

Economic and Financial Research in the Reserve Bank in 1995

As in previous years, the Bank maintained an active research program on issues related to its policy responsibilities in 1995. Results of this research are made available to the public in discussion papers, an annual conference volume and in *Bulletin* articles, as well as contributing to the analysis of policy issues within the Bank. Research projects completed during 1995 can be grouped under four main headings: monetary policy and inflation; productivity and growth (the theme of the annual conference, held in July); financial markets; and other macroeconomic issues. This article summarises the research papers released during 1995.¹

Monetary Policy and Inflation

The appropriate specification of inflation objectives has been a subject of considerable debate amongst policy analysts, both in Australia and overseas. The Bank's stated objective of maintaining 2-3 per cent underlying inflation over the course of an economic cycle is analysed in a paper by DeBelle and Stevens, prepared for a conference at the Bank of England. Three key issues are discussed. First, is the 2-3 per cent figure sufficiently low? The authors note that

research on this issue in a variety of countries has been inconclusive, and that while further reductions in inflation below the 2-3 per cent average would involve some costs, the size of the prospective benefits are less certain. The paper makes a pragmatic case that success in maintaining very low inflation in Australia and elsewhere will, in due course, allow a better assessment of this issue to be made. The second issue concerns the amount of permissible variability in inflation. It is argued that a commitment to keep the inflation rate within a narrow range would be unrealistic, given the evidence that inflation cannot always be predicted and controlled over short periods. Third, there is an analysis of the nature of the trade-offs faced by monetary policy in responding to shocks. The paper presents evidence of a trade-off in the short run between variability of the inflation rate and variability of output around its potential.

Three papers examine at a technical level the forces influencing inflation in Australia. The paper by de Brouwer and Ericsson develops an econometric equation for Australia's inflation rate based on standard notions of a mark-up on costs and import prices. The equation is found to provide an accurate historical description of underlying inflation over the past two decades, including the period of substantial deceleration in prices in the early 1990s, and it confirms a significant

1. Research papers referred to in this article are listed in the appendix.

role for aggregate-demand factors, represented by the output gap. The equation implies that, other things equal, low inflation will be maintained if output is kept close to potential, the exchange rate is relatively stable and growth of unit labour costs remains low. Although the role of policy is not explicitly modelled, the results give information on the relative importance of these key channels, which can be thought of as intermediate steps through which policy and other variables can influence inflation.

This approach to modelling inflation is placed in a somewhat broader framework in a study by Cockerell and Russell on wage-price interactions. The study focuses in particular on the role that shifts in factor income shares have played in the inflation process. A key finding is that movements in these factor shares have tended to be long-lasting. This behaviour is found to have important implications for inflation, with changes in factor shares having a major influence on inflation performance over the period studied. The key result is summarised in the finding that inflation and factor shares are correlated in the long run: periods when the wages share of national income is high have tended to be associated with high inflation rates.

A third paper, by Gruen and Dwyer, looks at the effect of terms-of-trade changes on inflation. Prior to the floating of the exchange rate, these had been an important source of inflationary shocks in Australia, and the paper looks at how this mechanism has been modified by the float. It argues that, under a fixed exchange rate, a rise in the terms of trade – say, through a rise in export prices – would be unambiguously inflationary. This is because it would add to nominal purchasing power in the domestic economy. (Similarly, a fall in export prices would reduce inflation.) With a floating exchange rate, at least some of this effect would tend to be offset by currency appreciation. Using a range of illustrative assumptions to calculate the strength of these effects, the study concludes that the overall

impact of terms-of-trade changes on inflation is likely to be small under our floating rate regime.

An important aspect of price-setting behaviour at the level of the individual firm or industry is the role of ‘price stickiness’, studied in a paper by De Abreu Lourenco and Gruen. Price stickiness – the idea that firms do not immediately adjust their prices to ensure continuous clearing in the markets for their products – is a central concept in macroeconomics and underpins many theories of how the economy behaves. The nature of this phenomenon, however, is not well understood. Two hypotheses concerning sources of price stickiness are studied in the paper. The first is that firms have an aversion to nominal price falls, being more willing to adjust prices upward than downward in response to a shock of a given size. The second hypothesis is that price stickiness is attributable to costs of adjustment which induce firms to change their prices only infrequently. The detailed predictions of a model based on this second hypothesis are found to be supported using industry price data for Australia and the United States.

A final topic of research on inflation was its impact on long-run economic growth. An analysis of this issue formed part of a longer study on growth by Andersen and Gruen, discussed further below. In this paper the authors argue that there are a number of reasons for thinking that inflation is likely to be detrimental to growth over the long run: for example, it distorts price signals, creates uncertainty and interacts with tax systems in ways that are likely to distort saving and investment decisions. The paper reviews a number of studies that try to estimate the importance of these effects by comparing the performances of high- and low-inflation economies in the post-war period, and also provides some new evidence. Taken together, the results suggest that higher average inflation is to some extent correlated with lower average economic growth.

Productivity and Growth

The Bank's annual conference brought together domestic and international experts on the theme of productivity and growth. Papers covered issues related to the measurement of productivity, the effects of microeconomic reform and analysis of factors conducive to longer-run growth.² Two papers were prepared by Bank staff.

The paper by Andersen and Gruen gives an overview of factors influencing growth and considers in particular the role of macroeconomic policies, reviewing evidence from a wide range of countries. The principal determinants of growth are identified as factor accumulation and technological progress, but macroeconomic policies are found to make a significant difference at the margin. Key policy-related factors identified as being conducive to growth are low and stable inflation, appropriate real interest rates, a stable and sustainable fiscal policy, a competitive and predictable real exchange rate and a viable balance of payments position. Countries with these characteristics are found, on average, to grow faster than those without them, although it is acknowledged that, to some extent, these favourable characteristics are likely to be results as well as causes of growth.

A paper by Lowe takes a detailed look at labour-productivity performance in Australia over the period 1978-1994. The early and later parts of this period were characterised by fairly rapid productivity growth, but this was interrupted by several years of flat productivity in the second half of the 1980s. This occurred at the same time that employment was growing rapidly, and is often interpreted as a result of a substitution of labour for capital consequent upon real wage restraint under the Accord. The paper accepts this as a partial explanation but argues that there were other important factors at work. Most notably these included compositional changes in the

workforce, and changes in work practices which led to an under-recording of overall productivity growth. A key example is in the retailing industry: the extension of shopping hours in the second half of the 1980s resulted in large increases in hours worked, but the resultant increased convenience to shoppers is not counted as extra output. Productivity in the industry is, therefore, recorded misleadingly as having declined. The paper documents a number of other likely sources of measurement bias and presents evidence that these biases were particularly acute during the second half of the 1980s.

Financial Markets

A number of research papers examined aspects of the behaviour of financial markets and institutions, which are obviously relevant in the transmission of monetary policy. A paper by Lowe on interest-rate linkages examined the way changes in overnight cash rates, which are closely controlled by policy, feed into the more general structure of interest rates in the Australian economy. The study finds that interest rates on short-term securities follow cash rates very closely, but deposit and lending rates of banks tend to adjust more slowly and incompletely to cash-rate changes. This means that, while the average margin between deposit and lending rates has been quite stable, the margin between key lending rates and the cash rate has been more variable – for example, as average cash rates declined in the 1990s, average bank lending rates fell less. The paper examines explanations for this pattern and argues that, in part, it has reflected a past lack of competitive pressure on lending rates. As competition becomes stronger in these markets, however, pressures for reductions in lending margins, and for bank interest rates to follow cash-rate movements more closely, are expected to intensify.

2. The introductory chapter of the conference volume, which contains a summary of the papers and discussion, was reprinted in the October *Bulletin*.

An analysis of similar issues, applied to a range of countries in the Western Pacific region, is covered in a paper by de Brouwer. The paper presents estimates of the degree and speed of pass-through of money-market interest rates into deposit and lending rates in each country. These are interpreted as providing indicators of the integration of domestic financial markets, with a rapid pass-through indicating that markets are relatively competitive and free of distorting regulations. The modelling suggests that the integration of domestic financial markets has increased substantially over the past decade in the countries studied, on the back of pervasive liberalisation and increasing competition. Changes in asset quality are shown to have had a substantial effect on lending rates. By the first half of the 1990s most of the developing or newly-developed countries of East Asia had comparable characteristics, in terms of the indicators studied, to those of countries with developed financial systems.

In another paper Gruen examines international trends in financial-market volatility, and in particular looks at the role of inflation in explaining those trends. The paper notes that inflation in most industrial countries is lower and less variable in the 1990s than it has been at any time in the past quarter-century. Standard economic theories predict that, since inflation is a key influence on financial asset prices, the move to low and stable inflation should be accompanied by reduced financial volatility. This proposition is tested using international data for bond markets and foreign-exchange markets. The evidence assembled suggests that reduced inflation volatility has indeed contributed to some reduction in the volatility of bond markets. However, there has been little, if any, reduction in exchange-rate volatility, contrary to the predictions of the theory.

More general issues of asset price formation are reviewed in a survey article by Kortian. This begins with the mainstream academic position summarised by the 'efficient markets hypothesis', which asserts that markets efficiently incorporate available information into prices. It then reviews theories as to how

this condition might fail to be satisfied in practice. A number of economists have proposed that phenomena like speculative bubbles and herd-like behaviour in markets can, under certain circumstances, be consistent with rational behaviour on the part of individual participants. Such theories can explain why markets might over-react to news or drive asset prices away from fundamental values, which may justify a limited role for policy in stabilising markets.

Other Macroeconomic Issues

An issue of considerable relevance for the Australian business cycle is the linkage between the domestic and foreign economies. This is the subject of a paper by DeBelle and Preston. The paper notes that Australian business cycle developments are closely correlated with those in other OECD economies, particularly the United States. This correlation does not seem to be fully explained by trade links. The paper considers other possible explanations, focusing particularly on the influence of foreign variables on expectations that affect domestic spending decisions. Some evidence is found for a linkage through this channel affecting domestic consumer spending, but the effects of foreign variables on investment spending remain hard to explain.

Finally, a paper by Morling and Subbaraman examines the historical relationship between superannuation and other forms of saving. It finds that there has been a significant though incomplete degree of substitutability between the different forms of saving, so that higher superannuation saving was partly offset in other components of saving. The paper identifies a number of factors, including the increasing mandatory element of superannuation and the extension of coverage to low income groups, which are likely to reduce these substitution effects in future years.

Appendix: Research Material Released in 1995

Conference Volume

Productivity and Growth, edited by Palle Andersen, Jacqueline Dwyer and David Gruen, contains the papers prepared by Bank and non-Bank authors for a conference held in July 1995. The volume also includes an introduction by Dwyer and summaries of the discussion. The papers by Bank staff were:

Lowe, P., 'Labour-Productivity Growth and Relative Wages: 1978-1994'.

Andersen, P. and D. Gruen, 'Macroeconomic Policies and Growth'.

Five additional major papers were commissioned. These were written by Steve Dowrick of the Australian National University, Ian Castles of the Australian Bureau of Statistics, Robert Gordon of Northwestern University, Michael Sarel of the International Monetary Fund and Kengo Inoue of the Bank of Japan.

In addition there were four short case studies of the productivity effects of microeconomic reform in Australia. These covered the steel, electricity and banking industries, and the microeconomic reform of the labour market.

Research Discussion Papers

- 9501 Kortian, T., 'Modern Approaches to Asset Price Formation: A Survey of Recent Theoretical Literature'.
- 9502 De Abreu Lourenco, R. and D. Gruen, 'Price Stickiness and Inflation'.
- 9503 Debelle, G. and G. Stevens, 'Monetary Policy Goals for Inflation in Australia'.
- 9504 Lowe, P., 'The Link Between the Cash Rate and Market Interest Rates'.

- 9505 Lowe, P., 'Labour-Productivity Growth and Relative Wages: 1978-1994'.
- 9506 de Brouwer, G., 'The Liberalisation and Integration of Domestic Financial Markets in Western Pacific Economies'.
- 9507 Andersen, P. and D. Gruen, 'Macroeconomic Policies and Growth'.
- 9508 Gruen, D. and J. Dwyer, 'Are Terms of Trade Rises Inflationary?'.
- 9509 Cockerell, L. and B. Russell, 'Australian Wage and Price Inflation: 1971-1994'.
- 9510 de Brouwer, G. and N.R. Ericsson, 'Modelling Inflation in Australia'.
- 9511 Morling, S. and R. Subbaraman, 'Superannuation and Saving'.
- 9512 Debelle, G. and B. Preston, 'Consumption, Investment and International Linkages'.
- 9513 Gruen, D., 'Financial Market Volatility and the World-Wide Fall in Inflation'.

Articles of General Interest in the Reserve Bank Bulletin

'Import Prices and Inflation', Reserve Bank of Australia, *Bulletin*, February.

'Derivatives – Bank Activities and Supervisory Responses', Reserve Bank of Australia, *Bulletin*, May.

'Australia's Export Performance in Asia', Reserve Bank of Australia, *Bulletin*, August.

'Trends in the Housing Sector', Reserve Bank of Australia, *Bulletin*, September.

'Productivity and Growth', Reserve Bank of Australia, *Bulletin*, October.

'Implications of the Barings Collapse for Bank Supervisors', Reserve Bank of Australia, *Bulletin*, November.