Economic and Financial Research in the Reserve Bank in 1997

During the past year the Bank's research efforts were primarily focused on the framework and operation of monetary policy. Other areas of research included bank supervision issues and the effects of internationalisation on the economy. As in previous years, the results of the research were made available through the Bank's *Bulletin*, its Research Discussion Paper series and in conference volumes. This article provides an overview of the papers written within the Bank.[1]

Monetary Policy and Inflation Targeting

The title of the Bank's annual conference in 1997 was 'Monetary Policy and Inflation Targeting'. Bank staff prepared four papers for the conference, with another six papers contributed by leading foreign central bankers and Australian academics. The Bank papers examined the arguments for and against various monetary policy frameworks; the evolution of the Australian framework; the use of interest-rate 'rules' for setting the overnight interest rate; and the rationale for central banks moving interest rates in a sequence of steps. Other papers discussed various alternatives to inflation targeting, design issues for inflation targets, the role of asset prices in an inflation targeting regime and possible changes to the current Australian arrangements. A detailed summary of the Conference is included in the October issue of the Bank's *Bulletin*.

Issues related to the implementation of monetary policy were not only addressed in papers prepared for the Conference, but also as part of the Bank's ongoing research program. One of the more significant recent changes in the way monetary policy is implemented took place in January 1990, when the Bank began announcing its desired level for the cash rate. Ric Battellino, John Broadbent and Philip Lowe discuss the rationale for this change and the effects that it has had on the monetary transmission mechanism. They argue that the policy of announcing and explaining interest rate changes to the public has led to greater rigour in the Bank's internal policy debates and improved the public's understanding of monetary policy decisions. It has also led to faster pass-through of cash rate changes into intermediaries' deposit and lending rates and contributed to a reduction in the volatility of money-market interest rates.

In determining the appropriate setting of the cash rate, the Bank needs to be forward-looking since a change in the cash rate takes time to affect output and inflation. A paper

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1. Papers referred to in this article are listed in the Appendix.

by David Gruen, John Romalis and Naveen Chandra attempts to measure this time lag using a simple model of Australian output growth. Since interest rates respond to changes in output, and output responds to interest rates, there are considerable econometric difficulties in estimating the lag, and as a result, the estimates are subject to considerable uncertainty. Notwithstanding this, the paper estimates that output growth falls by about one-third of one per cent in both the first and second years after a one percentage point rise in the cash rate.

Another relevant issue is whether or not monetary policy should respond to changes in asset prices. This issue is examined in a paper by Philip Lowe and Christopher Kent. The paper argues that it is inappropriate to include asset prices in the aggregate price index targeted by the central bank. However, there may be circumstances in which the central bank should respond to rapidly rising asset prices, even if expected inflation of goods and services prices is close to target over the short term. These circumstances are more likely to arise when increases in asset prices are not justified by fundamentals, are accompanied by rapid increases in credit, and where the inevitable correction in prices could cause a significant interruption to the process of financial intermediation. For example, in some cases it may make sense for monetary policy to bring forward a correction in property prices through higher interest rates, even if it means that expected inflation is temporarily below target. The benefit of doing so is that it prevents an even larger and more costly correction at some later point.

While monetary targeting has been abandoned by most countries, changes in money and credit may still provide useful information about future output growth and inflation, partly for the reasons discussed by Lowe and Kent. Ellis Tallman and Naveen Chandra extend their earlier work on this issue and conclude that, in general, even exact knowledge of future changes in financial aggregates does not increase the accuracy of model forecasts of output growth and inflation. The one exception is that an accurate forecast of the extent of the decline in credit growth during the period 1990 to 1992 would have improved forecasts of output growth at that time. This is consistent with the idea that most of the time the financial aggregates provide complementary, rather than independent, information about economic growth, but during times of financial restructuring, changes in credit may provide important additional information.

Finally, one of the arguments for an inflation target is that it contributes to the credibility of the central bank. Despite this, some countries with inflation targets and with low inflation rates have had relatively high bond yields, suggesting that the inflation targets are not seen as fully credible. A paper by Joseph Gagnon explains this observation by noting that monetary policy regimes are not necessarily perceived as permanent: they can change as a result of elections, changes in central bank personnel and unforeseen economic events. In assessing likely inflation over a long period of time, economic agents need to assess not only whether the central bank will meet its current objective, but also whether that objective will change. The key to credibility over the long term is to increase the probability that the current regime is sustainable, and that if a change in the regime does take place, it is only a relatively small change. The longer is the period that a regime is maintained, the greater should be the central bank's credibility.

Bank Supervision

In addition to the annual Economic Conference, the Bank conducted a Conference under the title 'Credit Risk in Banking'. Seven papers were prepared by private-sector specialists in the area of credit risk. These papers examined credit or counterparty risk in a range of banking activities, including retail and corporate banking, and treasury and derivative operations. A paper contributed from within

the Bank examined credit risk from a supervisory perspective, tracing the evolution of the current capital adequacy arrangements and possible future directions. A detailed summary of the Conference is included in the November issue of the Bank's *Bulletin*.

Other research in this area centred on the issue of market risk; that is, the risk that arises from changes in the market price of financial assets. A bank's capital requirement for market risk depends upon its 'Value at Risk' (VaR), which is a measure of potential losses. A paper by Colleen Cassidy and Marianne Gizycki outlines various approaches to obtaining estimates of the VaR. Each of the approaches is based on assumptions and these assumptions need to be tested, as do the predictions from the models used to generate VaR estimates. The paper provides a discussion of various tests that can be employed for this purpose. These tests are illustrated using data from actual bank portfolios.

International Issues

The internationalisation of the Australian economy has had many effects, including altering the pricing behaviour of Australian firms. A paper by James O'Regan and Jenny Wilkinson examines various aspects of this change in behaviour. Their results suggest that the increased competition facing Australian manufacturing firms has reduced the difference between Australian output prices and world output prices. Further, they show that prices in the traded goods sector tend to be more influenced by foreign prices than are prices in the non-traded goods sector, and that within the traded goods sector, the more open is the industry, the quicker domestic prices adjust to changes in foreign prices. An implication of these results is that as the economy becomes more open, changes in foreign prices (including via the exchange rate) have an increasingly important role in influencing the inflation rate in the short run.

Another issue in open economies is the relationship between the terms of trade and the current account; in some countries increases in the terms of trade tend to be associated with a *decline* in the current account deficit, while in others, the reverse is the case. A paper by Christopher Kent argues that the primary reason for this difference is that terms of trade changes are more persistent in some countries than in others. If an increase is only temporary, it is likely to lead to higher savings but little change in investment; the result will be a reduction in the current account deficit. In contrast, if the rise in the terms of trade is more long lasting, investment is likely to rise, and consumption will also increase so that savings do not rise; the result will be an increase in the current account deficit. The empirical work in the paper confirms that countries with the *least* persistent changes in the terms of trade tend to have a positive relationship between changes in the current account and the terms of trade while countries with the *most* persistent changes in the terms of trade exhibit a negative relationship.

Other Papers

One of the more popular models of inflation is the Phillips Curve, which explains deviations of inflation from its expected value by deviations of the unemployment rate from the so-called 'NAIRU' (the non-accelerating inflation rate of unemployment). A paper by Guy Debelle and James Vickery estimates this model and provides empirical support for the idea that the relationship is non-linear. This means that the upward effect on inflation of an unemployment rate one percentage point *below* the NAIRU is likely to be larger than the downward effect on inflation of an unemployment rate one percentage point *above* the NAIRU. This non-linearity implies that the more successful is output and inflation stabilisation policy, the lower will be the average level of unemployment. As such, it provides a rationale for central banks to be

forward-looking and to act pre-emptively to offset inflationary pressures.

In addition to the above research papers, short articles on the following topics were published in the Bank's *Bulletin*: supervisory aspects of options pricing; small business finance; trends in superannuation assets; the Bank's profits from currency issue; the Core Principles for effective banking supervision; and, the impact of privatisations on government finances and domestic financial markets.

Appendix: Research Material Released in 1997

Conference Volumes

Monetary Policy and Inflation Targeting, edited by Philip Lowe, contains papers prepared for the annual conference held in July 1997. The four papers prepared by Bank staff are:

- de Brouwer, G. and J. O'Regan, 'Evaluating Simple Monetary-policy Rules for Australia'.
- Edey, M., 'The Debate on Alternatives for Monetary Policy in Australia'.
- Grenville, S., 'The Evolution of Monetary Policy: From Money Targets to Inflation Targets'.
- Lowe, P. and L. Ellis, 'The Smoothing of Official Interest Rates'.

Three major papers were commissioned by external authors. These were written by A.G. Haldane of the Bank of England, F.S. Mishkin of the Federal Reserve Bank of New York and F. Smets of the Bank for International Settlements. In addition, there were three shorter papers by senior Australian academics: W. McKibbin, J. Quiggin and P.J. Stemp.

Credit Risk in Banking, edited by Brian Gray and Colleen Cassidy, contains papers prepared for a conference held in May 1997. The following paper was prepared within the Bank:

- Gray, B., 'The Supervision of Credit Risk in the Banking Sector – Current Approach and Future Directions'.

Seven other papers were commissioned. These were written by B. Allen of Westpac Banking Corporation, R. Eales of Westpac Banking Corporation, C. Crook of HongkongBank of Australia and R. Bass of HSBC Holdings plc, K. Fry of Commonwealth Bank of Australia, F. McNabb of National Australia Bank, M. Ullmer of Coopers and Lybrand/ Commonwealth Bank of Australia and J. Whitelaw of the Australia and New Zealand Banking Group.

Research Discussion Papers

9701 Gagnon, J.E., 'Inflation Regimes and Inflation Expectations'.

9702 Gruen, D., J. Romalis and N. Chandra, 'The Lags of Monetary Policy'.

9703 Battellino, R., J. Broadbent and P. Lowe, 'The Implementation of Monetary Policy in Australia'.

9704 Tallman, E.W. and N. Chandra, 'Financial Aggregates as Conditioning Information for Australian Output and Inflation'.

9705 Kent, C., 'The Response of the Current Account to Terms of Trade Shocks: A Panel-data Study'.

9706 Debelle, G. and J. Vickery, 'Is the Phillips Curve a Curve? Some Evidence and Implications for Australia'.

9707 O'Regan, J. and J. Wilkinson, 'Internationalisation and Pricing Behaviour: Some Evidence for Australia'.

9708 Cassidy, C. and M. Gizycki, 'Measuring Traded Market Risk: Value-at-risk and Backtesting Techniques'.

9709 Kent, C. and P. Lowe, 'Asset-price Bubbles and Monetary Policy'.

Articles of General Interest in the Reserve Bank *Bulletin*

'Recent Developments in Small Business Finance', Reserve Bank of Australia, *Bulletin*, April.

'Supervisory Aspects of Options Pricing', Reserve Bank of Australia, *Bulletin*, April.

'Measuring Profits from Currency Issue', Reserve Bank of Australia, *Bulletin*, July.

'Recent Trends in Superannuation Fund Assets', Reserve Bank of Australia, *Bulletin*, October.

'Small Business Lending', Reserve Bank of Australia, *Bulletin*, October.

'Core Principles for Effective Banking Supervision', Reserve Bank of Australia, *Bulletin*, December.

'Privatisation in Australia', Reserve Bank of Australia, *Bulletin*, December.