both the construction and operational phases of mining is imported.

Australian residents benefit from goods and services produced locally and used by the industry, from wages to Australian resident employees, from one-fifth of the profits and one-fifth of the increased value of mining assets, and from taxes on the mining industry.

All up, Connolly and Orsmond estimate that Australian residents may capture around half of the revenue from mining. If we think of this calculation as a sort of rough input-output table we can map it on to value add or GDP. If we take the last five years and add up all the additional revenue from metal ores and minerals and all the additional revenue from coal, half of it would be equivalent to around 7.5 per cent of the increase in nominal GDP over the period. That is of a similar magnitude to the alternative measure of the contribution of mining value add to real GDP, which over the whole decade was around 10 per cent. The nominal revenue or sales measure includes the Australian components of investment inputs and operational inputs to mining but excludes income paid offshore and imported components, while the real value add measure is before the removal of imports and income paid offshore, but excludes value add attributed to earlier links in the supply chain.

Measured either way it is a very significant contribution, but the comparison reminds us that 90 per cent of the growth of the Australian economy over the period arose from sources other than mining, and that 98 per cent of employees are doing something other than mining.

Measured as the industry value add contribution to real GDP growth over the decade, mining accounted for less than two-thirds of the contribution made by the finance industry. Mining's contribution was roughly equivalent to the contribution made by construction, and not very much more than the contribution made by the increase in the value add in the retail and wholesale sectors combined.

Nor was the rate of growth of mining output over the decade particularly fast. It increased at around the same rate of growth as real GDP as a whole, or a little over one-third in total. This

is quite quick – but not nearly as quick as the growth in health care & social assistance, finance & insurance services, construction or professional, scientific & technical services, all of which expanded output by half as much again. Even transport, postal & warehousing services increased output faster than mining.

Surprisingly, the ABS annual industrial production series shows us that while mining output increased strongly in the 2000s, it increased more quickly in the 1990s and even more quickly in the 1980s.

Another perspective on mining over the decade is that in terms of chain volume GDP the relative size of the industry today is much the same as it was twenty years ago. Using annual data the mining industry was 9 per cent of GDP in 1990, 9.3 per cent in 2000 and 9.5 per cent of GDP in 2010. In 1975 it accounted for 8 per cent of GDP, so even over more than three decades there has not been much change. Over the 2000s the production of coal, iron ore, bauxite, natural gas and manganese increased, while the production of oil, gold, lead and uranium fell and the production of copper, nickel and zinc remained much the same.

The narrowness of the mining boom is quite striking. Kearns and Lowe show that a large part of the contribution of mining to GDP is through increased business investment. Mining investment now accounts for around 4 per cent of GDP and is expected to increase to 6 per cent of GDP as new developments, particularly in liquefied natural gas (LNG), commence. But as we see from the work of Connolly and Orsmond, two-thirds of this investment is in just two industries – LNG and iron ore – which together employ 0.4 per cent of the workforce.

As mining investment grows over the next few years, it will also become more concentrated in LNG and iron ore. These are two industries that have quite small workforces, are mostly foreign-owned and are very capital intensive. Their production is often located far from population centres. They import their capital equipment and export their product. A lot can happen in those two industries without a big impact on the rest of the economy.

These considerations then raise the question of the extent to which we should think of what is happening in the Australian economy predominantly as an adjustment to a terms of trade shock centred in the mining industry. For example, how much of what is happening can be explained as a reallocation of resources from other industries into mining?

We know that as a small open economy in a large global capital market, Australia does not have to shift capital from other uses into mining. It can simply invest more in total, which is by and large what it has done. The large mining companies do not look to the Australian market to finance their investments – they look to global markets. We also know that at least two-thirds of the expansion of mining output will occur in sectors which employ very few people in the operational phase. It is therefore unlikely, or actually impossible, that very many Australians can shift out of what they are doing and get into mining. In fact, over the whole of the decade the increase in the mining workforce was just 1 per cent of total employment.

Much of the sense that the Australian economic story is largely about adjusting to the mining boom arises from the impact of a high Australian dollar on manufacturing, tourism and education services. We need to bear in mind, however, that there are a number of influences on the exchange rate quite apart from the price of metals. Because the GFC affected Europe and North America

far more than Australia, there is an unusually wide gap between Australian interest rates and interest rates in North America and Europe. Even without high prices for coal and iron ore, this rate difference would strengthen the Australian dollar. In trade, Australia is increasingly integrated with Asia, but in financial flows it remains integrated with Europe and North America. Other influences on the Australian dollar include the long-term decline of the US dollar, and the reluctance of most Asian nations to permit their currencies to freely float against the US dollar. These influences on the exchange rate are as much related to the consequences of the GFC as they are to the mining boom.

No doubt the expansion of mining output has a good way to run. Output of iron ore, coal and LNG is set to increase substantially over the next five years, as current mining investments reach the production stage. In the longer term, however, the rate of growth of mining output will slow. China's growth will slow a little; more of the growth will come from consumption and services, and the energy and metals intensity of its production will peak and then stabilise. India's peak metals demand is a long way off, but India has no need for our iron ore. At the same time other producers will have opened new capacity. Prices may well stabilise or even weaken a little in the meantime. From a higher base, Australian mining output increases will be limited to a rate consistent with the growth of metals consumption in the region, which at that point may be more like 4 per cent or 5 per cent a year.

I do not mean to suggest that the mining boom is unimportant. But I think there is a case to say that in assessing the experience of the 2000s we need to give weight to other influences as well – the most notable being the GFC of 2008.

Kearns and Lowe provide some very useful perspectives on the issue, and Kevin Davis has many excellent points to make, but I think it is generally true that we rather underplay the impact on the economy of the GFC.

This is because Australia emerged from the crisis in vastly better shape than Europe and North America. If we think of the impact of the GFC compared with other episodes in Australia's recent economic experience, however, it was a very big event. It was the sharpest downturn in GDP since the early 1990s. It saw the biggest change in official interest rates in the shortest time in our memory. It turned a fiscal surplus into a deficit. It obliged the Government to guarantee Australian bank deposits and some other bank liabilities. It saw the biggest decline in household wealth for generations. Many of these impacts have lingered. The gap between Australian interest rates and those in Europe and North America remains very wide. Household wealth has not yet recovered its 2008 level (and the decline in wealth coincided with the discovery by baby boomers that they were on the verge of retirement). The Federal Government is still working to restore a fiscal surplus, after years in which Australians became accustomed to tax cuts and other benefits from each successive budget. After nearly a decade of fiscal roominess, we are back to difficult trade-offs and unpleasant choices. The baby boomers are frightened. These circumstances have contributed to the strident and cheerless tone of Australian politics, to the strong currency, and also to the weakness of household consumption and housing construction.

The more we take into account the lingering impact of the GFC, the more we are able to think of the widely discussed two-speed economy as the result of the separate influences of the GFC and of the mining boom, rather than as one process explained as a terms of trade shock.

## Productivity

Saul Eslake's interesting and thoughtful paper on productivity reminded us that, at least compared with the previous decade, measured productivity performance was poor through the 2000s.

Comparing the 1990s to the 2000s, it is surely true, as Eslake argues, that the amount of structural economic reform was greater in the earlier decade. In the 1990s Australia switched from the most centralised system of wage fixation it had had for many decades to one based on enterprise bargaining. The switch occurred after a period of sustained labour shedding, and of industry adjustment to the decisions taken in 1988 and 1991 to lower tariffs. The usual productivity gain in recovery from a deep recession was enhanced and prolonged by these special factors. It was probably also helped by the proliferation of cheap computing and telecommunications applications, which boosted productivity in retail and wholesale trade and in the service sector more generally.

No doubt productivity would be enhanced with further economic reforms, though surely the gains would not be comparable to the big gains available from reform in the 1980s and 1990s. The gains from greater competition in selling medicines and newspapers, for example, would be useful, but not immense. As John Quiggin has pointed out, in the longer term, productivity will come back to technology and innovation, to improvements in human capital, and to our national capacity to invent, or adopt and adapt productivity-enhancing innovations – though it is also true that economic reform can spur innovation.

The evidence over many decades of rising employment, to something close to full employment, and rising productivity, suggests that in the long run there is no trade-off between employment growth and productivity. But in the short and medium term there is an interaction. In the 1980s Australia had the fastest employment growth in the OECD, and a dismal rate of growth of productivity. In the 2000s the big fall in unemployment and the big increase in participation brought into employment workers with lower output per hour worked. However, to the extent that it is caused by higher participation or the reduction in long-term unemployment, lower productivity growth is not something we should complain about.

In looking for the causes of slower productivity, perhaps we might give more thought to the composition of additional employment through the decade.

Productivity varies enormously between industries. On my admittedly rough numbers,<sup>4</sup> the average employee in mining produces 20 times the output of the average employee in the accommodation & food services industry. The average worker in finance & insurance services is 10 times as productive, and in electricity, gas, water & waste services 5 times as productive, as a worker in food and accommodation. Compositional changes in output and employment can therefore have quite a big impact on overall output per employee.

Because mining is so highly productive it pulls up the Australian average level of productivity. Ranking them by industry gross value added divided by the number of employees, only 6 of the 19 industries which the ABS uses to categorise GDP and employment by industry are above the average level of productivity. The remaining 13 are below it.

4 I divided annual industry real gross value added by employment in the middle of the month of the first quarter of the year.

Those below the average level of productivity, however, accounted for a little over 90 per cent of employment growth in Australia over the decade. If we take the market sector alone, then three-quarters of employment growth in the last decade was in industries with below-average productivity.

All other things equal, this compositional effect in employment growth has the arithmetic result of dragging down the average level and the growth rate of productivity. It will result in falling average productivity and thus a declining productivity growth rate overall, even if productivity per person employed in each industry remains the same, or actually to some extent increases.

But all other things have not remained equal. While the proportion of employees in sectors with below-average productivity has increased over the decade, the proportion of output produced by high productivity industries has increased.

At the beginning of the last decade, around 22 per cent of jobs were in the high productivity industries, while at the end of the decade the share was down to 19 per cent, a compositional change towards lower average productivity. At the same time the share of output accounted for by high productivity industries rose; from 28 per cent to 36 per cent.

These two moves might normally be expected to offset each other – except that in three of the high productivity sectors, productivity fell. These industries were mining, utilities, and rental, hiring & real estate services. On my figuring, the fall in productivity in mining and utilities was in the order of one-third. The Productivity Commission has pointed to the decline in mining and utilities productivity as being important elements of the slowdown in aggregate productivity.

So here I think we may have a somewhat different story about productivity growth.

Encouragingly, this possible explanation implies that, despite the compositional drag of higher employment in low productivity industries and declining productivity in three of the high productivity industries, there must be quite significant improvements in productivity in some industries to produce an increase in productivity for the economy as a whole. On my numbers, those industries in which productivity growth was well above the average include information, media & telecommunications, farming, finance, wholesale and retail trade, manufacturing, administration & support services, and construction – in that order.

It is also encouraging that, as the Productivity Commission pointed out a while ago, the fall in productivity in mining and in utilities is explained by particular and temporary circumstances. We may therefore expect that productivity growth in these industries will resume. In mining it will resume when the volume of output begins to respond to the huge investment of recent years. In electricity, gas, water & waste services it will pick up as output and demand catch up to new capacity.

## A service sector economy

The impact of compositional changes in output and employment over the 2000s is something we perhaps need to think more about. If we rank industries by their contribution to output growth in Australia over the decade, the first five industries are financial & insurance services, construction, mining, professional, scientific & technical services, and health care & social assistance. If we rank them by contribution to employment growth, then health care & social assistance is at the top by

far, construction is still in second place, professional, scientific & technical services in third place, and then we have public administration & safety, and education & training. Australia shares the experience common to many economies that the industries which grow the fastest or contribute most to the growth of GDP are not often the industries which contribute most to the growth of employment.

Those two lists are in different orders, and both are different to a ranking of industries by the level of productivity. In this productivity-ranked list, the first five are mining, finance & insurance services, electricity, gas, water & waste services, rental, hiring & real estate services, and manufacturing.

There is no industry which is in the first five on all three lists, though construction and professional, scientific & technical services are in the top five for both contribution to output growth and contribution to employment growth.

If we compare the ranking of industries by contribution to employment growth to the ranking of industries ordered by the level of productivity, we need to go down to number eight on both lists to find the first common industry, which is transport, postal & warehousing.

This is another way of saying that employment growth is predominantly occurring in industries with low levels of labour productivity compared with the Australian average.

I think this is fine. It is a market outcome and our experience is similar to that of other advanced economies. We need lots of jobs requiring long training and complex skills, but we also need a lot of jobs with low or entry-level skills for people who, for one reason or another, don't have high skills, for secondary family incomes and for temporary and part-time work.

Another way of looking at employment is to recognise that over the entire decade, the industrial sector as a whole – manufacturing, mining and utilities – accounted for 1 net new job out of every 30.

What this reminds us is that the big reallocation of labour in Australia is not from the rest of the economy to mining. It continues to be, as it has been for several decades, from industrial output to services and construction.

As we move through a new decade, we may well find that the story of the Australian economy is less about the impact of the mining boom, and more about this continuing transition to a service sector economy. We may also find that the policy challenges this transition poses are just as formidable as those of the so called 'two-speed economy'.

## 2. David Gruen\*

### Lessons about Fiscal Policy from the 2000s

Looking back on the decade of the 2000s provides an opportunity to reflect on what has changed, what has not, and what the experiences of the decade can teach us. For fiscal policy, the decade has been an eventful one, not only in Australia, but across the world.

In these comments I thought I would focus on what I see as the main lessons about fiscal policy from the 2000s. I have five broad lessons.

#### Lesson 1

Currency union without fiscal union is an accident waiting to happen.

The euro was created just over a decade ago in 1999, and by 2003, investors were buying 10-year bonds from the central governments of all the members of the euro area at an interest rate premium of less than 20 basis points over German 10-year bonds.

What was insufficiently appreciated at the time was the fragility of the euro area arrangements, in the absence of a fiscal union. One problem was the lack of effective mechanisms to discipline government borrowing. In the good times before 2007, the governments of some countries used their newly found capacity to borrow cheaply in international capital markets to accumulate levels of government debt that would prove unsustainable in the aftermath of the severe adverse shock of the 2008–2009 financial crisis. Certainly, neither bond markets nor rating agencies imposed such discipline in the good times.<sup>1</sup>

But the problems of currency union without fiscal union have turned out to be more serious than the problem of fiscal profligacy by some members. Currency union without fiscal union has meant that some countries with a track record of paying down government debt to quite moderate levels in the good times could no longer rely on even the automatic fiscal stabilisers when a big shock arrived.

A comparison of the evolution of sovereign debt levels and bond yields in Spain (within the euro area) and the United Kingdom (with its own currency and independent monetary policy) reveals this point starkly. Despite Spain's better fiscal track record over the past decade, in the aftermath of the financial crisis, markets responded to Spain's lack of control over the currency in which its debts are denominated, and its inability to reignite domestic growth via expansionary monetary policy and currency depreciation, by imposing a much larger risk premium on Spanish bonds than on UK bonds. This self-fulfilling loss of confidence left Spain with little choice but to override the automatic fiscal stabilisers and impose procyclical fiscal austerity at a time of high unemployment (De Grauwe 2011).

\* Australian Treasury.

1 Over the five years from 2003 to 2007, 10-year sovereign bonds issued by Greece, Ireland, Italy, Portugal and Spain all traded at an average interest rate premium of less than 25 basis points above 10-year German bonds. Furthermore, none of the major rating agencies downgraded the sovereign debt of any member of the euro area despite some building up levels of debt that would ultimately prove unsustainable. The first downgrade occurred in mid January 2009, when Standard & Poor's downgraded Greek sovereign debt from A to A-.



## Lesson 2

The longer-term goal for monetary policy remains much clearer than for fiscal policy.

The global move to independent central banks with price stability mandates was a major achievement of the 1980s and 1990s.<sup>2</sup> Most independent central banks achieved and sustained low single-digit rates of consumer price inflation, which has become the widely agreed longer-term goal for monetary policy. (Although there is, of course, more to monetary policy than that!)

For fiscal policy, however, the appropriate longer-term goal for the stock of government debt is less clear. In good economic times, should governments aim for a level of net government debt that is a small fraction of annual GDP? Alternatively, should they aim for zero, or even negative net government debt?

The financial crisis certainly suggests that the Maastricht criterion for gross government debt to be no higher than 60 per cent of GDP, or even the UK's net government debt ceiling of 40 per cent of GDP, are probably too high, because they leave insufficient fiscal space to respond to unforeseen adverse economic shocks. But beyond that, the experience of the 2000s has not provided much guidance about what should be the appropriate longer-term goal for net government debt.<sup>3</sup>

In Australia's case in the late 2000s, this issue has been couched in terms of whether Australia should save significantly more of the bounty from the mining boom in a sovereign wealth fund, to further improve the already strong balance sheet position of the Australian public sector. Curiously, that question has often been discussed without reference to the high and rising stock of financial assets in the Australian superannuation system, part of which represents accumulated contributions from the public sector (Gruen and Soding 2011).

## Lesson 3

The achievement of monetary policy's longer-term goal of low single-digit inflation has important benefits, but also one serious drawback. It means that some economic shocks are now too big for monetary policy and the automatic stabilisers to cope with on their own. A significant discretionary fiscal stimulus is also desirable in response to such shocks.

But does discretionary fiscal stimulus work?

In the important case of a country with a floating exchange rate and high capital mobility, the standard Mundell-Fleming model predicts that discretionary fiscal stimulus will have little or no expansionary effect on domestic economic output because it is crowded out by an appreciation of the exchange rate and the associated deterioration of net exports.

<sup>2</sup> Indeed, this global change in monetary policy governance is taken sufficiently for granted that it didn't rate a mention at this year's Conference. It remains to be seen whether it will continue to be taken for granted.

<sup>3</sup> There are other considerations that further complicate the issue. Governments that face more serious medium-term fiscal pressures because of a strongly rising age dependency ratio, and/or public health costs, should presumably aim for lower levels of government debt before these pressures become acute. There are also conceptual issues about whether government debt is the appropriate 'stock' concept for fiscal policy, as opposed to a broader measure such as government net worth.

This standard Mundell-Fleming result seems broadly correct for countries with very high levels of government debt, when fiscal solvency may be brought into question, and also for countries with high trade shares.<sup>4</sup>

A well-known empirical study defines a threshold of exports plus imports equal to 60 per cent of GDP, and estimates that for countries with trade shares above this threshold, fiscal multipliers are actually negative on average (Ilzetzi, Mendoza and Végh 2010).

But for less open economies with low government debt like Australia, fiscal multipliers for temporary discretionary fiscal stimulus appear to be positive and sizeable. For example, the International Monetary Fund's (IMF) Global Integrated Monetary and Fiscal model has fiscal multipliers for temporary discretionary fiscal stimulus for Australia of 0.5 for transfers to liquidity-constrained consumers, and 1.2–1.5 for government investment (Werner Schule, Deputy Division Chief, Asian and Pacific Department, IMF, 2011, personal communication, 1 August).<sup>5</sup>

Notwithstanding the evidence to the contrary, the standard Mundell-Fleming result for countries with a floating exchange rate and high capital mobility – that discretionary fiscal stimulus has little or no expansionary impact on domestic GDP, even for the first few years – is sometimes still invoked, even for countries like Australia with relatively small trade shares. For example, Valentine (2011, p 40) argues that the Australian discretionary fiscal response to the financial crisis was 'ineffective and, therefore, unnecessary', a conclusion he suggests is 'consistent with the accepted doctrine (at least outside Australia) that fiscal multipliers are close to zero in small open economies with a floating exchange rate'.

Valentine supports this statement with reference to the study mentioned earlier – Ilzetzi *et al* (2010). In fact, however, that study provides evidence supporting the *opposite* conclusion: that fiscal multipliers are instead positive and sizeable for countries like Australia. Bear with me for the explanation.

Among other things, Ilzetzi *et al* establish two interesting sets of results for their large sample of countries. First, for countries with flexible exchange rates, fiscal multipliers over the first few years are effectively zero on average, while they are positive and sizeable for countries with fixed exchange rates (see their Figure 7). Second, as explained above, on average for countries with high trade shares (exports plus imports greater than 60 per cent of GDP) fiscal multipliers over the first few years are estimated to be negative, while they are positive and sizeable for countries with low trade shares (their Figure 10b). With both a flexible exchange rate and a low trade share, Australia fits into the first category for the first set of results and into the second category for the second set of results.

For this sub-sample of countries, with both a flexible exchange rate and a low trade share, the results are virtually identical to those for the full sample of low trade share countries – with fiscal multipliers that are estimated to be positive and sizeable over the first few years. That is, when it comes to fiscal multipliers, the trade share dominates the exchange rate regime (although the

4 For countries with high trade shares, the standard Mundell-Fleming result applies only for unilateral fiscal actions. By contrast, for a global fiscal response to a global economic shock, fiscal multipliers are positive and sizeable, even for these countries, because spillover effects via trade work both into and out of the country in response to global fiscal stimulus.

5 By comparison, the Australian Treasury has used a somewhat larger multiplier for transfers (0.6) and a smaller multiplier for government investment (0.85) when estimating the domestic output effects of the Australian discretionary fiscal response to the financial crisis.

results have larger standard errors because the sub-sample of countries with both characteristics is smaller than the full sample of low trade share countries (Ethan Ilzetzki, 2011, personal communication, 6 September).

## Lesson 4

What about fiscal consolidation? Can it be expansionary for the economy?

The answer to this question is yes, but mainly in countries where doubts about solvency have raised borrowing costs, and the consolidation could reduce these costs sharply. For example, fiscal consolidations in Denmark in 1983 and Ireland in 1987 (countries that had experienced rapid deterioration in their sovereign debt ratings) both appear to have been expansionary for their economies and were associated with big falls in long-term bond rates (Giavazzi and Pagano 1990). However, these cases are rare (IMF 2010) and in most examples in the historical record, fiscal consolidation has been contractionary for the economy for the first few years.

Importantly, the contractionary effects of fiscal consolidation have been smaller in countries with a flexible exchange rate and independent monetary policy. For these countries, on average, the domestic output effects of fiscal consolidation have been reduced significantly by lower policy interest rates and a depreciation of the exchange rate (IMF 2010).

Of course, the interest rate offset is not available if interest rates are already effectively zero, and the exchange rate offset will be muted or absent if fiscal consolidation is occurring simultaneously all across the globe.

## Lesson 5

In countries with high levels of government debt, political economy considerations can lead to a chosen path for fiscal policy that appears far from optimal.

In many advanced countries, a long history of fiscal deficits followed by the big adverse shock from the financial crisis has led to high (though not unprecedented) levels of government debt as a share of GDP. Countries in this position that are part of a currency union then have very limited options: markets demand procyclical fiscal austerity.<sup>6</sup>

But even in countries with their own currencies where governments are now borrowing long-term at extremely low interest rates (indeed, with CPI-indexed bond yields around zero), the political process has delivered fiscal responses that seem far from optimal.

Thus, for example, both the United Kingdom and the United States have embarked on significant fiscal consolidation while their economies remain stuck in liquidity traps. There can be little doubt that substantial long-term fiscal consolidation and reform are needed in both countries. But the optimal fiscal response is surely *contingent* on economic outcomes – just as is the case for optimal monetary policy.

From an economic viewpoint, there are undoubtedly substantial benefits from announcing and legislating far-reaching fiscal consolidation that begins once the economies have emerged from

<sup>6</sup> Even though Spain did not follow this path – its average fiscal balance was a surplus of 0.9 per cent of GDP over the five years to 2007 – markets have nevertheless demanded procyclical fiscal austerity in Spain more recently, as discussed earlier.

liquidity traps, and resumed good economic growth. But it seems clear that in both countries, political considerations have rendered anything close to this optimal contingent fiscal response well-nigh impossible.

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### 3. John Quiggin\*

#### The Lost Golden Age of Productivity Growth

Economic policy debate in Australia is dominated by the belief that the nation's economy experienced a surge in productivity in the mid 1990s. The surge is attributed to programs of microeconomic reform that began in earnest with the floating of the dollar in 1983.<sup>1</sup> It was particularly welcomed by advocates of microeconomic reform, given that the decade following the float was characterised by relatively weak productivity growth and macroeconomic performance that began well, but ended in the deep recession of the early 1990s and the prolonged period of high unemployment that followed.

Discussions at the RBA Conference held in 2000 on the Australian economy in the 1990s reflected almost universal belief in the productivity surge and the future benefits that continued strong productivity growth might be expected to yield. A few participants, notably including Charles Bean, argued that the productivity growth of the 1990s was derived from once-off improvements

\* This paper may be regarded as a sceptical counterpoint to the mainstream interpretation presented by Eslake (this volume). However, it was prepared separately and not as a response to Eslake. I thank Daniel Quiggin and participants at the Conference for helpful comments and criticism.

<sup>1</sup> The Whitlam Government's tariff reforms, and its replacement of the old Tariff Board with the Industries Assistance Commission, now the Productivity Commission, are generally seen as a 'false state', largely reversed by subsequent protectionist measures.

and that the rate of growth might be expected to return to its long-term value, though at a higher level.

At the time, I was alone in arguing that the surge in measured productivity was largely illusory, reflecting an increase in work intensity (Quiggin 2000), and predicting:

Much of the apparent productivity growth of the 1990s [is likely to dissipate] as workers find ways of winding back the increase in the hours and intensity of work extracted through the unilateral repudiation of implicit labour contracts in this period. (Quiggin 2004, p 23, first version 2002)

This prediction has been borne out. Having risen at around 2 per cent per year between 1995 and 1999, the Australian Bureau of Statistics (ABS) estimate of multifactor productivity (MFP) has shown no net increase over the period since then. Over the period 2003/04 to 2007/08 there was an overall decline of 0.2 per cent per year. As a result, the average annual rate of measured MFP growth since the beginning of the supposed productivity surge in 1993/94 has been 0.8 per cent, marginally below the rate for the entire period since 1964/65.

More generally, with an arbitrary choice of starting date (no later than 1993/94) and ending with the most recent data, for 2009/10, Australia's long-run rate of MFP growth has been within the range 0.8 per cent to 1.0 per cent. Estimated MFP growth for the earliest period in the data, covering the end of the post-war boom, was slightly higher but within the range of measurement error. Statistical analysis mostly fails to reject the null hypothesis of a constant rate of productivity growth over the period since 1964/65 (Hancock (2005); McKenzie (2005); Quiggin (2006); but see also Parham (2005a)).

Despite the accuracy of the predictions it generated, the view that measured changes in MFP growth rates are driven by changes in work intensity commanded no more support at the 2011 Reserve Bank Conference than it did in 2000. The same is true of the broader policy discussion.

The idea that the productivity miracle of the 1990s might instead have been a mirage is almost never raised. Instead, two contradictory accounts have emerged. These accounts share an unquestioning acceptance of the measured productivity surge of the 1990s, but differ in their account of the 2000s.

The dominant view among economists is one of a 'lost golden age'. The low measured productivity growth of the 2000s is taken as reflecting a real deterioration in performance, which is attributed to a slowdown or reversal of the process of microeconomic reform. In this analysis, the favourable terms of trade associated with high world prices for minerals and strong demand from China are seen as having allowed Australians to avoid the harsh realities of the need for continued productivity growth.

An alternative view is that while the 1990s productivity surge was real, the reversal in measured productivity growth in the 2000s is attributable, at least in large part, to special factors and measurement problems. This view was maintained vigorously by the Productivity Commission during the early 2000s and continues to be reflected to some extent in its discussion.

The 'conventional wisdom' implicit in most discussions of the Australian economy is a somewhat incoherent mixture of these two ideas. On the one hand, in discussions of microeconomic issues, the 'lost golden age' view is dominant, and is reflected in calls for a new round of microeconomic reform. On the other hand, in discussions of Australia's strong macroeconomic performance

during the global financial crisis (GFC), a considerable share of credit is commonly given to the flexibility derived from microeconomic reform.

## Productivity: a problematic concept

At a conceptual level, productivity seems like a simple generalisation of straightforward concepts such as crop yield (the output of a given crop per unit of land) or the number of units of a given good a worker can produce in an hour. In national accounting, the homogeneous output of these examples is replaced by an output index such as GDP. Although index numbers raise a variety of complex issues, GDP indices are so familiar that they are normally treated, even by economists who should know better, as if they are objective numbers like outputs of wheat or widgets, rather than, as they are in reality, the outputs of economic models. Multifactor productivity measures similarly replace homogeneous input measures such as hours worked with indices aggregating two or more input factors.

Although index number problems are important, these problems are not central to the difficulties with productivity measures derived from national accounts. The main problems are that these measures omit important inputs, most importantly those of natural resources, and fail to take account of the intensity with which capital and labour are used. To understand this problem, it is useful to consider the ways in which sustainable improvements in living standards can be generated.

The most important, by far, is technological progress, that is, the introduction and adoption of technological innovations such as new products and improved production technologies. Krugman's much-cited statement that '[p]roductivity isn't everything, but in the long run it is *almost* everything. A country's ability to improve its standard of living over time depends almost entirely on its ability to raise its output per worker' (emphasis added, Krugman (1997, p 11)) would be equally valid if the word 'productivity' were replaced by 'technological progress'.

For a small country like Australia, the rate of technological innovation is essentially exogenous. National policies can affect the rate of adoption of new technologies. In particular, new technologies are usually more skill- and knowledge-intensive than old technologies, so rapid adoption of new technologies is feasible only with a skilled and educated workforce. Hence, investment in human capital can yield high returns.

The second potential source of improvement in living standards is more efficient use of endowments of capital and labour. This may be achieved either as a result of good macroeconomic outcomes (full/optimal employment of labour and capital) or through good microeconomic outcomes (output closer to the technological frontier for individual enterprises and industries).

Productivity measures, at least conceptually, exclude benefits arising from good macroeconomic outcomes, but include the benefits of good microeconomic outcomes. In practice, however, the two are intertwined. Capital utilisation generally declines during recessions, while capital may be operated to yield unsustainably high service flows during booms. However, standard productivity measures are based on the assumption that capital services are proportional to the capital stock. As the OECD (Schreyer 2001, p 73) observes, attempts to include proxies for capital utilisation have proved problematic.

Measurement of labour input is even more problematic. On the one hand, labour hoarding during recessions tends to reduce productivity, producing a procyclical pattern of labour productivity. On the other hand, increased employment during expansions results in the recruitment of more marginal workers, producing anti-cyclical productivity. Historically, the first of these tendencies has predominated, producing procyclical productivity. But as labour hoarding has declined, notably in the United States, productivity has been more anti-cyclical.

The use of a measure designed to include the benefits of good microeconomic outcomes and exclude the benefits of good macroeconomics is consistent with the thinking that has dominated Australian policy discussions since the 1980s, but it is deeply misleading. The primary reason for Australia's relatively strong growth in income per person since the early 1990s is the fact that, through a combination of good luck and good policy decisions, we have not undergone a recession.

The issue is further clouded by the fact that the ABS reports MFP estimates in 'productivity cycles', typically lasting about five years. The productivity cycle is a data-driven concept, with no explicit theoretical basis. In particular, productivity cycles do not necessarily correspond to the business cycles and productivity cycles in different industries are largely uncorrelated. Nevertheless, Quiggin (2000) observed that, for the Australian economy as a whole, the MFP cycles reported by the ABS largely reflected the phases of the business cycle. A typical business cycle contained two productivity cycles, with productivity growth being stronger in the cycle corresponding to the expansion phase and weaker in the cycle corresponding to the contraction phase (Dolman, Lu and Rahman 2006).

The productivity cycle plays a crucial role in the myth of the 1990s productivity surge, since it allows the five years of strong productivity growth from 1993/94 to 1998/99 to be treated as a distinct period, while the weaker years at the beginning of the decade are discarded, and the evidence of a slowdown towards the end of the 1990s is disregarded. The result is a widespread, but false, impression that the 1990s as whole were a period of exceptionally strong measured MFP growth. In reality, the average rate of MFP growth for the two ABS productivity cycles from 1988/89 to 1998/99 was 1.6 per cent, above average but not exceptional.

In summary, productivity is not a particularly useful measure of economic performance. Even when correctly measured, productivity estimates combine the effects of long-term technological growth with a subset of the factors that determine variations in short-term performance.

In practice, accurate measurement is impossible. In the case of Australia's supposed productivity surge, the crucial problem is the failure to take account of changes in work intensity.

## Work intensity and productivity

Labour productivity is typically measured in terms of output per hour worked. It is easy to see, however, that this measure is problematic. For example, enterprise agreements, and individual contracts adopted in place of awards, commonly eliminated breaks such as tea breaks. On the other hand, employees have always taken unauthorised breaks of various kinds. A notable example that has emerged in the last 10 to 15 years is the use of office computers to visit internet sites unrelated to work. Of much longer standing is the practice of making private phone calls

during paid time at work. Conversely, employers may demand unpaid overtime, or contact their employees with work requests outside paid hours.

Although these practices are regularly the subject of dispute, the normal situation is one of equilibrium, where some deviation from official hours is part of the wage bargain accepted more or less willingly by both parties. The hours of work reported to statistical agencies will reflect some, but not all, of the deviations from award-determined or contractually agreed hours.

How should these features of the labour market be reflected in productivity measures? At least conceptually, it seems clear that the appropriate measure is actual hours worked, rather than paid hours.

Now consider the case where the number of hours worked remains unchanged, but the pace of work varies. In some industries, such changes can be observed directly, and are the subject of explicit wage bargaining. The archetypal case is that of production line work; employers typically seek to increase the rate at which the line moves, while workers and unions slow it down.

The development of the word processor in the 1980s provides another example. Since the number of keystrokes could be measured directly, employers demanded higher rates, thereby precipitating an epidemic of repetitive strain injury (a problem that had previously existed but was typically diagnosed as an individual pathology rather than an occupational hazard).

There is, in principle, no difference between an increase in the number of hours worked and an increase in the pace of work. In both cases, standard economic logic implies that an equilibrium wage bargain will typically involve a commitment of hours and effort greater than the level that would be chosen by workers in the absence of a monetary incentive.

In particular instances, depending on labour market institutions, legal restrictions and so on, the bargained outcome may involve more or less hours and effort than would characterise a Pareto-optimal bargain. However, the general assumption is that, at the margin, increased hours and increased effort are equally costly to workers, when normalised by the payment required to elicit them.

It follows that, to the extent that increases in output are derived either from unmeasured increases in hours of work, or from increased intensity of work, there is no corresponding increase in productivity. If it happens that the hours or intensity of work were previously sub-optimal (or above the optimal level), there will be a net welfare gain (or loss), but this will be of second-order magnitude relative to the change in output.

Australian economic policy-makers have shown considerable confusion on this point. Some have explicitly asserted that working harder is a genuine source of productivity gains. For example, the Productivity Commission (1996, p 24) asserted that productivity gains could be achieved not only through resource reallocations but through people 'working harder and working smarter'. Fourteen years later, the Chairman of the Productivity Commission repeated an almost identical formulation (Banks 2011, p 16): 'Whether productivity growth comes from working harder or working "smarter", people in workplaces are central to it'.

The appearance of scare quotes around 'smarter' is revealing. Whereas in the 1990s this phrase was used in all seriousness, 'working smarter' is now understood as a piece of management jargon,



typically decoded as ‘we’re giving you more work to do with less resources, and it’s up to you to figure out how to do it’.

More commonly, the association of reform with harder and less pleasant work is implicit. Standard discussions of microeconomic reform and workplace reform are full of references to ‘cutting out fat’, the ‘chill winds of competition’, and so forth. It is not hard for workers to discern where the fat is to be cut, or to observe that CEOs are usually equipped with well-padded windbreakers, even in cases where their mismanagement leads to an early (but generously compensated) departure.

By contrast, in debates over the validity of MFP statistics, most mainstream economists, and particularly those associated with the Productivity Commission, have denied that changes in work intensity are an important source of changes in measured productivity.

The mid 1990s saw an upsurge in public concern about the pace of work, work-life balance, stress and similar issues, which persisted into the early 2000s, leading to John Howard’s description of the topic as a ‘barbecue stopper’. From about 2000 onwards, with a strengthening labour market, resistance to work intensification and to employer demands for longer hours of work, became increasingly successful.

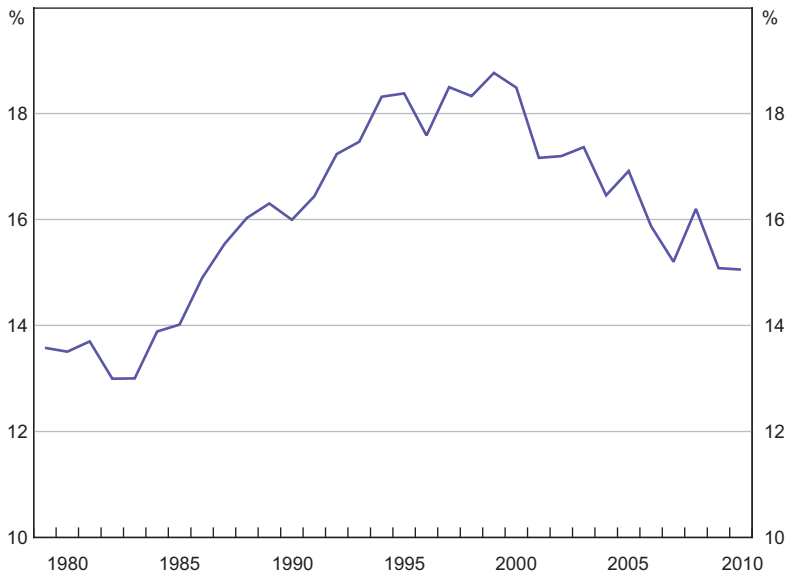
The intensity of work is difficult to measure. There is, nevertheless, sufficient evidence to support the general perception that an increase in work intensity in the 1990s was based in reality.

First, as discussed above, increases in work hours and in work intensity are substitutes both as inputs to production and as sources of disutility for workers. It follows that, when the equilibrium wage bargain involves an increase (or decrease) in hours it will also involve an increase (decrease) in work intensity. The data on working hours is unequivocal and exactly consistent with the idea that fluctuations in MFP growth may be explained largely in terms of work intensity. As the Australian Bureau of Statistics (2010) notes, the proportion of people working more than 50 hours per week increased from 13 per cent in 1978 to 19 per cent in late 1999 and early 2000, before falling to around 15 per cent in 2010. This point is illustrated in Figure 1.

Wooden (2003) offers a different interpretation of the data for the 1990s, focusing on the relative stability, between 1994 and 2000, of the proportion working more than 50 hours a week.

There is some direct evidence on work intensity. The Australian Workplace Industrial Relations Survey undertaken in 1995 (Morehead *et al* 1997) found that a majority of employees reported increases in stress, work effort and pace of work over the previous year, while less than 10 per cent reported reductions in any of these variables. This is consistent with evidence from the United Kingdom and some, though not all, other European countries (Green and McIntosh 2001). Moreover, Green and McIntosh observe that the increases in work intensity are associated with higher productivity (as would be expected) and are positively correlated with exposure to competition and with reductions in union density.

**Figure 1: Employed Persons Working 50+ Hours**  
Per cent of total employment



Source: ABS

## Defences of the productivity surge

### Asymmetric measurement error

In the 1990s, the Productivity Commission was the most prominent proponent of the claim that the strong growth in MFP reported by the ABS reflected the emergence of a 'new economy' as a result of microeconomic reform (Parham 1999). Unsurprisingly, the Commission rejected claims that the apparent surge in MFP growth was due, in part or in whole, to measurement error or cyclical factors.

By contrast, as low rates of MFP growth emerged in the 2000s, the Commission became much more sympathetic to the idea that measurement error might be a problem. The poor productivity growth of the early 2000s was blamed on, among other factors, the Sydney Olympics, capital expenditure associated with the Y2K fiasco, transitional effects of the introduction of the GST and the drought which began in 2002 (Parham 2005b). The drought persisted well into the decade, but the other factors mentioned by Parham should have been transitory.

As measured MFP performance deteriorated even further, attention has shifted to the mining sector. It seems clear that measurement problems associated with mining are significant. Investments in new or expanded mines count immediately as part of the capital stock, but contribute to output only with a delay of some years. Moreover, current high prices have led to the exploitation of resources that would otherwise be uneconomic.

Since the quality of the resource is not measured as an input, this produces an illusory decline in productivity. Richardson and Denniss (2011) estimate that the measured growth rate of labour productivity over the 2000s has been reduced by 1 percentage point as a result of distortions in the mining sector. This is a significant effect, but not sufficient to explain the decline in measured MFP growth rates.

The view that the disappointing performance of measured MFP is primarily due to measurement error has lost favour over time, as disappointment has persisted. However, it frequently re-emerges in discussions of Australia's strong macroeconomic performance during the GFC.

The idea that market-oriented microeconomic policies provide significant flexibility in response to macroeconomic shocks has been influential in Australia since the beginnings of microeconomic reform in the 1980s. This idea contributed substantially to the policy misjudgements that produced the 1989–1991 recession, when it was supposed that the economy was flexible enough to handle a 'short, sharp shock to interest rates' and then to bounce back rapidly from 'the recession we had to have'.

Counter-examples to this idea abound, but the most striking is that of New Zealand, which has followed broadly similar microeconomic policies since the 1980s (though with more radical microeconomic reform until the mid 1990s, and a sharper reaction against some aspects of those policies subsequently), while adopting much more restrictionist macroeconomic policies. From an initial position of approximate income parity with Australia in the early 1980s, New Zealand fell sharply behind, experiencing an even deeper recession from 1987–1991, and two subsequent recessions, interspersed with periods of mostly sluggish growth. By 2000, income per person in New Zealand fell to around two-thirds of the Australian level, and has remained there. While it is unwise to attribute such a huge gap to any single factor (Hazledine and Quiggin 2006), poor macroeconomic performance is an important part of the story.

### The 'lost golden age'

The dominant interpretation of the MFP statistics today is that of a 'lost golden age'. The surge in measured MFP growth is attributed to the microeconomic reform process begun in the 1980s, and the slowdown to 'reform fatigue' in the 2000s.

The major difficulty for this story is one of timing. It is difficult to see how a series of reforms undertaken over 20 years or more can have produced substantial productivity benefits confined to a single period of five years. It is even harder to see how the benefits of those reforms can have dissipated so rapidly, beginning when the reform process was still underway.

The beginning of the process of microeconomic reform is usually dated to the float of the Australian dollar in 1983. There is less agreement on the end of the process. Quiggin was, as far as I can determine, the first to give an explicit end date, saying:

The era of microeconomic reform in Australia began with a big bang – the floating of the dollar in 1983. It ended with another big bang – the package of tax reforms centred on the Goods and Services Tax (GST) which came into force in July 2000. (Quiggin 2004, p 1, first version 2002)

There have been retrospective attempts to backdate the end of microeconomic reform, sometimes as far as the election of the Howard Government in 1996, but such attempts do not

stand up to scrutiny. It is true that the Howard Government took a less consistent approach to reform than its Labor predecessors. Nevertheless, it introduced a number of major reforms in its first few years in office.

Many of the reforms implemented under Howard were measures that had long been demanded by advocates of radical reform but resisted by the Labor Government because of political sensitivities. These included the *Workplace Relations Act 1996*, the partial privatisation of Telstra in 1998 and 1999, waterfront reform in 1998, and, most notably, the Goods and Services Tax, introduced in 1999.

Moreover, many reforms introduced by the Hawke–Keating Government did not begin to take effect until after the MFP surge. The most notable of these is National Competition Policy. Most states did not even complete their legislative reviews or set up their general regulatory bodies until the late 1990s, and the National Competition Policy process, with associated payments to the states, was not completed until 2005, when it was succeeded by the National Reform Agenda.

The timing issue becomes more acute when we consider that the measured productivity surge did not begin until a decade after the float of the dollar. In fact, the years in which ‘even the parrot in the pet shop’ was talking about microeconomic reform were characterised by the lowest productivity growth of the entire period for which data are available. So, the golden age story requires a long-delayed impact for the reforms of the early 1980s, combined with instant (indeed, in some cases, retrospective) impacts for those of the late 1990s.

Even if the ‘lost golden age’ story is accepted, the whole rationale of microeconomic reform is called into question. Far from generating sustained growth, the ‘lost golden age’ story suggests that the decade or more of microeconomic reform that began with the floating of the dollar in 1983, produced only five years of above-average productivity growth before requiring a renewed burst of reform merely to sustain past gains.

## Conclusions

The correlation between demand for higher productivity and increases in work intensity is so evident to most Australians as to be taken for granted. This may be illustrated by the response to a recent speech by the Secretary of the Treasury (Parkinson 2011) calling for a renewed emphasis on productivity. Although the speech said nothing about work intensity, two separate news organisations ran it under the headline ‘Australians must work harder’.<sup>2</sup>

Moreover, the implicit assumption made by the subeditors in question proved correct. Within a few weeks of the delivery of this speech, proposals were aired for a revival of the Work Choices package of labour market reforms. Suggestions that a renewed approach to reform might focus on expanding access to education, or improving the regulation of the financial sector have received little attention.

What is striking in the context is the failure of (most) Australian economists and economic commentators to accept the evidence on this point. Unlike virtually everyone else in Australia, economists have resolutely denied that the higher measured labour productivity growth evident

<sup>2</sup> See, for example, ‘Treasury Says Australians Must Work Harder’, 1 July 2011. Available at <<http://abcasiapacificnews.com/stories/201107/3258158.htm?desktop>>.

in the mid 1990s, and the reversal of those measured gains in the 2000s, is largely due to changes in work intensity.

A belief that large increases in annual productivity growth rates can and should be achieved through microeconomic reform is not supported by the data and can lead to bad public policy decisions. Most notably, this belief, when combined with a period of declining measured productivity growth, can lend support to the idea that ‘Australians must work harder’. On the contrary, the evidence from the labour market is that the work intensification of the 1990s was undesired and unsustainable. Genuine improvements in productivity should permit reductions in working hours and work effort, rather than demanding more and harder work.

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## 4. General Discussion

In line with the themes of the conference papers, the key issues of policy, productivity and China emerged during the discussion in the final session.

The discussion began by looking at the impact of fiscal policy on economic activity. One participant highlighted that a distinction needs to be made between temporary and permanent fiscal stimulus when talking about fiscal multipliers. It was mentioned that the intertemporal aspect of fiscal policy is something that many Keynesian models do not capture, which can bias estimates of the fiscal multiplier. The participant thought that a credible announcement of fiscal consolidation to be phased in over a period of time, as opposed to a sudden cutback in fiscal spending, can actually be stimulatory in the near term, and that this was what was needed in the current economic situation in Europe. The formation of the European Union in the mid 1990s was cited as an example where a number of countries announced a credible fiscal consolidation, in line with the Maastricht Treaty, without causing a recession.

Another participant thought that the lack of a clear fiscal policy framework, which contrasts with monetary policy, makes it difficult for the public to assess issues of credibility and the objectives of governments. It was said that a clearer framework would also make more explicit the question of what fiscal policy should do to maximise household welfare. There was also further discussion about the sustainability of government debt. Participants thought that the comparison between the post-WWII experience of high government debt that was sustainable and the situation today was largely irrelevant since the earlier period involved financial repression and had strong growth prospects due to growing population and the repair of the capital stock.

Productivity was again a focus of the discussion. One participant commented that based on past experience it was dangerous to try to explain away the weakness in productivity in Australia due to measurement issues. They highlighted that during the 1950s, 1960s and early 1970s, Australia also experienced weak productivity growth, but this was overshadowed by strong population growth and the increasing terms of trade. When those two forces faded, however, Australia experienced both high inflation and high unemployment by the early 1990s. Neglecting productivity now, in their view, could lead to poor economic outcomes in the future, particularly if the mining boom starts to wane. They also questioned why, if it was the case that productivity was significantly mismeasured, there were not more concerns about the measurement of the inputs to calculating productivity – output and hours worked – when these are also key economic variables for policy-makers.

This question of how widespread was the slowdown in productivity was again raised, along with the implications for unemployment and inflation. If the productivity slowdown was broad-based across sectors, one participant thought that significant wage increases would be unlikely, which would contribute to lower inflationary pressure but higher unemployment. If, on the other hand, productivity weakness was more isolated to the mining and utilities sectors, then it would be possible to see higher wage pressures in the economy and therefore higher inflation but lower unemployment. Another participant suggested that given the limited pricing power of firms, weak productivity performance was more likely to result in higher unemployment than higher inflation. It was also suggested that in the short to medium term, given the deleveraging behaviour of governments and households in the current environment, it was likely that unemployment would increase.

In his presentation, John Quiggin noted that technological change could be considered largely exogenous to Australia. On this point, another participant clarified that this was due to Australia being a small open economy, assumed to have no impact on the rest of the world, but that the capacity for the economy to adopt technological change can be influenced, for example, by improving research institutions. Another participant highlighted that since the major policy reforms at the federal level have now taken place, such as floating the Australian dollar and the introduction of inflation targeting, the focus now needs to be on the state governments. It was also thought that smaller policies that induce step or level changes in productivity should not be discounted and are worth pursuing even if they do not necessarily impact the long-run growth rate of productivity.

The rapid re-emergence of China was again a primary topic of discussion. One participant reiterated that the biggest story of the 2000s was China and that this was likely to remain true in the coming decade. They characterised the past decade as one in which the world experienced a profound demand shock, driven by China in particular, increasing the terms of trade and so benefiting Australia. It was then suggested that the coming decade might instead be characterised by a large positive global supply shock, as investment comes on line and commodity production around the world increases. Such a scenario was thought to have the potential to lower the terms of trade, with follow-on impacts to the rest of the economy, including the federal budget. Another participant agreed that the supply story would be important in the next decade but stressed that further large increases in demand are still to come, particularly from India. While it was recognised that India's development will not follow exactly the same path as China, there were said to be signs

that India's manufacturing sector was expanding, with implications for the demand for Australian resources. Indonesia was also mentioned as another country with a very large population that is starting to look more outside its borders.

Another participant emphasised that China is a very dynamic economy and that there were already signs of change towards a new growth model. They thought that an important factor going forward would be the ability of the Australian economy to adapt and ride the new wave of growth in China, which in part will be related to how the gains from the mining boom are spent (e.g. improving research & development and human capital). Another participant presented the view that while it was sensible to be risk averse regarding the future, the China story is hardly finished. For example, it was stated that the overall capital stock installed in China was still quite low. The participant also highlighted that while around 200–250 million people in China are now comparatively affluent by IMF or World Bank standards (which was said to be an income of around US\$8 000–14 000 a year) this was not comparatively affluent by advanced economy standards (the substantial inequality in China, however, was also recognised). Cultural aspects to China's development were also mentioned, such as the liberalisation of human aspiration. This human aspiration story was said to be made stronger by the fact that more than one billion people in China have seen the improvement in living standards in the rest of the population and desire to do the same. A participant also emphasised that the current commodity boom is of an order of magnitude larger than ever seen in the past. It was stated that in the next 20 years, China will consume the same amount of copper as has been used over the entire history of copper as an industrial metal. The implications of rapid urbanisation for materials intensity in China were also mentioned. It was thought that in terms of country size, the United States' development, as opposed to Japan, was the most comparable example from history but that urbanisation today (as opposed to in the 1950s) is far more resource intensive. Also, the premium on arable land, leading to cities expanding vertically rather than horizontally, meant that the urbanisation of China was far more materials intensive.

Finally, another issue raised by participants during the final discussion was the need for more modelling work to be able to empirically test hypotheses of interest and investigate causality.





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## Chris Richardson

Chris Richardson is Head of Macroeconomics at Deloitte Access Economics. Prior to taking up that position in early 2011, he was a Director of Access Economics where he has worked since it was established in 1988. He has also previously served at the Australian Treasury and the International Monetary Fund. He is an economic modeller and forecaster, with a particular interest in fiscal policy and demographics. Mr Richardson is also the author of the *Business Review Weekly's* Fundamentals column. He holds a Bachelor of Economics (Hons) with the University Medal from the University of Sydney, and a Master of Economics from the Australian National University.

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Judith Sloan was appointed as a Non-executive Director of Westfield Holdings Limited in February 2008. She is Honorary Professorial Fellow at the Melbourne Institute of Applied Economic

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Mark Thirlwell is Program Director, International Economy at the Lowy Institute for International Policy. Before joining the Lowy Institute, Mr Thirlwell was Senior Economist at the Australian Export Finance and Insurance Corporation from 1999 to 2003, where he worked on country risk issues with a particular emphasis on east Asia. Prior to that he was a Vice President in the Economic Research Department at JP Morgan, with responsibility for central and eastern Europe. Mr Thirlwell began his career as an Economist in the Bank of England's international division, where he focused on emerging market issues. He also spent some time in the Bank's UK structural economic analysis division. Mr Thirlwell is a graduate of Cambridge University and has an MPhil in Economics from Oxford. He has a postgraduate qualification in Applied Finance from Macquarie University.

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## Judith Yates

Judith Yates is currently an Honorary Associate in Economics at the University of Sydney, following a career of more than 30 years in academia. Her research has been in the fields of housing economics, finance and policy and, in the past few years, has focused on housing affordability, the supply of low-rent housing, intergenerational sustainability of the housing system and housing taxation. She has served on numerous government advisory committees and on a number of boards and is currently a member of the Government's National Housing Supply Council and on the board of the not-for-profit National Housing Company. She holds a Bachelor of Economics from the Australian National University and a PhD in Economics from the University of Amsterdam.

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