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Susan Black, Joshua Kirkwood, Alan Rai and Thomas Williams

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Author: williamst at domain rba.gov.au

Media Office: rbainfo@rba.gov.au

Abstract

This paper examines the development of Australian corporate bond issuance since the early 20th century, based on a new unit-record dataset that we have compiled. Issuance trends have changed significantly over the past century as bond markets have become more diverse, sophisticated and globally integrated.

A number of changes over the past century are discussed: (i) today, issuance is largely by private entities whereas it was dominated by government-owned corporations historically; (ii) the issuer base has shifted from being mostly non-financial corporations towards banks; (iii) a wide range of entities are now able to tap the bond market; (iv) Australian corporations now raise a large share of funds offshore; and (v) the investor base has shifted away from direct holdings by households towards indirect holdings through superannuation/managed funds and holdings by non-residents.

These developments have largely been due to: the evolution of the structure of the Australian economy; privatisations; and changes in the regulatory landscape, particularly the deregulation of the banking system in the 1980s, and the floating of the exchange rate and abolition of capital controls in 1983.

JEL Classification Numbers: N27, N47
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1. Introduction

The bond market is a significant source of funds for many Australian financial and non-financial corporations. Correspondingly, this financing activity provides investment opportunities for both Australians and non-residents.

This paper examines the development of the Australian corporate bond market over the past century; it discusses how the bond market has changed and what has driven these changes. To do so, we have compiled a new unit-record dataset for bonds that covers onshore and offshore bond issuance by Australian entities from the early 1900s.

Since the early 20th century, the stock of bonds issued by Australian corporations has grown at an average annual rate of 4 per cent (adjusted for inflation). At around $825 billion, the current face value of the stock of bonds outstanding is around two-thirds of the market capitalisation of ASX-listed equities and equivalent to 62 per cent of gross domestic product (GDP) (Figure 1). [1]

Trends in the growth, size and composition of the bond market over the past century can be broadly grouped into three periods:

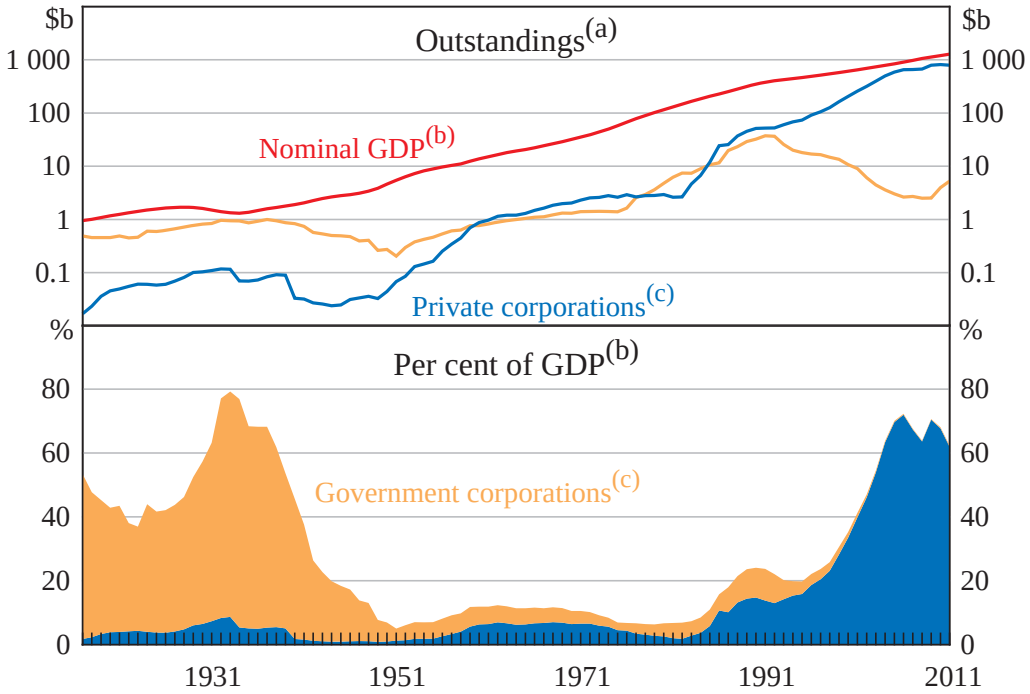
1. Up to about 1950 – a period when the bond market was relatively large and mostly comprised of publicly owned issuers.

2. From 1950 to the mid 1980s – a time of transition from publicly owned issuers to private issuers. The bond market was relatively small and the financial sector was heavily regulated over this period.

1 The denominator in this ratio is a five-year rolling average of GDP, which helps to smooth out the volatility of GDP and takes into account the extent to which the relationship between the stock of bonds outstanding and economic cycles is moderated because bonds have maturities of a number of years. The average tenor of newly issued bonds has shortened from around 12 years pre-1950 to around 5 years more recently.

3. From the late 1980s to today – a period of strong growth in the bond market and considerable private issuance.

Figure 1: Australian Corporate Bond Market



Notes: (a) Log scale

(b) Five-year rolling average for GDP

(c) Data on bonds issued offshore are not available prior to 1983

Sources: Australian Associated Stock Exchanges; Australian Bureau of Statistics; Butlin (1977); Melbourne Stock Exchange; RBA; Sydney Stock Exchange

Prior to the 1980s, government-owned corporations were the largest issuers of bonds in the Australian corporate bond market. Among these, the largest issuers were non-financial public trading enterprises (PTEs) and, to a lesser extent, government-owned banks. In contrast, the private corporate bond market did not see much growth until the 1950s and remained relatively undeveloped until the 1980s. Since the early 1980s there has been strong growth in the private corporate bond market, with banks the largest issuers of bonds today. Entities from a broad range of industries and with a wide range of credit ratings are now able to access the bond market. In addition, Australian corporations now raise a significant amount of funding in bond markets offshore.

Changes in the regulatory landscape, such as the regulation of the banking system during the 1950s and 1960s and deregulation of the financial system and capital account liberalisation during the 1970s and 1980s, were important drivers of these shifts in the corporate bond market. Increased privatisation activity, particularly in the 1990s and early 2000s, also played a role.

Macroeconomic events and regulatory developments have also influenced changes in the investor base. Following the introduction of compulsory superannuation, households' direct holdings of bonds declined substantially as they shifted toward holding their financial assets through superannuation funds. Foreign investors have become more prominent since Australia's capital account was liberalised. Direct holdings by households now make up only a small share of the investor base, in contrast to their dominance prior to the 1980s, and foreign investors have the largest share.

The pricing of corporate bonds is influenced by the economic cycle, reflecting changes in risk appetite and uncertainty. Bond spreads are generally higher and more dispersed during periods of economic and financial turmoil. While spreads have, on average, been higher for bonds with a lower credit rating, the significant variation in the prices of bonds with the same credit rating suggests that other factors, such as the degree of market liquidity, also play a role.

The rest of the paper is structured as follows. Section 2 introduces the long-run corporate bond dataset and discusses the changes in the structure of the market. Section 3 examines developments in the bond market up to about 1950, when the market was relatively large and comprised mostly of publicly owned issuers. Section 4 details the period of transition from publicly owned issuers to private issuers, between 1950 and 1980, including the introduction of banking regulations following World War II (WWII). Section 5 discusses how deregulation and liberalisation in the 1980s have contributed to strong growth and internationalisation of the bond market, as well as changes to the issuer and investor bases. Section 6 analyses the pricing of corporate bonds and some of the risk factors that influence bond spreads, while Section 7 concludes.

2. Description of Long-run Bond Data and Structure of the Market

The analysis in this paper draws on a new long-run unit-record dataset that has been compiled for bond issuance by Australian corporations. It covers bond issuance onshore since 1917 and includes offshore issuance since 1983.[2] Prior to the floating of the Australian dollar and capital controls being lifted in 1983, most capital inflows were equity rather than debt; debt inflows were typically bank lending or direct loans from parent corporations rather than bond issuance.

Bonds are defined as debt securities with a maturity at issue of at least 12 months. This includes debentures (which are typically secured using a fixed or floating charge over a company's assets), asset-backed bonds and unsecured bonds. Private placements are included where the information is available, while hybrids are excluded. The bonds are recorded at their face value; foreign currency bonds are valued at the Australian dollar equivalent face value, including the costs of swapping foreign currency to Australian dollars at the time of issuance. As unit-record data were unavailable between 1983 and 1993, aggregate data on bond issuance has been substituted instead.

In most cases, the detail available for each bond include: the issuer name, amount raised, tenor, price at issuance (face value), the coupon rate, whether fixed or floating, and the market of issuance.

The Australian corporate bond market is divided into three categories for the purposes of this paper:

- Bonds issued by Australian financial institutions, which includes banks (private and government-owned) and non-bank financials.

- Bonds issued by Australian non-financial corporations (as well as private corporations, this includes PTEs).

2 While our corporate bond data for the period prior to 1983 only includes bonds issued domestically, Australian corporates are likely to have issued offshore prior to 1983. As far as we are aware there is no complete record of these issues.

- Asset-backed securities (ABS) issued by Australian-domiciled special purpose vehicles (SPVs), which include private and government-owned entities.

Australian dollar-denominated issuance by non-resident entities (onshore and offshore) is discussed below. These issuers are natural swap counterparties for Australian resident issuers of foreign currency-denominated bonds who wish to use the funds domestically.

Bonds issued by PTEs and government-owned banks and SPVs are included as corporate bonds because these entities were commercially operated and financed the bulk of their operations from internal revenue sources and debt raisings. As these issuers have since been privatised, their inclusion throughout the sample period ensures a consistent sample over time. Examples of these entities are the Commonwealth Bank, the State Government banks (NSW, WA and SA), Telstra, Qantas, and a number of electricity and gas utility corporations. Bonds issued by publicly owned corporations have typically been government-guaranteed.

The data have been compiled from a number of sources. Prior to the 1980s, corporate bonds were mostly listed on a stock exchange. Bond issues were typically marketed to investors (including households) and underwritten by brokers.

In the early 20th century, of the six state capital city exchanges, most bonds were listed on the Melbourne and Sydney exchanges. It was uncommon for bonds to be dual listed in the early 20th century; the extent of dual listing increased through time. The lack of integration early on reflected the fact that the state stock exchanges served different issuers (for example, mining corporations typically issued bonds on the Melbourne exchange), and high listing costs generally deterred issuers from dual listings. In 1937, the Australian Associated Stock Exchanges (AASE) was established, with representatives from each of the state capital exchanges. The AASE was the precursor to the Australian Stock Exchange (ASX). It established uniform listing rules, broker rules, and commission rates during the

1950s and 1960s.[3] A decline in listing fees and the convergence towards uniform listing rules made it more attractive for issuers to list their securities on multiple exchanges (Adamson 1984). In addition, in 1972 a policy of 'national listing' was implemented, under which an application for the listing of a company's securities was made to all six stock exchanges.

The tendency for issuers to list bonds on stock exchanges started to decline from the 1950s – though listing remained prevalent at this time – alongside the growing importance of institutional investors relative to retail investors (discussed in Section 5.2). The trend towards issuing and trading corporate bonds in the over-the-counter (OTC) market accelerated during the 1980s. Today, more than 95 per cent of corporate bonds are launched through a book-build process that is almost always restricted to wholesale investors, and subsequent trading is done OTC. The retail bond market – that is, bonds marketed directly to households – accounts for less than 5 per cent of the stock of corporate bonds issued domestically. Around one-third of these (by number) are listed on the ASX, while the remainder are unlisted.

Bond issuance data prior to the early 1980s was sourced from the following publications: *The Stock Exchange of Melbourne Official Record*; *Sydney Stock Exchange Official Gazette*; and the *Australian Stock Exchange Journal*. Reflecting the trend away from exchange listing, from the 1980s onwards our data series has drawn on the following publications: Reserve Bank of Australia *Bulletin Supplement: Company Finance*; Australian Bureau of Statistics 'Financial Accounts'; and the Bank's internal unit-record bond database, which has been compiled from a range of sources including commercial data providers and market liaison.

Our dataset utilises all available historical data but there are some coverage issues to be aware of. First, offshore issuance prior to 1983 is not captured, meaning we are unable to generate an estimate of the size of the offshore bond market over this period. Second, bonds issued OTC prior to the early 1980s are not captured,

3 The ASX was formed in 1987 by legislation that enabled the amalgamation of the six state-based exchanges. In 2006, the Australian Stock Exchange merged with the Sydney Futures Exchange (SFE) to become the Australian Securities Exchange (also known as the ASX). In 2010, ASX Group became the overarching name, replacing Australian Securities Exchange, which remains the name of the listings and trading arm of the ASX Group.

meaning our estimate of total issuance between the 1950s and early 1980s is probably understated.

3. Up to 1950: Largely Publicly Owned Issuers

During the first half of the 20th century, private investment was largely financed through internal funds and, to a lesser extent, equity issuance (Merrett and Ville 2009). The modest private bond issuance that did occur was mostly to fund mining investment; corporations that later went on to become BHP were the main issuers. In contrast, there was significant bond issuance by PTEs and the corporate bond market grew to be relatively large.

The bulk of the issuance by government-owned corporations took place in the 1920s. The proceeds were used mostly to fund public works programs, with state and Australian governments initiating a range of projects following the end of World War I. Half of the bond issuance was by Victorian water and sanitation boards (Melbourne and Metropolitan Board of Works and the Geelong Waterworks and Sewerage Trust).[4] During the 1920s, investment by PTEs rose from 2½ per cent to 7 per cent of GDP.

Sizeable bond issuance saw the stock of corporate bonds outstanding rise to a peak of around $1 billion in 1932. The stock of corporate bonds relative to nominal GDP peaked at around 80 per cent in 1933, largely because of the decline in GDP during the Great Depression (of around 30 per cent between 1929 and 1932) (Figure 2). This accounted for just under half of the increase in the ratio of the stock of bonds outstanding to GDP over this three-year period.

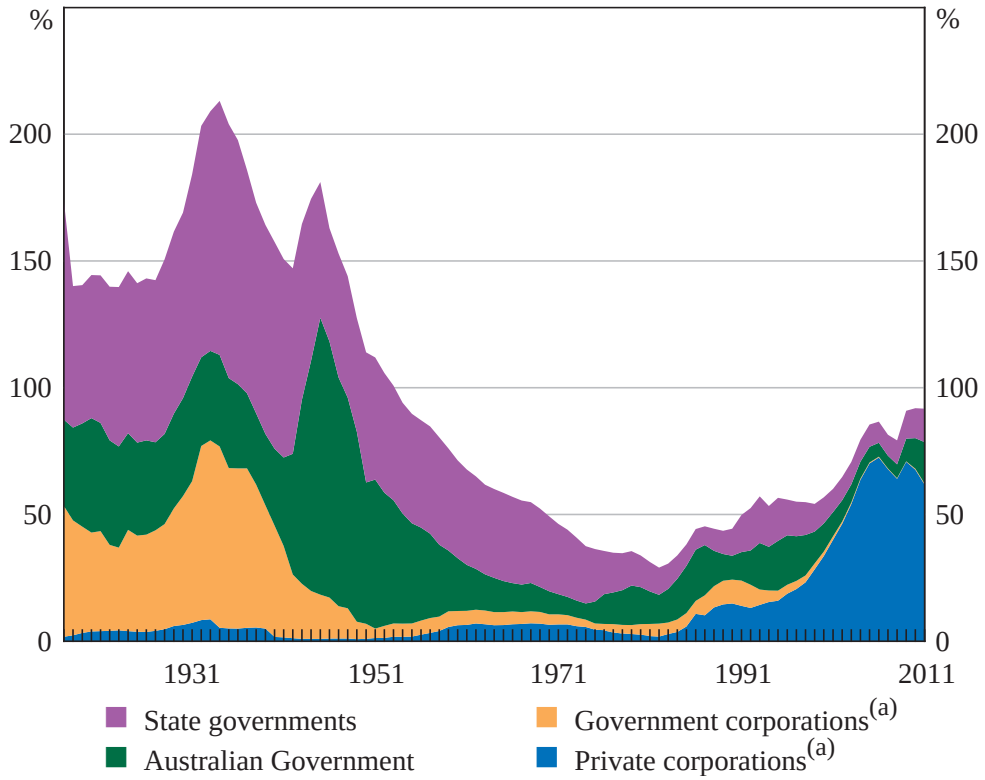
Over the 1930s and 1940s, the stock of corporate bonds outstanding declined. There was limited bond issuance as governments reallocated resources to finance war-related expenditure and corporations reduced their leverage amid significant uncertainty about the economic and political outlook. The imposition of war-time controls on the banking system also contributed to a lack of bond issuance by banks.

4 Sizeable public works projects undertaken in Sydney during this period – including the building of the Sydney Harbour Bridge and Sydney's underground railway system – were mostly funded directly by governments.

In contrast, there was strong bond issuance by the Australian Government during WWII. Government bond issuance was mostly domestically sourced through 'war bonds' that were marketed patriotically to the general population. Households drew down bank deposits, sold shares and took out bank loans to buy war bonds. Households became comfortable buying bonds on the stock exchanges, a legacy that continued over the next few decades as households remained the main investors in corporate bonds. By the end of WWII, the corporate bond market had shrunk to around 18 per cent of GDP.

Figure 2: Australian Bond Market

Per cent of GDP



Notes: Bonds issued onshore and offshore; five-year rolling average for GDP

(a) Data on bonds issued offshore are not available prior to 1983

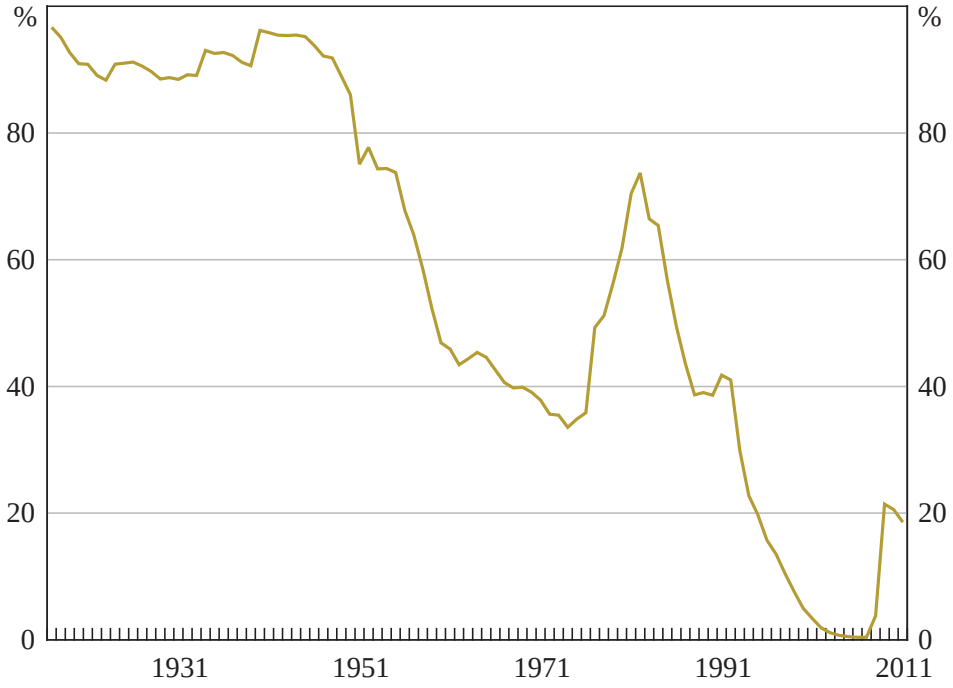
Sources: Australian Associated Stock Exchanges; Australian Bureau of Statistics; Butlin (1977); Foster (1996); Melbourne Stock Exchange; RBA; Sydney Stock Exchange

4. 1950 to 1980: Regulation and Transition Towards Private Issuers

In line with strong economic growth during the 1950s and 1960s, the stock of corporate bonds outstanding increased at a rapid average annual growth rate of 12 per cent. However, this was from a low base and the corporate bond market remained relatively small at less than 10 per cent of GDP. At the same time, the corporate bond market began to shift towards a larger share of private issuance. The share of corporate bonds outstanding that were issued by publicly owned entities fell from over 80 per cent to around 40 per cent over this period (Figure 3).

Figure 3: Corporate Bonds Guaranteed by Australian Governments

As share of bonds issued by all Australian corporations



Notes: Guaranteed by Australian or state governments; bonds issued onshore and offshore, data on bonds issued offshore are not available prior to 1983

Sources: Australian Associated Stock Exchanges; Melbourne Stock Exchange; RBA; Sydney Stock Exchange

The shift toward private bond issuance largely reflected two factors:

- The need to fund an increase in private investment, in particular mining investment. Private investment rose from 10 per cent of GDP to 17 per cent of GDP over the 1950s and 1960s. This was in an environment of strong domestic

and international economic growth, with ongoing industrialisation and urbanisation in Australia and its major trading partners (particularly Japan).

- Corporations seeking to increase gearing from pre-war levels. For much of this period, banks' ability to lend to corporations was constrained by banking regulations, which originated from the imposition of war-time controls.[5] As a result, an increasing proportion of corporate investment was financed through the issuance of bonds, as well as intermediated through non-bank financial institutions (NBFIs).[6] NBFIs' share of total financial institutions' assets had increased from 10 per cent prior to introduction of the war-time banking controls to around 36 per cent by the end of the period of banking controls. NBFIs' share of the bond issuer base also increased from 2 per cent in 1950 to around a quarter in 1960. In contrast, banks accounted for less than 10 per cent of the issuer base prior to the 1980s, and only 3 per cent during the period of regulation.

The share of public issuance increased sharply from 35 per cent in 1974 to 75 per cent in 1982, although the trend towards private issuance re-emerged soon after. Higher inflation and less favourable macroeconomic conditions in the 1970s made fixed-coupon corporate debt securities a less attractive investment option and private corporations consequently scaled back issuance during this period. This coincided with an increase in issuance by PTEs, particularly those owned by state and local governments, to fund investment in public infrastructure. The increase in borrowing by state and local government authorities was due in part to the relaxation of Australian Loan Council restrictions by the Australian Government during this period (Grewal 2000).[7] These developments, along with strong issuance by the newly created Telecom Australia (now privatised and known as Telstra), led to the increase in the share of the stock of bonds outstanding accounted for by government corporations.

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5 The controls included limits on interest rates for bank lending and borrowing and on terms to maturity of different types of deposits and loans. There were also quantitative and qualitative controls on bank loans in aggregate and to particular types of borrowers.

6 Several NBFIs were also owned by foreign banks seeking a financial presence in Australia, but were precluded from establishing a formal banking operation by the effective moratorium on new foreign banking authorities prior to 1985 (Edey and Gray 1996).

7 The Australian Loan Council is a body that coordinates the borrowing arrangements of the Australian and State and Territory governments.

5. 1980s to Today: Deregulation and Capital Account Liberalisation

The stock of corporate bonds outstanding has increased significantly over the past 30 years, with the market now equivalent to around 62 per cent of GDP. At the same time, there has been an increase in the diversity of issuers (especially by credit rating), a sectoral shift in the issuer base from non-financial corporations to banks, and increased utilisation of offshore bond markets. The deregulation of the banking system in the 1980s and the floating of the exchange rate and abolition of capital controls in 1983 contributed to these changes. The removal of capital controls and the introduction of compulsory superannuation have also driven changes in the composition of the investor base, with holdings by non-residents and institutional investors largely replacing direct holdings by households.

5.1 Changes in the Issuer Base

5.1.1 Shifts in issuer concentration

As mentioned above, the Australian bond market has become more diverse over the past century and a wider range of private corporations are now able to tap both onshore and offshore bond markets. A measure of this broadening is the proportion of issuance accounted for by the twenty largest issuers. Prior to the 1950s, the twenty largest issuers accounted for over 90 per cent of issuance (Figure 4). This share declined over subsequent decades and reached a low of 24 per cent in the 1990s. However, the trend reversed in the 2000s as banks reduced their relative use of deposit funding and accelerated during the global financial crisis as banks utilised the Australian Government Guarantee Scheme in place between October 2008 and March 2010.[8] The four major banks have accounted for around 60 per cent of total issuance since mid 2007. Non-financial corporations also found it more difficult to issue during the crisis due to the end of credit-wrapped issuance.[9] After initially turning to banks for funding, these entities then chose to reduce their debt levels, with debt-to-equity ratios for listed non-financial

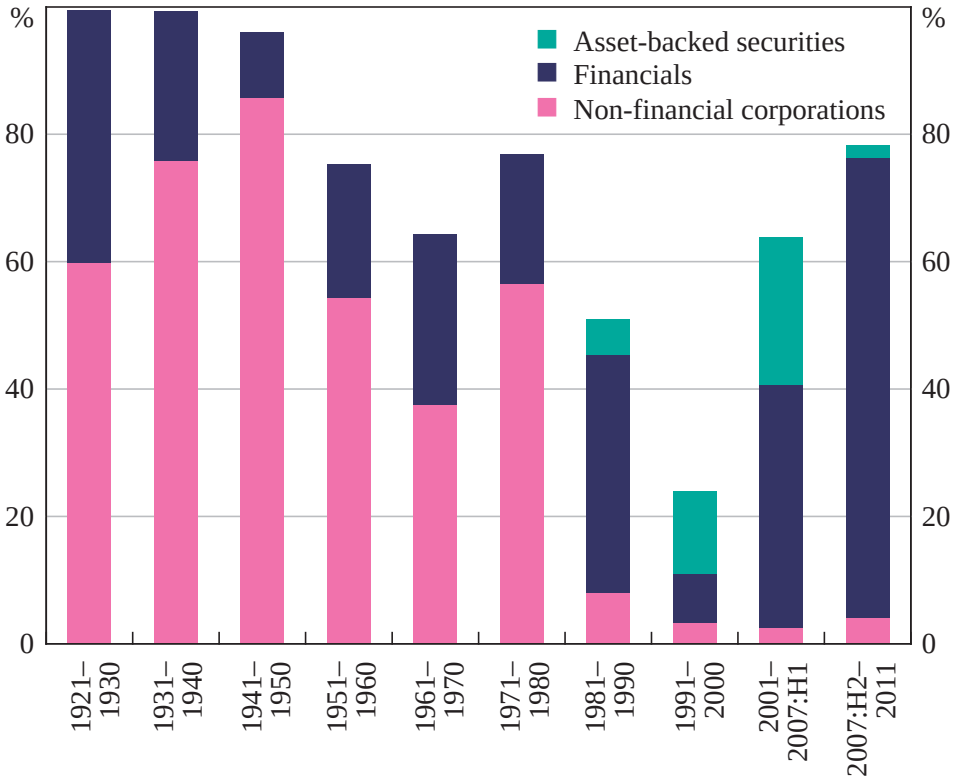
8 For more information on the Australian Government Guarantee Scheme see Schwartz (2010).

9 Prior to the global financial crisis, many of these companies issued bonds that were credit-wrapped by monoline insurers to boost their rating, usually to AAA, in the domestic market; this practice has largely been discontinued as most of these insurers have been downgraded significantly in recent years.

corporations declining from over 80 per cent in 2008 to around 50 per cent currently.

Figure 4: Top 20 Issuers in the Australian Corporate Bond Market

Proportion of onshore and offshore issuance, averages



Note: Data on bonds issued offshore are not available prior to 1983

Sources: Australian Associated Stock Exchanges; Australian Bureau of Statistics; Melbourne Stock Exchange; RBA; Sydney Stock Exchange

While concentration among large issuers has not changed a great deal over recent decades, there has been an increase in the diversity of credit risk of Australian corporate issuers over this period (Table 1). In the 1980s, the market was mostly rated AAA or AA. As it has developed over time, it has become more diverse as corporations rated A and BBB have also been able to issue bonds. The share of junk bonds (i.e. bonds rated BBB- and below) issued by Australian corporations is very small, although there have been a few issues in the US market. In fact, part of the increasing diversity of issuers by ratings reflects the internationalisation of our

market, with lower-rated issuers typically issuing in the US private placement market.[10]

Table 1: Australian Corporate Bond Issuance
Percentage of total issuance by rating

Period	AAA	AA	A	BBB
1983–1989[(a)]	32	57	11	0
1990–1992	22	70	8	0
1993–2007:H1	28	46	22	3
2007:H2–2011	30	45	19	7

Notes: Bonds issued onshore and offshore by Australian corporations over selected periods
(a) Sample commences from 1983 when Standard & Poor's commenced rating Australian entities
Source: RBA

5.1.2 Increased issuance from financial corporations

The strong growth in the bond market since the 1980s, and the shift towards private issuance, was largely driven by a significant increase in bank bond issuance.

Historically, Australian banks largely used deposits as a source of funds. However, this declined markedly during the 1980s as banks broadened their funding sources to include capital market funding; the deposit share of total liabilities fell from around 80 per cent in 1980 to 55 per cent in 1989 (Figure 5).

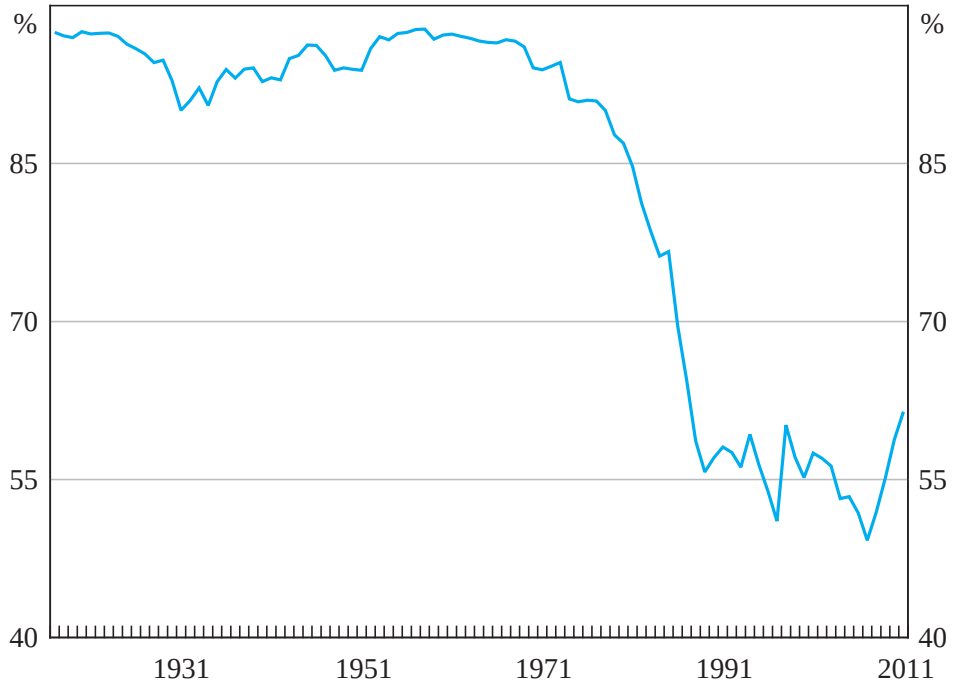
This shift in behaviour was driven by deregulation and liberalisation. Financial deregulation began slowly in the 1970s before accelerating sharply in the early 1980s in response to the Campbell report (Australian Financial System Inquiry 1981).[11] In particular, controls on interest rates that banks could pay and charge customers were removed, causing banks to shift from asset management to liability management (Battellino and McMillan 1989). This enabled banks to

10 The US private placement market consists of bonds sold to a small group of institutional investors (mainly pension funds and insurance companies). Disclosure requirements are generally less stringent for this type of issuance and credit ratings are less important than in public markets, due to the expertise of the investor base.

11 Changes included: the introduction of a tender system for selling Treasury bonds; removal of controls on the interest rates that banks could pay and charge; the floating of the Australian dollar and removal of capital controls; and the entry of foreign banks.

compete more effectively with NBFIs, which had benefited from the high regulation of banks, and banks expanded their balance sheets significantly. As a result, NBFI's share of the issuer base fell from 27 per cent to 13 per cent over this period, consistent with the decline in NBFI's share of financial system assets.

Figure 5: Banks' Deposits
Share of total liabilities

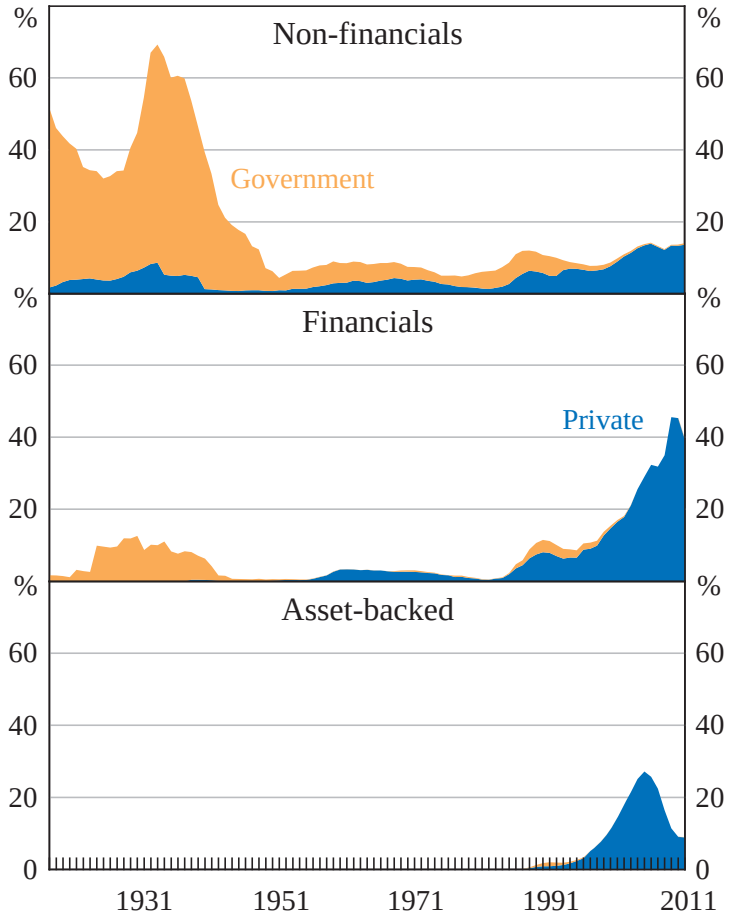


Sources: Australian Bureau of Statistics; Butlin, Hall and White (1971); Foster (1996); RBA

Over this period, banks increasingly tapped bond markets – both onshore and offshore – to help fund growth in their assets. During the 1980s, banks' share of total bond issuance was around half and increased to around three-quarters in more recent years. The stock of financials' bonds outstanding increased from less than 5 per cent relative to GDP prior to the 1980s, to over 40 per cent currently (Figure 6).

Figure 6: Bonds Issued by Australian Corporations

Per cent of GDP



Note: Five-year rolling average for GDP

Sources: Australian Associated Stock Exchanges; Australian Bureau of Statistics; Butlin (1977); Foster (1996); Melbourne Stock Exchange; RBA; Sydney Stock Exchange

Another regulatory change that has influenced the pattern of bond issuance is the abolition of capital controls. Prior to the 1980s, capital flows into Australia were predominantly equity investment and almost all debt flows were of a direct nature (for example, between an overseas parent company and its domestic subsidiary) (Tease 1990). There were a range of constraints on capital flows that were intended to prevent or discourage firms from undertaking foreign borrowing. These included:

- During the period from the 1950s to the 1970s, permission from the Reserve Bank was required before borrowing from overseas.

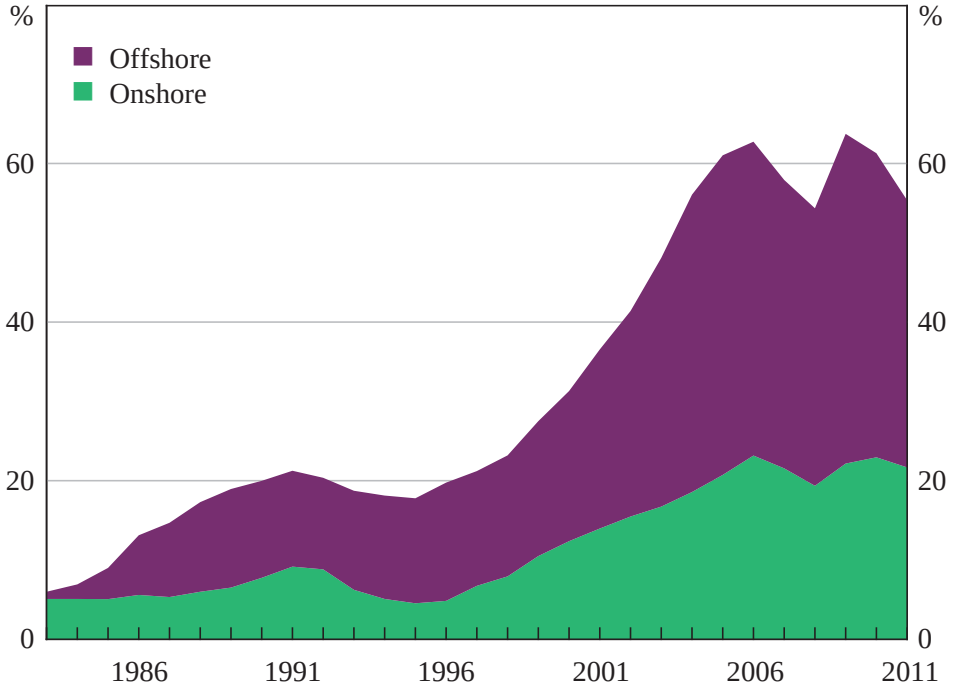
- An embargo on short-term borrowing that was periodically introduced in the 1970s.

- A variable deposit requirement which increased the cost of borrowing in the 1970s.

Since the general capital account deregulation during the 1980s, banks and other corporations have obtained a significant proportion of funding from offshore bond markets. Since 1986, the stock of bonds issued offshore by Australian residents has exceeded the size of the onshore market; at the end of 2011, the stock of bonds issued offshore represented 34 per cent of GDP, compared to 22 per cent for onshore issuance (Figure 7).

Figure 7: Australian Corporate Bond Market

Bonds outstanding as a per cent of GDP

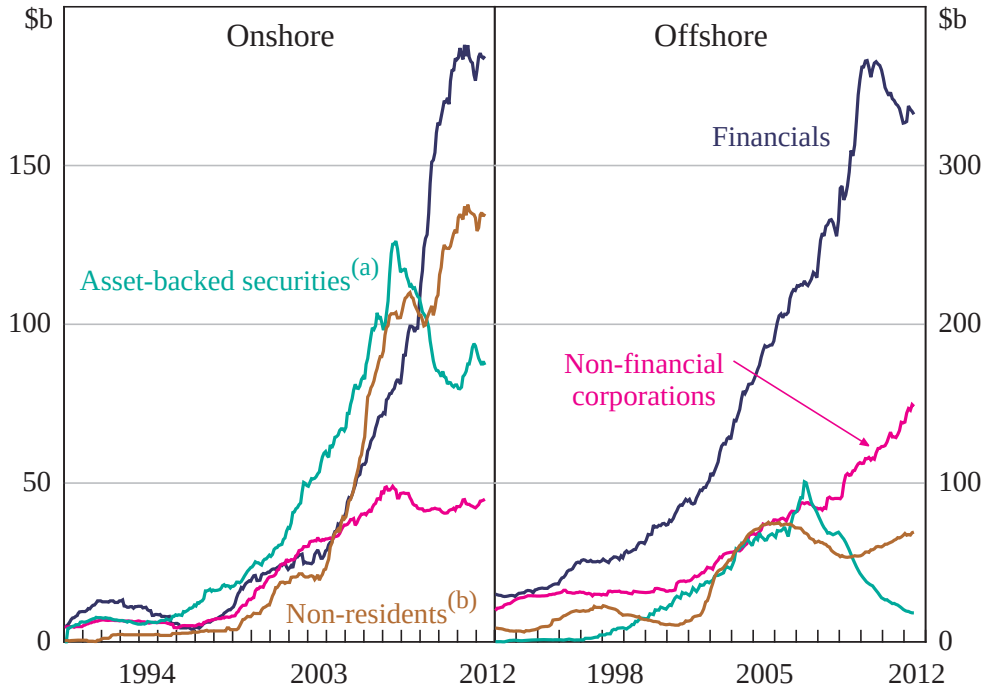


Sources: Australian Bureau of Statistics; RBA

The liberalisation of the capital account and the floating of the Australian dollar also contributed to the development of the non-resident Australian dollar bond market. Since the mid 1980s, and increasingly since the late 1990s, non-residents have issued significant amounts of Australian dollar-denominated bonds, both onshore (Kangaroo bonds) and offshore (Australian dollar Eurobonds) (Figure 8).

Kangaroo bonds represented less than 2 per cent of the onshore non-government bond market in the early 1990s, but this share has risen sharply over the past decade to around 30 per cent as at end 2011.[12] The strong growth in the Kangaroo bond market over the past decade has reflected a desire by Australian investors to diversify their exposure as well as cross-border portfolio investment by foreign investors (Ryan 2007).

Figure 8: Non-government Bonds Outstanding



Notes: (a) Onshore asset-backed securities exclude authorised deposit-taking institutions' self-securitisations

(b) Australian dollar-denominated bonds only

Sources: Australian Bureau of Statistics; RBA

Kangaroo bond issuance was also encouraged by, and further contributed to, the development of an active cross-currency interest rate swap market in Australia. Non-residents tend to swap Australian dollar funding into foreign currency, and as such are natural swap counterparties for Australian resident issuers of foreign currency bonds who require Australian dollars. During the 1980s, offshore bond issuance by Australian residents was mostly denominated in Australian dollars (Australian dollar Eurobonds). The tendency to issue bonds offshore denominated in foreign currency has increased since that time, alongside the development of

12 Here, the non-government bond market is defined as the sum of the Australian corporate bond market and the Kangaroo bond market.

liquid cross-currency interest rate swap markets in which issuers can hedge their foreign currency risk. Today, almost all bonds issued offshore by Australian residents are denominated in foreign currency (mostly US dollars and euros). Australian banks account for the bulk of this bond issuance and hedge virtually all of this debt through derivatives. By swapping the foreign currency cash flows into Australian dollars, they effectively obtain Australian dollar funding (to match their assets which are mostly denominated in Australian dollars).[13] The banks issue bonds offshore to minimise their funding costs by arbitraging potential differences between the costs of onshore and offshore issuance, diversify funding sources by accessing foreign investors and increase the tenor of their issuance (Black and Munro 2010).

A further change in the type of issuance that has occurred in recent decades has been the strong growth and subsequent easing of the asset-backed securities (ABS) market. ABS issuance picked up sharply in the late 1990s to mid 2000s; the stock of ABS (issued onshore and offshore) increased from 2 per cent of GDP in 1995 to 22 per cent of GDP in mid 2007. In Australia, ABS have predominantly consisted of residential mortgage-backed securities (RMBS). The increase in RMBS issuance was driven by:

- Strong growth in housing finance in Australia.

- Increased competition in the mortgage market, with a growing share of lending done by mortgage originators, who rely exclusively on securitisation for funding.[14]

- Increased securitisation of residential mortgages by traditional mortgage lenders like banks, credit unions and building societies (Bailey, Davies and Dixon Smith 2004).

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13 For more information on foreign currency hedging see D'Arcy, Shah Idil and Davis (2009).

14 Mortgage originators came to prominence in the mid 1990s, in part because the decline in the general level of interest rates reduced the banks' competitive advantage from being able to raise low-cost retail deposits. The high level of mortgage interest rates relative to capital market interest rates meant that mortgage originators were able to remain highly profitable despite funding their lending through the wholesale market.

These factors saw the share of housing loans funded through securitisation increase from less than 10 per cent in the late 1990s to a peak of 27 per cent in mid 2007. However, around the middle of 2007, there was a global reappraisal of the risks associated with investing in structured credit products as credit problems in the US subprime housing market became evident. Despite the continued strong performance of Australian RMBS due to the quality of the underlying assets, and the absence of issues of transparency and complexity, investor appetite declined markedly. Prior to the financial crisis, at least one-third of the investors in Australian RMBS were offshore structured investment vehicles (SIVs). These entities funded themselves with short-dated paper, of less than 365 days, to purchase longer-dated assets such as Australian RMBS. However, during the financial crisis, SIVs had difficulty rolling over funding and were forced to liquidate their assets, leading to over-supply in the secondary RMBS market.

RMBS issuance has subsequently picked up a little, assisted by government support through the Australian Office of Financial Management (AOFM). The AOFM has invested over $15 billion in the RMBS of regional banks and non-bank mortgage originators since 2008, although its share of issuance has declined noticeably in the past year or so. The share of housing loans funded through securitisation is currently around 7 per cent and the stock of bonds issued by securitisation vehicles has declined sharply, from 22 per cent relative to GDP prior to the financial crisis to now be less than 10 per cent.

5.1.3 Declining share of issuance from non-financial corporations

Deregulation and liberalisation of capital flows had two main (offsetting) effects on private non-financial corporate bond issuance. First, corporations were able to access the large offshore bond markets to fund domestic investment, in particular large-scale resource projects during the resources boom in the 1980s and again during the current boom.[15] This has supported issuance volumes for non-financial corporations. Second, increased competition for business lending, including the entry of foreign banks, meant many non-financial corporations found it more attractive to obtain intermediated funding. During the 1950s and 1960s, bonds

15 There was also an increase in equity investment overseas that was financed by foreign borrowing in the 1980s (Tease 1990).

accounted for around 20 per cent of total (intermediated and non-intermediated) debt outstanding; this halved post-deregulation to around 10 per cent.

The stock of non-financial corporate bonds outstanding offshore is now more than double the non-financial stock of bonds outstanding onshore. Non-financial corporations tend to issue offshore as they can issue larger, longer maturity and lower-rated bonds at a cheaper price. In part, this reflects differing domestic and foreign investor appetite for credit risk, as illustrated by Australian investors' low allocation to fixed income compared to elsewhere. While almost all Australian corporations that access bond markets are investment grade (i.e. BBB- and above), most are rated at the lower end of this range at BBB and domestic investors, particularly managed funds with investor mandates, tend to have a preference for higher-rated bonds. Foreign investors also have a strong appetite for exposure to Australian mining corporations. Around half of non-financial corporations' foreign currency debt is hedged using derivatives (D'Arcy *et al* 2009). However, corporations also borrow in foreign currency to match their foreign currency revenue streams (for example, exporters), as this provides a natural hedge.

Overall, the growth in the stock of non-financial corporate bonds outstanding was more moderate over the past three decades than for financials. The ratio of non-financial corporate bonds to GDP averaged just over 5 per cent between 1950 and 1980, but it has increased to around 15 per cent in recent years. Most of this issuance has been by private corporations, due in part to widespread privatisations since 1990, which has also contributed to the trend away from publicly owned issuers. Many PTEs owned by state governments (primarily electricity and water utilities) and the Australian Government (such as Telstra) were privatised during the 1990s, along with state government-owned banks. These privatisations were part of an increased emphasis on commercial viability, operating efficiency and profitability. Privatisation continued during the 2000s, and included sales of additional tranches of Telstra and some city airports (such as Sydney Airport).

5.2 Changes in the Investor Base

The internationalisation of the bond market as well as changes in government policies have caused significant changes in the investor base of corporate bonds during recent decades. The investor base has shifted away from direct holdings by

households towards indirect holdings through superannuation/managed funds and non-resident investors (Table 2).[16] Foreign investors now make up the largest share of the investor base.[17]

Table 2: Investor Purchases of Australian Corporate Bonds
Share of total inflows by investor type over selected periods

	1954–1960	1961–1970	1971–1980	1981–1990	1991–2000	2001–2010
Households	45	27	40	22	–4	–1
Non-financial corporations	3	7	11	4	1	1
Authorised deposit-taking institutions	17	27	20	16	11	15[(c)]
Managed funds[(a)]	34	36	20	21	18	11
Non-residents	–1	11	7	36	75	67
Government[(b)]	2	3	2	2	–1	6

Notes: (a) Largely life insurance offices, superannuation funds, public unit trusts and cash management trusts
(b) Bonds held under repurchase agreement (repo) by the RBA for open market operations, holdings of the Future Fund, and holdings of the Australian Office of Financial Management
(c) Excludes holdings of ABS, in which a related party was involved in loan origination or securitisation (i.e. internal or 'self' securitisations)
Sources: Australian Bureau of Statistics; RBA

5.2.1 Australian households' direct holdings

Historically, households had large direct holdings of bonds, accounting for between one-quarter and one-half of the investor base until around the 1980s. War bonds had helped to familiarise households with bond ownership and many bonds were listed on a stock exchange – particularly up to the middle of the 20th century – making it relatively easy for households to purchase bonds.

Households' direct participation in the bond market is now less than 1 per cent of bonds on issue. This low participation reflects two main factors. First, the introduction of compulsory superannuation in the early 1990s has produced a pool of household savings that is invested via the funds management industry rather

16 Government entities have historically accounted for a small share of corporate bond purchases, though in recent times purchases of RMBS by the AOFM has led to a modest increase.

17 For a discussion of trends in ownership of Australian bonds and equities through the financial crisis, see Black and Kirkwood (2010).

than directly by households.[18] Second, the disclosure requirements for issuers that raise funds from retail investors mean that it has usually been more cost-effective to raise debt from institutional investors. These factors have contributed to institutional investors' large holdings of bonds, at around one-third of all Australian corporate bonds.

5.2.2 Australian institutional investors

Australian institutional investors – authorised deposit-taking institutions (ADIs), superannuation funds and other managed funds – have participated in the corporate bond market since its inception. Unit trusts, traditionally the most common structure for managed funds, were one of the earliest institutional investors, having been established in Australia in the late 1920s as a vehicle for households to acquire financial assets indirectly (Merrett 1997). The importance of Australian institutional investors in the investor base has varied substantially through time, often in response to changes in regulation.

For example, managed funds' share of the corporate bond investor base fell sharply during the 1970s, from 35 per cent to around 25 per cent. This partly reflected the imposition of the '30/20' rule for life insurance offices and superannuation funds between March 1961 and September 1984, which exempted them from income tax provided that least 30 per cent of a fund's assets were held in government securities (including PTEs), with at least 20 per cent invested in Commonwealth Government securities (CGS).[19]

Another example is that prior to deregulation of the banking system, there were incentives for ADIs' to hold corporate bonds:

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18 Although compulsory superannuation was first introduced in Australia in 1986, the system initially applied only to employees on Federal awards. Today, over 90 per cent of Australian workers are covered by the Superannuation Guarantee Charge (SGC), which requires contributions of 9 per cent of taxable income; these funds are generally not accessible until retirement. See Commonwealth Treasury of Australia (2001) for more information on Australia's compulsory superannuation scheme.

19 These regulations did not limit institutional investors' participation in the PTE segment of the corporate bond market, although participation in the overall corporate bond market would have been constrained by these regulations.

- Under the Liquid Assets and Government Securities (LGS) convention, introduced in March 1956, trading banks agreed to hold a minimum proportion of deposits in liquid assets and government securities, including bonds issued by government-owned corporations.[20] In addition, savings banks were required to hold 70 per cent of their assets in the form of government securities. This skewed banks' portfolios towards bonds issued by government-owned corporations, which typically offered a higher yield than bonds issued by Australian governments.

- ADIs held bonds directly issued by private corporations to fund these businesses when direct lending was constrained by both qualitative and quantitative lending directives. These directives emphasised that longer-term capital for financing investment and the development of new enterprises should be obtained from outside the banking system, with banks confining their lending to short-term finance, such as overdrafts and working capital (Grenville 1991).

Following deregulation, ADIs' holdings of corporate bonds fell from around 20 per cent to around 10 per cent.

5.2.3 Foreign investors

Foreign investors made limited purchases of corporate bonds prior to capital controls being lifted in the 1980s; purchases constituted less than 10 per cent of the investor base. Adamson (1984) and Salsbury and Sweeney (1988) note that foreigners' purchases of Australian financial assets were largely confined to government bonds and equities, both of which tended to be more liquid than corporate bonds, although the size of these holdings were constrained by the existence of capital controls.[21]

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20 The LGS ratio was replaced in May 1985 by the prime assets ratio arrangements, under which a proportion of a bank's total liabilities (excluding shareholders' equity) were invested in Australian prime assets comprising, *inter alia*, notes and coin, balances with the Reserve Bank, Treasury notes and other CGS.

21 Debelle and Plumb (2006) discuss the evolution of exchange rate policy and capital controls in Australia since the 1970s. Non-residents' purchases of government bonds were primarily through issuance of Australian dollar-denominated debt in offshore markets. Prior to the 1980s, non-residents' holdings of domestically issued Australian government bonds represented less than 1 per cent of the investor base (Caballero, Cowan and Kearns 2004).

Following the liberalisation of the capital account and the deregulation of the banking system, foreign investors became significant investors in Australian corporate bonds. The introduction of exemptions for some non-residents from interest withholding tax (IWT) – a federal tax applied to foreign investors' income from Australian investments – also played a role.[22] This facilitated an increase in corporate bond issuance offshore, as well as more non-resident participation in the local bond market. The development of liquid interest rate and foreign exchange derivatives markets contributed to this activity, and foreign investor participation enhanced these markets. Foreign investors now hold around 70 per cent of total Australian corporate bonds on issue onshore and offshore.

6. Corporate Bond Pricing

It is market convention for corporate bond yields to be quoted as a spread, often to CGS or swap. This spread reflects the credit, liquidity and market risks inherent in bonds and tends to be higher and more dispersed during periods of economic and financial difficulties.[23]

A comparison of spreads on government-guaranteed bonds to those on non-government guaranteed bonds is available over a long period time and is a useful proxy for credit risk differentials (Figure 9). During periods of greater uncertainty about economic and financial conditions,[24] spreads on non-government guaranteed

22 Section 128F of the *Income Tax Assessment Act 1936* specifies the conditions required for an exemption for foreign investors from IWT; in particular, securities issued by Australian corporations must satisfy the 'public offer' and 'associates' tests which essentially require that the securities be issued publicly. Key IWT exemptions were introduced in 1997; non-residents were exempted from IWT on interest income derived from offshore borrowings by Australian corporations and, in 1999, non-residents were exempted from IWT on interest earned from bonds issued onshore.

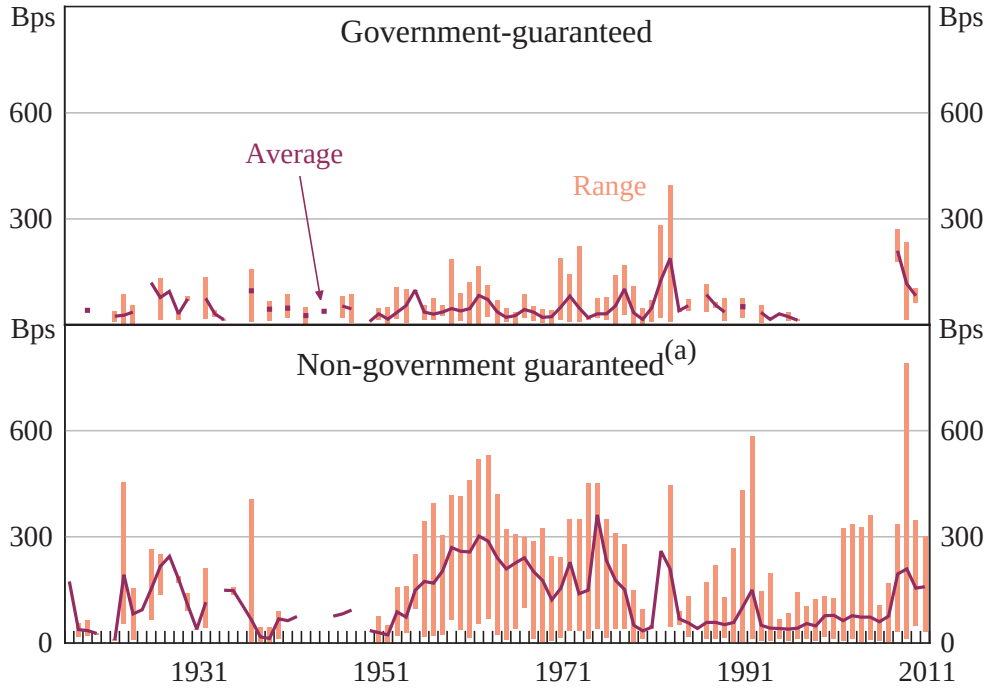
23 It is worth noting that economic downturns are not the only explanation of the time series variation in spreads: the corporate bond issuer base (including by credit rating) tends to broaden during periods of strong economic growth, which can lead to a rise in the dispersion of spreads across the market as a whole.

24 Defined as the periods 1929:Q1–1931:Q4, 1960:Q2–1961:Q2, 1974:Q1–1975:Q1, 1982:Q1–1983:Q1, 1990:Q1–1991:Q2 and 2007:Q3 onward. The most recent issuance of government-guaranteed bonds was by banks during the global financial crisis rather than publicly owned corporations. The lack of pricing data around the time of the Great Depression and WWII is due to a lack of issuance during this period, reflecting the weak economic conditions at that time.

bonds averaged 166 basis points, compared to 84 basis points for guaranteed bonds. In other periods these spreads averaged 99 basis points and 40 basis points, respectively. These spread differentials illustrate the increased compensation for credit risk during periods of market difficulties.

Figure 9: Corporate Bond Spreads at Issuance

Bonds issued onshore and offshore by Australian corporations



Notes: Spread to CGS; spreads on foreign currency-denominated bonds are converted to CGS-equivalent spreads by incorporating the cost of swapping into AUD from non-AUD; data on bonds issued offshore are not available prior to 1983

(a) Includes bonds issued with a private bond guarantee

Sources: Australian Associated Stock Exchanges; Bloomberg; Global Financial Data; Melbourne Stock Exchange; RBA; Sydney Stock Exchange

Spreads have, on average, been higher for bonds with lower credit ratings (credit rating data is only available for Australian corporations since the early 1980s) (Table 3). However, there is considerable 'overlap' between spreads on bonds with different credit ratings, such that a bond rated BBB could have a lower spread than

a bond rated AAA.[25] This overlap occurs mostly during periods of favourable economic and financial outcomes, such as following the early 1990s recession. During this period there was significant compression of spreads across investment-grade bonds, with the differential of spreads between bonds rated AAA and A declining to 34 basis points, compared to 83 basis points during the early 1990s recession. This led to a corresponding rise in the proportion of bonds with similar spreads, but different credit ratings. Around 90 per cent of BBB-rated bonds issued between 1993 and June 2007 had spreads at issuance comparable to bonds rated AAA (Figure 10). In contrast, only around one-third of BBB-rated bonds issued since the global financial crisis have had spreads at issuance comparable to AAA-rated bonds.

Table 3: Australian Corporate Bond Pricing

Average spread to CGS

Period	AAA	AA	A	BBB
1983–1989[(a)]	46	58	82	
1990–1992	30	73	113	
1993–2007:H1	44	48	78	112
2007:H2–2011	120	156	243	316

Notes: Bonds issued onshore and offshore by Australian corporations over selected periods; bonds with a 3–6 year tenor

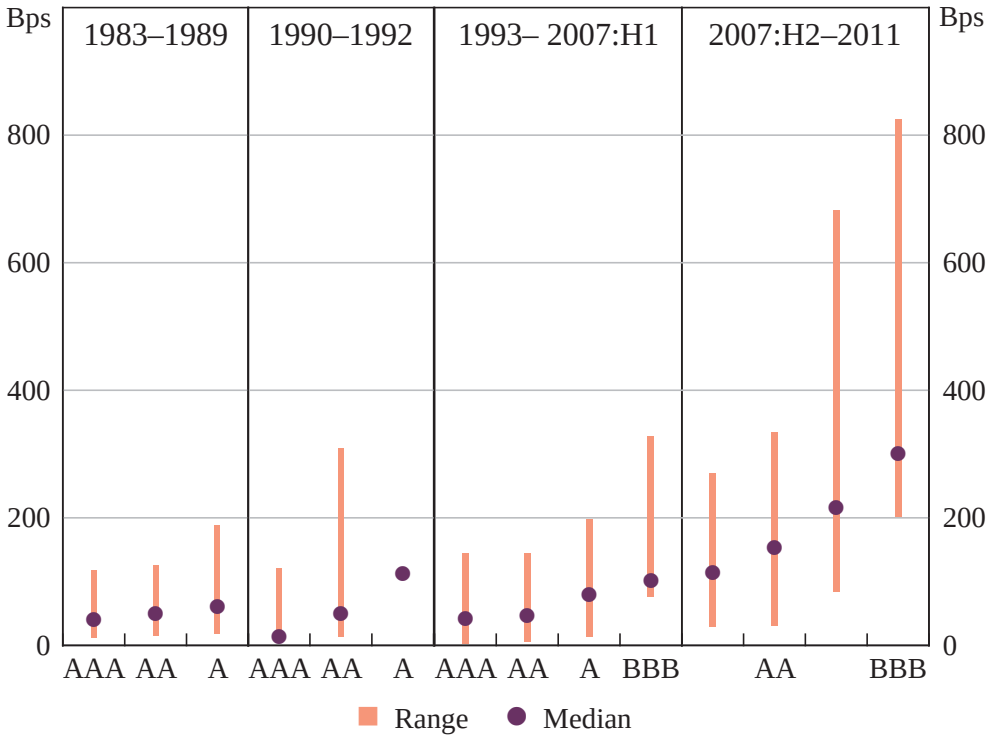
(a) Sample commences from 1983 when Standard & Poor's commenced rating Australian entities

Sources: Bloomberg; RBA

25 This overlap of spreads across credit ratings reflects the fact that credit ratings capture one measure of risk borne by investors, but not all risks. Other risks that are likely to be priced into bonds include differences in liquidity (with less liquid bonds typically having higher spreads), and investors' expectations of changes in credit risk and ratings during a bond's life. Some of the spread overlap is also explained by differences in bond maturities, as our sample here includes bonds with maturities of between 3 and 6 years.

Figure 10: Corporate Bond Spreads at Issuance

Bonds issued onshore and offshore by Australian corporations



Notes: Spreads to CGS; spreads on foreign currency-denominated bonds converted to AUD-equivalent yield by incorporating the cost of swapping into AUD from non-AUD

Sources: Australian Associated Stock Exchanges; Bloomberg; Global Financial Data; Melbourne Stock Exchange; RBA; Sydney Stock Exchange

7. Conclusion

This paper examines the development of the Australian corporate bond market over the past century. Today, bond issuance is almost entirely undertaken by private issuers, particularly banks, in contrast to the dominance of government-owned corporations prior to the 1980s. The growing importance of private issuers in the corporate bond market and the wider range of issuers that are able to access funding through the bond market are indicative of the development of Australia's financial markets over the past three decades.

The development of the corporate bond market has been influenced by global economic events and changes in the regulatory landscape. The major regulatory changes have been: the imposition of banking controls following WWII; the deregulation of the banking system and capital account liberalisation during the

1970s and 1980s; and the introduction of mandatory superannuation from the late 1980s.

The banking system regulation and subsequent deregulation, as well as capital account liberalisation, influenced the composition of the issuer base, particularly between banks and non-bank financial institutions. Banks now dominate bond issuance, in contrast to their low share of issuance prior to financial system deregulation.

These regulatory developments, along with the introduction of mandatory superannuation, also led to significant changes in the investor base. Non-residents now account for the largest component of the investor base, while households comprise the smallest share.

The pricing of corporate bonds has varied through the business cycle, with periods of economic and financial distress associated with an increase in both the level and dispersion of spreads relative to other periods. While bond spreads have, on average, been higher for bonds with a lower credit rating, the significant variation in spreads across bonds of the same credit rating suggests that other risk factors, such as the degree of liquidity, are also important.

Appendix A: Data Descriptions and Sources

Data are on a calendar year basis, except where source data is only available on a financial year basis.

Bank deposits and total liabilities: total bank deposits and liabilities are the sum of deposits and liabilities for trading banks and savings banks.

For 1917–1945, data are from Butlin, Hall and White (1971), Tables 1 and 53(ii); for 1946–1952, data are from White (1973), Tables 44 and 66; from 1953–1974 we use the Reserve Bank of Australia *Statistical Bulletin: Flow-of-Funds Supplement* (Tables 3.2, 3.3 and 4.9); from 1975–1997, data are from Foster (1996), Table 3.7a; and from 1997 onwards, data are from 'Australian National Accounts: Financial Accounts' (Cat No 5232.0), Table 8.

Equity market capitalisation: market capitalisation of all equities listed on the Sydney Stock Exchange (for period 1917–1989) and ASX (from 1990 onwards).

For 1917–1970, the data are sourced from the *Sydney Stock Exchange Official Gazette*. For 1971–1997, we use Foster (1996) Table 3.17; and from 1998 onwards, the data are from RBA Statistical Table 'F.7 Share Market'.

Government bond market: bonds issued by Australian and state governments (including central borrowing authorities). For 1917–1949, data are from Butlin (1977), Table IV.15; for 1950–1987, data are from Foster (1996), Table 2.19; and from 1988 onwards, the data are from 'Australian National Accounts: Financial Accounts' (Cat No 5232.0), Tables 15, 18 and 19.

Households corporate bond holdings: households' stock of corporate debentures and bonds, held both directly and indirectly via superannuation funds and life insurance offices.

Data on direct holdings are from 'Australian National Accounts: Financial Accounts' (Cat No 5232.0), Table 20; and data on indirect holdings are from RBA Statistical Tables 'B14 Life Insurance Offices – Statutory Funds' and 'B15 Superannuation Funds – Outside Life Offices'.

Inflation: from 1950 onwards, inflation is measured as annual growth in the consumer price index (CPI); prior to 1950, annual growth in retail price index (RPI) is used. For 1950–1970, the data are from Foster (1996), Table 5.7a; from 1971 onwards, data are from RBA Statistical Table 'G1 Measures of Consumer Price Inflation'.

RPI data are from ABS (1986, p 129).

Investors in Australian corporate bonds: net inflows into corporate debentures and bonds.

For 1953–1986, data are from Reserve Bank of Australia *Statistical Bulletin Flow-of-Funds Supplement/Financial Flow Accounts Supplement* (Tables 2.2, 2.3, 2.5–2.23); and from 1988 onwards, data are from 'Australian National Accounts: Financial Accounts' (Cat No 5232.0), Table 28.

Output: GDP in current prices.

For 1917–1958 data are from Butlin (1977), Table IV.1; and from 1959 onwards, data are from RBA Statistical Table 'G12 Gross Domestic Product – Income Components'.

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