Bulletin

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Contents

The Reserve Bank's Liaison Program Turns 21

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Photo: Reserve Bank of Australia

Abstract

In 2001, the Reserve Bank established its liaison program – a formal program of economic intelligence gathering, through which Bank staff meet frequently with firms, industry bodies, government agencies and community organisations. The program is systematic in its approach to collecting and assessing information, and the intelligence obtained is a useful complement to published sources of data and economic models in informing the Bank's assessment of economic conditions. In addition, the information gathered is available in near real time, making it useful for 'nowcasting' and understanding the implications of short-term shocks to the economy. This article looks at the process of liaison, the nature of the information collected and how it has been used over its 21 years of operation.

Introduction

Over the past 21 years, the Reserve Bank's liaison program has made an important contribution to our understanding of current and emerging economic developments in Australia. The economic intelligence gathered through liaison is incorporated into the Bank's internal analysis and policy discussions alongside other published data sources and economic models, and the themes from liaison are shared externally in a range of public communications.

This article outlines the nature of the liaison program, the information collection and how it is used. In particular, it highlights some of the key areas where liaison information has been especially valuable in assisting the Bank's understanding of economic developments.

Background

It has always been important to the Reserve Bank to have a presence in the community and channels for receiving, and sharing, information about economic conditions. Historically, the Bank's interstate

branches played a role in this regard – in addition to their banking business, they were the 'eyes and ears' of the Bank in the broader community. However, as the Bank's government banking and registry operations shrank, the branch network diminished and most branches were closed by the year 2000.

Since that time, the Bank has devoted significant resources to systematically building relationships across a broad cross-section of the business community, and establishing new and direct information channels about economic conditions. The Bank opened offices in Victoria, Queensland and Western Australia in 2001, and in South Australia in 2003; these offices have remained operational ever since.[1] Each state office comprises a small staff, including a senior representative, an economist and a senior liaison officer. Liaison with the New South Wales business community is conducted by a larger dedicated team within Head Office; this team also coordinates the Reserve Bank's liaison program (Figure 1). The staff involved in the liaison program are part of Economic Analysis Department.[2]

The value of liaison information

Most of the economic analysis and forecasting undertaken by the Reserve Bank to inform monetary policy is quantitative in nature and uses official and other sources of data as the primary sources of information. However, there are some limitations to economic data – it may only reflect a share of economic activity, it may provide an imperfect measure of a variable and it is not always timely. This leaves an important role for qualitative information, especially when monetary policy decisions are made in an environment of considerable uncertainty and change is occurring rapidly. Liaison information is also helpful in understanding the drivers of economic data (the 'why'), as well as how firms are responding.

In addition to the routine analysis of economic data, macroeconomic models are used by the Bank as an important tool to assist in assessments of the economy and its outlook. However, these models are by their nature reliant on data and as such can be subject to error due to the limitations given above. Furthermore, most macroeconomic models

require assumptions to be made where there are gaps in the data or where there are credible reasons why historical observations may not be the most informative guide to near-term developments. This is particularly the case during large economic shocks.

Reflecting these challenges, qualitative information can provide a useful supplement to quantitative data and economic models. It can inform assumptions used in the place of data gaps and explain why something has occurred and under what conditions it may or may not occur in the future. The Reserve Bank's liaison program operates within this space by asking economic agents directly about their decisions and experiences.

The nature of the Bank's liaison program

The role of the program

The liaison program has two main roles:

1. *Economic intelligence gathering* – the collection of timely information through liaison meetings to inform the assessment of monetary policy.

2. *Representation* – the presence of Reserve Bank staff across the country to improve the Bank's communication and engagement with the community.

The time and resources devoted to intelligence gathering and analysis are significantly greater than those for representation.

Who do we talk to?

The liaison program has a pool of around 900 currently active contacts. Around three-quarters of these contacts are firms, though an important part of the program is liaison with industry associations, government agencies (particularly at the state government level) and community associations. Contacts are typically invited to participate by Reserve Bank staff following identification that they would maintain or improve the representativeness of the program and enhance the Bank's understanding of economic developments. Participation in the program is voluntary.[3]

In the very early stages of the program, industry associations and government agencies were the

Figure 1: The Reserve Bank's Liaison Offices

focus of our attention, so that the Bank could become more familiar with local industry issues before liaising directly with firms. After gaining high-level insights into industry conditions from these contacts, we began engaging with individual firms from 2002 onwards. Being equipped with some knowledge about their industry enabled us to obtain deeper insights into the conditions facing individual firms and their decision-making, including about key economic variables such as investment, employment and wages. However, industry associations and government agencies remain important contacts that are regularly consulted, as they have insights into entire sectors of the economy.

How representative is the program?

We attempt to interview a range of firms that are broadly representative of the industry structure of the economy. Graph 1 shows that the national share of liaison meetings in each industry group has been broadly representative of each industry's share of output over the life of the program. However, the program has a greater proportion of firms in the wholesale and retail trade sector, compared with their share of output, in order to obtain a more frequent and real-time read on this cyclically sensitive industry; conversely, the program has a smaller proportion in the household services sector

where activity is typically less cyclically sensitive and there is a large number of small firms.

The program also aims to ensure broad coverage of conditions across the country. The vast majority of meetings over the life of the program have been conducted in person, which supports our representative role, complemented by virtual meetings. Importantly, staff also conduct regular visits – in person and virtually - with contacts outside of the cities where our offices are based.

Contacts in the program tend to be medium to larger sized firms. By interviewing medium and larger firms, the program can capture a broader sample of activity and employment given available resources. The impost on these larger firms is also less as these contacts are typically better equipped, in terms of available staff and information systems, to answer questions about economic conditions. The Bank gains exposure to the conditions facing smaller businesses (that typically employ less than 20 staff) through some one-on-one interviews, as well as through roundtables, interviews with industry associations and liaison with firms servicing smaller businesses. The Bank also hosts a Small Business Finance Advisory Panel.[4]

Number and frequency of meetings

The Reserve Bank has conducted around 20,000 interviews as part of this program over the past 21 years. Interviews are conducted on a continuous basis throughout the year; this contrasts with many business surveys that are conducted at static points (such as end of the month or the quarter). On average, we speak with around 70–80 contacts a month across the nation and complete almost 900 meetings per year (Graph 2).[5] While most are interviewed for about an hour once per year, around 15 per cent of contacts are spoken to at monthly, quarterly or six-monthly intervals. Participants interviewed more frequently are typically those in more cyclical sectors of the economy, such as retailers and construction firms, or are 'bellwethers' of changes in economic conditions (because of their position in a supply chain or exposure to a particular market). Over a typical year, we speak with around 650 individual contacts.

The number and length of meetings can be adjusted in response to shocks. For example, the liaison team conducted a record of around 160 meetings in April 2020 as part of its response to the COVID-19 pandemic; meeting lengths were reduced in recognition of contacts' time constraints during this busy period. The number of meetings conducted in 2021/22 was impacted by COVID-19-related absenteeism for both our staff and contacts, with the total number of meetings in line with the two years prior to the pandemic.

Confidentiality

All meetings within the liaison program are conducted on the basis of confidentiality. This aids

Graph 1

Liaison Program Industry Shares
Average, FY2001/02 to FY2020/21
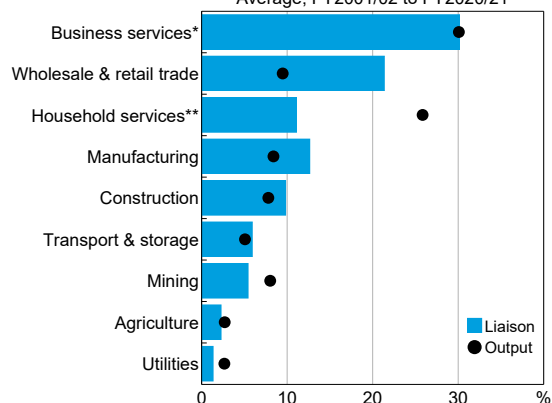
* Information media & telecommunications; financial & insurance services; rental, hiring & real estate services; professional, scientific & technical services; administrative & support services; and public administration & safety.
** Accommodation & food services; education & training; health care & social assistance; arts & recreation services; other services; and ownership of dwellings.
Sources: ABS; RBA

Graph 2

Number of Liaison Interviews Completed
By financial year
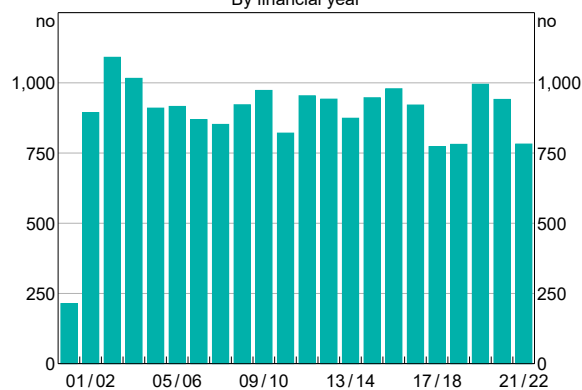
Source: RBA

in firms being comfortable to share figures and firm-level insights openly with the Reserve Bank, as does the trust built over years of engagement with participants.

Information from the liaison program is aggregated, de-identified and summarised before being shared across the Bank. The Bank is often called upon by other government agencies to provide a view on the economy, including a view 'based on what firms are saying'. Reflecting our confidentiality commitments, information is only ever shared at an industry or economy-wide level. Similarly, only high-level messages are published in the Bank's external publications.

What information do we collect and how is it used?

Liaison interviews conducted by the Reserve Bank are 'structured discussions' involving two main components:

1. *Core questions* – these questions are set and have been asked in most interviews over the past two decades.

2. *Topical questions* – these questions evolve over time and are reviewed regularly.

Key messages from liaison are incorporated into analysis provided to the Reserve Bank Board and communicated to the public on an ongoing basis via the *Statement on Monetary Policy* and other Bank publications, including the *Bulletin* and speeches. A regular dedicated summary of liaison messages will be included in the *Statement* from the November 2022 issue.

Information collected on 'core questions'

In essence, the core questions each participant is asked at each liaison interview are: how has demand for your goods or services, your investment, headcount, non-labour costs, wages and prices changed over the past year, and how are they expected to change over the coming year?[6]

Based on the responses provided in the interview, we assign a quantitative indicator of the extent of change in the key economic variables being discussed. Specifically, staff assign scores on an ordinal scale from −5 to +5 based on the conditions

reported by liaison contacts compared with one year ago.[7] If the level of a variable was unchanged, the score would be zero. An extreme rise would be assigned a score of +5 and an extreme fall assigned a score of −5. While judgement is required for the scores in between, a score of +2 would be considered a 'normal' or 'average' increase from the previous year.[8] This scaling system provides an important discipline for the interpretation of interviews and generates a rich panel of data for quantitative analysis of actual and expected changes in key economic variables.[9]

Graph 3 shows the evolution of the liaison scores for core variables over the life of the program.[10] The initial negative impact of the COVID-19 pandemic is evident in the declines across all series in the first half of 2020, as is the strong recovery since. Liaison scores for nominal variables such as domestic non-labour costs, wages and prices are currently slightly above +2, indicating that on average firms are reporting higher than 'normal' increases in these variables over the past year, after a number of years of subdued outcomes.

Over the life of the program, these scores have been monitored and tested to assess their comparability to official data series. A basic measure of the usefulness of the liaison scores is their correlation with benchmark official variables. Across the core variables on current conditions, the average correlation for the full sample of the liaison program is 0.6. Graph 4 shows the correlation of liaison
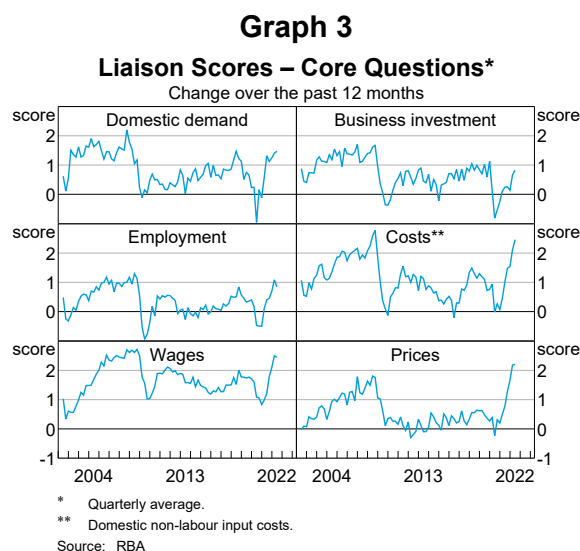

Graph 3

Liaison Scores – Core Questions*

Change over the past 12 months

*   Quarterly average.
**   Domestic non-labour input costs.
Source: RBA

Table 1: Predictive Power of Liaison Scores

Granger causality results; liaison score Granger causes ABS variables, 2003–2022

Variable being scored	ABS variable year-ended change	Granger causality[a] P-value
Expected change in demand	Domestic Final Demand	0.01
	Gross Domestic Product	0.01
Expected change in wages	Wage Price Index	0.00

(a) Optimal lag chosen based on Akaike information criterion.

Sources: ABS; RBA

scores about how economic conditions have changed over the past year against corresponding official data produced by the Australian Bureau of Statistics (ABS), with the degree of correlation suggesting that there is useful information in the scores.

Of particular relevance to monetary policy is forward-looking information, so we also examine the liaison scores for firms' expectations. Granger causality tests suggest there is predictive information about the outlook for aggregate demand and wages in firms' expectations reported through the liaison program (Table 1). Granger causality does not run in the other direction.[11]

Since liaison scores appear to contain useful information regarding official variables, they are one input used to inform judgement-based adjustments to model-driven forecasts and other advice on the possible direction or momentum in economic

activity. This is particularly the case where trends in economic data appear to be at a turning point, or the economy is experiencing an economic shock where little or no official data are yet available. In such instances, the scores are used in conjunction with other available data, including surveys, as well as economic theory and economic research to try and gauge the most likely outcome and risks to the forecasts. Firms' answers to other 'non-core' questions (discussed below) are also an important input to these judgements.

As part of the information collected and scored by Reserve Bank staff, many participants offer precise numerical information about their business activities. This is often used by staff in assigning liaison scores, but it is also useful in its own right. This is particularly so for information about wages and prices (which are core to analysis of the inflation outlook) and for economic activities that are difficult to measure (like services sector output). Typically, regular contacts in the program (and even newer ones) come to liaison meetings ready to report numerical outcomes or estimates, reflecting the trust firms have in the program's confidentiality.

Understanding topical developments in the economy

In addition to gathering information on core questions, liaison interviews include topical or 'non-core' questions that ask contacts in particular industries about the drivers of a development or the impact of a specific shock.[12] The answers to topical questions are often coupled with data analysis to form assessments of issues as they arise; the timeliness of liaison can be particularly helpful in understanding the economic effects of

Graph 4

Information Content of Liaison Scores*
Correlation between scores (2002–2022) and ABS variables
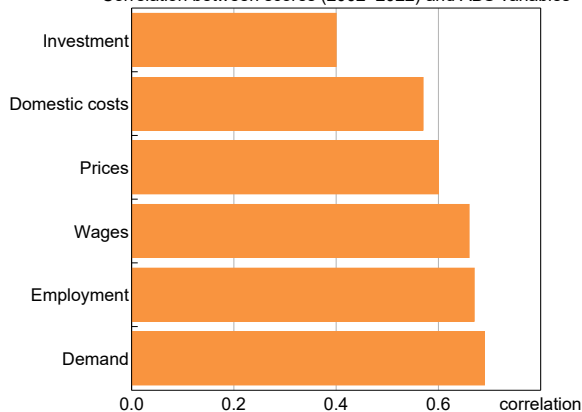
* ABS variables tested were year-ended growth in business investment, the Producer Price Index, the Consumer Price Index, the private Wage Price Index (excluding bonuses), employment and domestic final demand.

Sources: ABS; RBA

unexpected events (such as natural disasters) or gaining insight into structural changes in the economy. The liaison team will typically identify and seek meetings with relevant contacts within days of a significant event to better understand the scale of the shock, its effects and the implications for the economy. This is aided by longstanding relationships with many of our contacts.

The focus of topical analysis is determined on an 'as needed' basis. To ensure information collected remains current and targeted over time, analysts from both the liaison program and the Bank's forecasting teams meet regularly to discuss economic developments and key uncertainties to develop priority questions for firms on different issues. Episodic questions used in interviews may test various internal hypotheses and build a better understanding about how each industry works, the current stage of its business cycle, the challenges and opportunities faced over the medium-to-long term, and how firms are responding to the domestic and international circumstances they face. In doing so, this work supports the Bank's effectiveness, particularly in environments of uncertainty.

While liaison information has improved the Bank's understanding of a wide range of topics over the past decade, the four case studies discussed below provide examples of times when liaison was especially helpful.[13]

Case study 1: The mining investment boom
Insights from liaison were instrumental in improving the accuracy of the Bank's forecasts for mining investment and resources exports during the commodity price boom of the mid-2000s to late 2011, and its subsequent unwinding thereafter. Information from mining contacts gave the Bank an early indication that the amount of mining investment was going to be bigger than most forecasters expected and that, as prices fell, investment would decline at a faster pace than anticipated; this was highlighted in a speech by Assistant Governor Kent (2016), and in an interview (RBA 2014b). Liaison with other firms also highlighted the significant spillovers from mining investment to other sectors of the economy and

the labour market, outlined in *Bulletin* articles by Manalo and Orsmond (2013) and Langcake and Poole (2017).

Case study 2: Retail inflation in the 2010s
Inflation for retail goods in the first half of the 2010s was surprisingly low, especially given the depreciation of the Australian dollar from 2013, which would normally increase the price of imported goods. Statistical analysis did not provide an answer for this weakness, indicating little evidence that the relationship between the exchange rate and retail inflation had changed. It was discussions with retailers in the liaison program that suggested an intensification of competition in the retail sector and firms' efforts to reduce costs along their supply chain were likely to have contributed to low retail inflation. These developments were explored in a *Bulletin* article by Ballantyne and Langcake (2016).

Case study 3: Wages growth
Both qualitative and quantitative liaison information has contributed to the Bank's understanding of developments in wages growth over the past decade.

The actual wages growth numbers reported by firms through the liaison program have historically had a very high correlation with the private sector Wage Price Index (WPI) produced by the ABS (Graph 5). These numbers, along with data and survey information, are useful for 'nowcasting' and 'nearcasting' as they are typically available at least six weeks prior to the ABS's publication of the WPI.

In addition to the aggregated wage outcomes reported by firms, the liaison team also reviews the distribution of firms' reported wage growth outcomes and intentions (Graph 6).

Wages growth declined notably from the early 2010s and remained subdued at around 2 per cent per annum until the end of the decade. Discussions with liaison contacts provided some possible explanations for the decline, and indicated that wages growth was likely to remain subdued. This was supported by the numerical wages growth figures they shared. These messages were highlighted in a speech by former Deputy Governor Debelle (2019) and in a *Bulletin* article by Jacobs and

Rush (2015). Firms also provided insights into the range of practices they sometimes use before increasing wages to address skills shortages and how this varies in different time periods; these insights were shared in a *Bulletin* article by Leal (2019).

The COVID-19 pandemic resulted in another marked slowdown in wages growth in 2020 and 2021. The numerical wages information from liaison was valuable in helping forecast this decline and subsequent rebound. In 2022 thus far, liaison information suggests that wages growth has been picking up. Around 40 per cent of firms over the past two quarters reported wages growth above 3 per cent – this is higher than the share in late 2021 and higher than the years prior to the

Graph 5

Private Sector Wages Growth
Year-ended, excluding bonuses

* Rescaled to have the same mean as the Wage Price Index.
Sources: ABS; RBA

Graph 6

Distribution of Wages Growth
As a share of firms reporting wage data in liaison, calendar years

* March and June quarters of 2022.
** Expectations for the year ahead for firms reporting in the March and June quarters of 2022.
Source: RBA

pandemic (Graph 6). In terms of expected wages growth, over recent quarters there was a much lower share of firms reporting expected wages growth below 2 per cent than prior to the pandemic and a much larger share reporting expected wages growth over the year ahead above 3 per cent.

Case study 4: The recent increase in consumer price inflation

A focus of topical liaison analysis over recent quarters has been the increase in consumer price inflation. Liaison with the construction, energy and retail sectors on this topic has provided valuable information for the Bank to use in its economic assessments.

Liaison with the **residential construction sector** over the past year or so, combined with official data and surveys, has allowed the Bank to gain deeper insights into the factors contributing to the sharp increase in new dwelling inflation. With firms operating at close to full capacity, liaison has highlighted that a broad-based decline in the availability of most trades since late 2020 has weighed on the ability of construction firms to expand capacity to deliver this large pipeline of investment. Coupled with difficulties in securing sufficient material supplies, firms have noted for several quarters that project completion times have been pushed out relative to their typical timeframes and the volume of residential construction work done has been much lower than would typically be expected by the flow of approvals (Graph 7). As a result of these pressures, input costs have increased significantly. Of note, builders have said that in many cases suppliers and subcontractors are now reviewing costs monthly and residential construction firms are doing the same. The combination of larger and more frequent cost increases is adding upwards pressure to inflation, as discussed in a speech by Assistant Governor Ellis (2022).

Liaison with the **energy sector** provided insights into the drivers of the sharp increases in wholesale electricity prices in the June quarter and their implications for retail electricity prices. Liaison supplemented the analysis of published data on
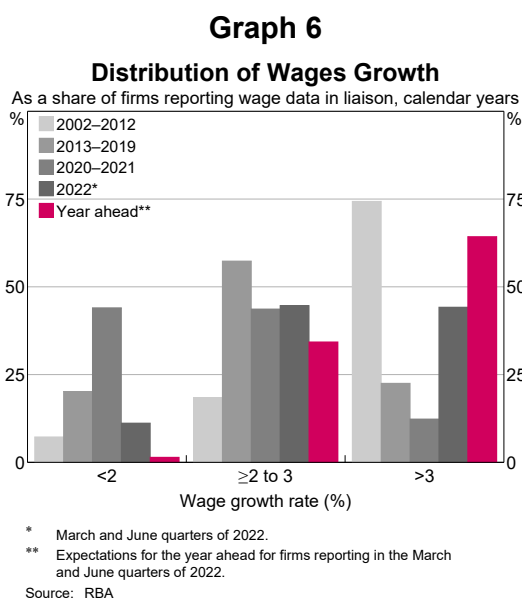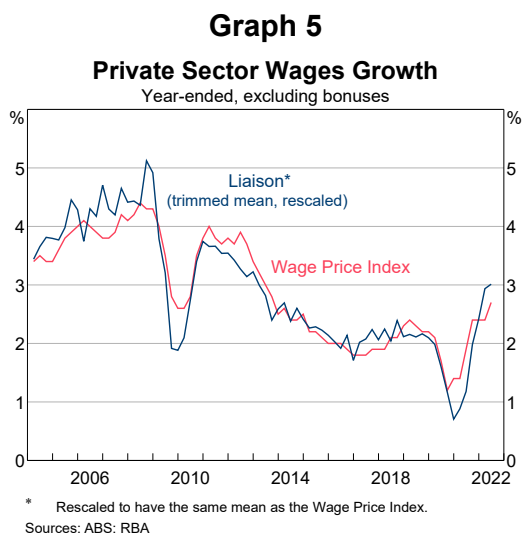
commodity prices, electricity demand and generation from fossil fuel and renewable sources, by asking a range of contacts in the energy sector for their insights into areas where data were more limited, the key factors in their decision-making during this period, and importantly their expectations for electricity prices over the coming quarters. This information was used to inform the Bank's forecasts for retail electricity and gas bills for households, and in turn consumer price inflation, in the August 2022 *Statement on Monetary Policy*. Households' electricity and gas prices are expected to increase significantly in the September quarter (though the bulk of the effect on the Consumer Price Index will be delayed until the December quarter), and contacts generally expect further significant increases in retail electricity prices in 2023 (RBA 2022).

Finally, liaison with firms in the **retail sector** provided valuable information about the outlook for retail inflation (Graph 8). Liaison with these firms over recent quarters has included specific questions on the share of their products undergoing price changes or expected to undergo price changes. Retail contacts have also been asked about the factors affecting pass-through of cost increases to prices, and how the frequency and magnitude of price changes compares to that in the pre-pandemic period. Most retailers in the liaison program have increased prices over recent months, or expect to do so over the months ahead, due to the persistence and magnitude of cost increases
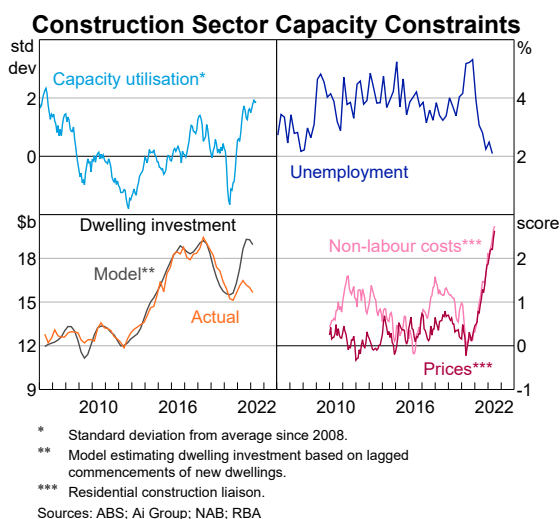
from inputs such as energy, shipping and materials. Suppliers are also requesting price increases more frequently. Firms in the liaison program have said that their price increases have become fairly widespread and passing through price increases is now more easily accepted by consumers than prior to the pandemic. Firms have generally reduced discounting, particularly when product availability has been low.[14]

Adaptability of the program

A key feature of the liaison program is the scope to adapt the non-core topics for discussion and the types of contacts spoken to, as well as the number and length of meetings. This has been particularly important in times of crisis, such as during the global financial crisis (GFC) and the COVID-19 pandemic. For example, liaison information from key firms on evolving events during the early part of the GFC indicated that reductions in labour demand would primarily occur via fewer hours worked and the use of accumulated leave rather than large headcount reductions, which aided the Bank's forecasting of labour market outcomes (RBA 2014a; RBA 2014b). Liaison information has been used extensively in the forecast process during the pandemic, and has been critical for providing a timely read on conditions as well as generating insights into the impacts of the shock and policy responses.

While adaptation of the program has primarily reflected changes to the topics discussed with

Graph 7

Construction Sector Capacity Constraints

* Standard deviation from average since 2008.
** Model estimating dwelling investment based on lagged commencements of new dwellings.
*** Residential construction liaison.
Sources: ABS; Ai Group; NAB; RBA

Graph 8

Retail Inflation vs Liaison Score

* Year-ended growth.
** Quarterly average liaison score for the wholesale & retail trade industry.
Sources: ABS; RBA

contacts and how frequently we speak with them, the COVID-19 pandemic also led to some practical adaptations. The liaison program shifted rapidly to entirely virtual liaisons from March 2020 in light of public health restrictions. Prior to this, only a small share of liaison meetings had been conducted virtually. Advantages arose from the shift, including: reduced travel time, which increased productivity; a greater ability for liaison staff and subject matter experts to join meetings with contacts across states; and the ability to continue to engage with regional contacts while travel was restricted.

More generally, the Reserve Bank periodically reviews and adjusts the liaison sample to capture changes in the structure of the economy over time to help maintain the representativeness of the program. For example, coverage of online retailers has been expanded in line with the growing share of online retail sales since the mid-2010s, a trend that accelerated during the pandemic. Similarly, community organisations and not-for-profit organisations were included in the program from 2012 to gain greater insight into households experiencing financial stress or long-term unemployment and to improve the Bank's understanding of economic developments in this space. Such information helped inform our understanding of employment outcomes for disadvantaged Australians, as discussed in a *Bulletin* article by Cunningham, Orsmond and Price (2014). More recently, the liaison sample has been expanded to include First Nations contacts that would otherwise be missed due to the limited sample of smaller firms in the program.[15]

Conclusion

The Reserve Bank's liaison program complements published data and other information sources to enhance our understanding of the economy. The program aims to be systematic in its approach to recording core information over time, but flexible enough to identify and respond to economic shocks and structural changes. It is also an important way through which the Reserve Bank engages with the Australian community. We expect these core aspects of the program to persist, though the Bank remains committed to the program's continual improvement, adaptation and review.

Acknowledgements

Endnotes

[1]   The Victorian Office engages with Tasmanian contacts, the South Australian Office engages with Northern Territory contacts, and staff in Head Office engage with contacts in both New South Wales and the ACT.

[2]   The Bank's liaison program is not the only form of liaison conducted by the Bank. For example, the Domestic Markets and Financial Stability departments have

extensive networks for collecting information from the finance sector.

[3] While liaison meetings are largely focused on information gathering, we ensure there is time in each meeting for our contacts to ask any questions they may have for the Bank. We also host debriefs following the release of our *Statement on Monetary Policy* and *Financial Stability Review* publications as a way of saying 'thank you' to our contacts.

[4] See RBA, 'Small Business Finance Advisory Panel'. Gaining small business perspectives is an important part of the Bank's economic analysis as they account for an estimated 30 per cent of economic activity and 40 per cent of employment (ASBFEO 2020).

[5] The number of firms spoken to varies a little from month to month and is typically lower in December and January reflecting the number of contacts on leave at this time.

[6] Typically, we focus on growth over the year to control for seasonal influences.

[7] The origins of this approach come from Likert (1932), who first published a report using such ordinal rankings to gauge the strength of social attitudes. It is most commonly used in social research to measure the level of agreement with a statement, though variants of it have become features of business surveys. Staff undertake training on completing these scores and analysts review scores as part of assurance exercises.

[8] A key exception is for business investment, where a score of zero reflects an 'average' or 'normal' level of investment, and negative (positive) scores reflect investment below (above) average levels.

[9] Nicholls and Orsmond (2015) use liaison scores to analyse the drivers of small businesses' behaviour.

[10] Not all information firms provide in response to these questions is able to be readily transposed to a score, and sometimes the contact is unable to provide this

information. Consequently, most liaison meetings do not result in scores for all of the six variables in Graph 3 (either on current or prospective conditions), but the majority of variables are scored at any point in time.

[11] Granger causality results are not sensitive to lag length and are fairly stable over the sample. For both the overall and private measures of year-ended WPI growth and the expected change in wages scores, we fail to reject the presence of a unit root. Taking the first difference of all series yields similar Granger causality results.

[12] Through discourse, firms often provide additional qualitative information about their business operations, their observations of changes in the economy and the drivers of these trends. In this way, liaison meetings are typically analytical in nature and differ from some business surveys commonly undertaken. Bank staff can subsequently seek data or adjust future interview questions to further explore the potential significance of an issue.

[13] Other publicly available examples of topical analysis utilising liaison insights data include Hsieh, Norman and Orsmond (2012), Lane and Rosewall (2015), Jenner *et al* (2018), de Atholia, Flannigan and Lai (2020), Grozinger and Parsons (2020), de Atholia and Walker (2021), RBA (2021a) and RBA (2021b).

[14] From time to time, staff also conduct a pricing survey of firms. For an example of published analysis on the results, see Park, Rayner and D'Arcy (2010).

[15] The inclusion of First Nations' contacts complements the work of the Bank's Small Business Finance Advisory Panel and is part of the Bank's commitments under our 'Innovate' Reconciliation Action Plan.

References

ASBFEO (Australian Small Business and Family Enterprise Ombudsman) (2020), 'Small Business Counts', December.

Ballantyne A and S Langcake (2016), 'Why Has Retail Inflation Been So Low?', RBA *Bulletin*, June, pp 9–18.

Cunningham M, D Orsmond and F Price (2014), 'Employment Outcomes of the Economically Disadvantaged', RBA *Bulletin*, March, pp 23–31.

de Atholia T, G Flannigan and S Lai (2020), 'Renewable Energy Investment in Australia', RBA *Bulletin*, March.

de Atholia T and A Walker (2021), 'Understanding the East Coast Gas Market', RBA *Bulletin*, March.

Debelle G (2019), 'Employment and Wages', Speech at the Australian Council of Social Service (ACOSS) National Conference, Canberra, 26 November.

Ellis L (2022), 'Housing in the Endemic Phase', Keynote Speech to the UDIA 2022 National Congress, Sydney, 25 May.

Grozinger P and S Parsons (2020), 'The COVID-19 Outbreak and Australia's Education and Tourism Exports', RBA *Bulletin*, December.

Hsieh W, D Norman and D Orsmond (2012), 'Supply-side Issues in the Housing Sector', RBA *Bulletin*, September, pp 11–20.

Jacobs D and A Rush (2015), 'Why Is Wage Growth So Low?', RBA *Bulletin*, June, pp 9–18.

Jenner K, A Walker, C Close and T Saunders (2018), 'Mining Investment Beyond the Boom', RBA *Bulletin*, March.

Kent C (2016), 'After the Boom', Speech at the Bloomberg Breakfast, Sydney, 13 September.

Lane K and T Rosewall (2015), 'Firms' Investment Decisions and Interest Rates', RBA *Bulletin*, June, pp 1–8.

Langcake S and E Poole (2017), 'The Resources Economy and the Terms of Trade Boom', RBA *Bulletin*, September, pp 27–34.

Leal H (2019), 'Firm-level Insights into Skills Shortages and Wages Growth', RBA *Bulletin*, March.

Likert R (1932), 'A Technique for the Measurement of Attitudes', *Archives of Psychology*, 140, pp 5–55.

Manalo J and D Orsmond (2013), 'The Business Services Sector', RBA *Bulletin*, March, pp 1–10.

Nicholls S and D Orsmond (2015), 'The Economic Trends, Challenges and Behaviour of Small Businesses in Australia', in A Moore and J Simon (eds), *Small Business Conditions and Finance Conference*, Reserve Bank of Australia, Sydney.

Park A, V Rayner and P D'Arcy (2010), 'Price-setting Behaviour – Insights from Australian Firms', RBA *Bulletin*, June, pp 7–14.

RBA (Reserve Bank of Australia) (2014a), 'The RBA's Business Liaison Program', RBA *Bulletin*, September, pp 1–6.

RBA (2014b), 'Business Liaison Program', Video, 13 November.

RBA (2021a), 'Box B: Supply Chains during the COVID-19 Pandemic', *Statement on Monetary Policy*, May.

RBA (2021b), 'Box B: COVID-19 and Commercial Property in Australia', *Statement on Monetary Policy*, August.

RBA (2022), 'Box A: Recent Developments in Energy Prices', *Statement on Monetary Policy*, August.

The Current Climate for Small Business Finance

Madeleine McCowage and Laura Nunn[*]

Photo: Kentaroo Tryman – Getty Images

Abstract

Economic conditions for small and medium enterprises (SMEs) have been relatively strong since the second half of 2021, and demand for business finance is high. However, the environment remains challenging and uncertain, and interest rates on loans for SMEs are rising from historical lows. Small businesses continue to report that accessing funding through banks is a challenge, although new lenders and products are providing alternative sources of finance. The article considers these recent developments, drawing in particular on the discussions of the Small Business Finance Advisory Panel, which met in July this year.

Introduction

Small businesses' access to finance has been a longstanding focus for the Reserve Bank. Each year, the Bank convenes a Small Business Finance Advisory Panel to better understand the challenges faced by small businesses, with 2022 marking the 30th anniversary of this practice.[1] This year's panel convened in mid-July and focused on economic conditions for small businesses, their appetite to take on debt and the challenges they encounter accessing finance.[2] This article summarises recent developments in small business finance, drawing on the panel's discussions, a range of data and the Bank's ongoing liaison with businesses and lenders.

Economic conditions for small businesses

Economic conditions for small businesses have improved, but the environment remains challenging and uncertain. Small businesses have been disproportionately affected by the COVID-19 pandemic because they are more likely to be in industries that have been affected by restrictions on movement. Indeed, panellists in face-to-face service sectors or tourism saw their orders and revenue fall sharply during lockdown periods. By contrast, businesses that were able to take advantage of online channels – especially those in the IT and software sectors – achieved strong growth throughout the pandemic.

The Australian economy bounced back from the COVID-19 lockdowns in the second half of 2021, and has since maintained strong underlying momentum. In line with this, panellists saw demand for their products and services recover rapidly as containment measures eased and economic activity rebounded. This is consistent with strong growth in retail sales since mid-to-late 2022, especially for small retailers (Graph 1). Current demand was described as being at or above pre-pandemic levels for almost all panellists. Many panel members also stated that strategic shifts in their business models and product lines made during the lockdown periods have had a lasting beneficial impact on their revenue.

Conditions and confidence have eased more recently as a result of above-average increases in input and labour costs, difficulties attracting and retaining workers, ongoing supply constraints and increased uncertainty about the economic outlook (Graph 2). Inflation is high and has picked up by much more than expected over the past year. Panellists noted that rising prices for fuel, freight, packaging and food has affected their margins and profitability. In response to rising input cost and wage pressures, most panellists stated they have passed through higher prices to their customers.

Panellists widely noted that it has been challenging to attract and retain staff given the competitive labour market. Conditions in the labour market are the tightest they have been in a number of decades. The strong demand for labour points to the resilience of the economic recovery and the general strength in aggregate demand; however, it has led to ongoing labour shortages, which have in some cases constrained panellists' ability to invest or increase output. As a result, many panel members have been offering larger-than-usual pay increases, or are about to do so. This was common across most industries but was particularly prevalent for staff with technology skills. These experiences are consistent with signs of rising wages in the economy at large (Graph 3) (Dwyer, McLoughlin and Walker 2022). Matching hours worked by staff to fluctuations in demand also remains challenging for small firms, with panellists noting that consumer behaviour has become less predictable since the pandemic. For example, workers no longer consistently commute to central business districts five days per week. To better meet fluctuations in demand, a couple of panellists noted that they prefer to hire casual workers.

Borrowing costs for SMEs

As the economic outlook improved in the second half of 2021 and early 2022, the Reserve Bank Board ended a number of the extraordinary policy measures put in place to support the economy through the pandemic.[3] In addition, the Board started raising the cash rate from May 2022 to normalise monetary conditions.

In response, interest rates on most types of business loans have increased, including on variable-rate loans to SMEs, which account for around three-

Graph 1

Retail Sales Growth by Size

January 2019 = 100

Source: ABS
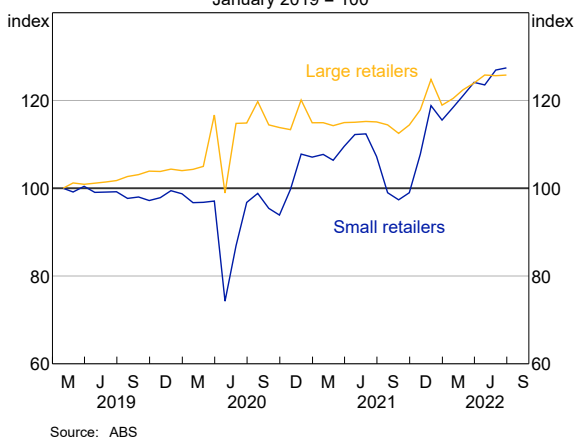
Graph 2

SME Business Sentiment*

Net balance

*   Survey captures businesses with turnover between $2 million and
    $10 million.
Source: NAB
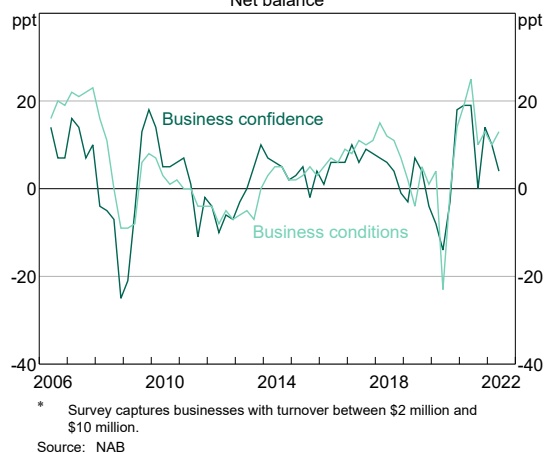
quarters of outstanding SME loans (Graph 4). From October 2021 into early 2022, this reflected the impact of rising market-based interest rates as expectations for monetary policy tightening increased. Average interest rates on new fixed-rate loans for SMEs have increased sharply since the start of the year. Since May, lenders have passed through the cash rate increases to their published small business indicator rates (the pricing benchmark for many small business variable-rate products). As a result, average interest rates on variable-rate loans have also increased.

In general, smaller businesses face higher borrowing costs than larger businesses as they are typically more risky (Graph 5). Modelling by the major banks suggests that SMEs are around twice as likely to default on their loans as standard mortgage customers and large corporations (Graph 6). The

spread between interest rates on loans for smaller businesses and those for larger businesses increased slightly in 2020, but subsequently narrowed and is now well below pre-pandemic levels. This decline reflects the fact that large business lending rates increased ahead of SME lending rates, due to the sharp rise since the start of the year in the three-month bank bill swap rate, which large business lending rates are typically linked to. The average rate on total outstanding SME loans began to pick up from May alongside increases in the actual cash rate as lenders passed these through to variable-rate SME loans.

Despite the narrowing in this spread between small and large business lending rates, recent increases in lending rates could have a larger impact on SMEs'

Graph 3

Wage Price Index Growth*

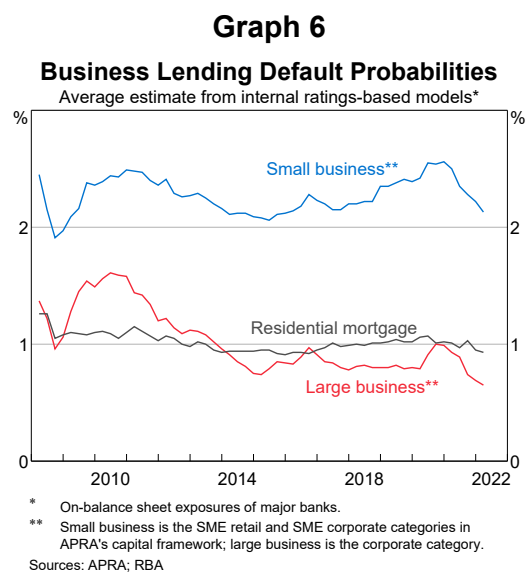**Graph 4**

SME Lending Rates

Weighted average interest rate, data to July 2022

* Total hourly rates of pay excluding bonuses and commissions.
Source: ABS

Sources: APRA; RBA

Graph 5

Australian Business Lending Rates

* Small loans data up to June 2019 reflect loans valued less than $2 million; large loans data up to June 2019 reflect loans valued $2 million or more; from July 2019 new data are used from the Economics and Financial Statistics (EFS) collection (see Statistical Table F7).
Sources: APRA; RBA

Graph 6

Business Lending Default Probabilities

Average estimate from internal ratings-based models*

* On-balance sheet exposures of major banks.
** Small business is the SME retail and SME corporate categories in APRA's capital framework; large business is the corporate category.
Sources: APRA; RBA

overall cost of finance compared to large businesses. Small businesses are generally more reliant on bank loans given that they have fewer alternative sources of funding. Additionally, SME business owners historically prefer debt over equity finance to maintain control of their business (Productivity Commission 2021). By contrast, large businesses can access finance through a range of alternative channels, including by issuing corporate bonds or equity, or by securing a syndicated loan.

As in previous years, many panellists reiterated that the price of lending has generally not been an impediment to accessing finance. Rather, as discussed below, accessing suitable amounts of finance through traditional lenders remains challenging for small businesses, with difficult approval processes and substantial collateral requirements.
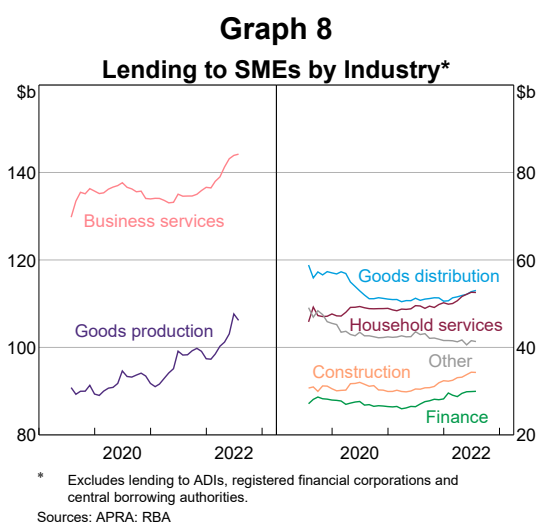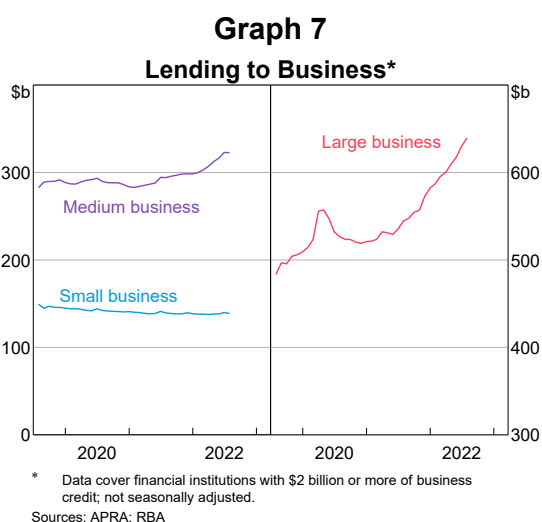
Demand for finance

Lending to SMEs increased by around 6 per cent over the past year. This has reflected increased lending to medium-sized businesses; lending to small businesses has been little changed for some time (Graph 7). Lending to SMEs has increased for most industries, with the strongest growth in the construction, goods production and business services industries (Graph 8).

Businesses' demand for finance generally remains high and overall loan commitments are elevated; however, views on future demand are mixed. Some banks expect lending growth to remain strong over the year, driven by medium and large businesses. Lending will continue to be supported by strong economic conditions, the high levels of merger and acquisition activity over the past 12 months, drawdowns on existing credit facilities for working capital requirements and growth in business investment. Other banks have noted that economic uncertainty, rising input costs and climbing interest rates may contribute to some slowing in demand for debt, particularly for small businesses.

Among the panellists, some stated that they are accessing or are considering accessing finance to support growth and significant changes to their businesses, particularly to meet increased demand. Other panellists are hesitant to take on new debt. Additionally, perceived challenges in accessing finance continue to weigh on their demand for debt.

A range of temporary government support measures – such as JobKeeper, Boosting Cash Flow for Employers and the accelerated depreciation schemes – supported businesses' cash flows during the pandemic. These, along with improved business operating conditions, enabled many businesses to build and maintain cash buffers over the past two years, reducing the need for some businesses to take on new debt (Graph 9). Up until the end of June 2022, lending to some SMEs was also supported by the Australian Government's SME loan guarantee schemes, although take-up of the schemes was modest (Treasury 2021; Bank and Lewis 2021). Some panel members noted difficulties

Graph 7

Lending to Business*

* Data cover financial institutions with $2 billion or more of business credit; not seasonally adjusted.
Sources: APRA; RBA

Graph 8

Lending to SMEs by Industry*

* Excludes lending to ADIs, registered financial corporations and central borrowing authorities.
Sources: APRA; RBA

accessing loans under these schemes; by contrast, many panel members had accessed JobKeeper. A handful of ongoing government programs remain in place to support lending to small businesses, such as the Australian Business Securitisation Fund and the Australian Business Growth Fund (Bank and Lewis 2021; Treasury 2020).

Access to credit from banks

As in previous years, panellists reported that they find it difficult to access finance through traditional lenders with terms that suit their needs. The requirement to provide personal collateral – often residential property – against a business loan continues to be the key constraint on access to finance for some SMEs. SMEs that can provide residential property as collateral are typically able to receive lower interest rates and can secure larger loans than otherwise, although these loans may still not be sufficient to meet the needs of an expanding business (Graph 10). However, some small business owners are unwilling to provide residential property as collateral given the stress involved in such a decision. Doing so could adversely affect the growth of the business, as business owners would become too risk averse with their family home on the line.

Small businesses often face a number of other non-price barriers to accessing financing, arising from their smaller scale, lack of business history (at least in the earlier phases of their business) and less diversified nature. The approval process is often difficult, and can be relatively costly for small businesses that do not have access to the finance teams of larger businesses. As a result, some small businesses on the panel reported that they had given up on seeking finance from banks. First Nations business owners often face even greater financing challenges than other small businesses. First Nations people tend to be younger and have lower incomes, personal and family wealth and educational qualifications on average compared to other Australians (Evans and Polidano 2022).

To reduce non-price barriers to accessing finance, a number of traditional lenders are increasingly automating processes for small business lending. Further, liaison indicates that some banks are implementing digital lending platforms to simplify the application process and reduce processing times for small business customers. These sorts of platforms generally utilise customer data, such as historical transactional and accounting data, to automate credit decisions up to a certain amount (typically up to around $200,000). The Australian Government's Consumer Data Right program is expected to facilitate this shift, as businesses will be able to share financial data with accredited third parties (Australian Government 2022a). By opting in to share data, businesses will be able to better compare products and services between organisations, and will potentially be able to reduce the time it takes to apply and be approved for a loan.

Graph 9

Cash Holdings of Non-Financial Businesses

Months of expenses*
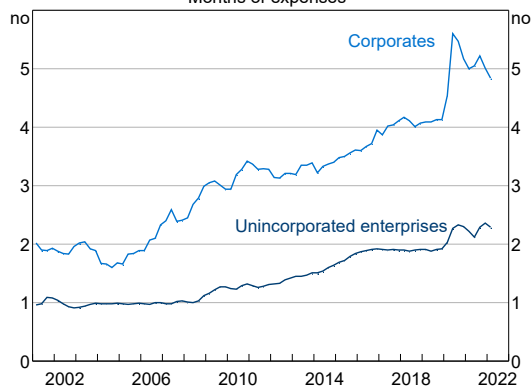
* Expenses estimated from the ABS Quarterly Business Indicators Survey.
Sources: ABS; RBA

Graph 10

Outstanding Small Business Lending

* Excluding credit cards.
Sources: APRA; RBA

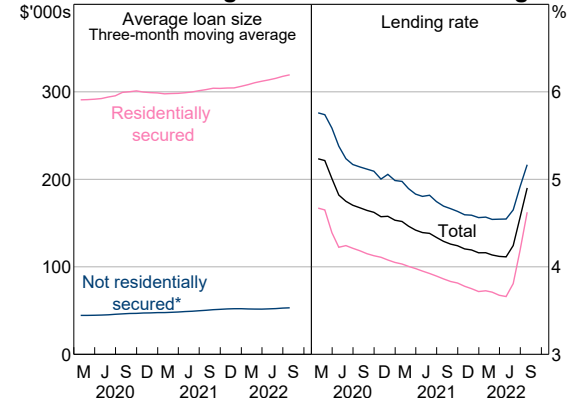Reductions to the Australian Prudential Regulation Authority's capital requirements for banks' SME loans, which will become effective from January 2023, may also support lending to SMEs by lowering the risk weights on loans to SMEs when calculating the necessary capital buffers banks need to maintain, and raising the threshold for defining a retail SME from a loan size of $1 million to $1.5 million.

New lenders and other sources of finance

The emergence of new lenders has helped to improve SMEs' access to finance (Productivity Commission 2021). These new lenders have different risk appetites and approaches to lending beyond traditional loans secured by property. Many panellists reported turning to non-traditional sources of finance over the past year, such as private equity and non-bank finance.

Equity

Small businesses typically have access to a narrower pool of equity funding than larger companies. Australian private companies can only raise equity from professional and sophisticated investors (such as angel investors or venture capitalists), through small-scale personal offers or crowd-sourced equity funding.

Several panellists reported that they had sought private equity in recent years, noting it was more accessible than traditional financing – particularly for high-growth businesses that had yet to turn a profit – but more expensive. This aligns with reports from industry surveys that venture capital and private equity funding was resilient through the pandemic and had been elevated over much of the past year (Preqin and Australian Investment Council 2022). As in previous years, some small businesses noted that private equity can also provide strategic benefits beyond financing, such as expertise and support from larger businesses or experienced investors.

However, recent commentary suggests that activity in venture capital and private equity markets has eased, particularly funding from offshore investors. This trend may be exacerbated by the recent decline in technology company valuations,

particularly in the United States. Several panellists confirmed these messages, with the recent declines in valuations relevant for domestic private equity expectations.

Non-traditional finance

Consistent with global trends, Australia's non-traditional finance market has continued to grow in recent years (Graph 11). Balance-sheet lending by technology firms is the largest source of non-traditional finance. These firms use transaction data to identify creditworthy business borrowers and provide loans and trade credit from their own balance sheets. This makes the application process quicker and easier than that of traditional lenders and these technology firms do not usually require collateral. However, interest rates on these loans tend to be much higher than on bank loans. Additionally, small businesses can typically only access small loan amounts through these lenders (generally up to $250,000), which is a limitation of this source of funding.

Other forms of non-traditional finance have also grown in recent years. Notably, crowd-sourced equity funding – which allows SMEs to raise funds through issuing shares to the public – grew strongly in 2021. While crowd-sourced equity funding can be expensive, some panellists noted that it can help build momentum, brand awareness and customer engagement with a business.

Graph 11

Australian Non-traditional Finance

Transaction volume

* Includes balance sheet consumer lending, marketplace business lending, property lending, invoice trading, crowdfunding and other models.

Sources: Cambridge Centre for Alternative Finance; RBA
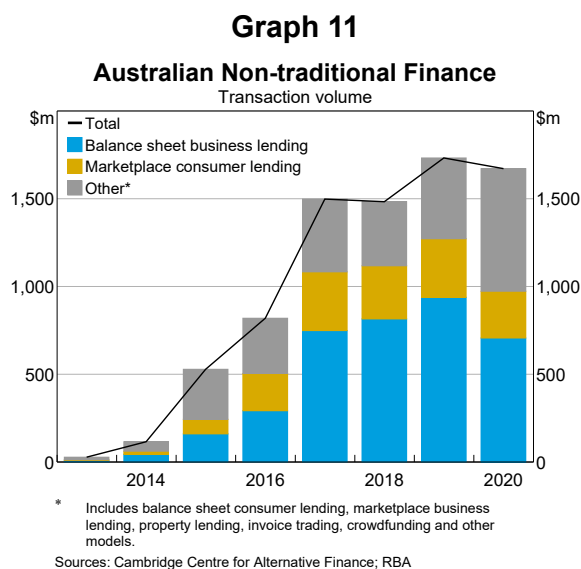
Trade credit is another alternative source of business finance. This is an agreement in which a supplier allows a business to delay payment for goods and services already delivered. On the one hand, trade credit is an important source of short-term funding for unlisted (typically smaller) businesses, which allows them to manage short-term cash flows. On the other hand, late payments by larger businesses and long payment terms have often been cited as an issue for smaller businesses. Late payment times remain high for many small businesses, and the latest payment times report register shows the average standard payment time for small businesses is greater than 33 days (Australian Government 2022b). Nevertheless, payment times have broadly been improving over the past year, and the compulsory Payment Times Reporting Scheme – which requires larger corporations to publicly report how quickly they pay invoices issued by small businesses – should help to improve payment times through increased transparency and greater scrutiny.

Conclusion

Small businesses form an integral part of the Australian economy, so understanding their unique challenges is a longstanding focus of the Reserve Bank. Economic conditions for small businesses have improved since the second half of 2021, although more recently cost pressures are increasing and businesses are finding it harder to attract workers. Demand for business finance remains high, but interest rates on business loans are rising from historic lows and views on future demand are mixed. Obtaining finance through banks remains a challenge for small businesses – this has been a consistent theme from the Bank's Small Business Finance Advisory Panel over its three-decade history – but new lenders and products are providing alternative sources of finance. ✨

Endnotes

[*]   The authors are from Domestic Markets Department.

[1]   The 2022 panel comprised eight entrepreneurs covering New South Wales, Victoria, the ACT, Western Australia and South Australia as well as multiple industries (manufacturing, hospitality, retail, IT and household services), including one First Nations member.

[2]   In the Australian Prudential Regulation Authority's lending data, a business is classified as small or medium if it has an annual turnover of less than $50 million. Within this, a business is considered small if it has an exposure to the reporting lending entity of less than $1 million. In the Australian Bureau of Statistics' economic data, a small business is defined as having fewer than 20 employees and a large business has 200 or more employees.

[3]   For a summary of these measures, see Debelle (2021).

References

Australian Government (2022a), 'Consumer Data Right'. Available at <https://www.cdr.gov.au/>.

Australian Government (2022b), 'Payment Times Reports Register'. Available at <https://register.paymenttimes.gov.au/dashboard.html>.

Bank J and M Lewis (2021), 'Australia's Economic Recovery and Access to Small Business Finance', RBA *Bulletin*, March.

Debelle G (2021), 'Monetary Policy during COVID', Shann Memorial Lecture, Online, 6 May.

Dwyer J, K McLoughlin and A Walker (2022), 'The Reserve Bank's Liaison Program Turns 21', RBA *Bulletin*, September.

Evans M and C Polidano (2022), 'First Nations Businesses: Progress, Challenges and Opportunities', RBA *Bulletin*, June.

Preqin and Australian Investment Council (2022), 'Australian Private Capital Market Overview: A Preqin and Australian Investment Commission Yearbook 2022', June.

Productivity Commission (2021), 'Small Business Access to Finance: The Evolving Lending Market', Commission Research Paper, 30 September.

Treasury (2020), 'Launch of the Australian Business Growth Fund', Media Release, 16 October.

Treasury (2021), 'SME Recovery Loan Scheme'. Available at <https://treasury.gov.au/coronavirus/sme-recovery-loan-scheme>.

The Cost of Card Payments for Merchants

Troy Gill, Cara Holland and Georgia Wiley[*]

Photo: mapodile – Getty Images

Abstract

The average cost for a merchant to accept a card payment has declined over recent years. However, consumers are making more payments with cards than ever before, which is raising total payment costs for merchants. Smaller merchants also face notably higher card payment costs per transaction than larger merchants. To strengthen competition and help reduce the cost of accepting card payments, the Reserve Bank wants all merchants to be able to choose which card network is used to process debit transactions – a functionality known as least-cost routing (LCR). While considerable progress has been made, the payments industry has more work to do to provide and promote LCR. The Bank is taking further action to ensure that LCR will be available for all merchants.

Introduction

Cards are the most frequently used payment method in Australia. Over the past few decades, card payments have grown strongly, driven by changing consumer preferences and increasing acceptance of cards by businesses. The COVID-19 pandemic reinforced this trend, with many businesses discouraging the use of cash due to hygiene concerns, while consumers also used less cash and made an increasing share of their purchases online.

When a merchant accepts a card payment, they are typically charged a 'merchant service fee' by their payment service provider for processing the transaction.[1] These fees can differ based on the type of card used in the transaction (e.g. a credit or debit card), the type of transaction (e.g. online or in person) and the card network through which the transaction is processed (e.g. eftpos, Mastercard or Visa). Providers may also charge merchants different rates depending on the merchant's size and industry.

Merchant service fees are comprised of three elements:

- **Interchange fees** – wholesale fees set by card networks that are paid from the merchant's financial institution (acquirer) to the cardholder's financial institution (issuer) on every transaction. These fees can vary based on factors like the type of card, whether it is an online or in-person transaction, the value of the transaction and the size of the merchant. For example, cards that provide rewards to the cardholder (such as 'gold' or 'platinum' credit cards) have higher interchange fees.

- **Scheme fees** – fees payable separately by both acquirers and issuers to card networks for the services they provide (often charged on a per-transaction basis).

- **Acquirer margin** – additional fees levied on merchants by their acquirer, to cover the acquirer's cost of providing card acceptance services to merchants.

The Reserve Bank's Payments System Board has responsibility for promoting the stability, efficiency and competitiveness of Australia's payments system. Given the prominence of card payments in Australia, the Bank views merchants' card payment costs as a key indicator of efficiency and competition in the payments ecosystem. In line with its mandate, the Board has introduced a number of reforms since the early 2000s that have helped drive down the average amount merchants pay for each card transaction. The Board announced a range of policy measures aimed at maintaining downward pressure on merchant payment costs in the Bank's 2019–2021 Review of Retail Payments Regulation (the 'Review') (RBA 2021).

This article examines developments in merchant payment costs using a range of data available to the Bank, including new, more detailed data on aggregate merchant service fees.[2] These data show that the costs merchants pay per card transaction have continued to trend down over recent years. Drawing on a database of payment costs for individual merchants, the article shows how the cost of accepting card payments varies not only across different card networks, but also across

different merchants. Most notably, smaller businesses tend to face significantly higher average merchant fees than larger businesses. Across all merchants, debit cards remain significantly cheaper for businesses to accept than credit cards. The data also show that merchants are charged materially less for debit transactions that are processed via the eftpos network compared with the Mastercard and Visa networks.

Finally, drawing on a new data collection, the article provides an update on the availability and take-up of least-cost routing (LCR), also known as merchant-choice routing. LCR refers to functionality that allows merchants to choose which card network is used to process debit card transactions – typically the network that costs them the least to accept. The Bank views LCR as a key mechanism for promoting competition and efficiency in the debit card market, and expects payment service providers to offer and promote LCR functionality for 'device-present' (or in-person) transactions and, by the end of 2022, for 'device-not-present' (or online) transactions. The data show that LCR is currently available to the vast majority of merchants for in-person debit transactions. However, take-up remains relatively low, suggesting that many more merchants could be benefiting from LCR.

Aggregate data on payment costs: Average merchant fees have decreased over time

The Reserve Bank publishes quarterly data on average merchant fees per transaction for the main card networks operating in Australia.[3] Across all networks, there has been a significant decrease in the average merchant fee since the early 2000s. This reflects a shift by consumers away from credit cards towards debit cards, which tend to be less expensive for merchants to accept (Graph 1); debit cards accounted for 58 per cent of the total value of card payments in 2021, up from 42 per cent a decade ago. The decline also reflects lower average merchant fees for most card networks (Graph 2).

Looking at the different card types, the average merchant fee for *credit* cards has declined over the past 10 years, driven by competitive pressure between credit card networks. This is partly due to Reserve Bank reforms that allowed merchants to

surcharge their customers for card payments. This led to a decline in the average fees and market share of the more expensive American Express and Diners Club networks, which pushed down aggregate credit card fees.
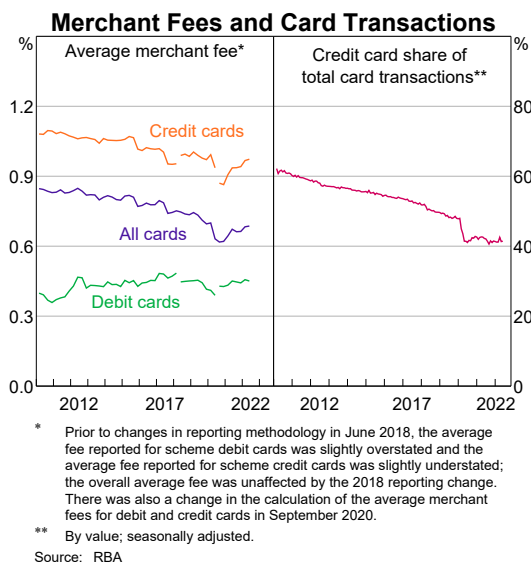
By contrast, the average merchant fee for *debit* cards has generally fluctuated within a narrow range, with downward pressure from the Bank's reforms to debit interchange fees and competitive pressure from LCR offsetting upward pressure from the increasing market share of the (generally more expensive) Mastercard and Visa debit networks. The Bank lowered the benchmark it sets for average

Graph 1
Merchant Fees and Card Transactions

Graph 2
Total Merchant Fees*

debit card interchange fees in 2017, which contributed to a decline in fees for Mastercard and Visa debit cards.[4] At the same time, however, the rise of contactless transactions, including via mobile wallets (such as Apple Pay and Google Pay), has led to an increase in the market share of the Mastercard and Visa debit networks, because such transactions are typically sent to these networks by default. Mobile wallet transactions have grown strongly in recent years and accounted for around 27 per cent of debit card transactions (by number) in the March quarter of 2022.

The COVID-19 pandemic has affected merchant service fees in a number of ways. Many acquirers offered merchants temporary fee waivers, which drove a fall in fees in mid-2020. Additionally, there was a shift in consumer behaviour, with a marked increase in the use of debit cards rather than credit cards, consistent with households' increased saving reducing their need for credit. Travel restrictions also drove a fall in transactions on foreign-issued cards in 2020 and 2021. Given that credit cards and foreign-issued cards are relatively expensive for merchants to accept, these developments contributed to a fall in average fees. However, average fees have risen over the past year or so, as the fee waivers ended and international travel began to recover.

The cost of accepting a card payment varies depending on the card network that processes the transaction (Graph 2). These differences depend on the prices set by both acquirers and card networks. As mentioned above, card networks set the interchange fees and scheme fees that apply to the transactions they process, with these costs ultimately passed on to merchants. Acquirers may also impose different margins on transactions of different networks. Payments made through the domestic debit card network, eftpos, are generally the least expensive, costing merchants an average of 0.3 per cent of the transaction value; this cost has been broadly unchanged over the past decade. This compares with average merchant fees of 0.5 per cent for both Mastercard and Visa debit card transactions, which have trended down in response to LCR and the policy measures noted above. The costs of accepting American Express and Diners Club cards have declined significantly over the past
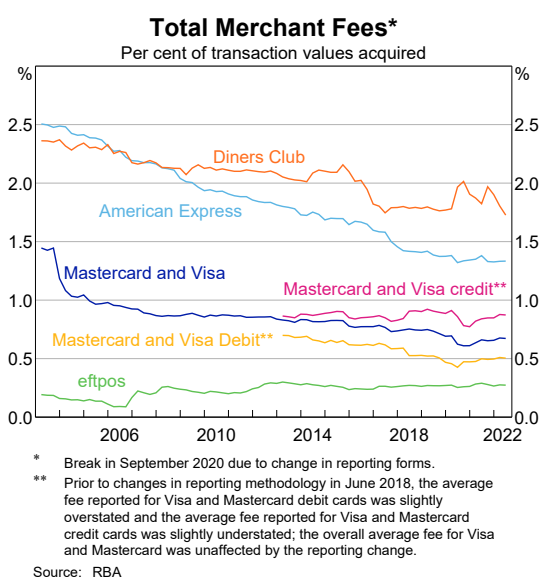
decade, but they remain the most expensive networks, with average merchant fees of around 1.3 per cent and 1.7 per cent of the transaction value, respectively. By contrast, Mastercard and Visa credit card transactions attract an average merchant fee of 0.9 per cent.

Merchant fee comparisons across networks are complicated by both compositional differences in the transactions processed by the networks, as well as the way acquirers charge merchants. For example, unlike Mastercard and Visa, eftpos does not process foreign-issued card transactions, which for Mastercard and Visa have significantly higher interchange fees than transactions on domestic cards. Additionally, eftpos has only recently begun processing online transactions, which can also attract different interchange and scheme fees. This means that the difference in the cost of accepting *a specific transaction* across networks could be quite different to that suggested by the aggregate data (which has implications for the size of potential savings for merchants from LCR). To address these compositional differences and allow for more meaningful comparisons across networks, the Bank recently began collecting and publishing more granular data on merchant fees that distinguishes between network, card and transaction type. The new data allow for comparisons of the cost of accepting domestic and foreign-issued card transactions, and device-present and device-not-present transactions, for both debit and credit cards and for each network individually.

Given the compositional differences noted above, the most meaningful comparison across the debit networks – at least while eftpos' online volumes remain low – is the cost of *domestic device-present* debit transactions. For these transactions, eftpos is still generally the least expensive to accept, with an average fee around 0.24 percentage points lower than the other debit networks in the first half of 2022 (Graph 3). The new data also confirm that foreign-issued credit card transactions are significantly more expensive to accept than domestic credit card transactions, by around 1 percentage point on average. Overall, device-not-present transactions are cheaper on average than device-present transactions, due to large merchants

that can negotiate lower fees making up a larger share of device-not-present transactions.

While these new data allow for more meaningful comparisons across networks, such comparisons remain complicated by acquirers' pricing practices. In particular, a sizeable share of merchants are on 'blended' pricing plans, where the merchant is typically charged a specified per-transaction fee either for each international card network (e.g. a single rate for all Visa debit and credit transactions) or for multiple networks (e.g. a single rate for all Mastercard and Visa debit and credit transactions). Since the wholesale cost of credit transactions is on average much higher than for debit transactions, these blended rates are higher than those that would apply if debit transactions were priced separately. Accordingly, these plans inflate the average reported cost of accepting Mastercard and Visa debit transactions relative to eftpos (which tends to be priced separately), although the merchant-level data discussed below suggest this bias is small. As noted above, the margins charged by acquirers can also differ across networks, and appear to be higher for Mastercard and Visa on average (at least partly due to the impact of blended pricing).[5]

Merchant-level data on payment costs

To look at the distribution of payment costs across different merchants, the Bank collects anonymised merchant-level data on payment costs each year.

Graph 3

Total Merchant Fees
Per cent of transaction values acquired
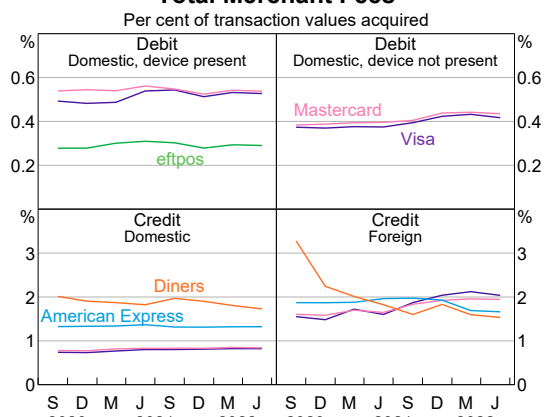
* 'Domestic' refers to acquired transactions on domestic-issued cards; 'foreign' refers to acquired transactions on foreign-issued cards.

Source: RBA

These data show how much individual merchants pay, on average, to accept card payments under the eftpos, Mastercard and Visa networks. The 2020/21 data were collected from 11 large acquirers (and payment facilitators) and include card acceptance costs for more than 700,000 merchant accounts.[6] These merchant accounts processed a total of around $500 billion in transactions through the three card networks in 2020/21, making up around 80 per cent of the total value of transactions processed through these networks in Australia. The 2020/21 dataset for the first time also included information on each merchant's industry and the type of payment pricing plan they were on.

The dataset captures merchants of all sizes. The vast majority (88 per cent) of merchant accounts are relatively small, processing less than $1 million per year in card transactions, with 48 per cent of merchants processing less than $100,000 in 2020/21 (Graph 4);[7] however, merchants that processed less than $1 million in card transactions accounted for only 22 per cent of total card transaction values. At the other end of the spectrum, while less than 1 per cent of merchants processed more than $10 million in card transactions, they accounted for 40 per cent of total transaction values.
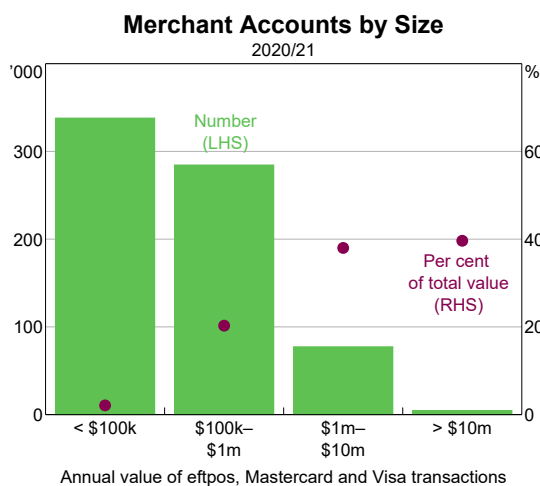
Smaller merchants tend to pay higher average fees

The merchant-level data show that average payment costs tend to decrease as merchant size increases. To illustrate this, Graph 5 divides the

sample of merchants into deciles, where each decile contains merchants that account for 10 per cent of the total value of card transactions in the 2020/21 dataset. The first decile includes around 525,000 merchants with an average of around $100,000 in card transactions in the year. By contrast, the 10th decile includes 34 merchants, processing on average $1.5 billion in card transactions in the year. As shown in the graph, the smallest merchants (in the first decile) had an average cost of acceptance across all three card types of 1.15 per cent of transaction values, while the largest merchants (in the 10th decile) had an average cost of acceptance of 0.47 per cent. Average payment costs for small merchants also tend to be more widely dispersed – for example, one-fifth of merchants with annual card turnover below $100,000 faced average payment costs of more than 2 per cent of transaction values.

There are several reasons why smaller businesses tend to face higher payment costs on average. There are some fixed costs associated with accepting card payments, such as purchasing or renting payment terminals, which for smaller merchants are spread over a lower volume of transactions, leading to higher average costs. Also, because of their higher transaction volumes, larger merchants are more likely to be able to negotiate favourable interchange and scheme fees set by card

Graph 4

Merchant Accounts by Size

2020/21

Number (LHS)

Per cent of total value (RHS)

Annual value of eftpos, Mastercard and Visa transactions

Source: RBA

Graph 5

Cost of Acceptance by Merchant Size*

Per cent of value of card transactions, 2020/21

Credit

Total

Debit
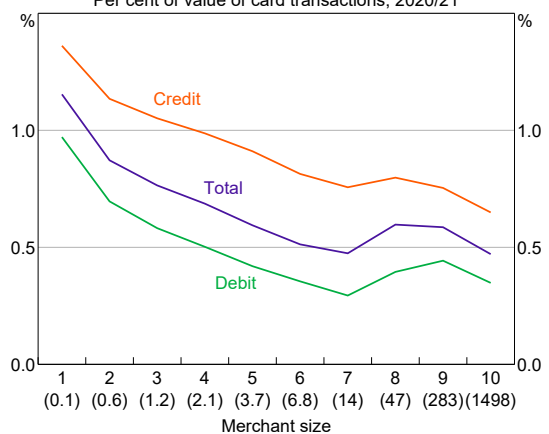
Merchant size

* Includes eftpos, Mastercard and Visa transactions. Merchants ranked in value deciles, with average annual value of eftpos, Mastercard and Visa transactions ($m) in parentheses.

Source: RBA

networks and may be able to negotiate lower acquirer margins.

Another factor that influences payment costs is the type of pricing plan a merchant is on. Pricing plans can be grouped into three main types:

- **'Fixed' (or 'simple') plans** charge the same rate for all networks, cards and transaction types.[8]

- **'Blended' plans** charge a few different rates, each of which may cover a number of networks, card and transaction types.

- **'Unblended' plans** charge the merchant the wholesale cost of each transaction (interchange fees and scheme fees) plus an acquirer margin. This is also known as 'interchange plus' or 'interchange plus plus' pricing.[9]

The new data collected on merchants' pricing plans show that smaller merchants are more likely to choose fixed plans – particularly merchants in the first decile that process less than $100,000 in card transactions each year on average (Graph 6). Some stakeholders have suggested that this may be because these plans are easier to understand and provide merchants with more certainty around their payment costs, since the cost of accepting a card payment is fixed regardless of the type of card used. However, these plans tend to be more expensive.[10] One reason for this is that, with fixed prices, the acquirer takes on the risk that there could be changes in the merchant's transaction mix from one period to the next that result in higher wholesale costs for the acquirer (because the wholesale cost of individual transactions can vary significantly). Some acquirers offering fixed plans may also include more services than other acquirers, such as a single payment solution that covers both in-store and online purchases, better integration with accounting and inventory management software, or better analysis of merchants' sales data. For some smaller merchants, the benefits of fixed plans in terms of simplicity, convenience and functionality could outweigh their higher cost.

A number of barriers to competition in the acquiring market are also likely to contribute to higher payment costs for smaller merchants. Payments concepts and pricing plans can be complicated, particularly for smaller merchants that may lack the time and other resources to study them, which can lead to a 'set-and-forget' approach to the selection of payment services. It can also be costly to switch to a new acquirer – for example, because of one-off transitional costs or because payment services may be part of a package that provides favourable prices on other banking services (such as credit facilities). A lack of price transparency can also be a barrier, with blended plans – which tend to be more competitively priced than fixed plans – usually negotiated individually between the acquirer and the merchant, based on the merchant's specific card transaction mix (e.g. the share of credit versus debit card transactions that the merchant typically processes). These custom pricing plans, along with merchants often not having easy access to their detailed card transaction data, can make it difficult for merchants to compare different plans and shop around for a better deal.

In its recent Review, the Bank committed to take further steps to help improve competition in the acquiring market for smaller merchants. This includes regularly publishing summary information on average card payment costs for merchants of different sizes, as well as explanatory material about key concepts in card payments and acquiring services. The Bank is also continuing to support

Graph 6
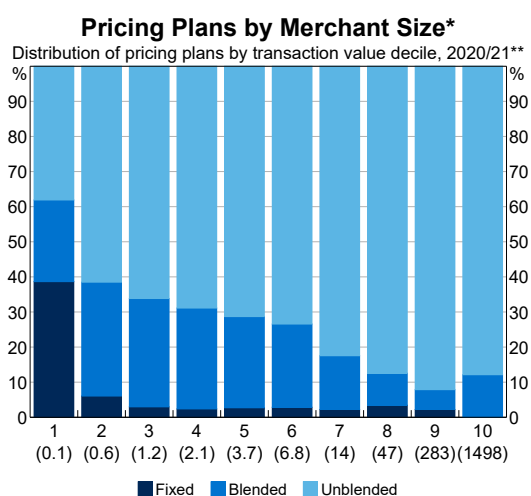
Pricing Plans by Merchant Size*
Distribution of pricing plans by transaction value decile, 2020/21**

* Merchants ranked in value deciles, with average annual value of eftpos, Mastercard and Visa transactions ($m) in parentheses.
** A small number of merchants using 'other' pricing plans have been excluded from this graph.
Source: RBA

Treasury in exploring the possibility of extending the Consumer Data Right to acquiring services provided to small businesses, to make it easier for merchants to access their transaction data and seek quotes from alternative payment providers.

Merchants' card payment costs not only vary by merchant size, but also by industry. For example, the data show that merchants in the airline industry faced the highest payment costs in 2020/21, on average, while merchants in the oil and gas industry faced the lowest. However, this mainly reflects a correlation between industry and other factors affecting payment costs, such as card transaction mix – for example, merchants in the airline industry tend to process a higher proportion of credit card (and possibly foreign-issued card) transactions, which cost more to accept on average than debit card transactions. Similarly, some industries are dominated by larger merchants, which tend to have lower card payment costs (and vice versa).

## Average fees have declined over time as consumers have shifted to debit cards

In line with the aggregate data discussed above, merchants' average cost of accepting card payments has typically declined since 2016/17 across merchants of different sizes, including for smaller merchants (Graph 7, top panel). This largely reflects a compositional shift in consumers' card payments from credit cards to debit cards, which tend to be less expensive for merchants to accept.

However, as shown in the bottom panel of Graph 7, merchants' average cost of accepting debit transactions has risen since 2016/17, mainly for those in the middle of the size distribution. This reflects the ongoing rise of contactless (including mobile) and online card payments in recent years, as most of these transactions are processed by Mastercard or Visa by default (which are typically more expensive). There has also been less competitive pressure on the interchange and scheme fees for mobile and online transactions. This is because LCR is currently not available for mobile wallet transactions, and because eftpos did not have the ability to process online transactions until recently.

Eftpos is currently the cheapest debit card network on average

The merchant-level dataset shows that average payment costs tend to be lower for larger merchants across each of the card networks. These data suggest that in 2020/21 eftpos was, on average, significantly cheaper to accept than the other debit card networks for merchants of all sizes. Acquirers charged around 23 basis points more on average for Mastercard and Visa debit cards than for eftpos transactions, with the difference ranging from 19–34 basis points across merchant-size deciles (Graph 8). This is similar to the average cost difference in the aggregate data shown in Graph 2 above.

Graph 7

Change in Payment Costs by Merchant Size*
Per cent of value of card transactions
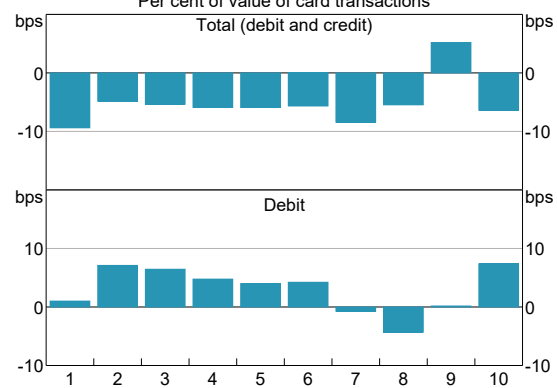
* Since 2016/17. Merchants ranked in value deciles based on annual value of eftpos, Mastercard and Visa transactions in the relevant year. This graph excludes acquirers that reported data for the first time in 2020/21.
Source: RBA

Graph 8

Cost of Acceptance by Merchant Size*
Per cent of value of card transactions, 2020/21
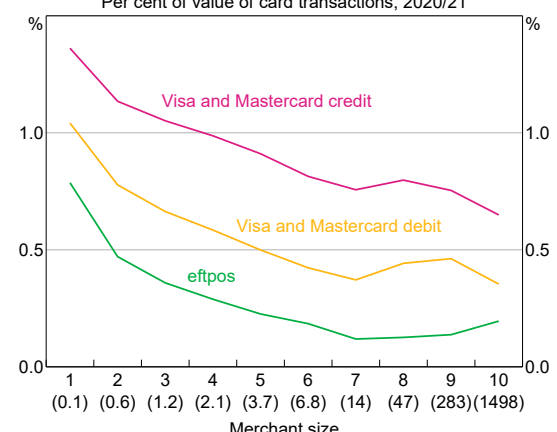
* Merchants ranked in value deciles, with average annual value of eftpos, Mastercard and Visa transactions ($m) in parentheses.
Source: RBA

However, these average price differences do not necessarily mean that eftpos is cheaper for any given merchant; in particular, for merchants with low average transaction sizes, eftpos may be more expensive in *percentage terms*, because acquirers often charge cents-based fees per transaction for eftpos (but percentage fees for other networks). Indeed, for around 10 per cent of merchants in this sample, accepting Mastercard and Visa debit cards was more than 10 basis points cheaper than eftpos. There was little difference between the costs of the debit networks for a further 30 per cent of merchants, many of whom were on 'fixed' pricing plans. For the remaining 60 per cent of merchants, eftpos was cheaper on average than the other debit networks.[11]

Least-cost routing: Limited take-up by merchants to date

With debit cards now the most frequently used payment method in Australia, the cost to merchants of accepting these cards has been an important area of focus for the Payments System Board.

Most domestically issued debit cards are *dual-network* debit cards. These cards allow transactions to be processed either through eftpos or one of the international debit networks (most commonly Visa or Mastercard). Prior to widespread use of contactless ('tap-and-go') technology, consumers would insert their dual-network debit card into the merchant's payment terminal and then select the network to process the transaction. By contrast, for contactless payments the default is for the transaction to be automatically routed to the international debit network on the card. With those networks being generally more expensive for merchants, the increasing use of contactless functionality by consumers has resulted in higher costs to merchants for accepting debit transactions. As a result, for some years the Bank has been encouraging financial institutions to provide merchants with LCR functionality, which allows merchants to route dual-network debit card transactions via their preferred network – typically the one that costs them the least to accept.

LCR can help merchants to directly reduce their payment costs. It can also increase the competitive

pressure between the debit networks, providing greater incentives for the networks to lower the wholesale fees that are ultimately paid by merchants. The Board has strongly supported the continued issuance of dual-network debit cards and the provision of LCR functionality because they contribute to efficiency and competition in the payments system. Following pressure from the Bank and other stakeholders, larger acquirers began offering LCR from 2018. However, low merchant take-up and limitations in the functionality provided by acquirers led the Bank to examine the availability and functioning of LCR in its Review, and to consider whether additional regulatory action was required (RBA 2019). The Board concluded that policy action to promote the provision and merchant awareness of LCR was indeed warranted, resulting in two main policy initiatives (RBA 2021):

1. The Bank set an expectation, with immediate effect, that all acquirers and payment facilitators (which provide card acceptance services to merchants) would offer and promote LCR functionality to merchants in the *device-present* (in-person) environment. Acquirers and payment facilitators are also expected to report to the Bank on their LCR offerings, and on merchant take-up of LCR, every six months. This reporting requirement, and the latest results, are discussed further below.

2. The Bank set an expectation that all acquirers, payment facilitators and gateways would offer and promote LCR functionality to merchants in the *device-not-present* (online) environment by the end of 2022; this deadline reflects the fact that LCR in the online environment is only becoming possible this year as eftpos completes the rollout of its online functionality. Acquirers, payment facilitators and gateways are also expected to report to the Bank on their LCR capabilities and offerings, and on merchant take-up of LCR, every six months.[12]

An important limitation to the expectation regarding LCR in the device-present environment was that it applied only to contactless transactions that are initiated by tapping a *physical card* – it did not extend to transactions initiated using a mobile wallet on a smart phone or other payment-enabled

Table 1: LCR for In-person Transactions

Measures of LCR availability and take-up, per cent, June 2022[a]

	Available		Active/enabled	
	By number of merchants	By transaction value	By number of merchants	By transaction value
Total	85	88	50	33
– Fixed	93	83	85	64
– Blended	91	90	28	32
– Interchange plus (plus)	67	88	12	29

(a) Figures exclude very large (strategic) merchants. In-person transactions do not include transactions using a mobile wallet.
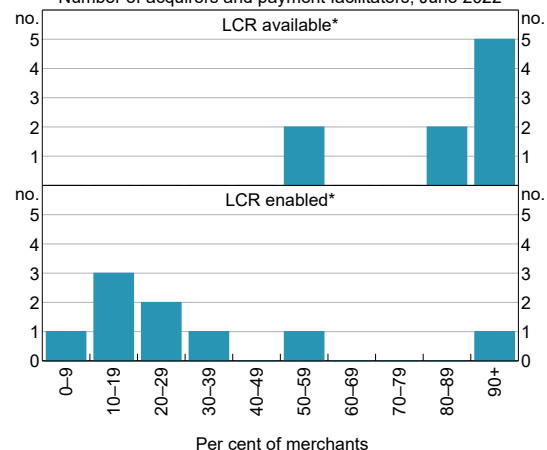
Source: RBA

mobile device. While the benefits of enabling LCR for mobile-wallet transactions could be substantial, the Board concluded in the Review that these would likely be outweighed by the significant implementation costs, particularly given very limited international precedent for the functionality, as well as other legal and practical challenges. However, the accumulation of additional evidence, particularly through recent liaison with stakeholders, suggests that the technical implementation of LCR for mobile-wallet transactions would be less complex and costly than first thought. Accordingly, with the ongoing rapid growth in mobile-wallet transactions, the policy case for extending LCR to such transactions has strengthened. In view of these developments, the Board announced in August that it now expects the industry to make LCR functionality available for mobile-wallet transactions (RBA 2022).

The Bank has recently received the first round of six-monthly reporting from acquirers and payment facilitators on LCR for *in-person* transactions.[13] This includes qualitative information on providers' LCR offerings and promotion activities, as well as data on the availability and take-up of LCR. Overall, the results show that the industry has not yet met the Bank's expectations.

The results confirm that, as of mid-2022, LCR for in-person transactions is available to most merchants. By number, LCR is available to 85 per cent of merchants, with these merchants accounting for 88 per cent of the total value of debit transactions (Table 1). This shows that the industry as a whole has made good progress on making LCR technically

available to merchants, and most acquirers and payment facilitators are meeting the Bank's expectation (at least in regards to *offering* LCR for in-person transactions). However, these data show that there are some large gaps in availability at a small number of acquirers, most commonly because some older payment terminals do not have the requisite capability (Graph 9). The Bank has asked for concrete plans and assurances from the relevant acquirers that they will address these gaps promptly, to ensure that LCR is made available for in-person transactions for all their merchants.

Having LCR *technically* available to merchants, however, does not necessarily mean that it is accessible in practice. Merchant groups have consistently highlighted that LCR is not easily accessible for merchants, arguing that acquirers and

Graph 9

Progress on LCR Availability and Take-up
Number of acquirers and payment facilitators, June 2022

*   Figures exclude strategic merchants.
Source: RBA

payment facilitators provide insufficient information and assistance. A key indicator of whether LCR is easily accessible, and whether the Bank's expectations are having the desired effect, is the extent to which LCR is being taken up by merchants. The data show that take-up of LCR remains relatively low. By mid-2022, LCR had been enabled for only 50 per cent of merchants, with these merchants accounting for just 33 per cent of the total value of transactions. Take-up is especially low for merchants on interchange plus (plus) plans, which is particularly disappointing given that the benefits of LCR are so clear for merchants on these plans (since wholesale costs are passed straight through to merchants, with a fixed acquirer margin).[14]

In recent years some acquirers have rolled out 'fixed' (or 'simple') merchant payment plans with LCR implemented 'in the background' – that is, where the acquirer routes transactions to reduce their wholesale costs without the involvement of the merchant. The increasing availability of these plans appears to have made a material contribution to the overall take-up of LCR, particularly in terms of the *number* of merchants, with 85 per cent of merchants on fixed plans having LCR enabled. However, some stakeholders argue that fixed plans with LCR 'in the background' should not be considered as having implemented LCR, partly because the savings from LCR may not be fully passed on to merchants. If merchants on such plans were instead counted as not having LCR, then 40 per cent of merchants would have LCR available (accounting for 81 per cent of the total value of debit transactions) and overall take-up would be 9 per cent of merchants (28 per cent of the total value of debit transactions).

In addition, the LCR functionality provided by some acquirers and payment facilitators is quite rudimentary. Many providers continue to adopt a simple 'all or nothing' (or 'binary') approach for their merchants, whereby all routable transactions are sent to either eftpos or the default debit network, depending on which network is cheaper *on average*. Most providers also offer a more sophisticated approach to LCR, where the choice of network for an individual transaction depends on whether the transaction value is above or below a

certain threshold. However, very few offer 'dynamic' LCR, which maximises savings by routing each individual transaction to the cheapest network *for that particular transaction*. A question for the industry and policymakers to consider is how much additional savings merchants could achieve by using 'dynamic' routing logic and how costly that would be to implement and roll out across all payment terminals.

Acquirers and payment facilitators generally make some information on LCR available to their merchant clients, including explanations of what LCR is, how merchants can benefit from LCR and how LCR can be enabled. This information is typically provided on their public websites. However, this information can be highly generalised, sometimes with little further detail that a merchant could use to determine how much they could save. In part, this reflects the fact that many key details will depend on the merchant's unique circumstances. Most acquirers and payment facilitators have also taken at least some action to actively alert merchants to the potential benefits of LCR. However, merchant groups continue to report that merchants face a range of roadblocks when seeking further information on LCR and/or its implementation. Overall, particularly in light of the low take-up of LCR, many acquirers' and payment facilitators' promotion activities do not yet seem to meet the needs of merchants.

Conclusions

The average cost of accepting a card payment has continued to fall over recent years, extending the longer run downward trend due to reforms introduced by the Reserve Bank's Payments System Board. However, the cost of accepting debit card payments has risen for smaller merchants, driven by the ongoing rise of contactless (including mobile) transactions. These transactions are typically routed to Mastercard and Visa, which tend to be more costly for most merchants than those processed by eftpos. More generally, smaller businesses typically face higher average payment costs than larger businesses.

The Bank continues to actively support LCR as a way of reducing merchants' cost of accepting card

payments, including by facilitating stronger competition between the card networks. The Bank has set expectations for the payments industry regarding LCR, including recently announcing that it expects LCR functionality to be made available for mobile-wallet transactions. Currently, LCR is widely available for in-person transactions, and this has put downward pressure on wholesale fees for debit transactions. However, new data reported to the

Bank highlight that some notable gaps in LCR availability persist, and that merchant take-up of LCR remains low. This indicates that payment providers have more work to do to provide and promote this functionality to their merchant clients. The Bank is taking further action to support LCR under its mandate to promote a more efficient, competitive and safe payments system. ✦

Endnotes

[*] The authors are from Payments Policy Department

[1] The payment service provider that provides services to a merchant to allow it to accept card payments, usually a bank, is known as the 'acquirer'. In the case of payments using an American Express and Diners Club card, merchant fees are typically paid directly to the card network.

[2] This article is an update to Occhiutto (2020), which examined trends in merchants' card payment costs based on data to the end of 2019.

[3] These data are part of the RBA's Retail Payments Statistics, which are available at <https://www.rba.gov.au/ payments-and-infrastructure/resources/ payments-data.html>. The merchant fees data include both per-transaction fees and any other fees (such as the cost of renting a terminal to accept cards and monthly or annual account fees) that acquirers charge merchants for accepting card payments.

[4] New standards implemented in July 2017 reduced the weighted-average interchange fee benchmark for debit (and prepaid) cards from 12 cents to 8 cents, and introduced caps on individual interchange fees. In February 2022, as part of the Bank's Review, the debit interchange standard was amended to reduce the cap on individual debit (and prepaid) interchange fees that are set in cents terms from 15 cents to 10 cents.

[5] More generally, aggregate data cannot be relied on to assess the cost of accepting different networks for an individual merchant, which will depend on a range of factors, including their size, type of payment pricing plan, average transaction size, card mix, industry and choice of acquirer.

[6] Payment facilitators provide card acceptance services mainly to smaller merchants and act as an intermediary between the merchant and the acquirer. They typically provide a simplified 'all in one' payments solution for merchants – for example, by offering a single service for accepting both in-store and online card payments.

[7] Hereafter, merchant accounts are referred to as 'merchants' for simplicity. However, individual outlets within chains or franchises may be treated by some

acquirers as separate merchant accounts and receive separate merchant statements, even if their payments contracts are arranged on a group level. This would tend to overstate the true number of merchants and understate the true size of merchants in the sample.

[8] Some fixed plans may charge merchants a different rate for in-store versus online transactions, or for transactions made with Australian-issued versus foreign-issued cards.

[9] 'Interchange plus plus' plans charge the merchant for interchange fees, 'plus' scheme fees 'plus' an acquirer margin, while 'interchange plus' plans charge the merchant for interchange fees 'plus' an acquirer margin (with scheme fees subsumed within the acquirer margin, rather than being separated out).

[10] On average, and controlling for some other factors, we estimate that fixed plans are around 40 per cent (and blended plans are around 30 per cent) more expensive than unblended plans.

[11] As noted above, comparing the average cost of acceptance across debit networks is complicated by compositional differences and acquirer pricing. With regard to acquirer pricing, the merchant-level data allow us to estimate the potential upward bias that blended plans may introduce into the measured difference between the cost of accepting eftpos and the other debit networks. Comparing the average difference between the debit networks for *blended* versus *unblended* plans suggests that the upward bias is relatively small, in the ballpark of 2 basis points.

[12] The Bank also announced that it expects the industry to follow a set of principles regarding the implementation of LCR in the online environment, to address the Board's concern that online LCR could be hindered by some industry participants taking divergent, or restrictive, approaches to its implementation. Together, these initiatives formed part of a broader package of reforms designed to support the viability of LCR (RBA 2021).

[13] The LCR reporting for *in-person* transactions includes nine large acquirers and payment facilitators, which together processed around 90 per cent of debit card transactions in the first half of 2022.

[14] The benefits of LCR for very large (strategic) merchants on interchange plus (plus) plans is not always clear, given that enabling LCR will often result in them losing their discounted (strategic) interchange rates on debit transactions processed by the international card networks. The data reported in this section exclude 'strategic' merchants.

References

Occhiutto K (2020), 'The Cost of Card Payments for Merchants', RBA *Bulletin,* March.

RBA (Reserve Bank of Australia) (2019), 'Review of Retail Payments Regulation: Issues Paper', November.

RBA (2021), 'Review of Retail Payments Regulation: Conclusions Paper', October.

RBA (2022), 'Payments System Board Update: August 2022 Meeting', Media Release No 2022-27, 25 August.

Trends in Australian Banks' Bond Issuance

Claire Johnson[*]

Photo: d3sign – Getty Images

Abstract

Bonds account for around 10 per cent of Australian banks' funding, and bonds issued by banks account for about half of the non-government bond market. The Australian bank bond market is primarily driven by the five largest banks, which issue most of the banks' bonds. This article explores trends in Australian banks' senior unsecured bond issuance since the global financial crisis. The COVID-19 pandemic, and the policies implemented in response, significantly influenced bank bond issuance. In particular, banks' bond issuance declined for a period as they accessed funds through the Reserve Bank's Term Funding Facility; however, issuance has increased recently as the economy has recovered from the initial phase of the pandemic.

Introduction

Around half of all outstanding Australian non-government bonds are bank bonds. This is high relative to banks' share of Australia's stock market capitalisation (21 per cent) or economic activity (8 per cent), consistent with the higher leverage involved in banking compared with other industries. Bonds are an important source of stable long-term funding for banks, and comprise just over 10 per cent of their total funding; by comparison, the average for Australian non-financial corporations is around 6.5 per cent. This article explores trends in Australian banks' issuance of senior unsecured bonds, with respect to the volume issued, markets accessed, tenor of issuance and pricing.[1]

Issuance volume: Responding to the GFC and the COVID-19 pandemic

Trends in bank bond issuance are driven by Australia's five largest banks – ANZ, Commonwealth Bank (CBA), National Australia Bank (NAB), Macquarie and Westpac (Graph 1). These large banks, which together hold about 90 per cent of banking assets, issue around three-quarters of senior unsecured bank bonds, although this varies

over time in response to funding needs and market conditions. By contrast, issuance from the mid-sized banks – defined here as the domestic banks (other than the five largest) that are subject to the liquidity coverage ratio (LCR) and net stable funding ratio (NSFR) regulatory requirements (APRA 2022) – has been relatively steady since the global financial crisis (GFC). The 'other' banks, which are primarily Australian branches of foreign banks, have more variable issuance with little discernible trend.

The stock of Australian bank bonds outstanding peaked at $530 billion in late 2010 (Graph 2). This followed high issuance around the GFC, which included a record $229 billion issued in 2009. During this time, issuance was boosted by the Australian Government Guarantee Scheme, which was introduced in response to the crisis in the financial sector (Black, Brassil and Hack 2010; Schwartz and Tan 2016).

From 2011 onwards, bond issuance returned to levels more akin to those prior to the GFC. In this period, funding needs were lower than otherwise because of the precautionary funding that had occurred during the GFC, as well as slower credit growth in the wake of the crisis.

Annual issuance increased steadily each year through to 2016. One reason for this increase was because the large banks were preparing for the introduction of the NSFR, which came into effect in 2018. The NSFR was introduced globally following the GFC to reduce banks' use of short-term funding

by promoting more stable funding sources such as bonds. As a result, it reduced banks' vulnerability to liquidity stresses. Issuance outpaced maturities, and the stock of bonds outstanding reached a post-GFC peak of $485 billion in early 2019.

In March 2020, bond markets were severely disrupted by the economic impacts of the COVID-19 pandemic (Johnson, Lane and McClure 2022). A range of policies were introduced by the government, the Reserve Bank and regulators to support the economy though this period and improve market conditions (Debelle 2021). The policy with the most direct influence on bank funding and, by extension, bank bond issuance, was the Reserve Bank's Term Funding Facility (TFF).

The TFF provided low-cost three-year funding to banks operating in Australia, available for drawdown between April 2020 and June 2021 (Black, Jackman and Schwartz 2021). The amount of funding available to a bank was based on its credit outstanding, with an additional allowance available to banks that expanded their lending to businesses. In aggregate, $188 billion was accessed across 92 banks – 88 per cent of the total available. Take-up differed slightly across banks; the large and mid-sized banks accessed almost all of their available TFF allowances, while other banks accessed less.

Senior unsecured bond issuance by the large and mid-sized banks was very low following the onset of the pandemic, and during the initial period that TFF funding was available for drawdown (Graph 3). This lower activity reflected the low cost of funding

Graph 1

Senior Unsecured Bank Bond Issuance

Australian banks; annual total*

*   2022 figures contain data to 30 June 2022.
** ANZ, CBA, NAB, Macquarie and Westpac.
*** Includes remaining banks subject to the NSFR and LCR.
Sources: Bloomberg; Private Placement Monitor; RBA

Graph 2

Senior Unsecured Bank Bonds

*   Semi-annual totals.
Sources: Bloomberg; Private Placement Monitor; RBA
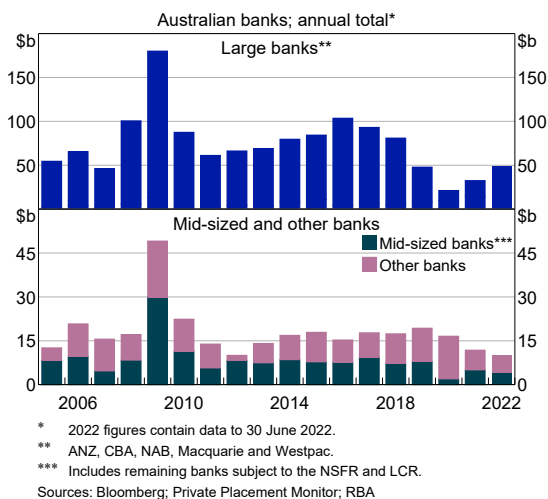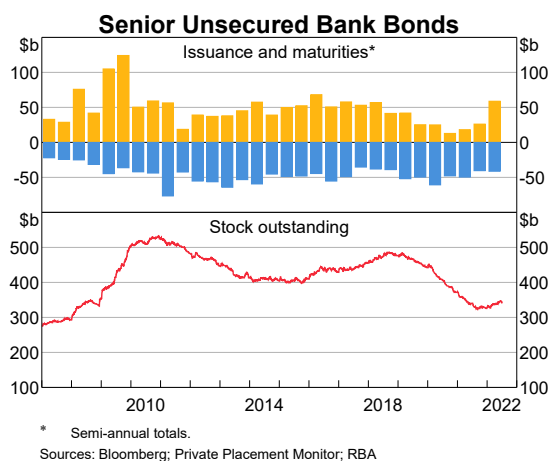
through the TFF compared with the cost of bond funding. In addition, funding needs declined as the banks were experiencing strong growth in deposit funding, in part due to the creation of deposits through Reserve Bank bond purchases. More generally, the economic outlook and expectations for future lending growth were very uncertain at the time.

Issuance by 'other' banks, many of which are Australian branches of foreign banks, was less affected by the pandemic (Graph 3). Lower use of the TFF partially explains this difference compared with the large and mid-sized banks. A few of these 'other' banks issued some atypically large bonds in the early stages of the pandemic, perhaps to take advantage of comparatively favourable funding conditions in Australia relative to other countries at that time. This issuance would have benefited from the gap in activity from the larger Australian banks.

Towards the end of the TFF drawdown period, the large and mid-sized banks started to raise more senior unsecured bond funding again. Since then, issuance has been at a slightly faster-than-average pace in comparison with the pre-pandemic period. Issuance has outpaced maturities in 2022 so far, and the outstanding bank bond stock has begun to grow once more.

Looking ahead, issuance decisions will be influenced by bank asset growth as well as the availability of other funding sources, including deposits. It is likely that banks will issue bonds to refinance some of the TFF funding maturing in
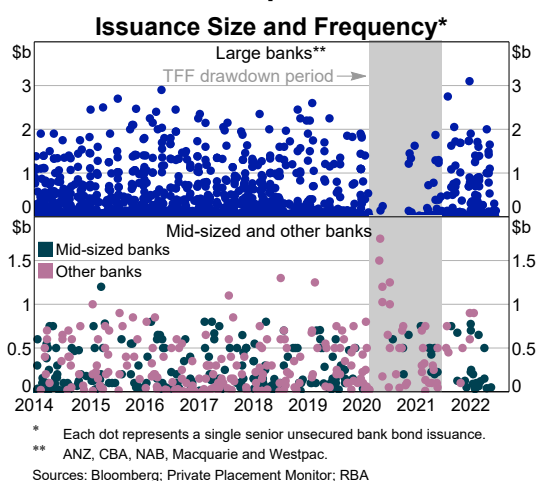
2023 and 2024; however, it is only one funding source available for them to do so. The winddown of the Committed Liquidity Facility (CLF) by the end of 2022 might also be affecting banks' bond funding decisions.[2]

Markets of issuance: Offshore issuance is more variable than domestic issuance

The large banks typically raise about three-quarters of their bond funding offshore (Graph 4). Offshore funding provides several benefits, including funding diversification. Offshore markets also have greater capacity to absorb large issuance and offer a deeper pool of investors looking for longer tenors than is available in the domestic market. The large US insurance industry is one example of this kind of investor.

Fluctuations in the large banks' issuance have largely been driven by changes in their offshore issuance, while domestic issuance has remained fairly steady (Graph 5). For example, the decline in total issuance between 2016 and 2019 was driven by lower offshore issuance from the large banks, with their offshore issuance falling to 50 per cent of their total 2019 issuance. The share of offshore issuance from mid-sized and other Australian banks fell sharply around the GFC, and has remained low since; in part, this reflects the fact that St George Bank, which had been a large offshore issuer pre-GFC, was acquired by Westpac (Graph 4).

Graph 3

Issuance Size and Frequency*

* Each dot represents a single senior unsecured bank bond issuance.
** ANZ, CBA, NAB, Macquarie and Westpac.
Sources: Bloomberg; Private Placement Monitor; RBA

Graph 4

Offshore Share

Percentage of annual senior unsecured bank bond issuance*

* 2022 figure contains data to 30 June 2022.
** ANZ, CBA, NAB, Macquarie and Westpac.
Sources: Bloomberg; Private Placement Monitor; RBA

The majority of banks' offshore issuance is denominated in USD (Graph 6). Even so, banks hedge most of their foreign currency liabilities back into Australian dollars (Berger-Thomson and Chapman 2017). Hedging enables banks to diversify their funding mix offshore without exposing them to exchange-rate risk.

Rate type: Most domestic issuance pays floating rate interest

The interest rate paid on bonds can be fixed or floating, whereby it varies with a benchmark rate. The most common benchmark in Australia is the three-month bank bill swap rate. Most domestic bond issuance pays a floating rate, irrespective of bank type, although fixed-rate issuance picked up in 2022 (Graph 7). Floating-rate issuance has the

advantage of matching the liability to the floating rate interest received on much of the banks' assets (i.e. variable-rate loans). Offshore issuance typically pays a fixed rate, as this form of interest payment is more prevalent in offshore markets. However, where banks issue fixed-rate bonds, they frequently use interest rate swaps to hedge these fixed-rate liabilities into floating-rate liabilities.

Bond tenors: Domestic tenors were shorter than offshore tenors in recent years

The average tenor of domestic and overseas issuance declined in 2007 in the early phase of the GFC, as investors became less willing to commit funds for an extended period (Graph 8). Another factor contributing to the decline in tenors during and in the aftermath of the GFC was the reduced use of very short-term instruments, such as one- and three-month funding, as part of a broader shift in liquidity management. Banks had previously issued longer tenor bonds to balance the liquidity risk of these instruments; with less use of these instruments, the counterbalancing long-tenor bonds were no longer required.

Large banks' offshore funding is spread across a broad range of tenors, which reflects the diversity available in offshore markets (Graph 9). By contrast, the tenor of domestic issuance rarely exceeds six years.

Graph 5

Issuance by Market
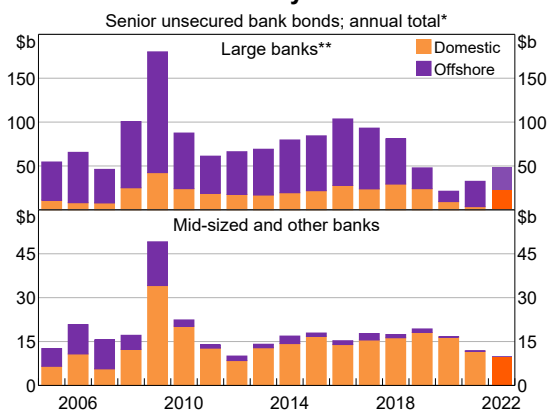
Senior unsecured bank bonds; annual total*

* 2022 figure contains data to 30 June 2022.
** ANZ, CBA, NAB, Macquarie and Westpac.
Sources: Bloomberg; Private Placement Monitor; RBA

Graph 6

Currency of Issuance

Percentage of senior unsecured bank bonds issued offshore, 2016 to mid-2022

Sources: Bloomberg; Private Placement Monitor; RBA

Graph 7

Rate Type of Issuance

Senior unsecured bank bonds; annual total*

* 2022 figure contains data to 30 June 2022.
Sources: Bloomberg; Private Placement Monitor; RBA

Pricing: Spreads were tight during the pandemic but have recently widened

Bank bond pricing is usually expressed in terms of the difference, or 'spread', between bank bond yields and other benchmark rates of comparable maturity. Two commonly used benchmark rates are the yield on Australian Government Securities (AGS) and the swap rate. By isolating the part of the yield that is over and above reference rates, it is possible to identify different factors affecting bond pricing. The spread to AGS provides a measure of the compensation that investors require to cover factors such as credit and liquidity risk for holding a bank bond compared with an AGS. The swap rate, under certain assumptions, measures the expected interest rate on short-term bank debt over a given period of time. This means that one interpretation

of the spread to swap is the cost of locking in bond funding rather than the expected cost of rolling over short-term debt. Because these two measures both involve the bank bond yield, they tend to move together (Graph 10). However, they diverge when the relationship between the swap rate and AGS changes.

Bank bond spreads vary over time, reflecting changes in the demand for, and supply of, bank bonds. Variations in investor demand for bank debt also affects the volume of bond funding available, as well as the tenor of those bonds. Bank bond spreads increased around the GFC. There was also an increase around 2012, which was associated with concerns about sovereign debt sustainability in the euro area, and the links between sovereign and bank balance sheets (RBA 2012). Between 2012 and 2020, bank bond spreads trended down alongside market interest rates more generally.

During the pandemic, after a brief rise, bank bond spreads declined and yields reached historical lows (Graph 10). That the widening was relatively short lived in spreads reflected the fiscal and monetary policy responses to the pandemic, as well as the fact that the pandemic stress arose from outside the banking sector and so investors were less concerned about the risks from holding bank bonds than was the case in previous crises when banks were a central source of financial market stresses (e.g. during the GFC).

More recently, bank bond yields have risen sharply along with monetary policy tightening and higher

Graph 8

Tenor at Issuance

Annual weighted average for senior unsecured bank bonds*
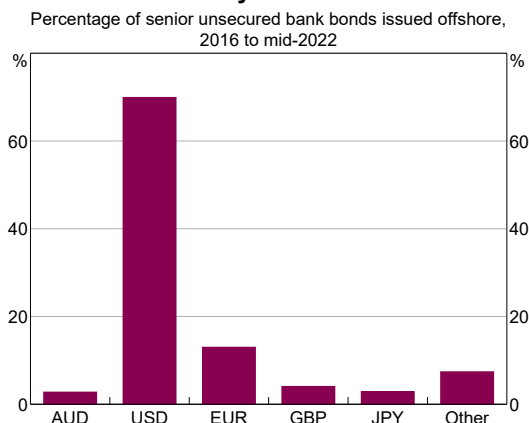
* 2022 figure contains data to 30 June 2022.
** ANZ, CBA, NAB, Macquarie and Westpac.
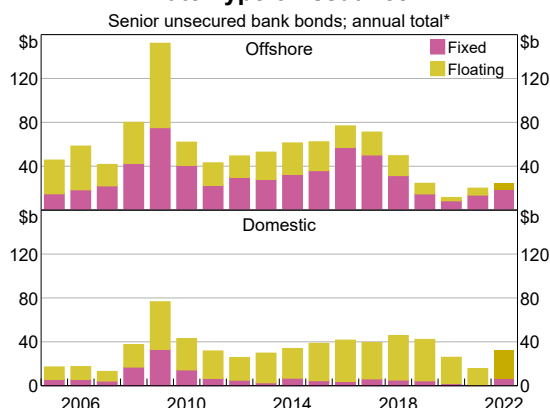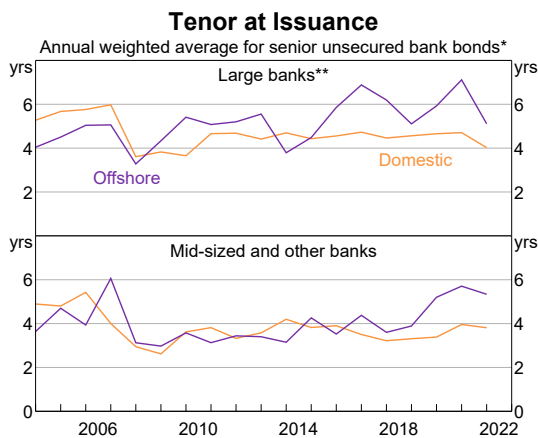Sources: Bloomberg; Private Placement Monitor; RBA

Graph 9

Volume Raised by Tenor

Senior unsecured bank bond issuance; 2016 to mid-2022

* ANZ, CBA, NAB, Macquarie and Westpac.
Sources: Bloomberg; Private Placement Monitor; RBA

Graph 10

Senior Unsecured Bank Bond Pricing

Domestic market; 3-year tenor
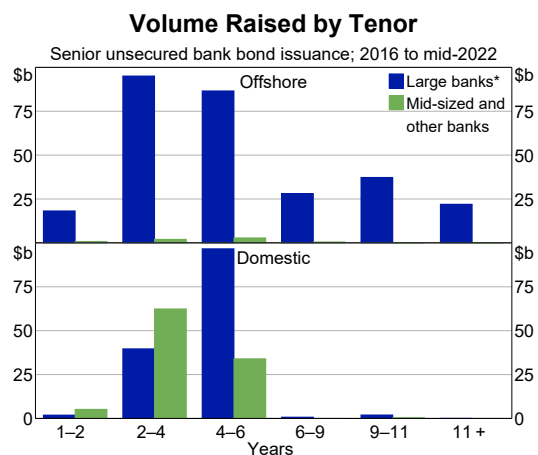
Sources: Bloomberg; RBA
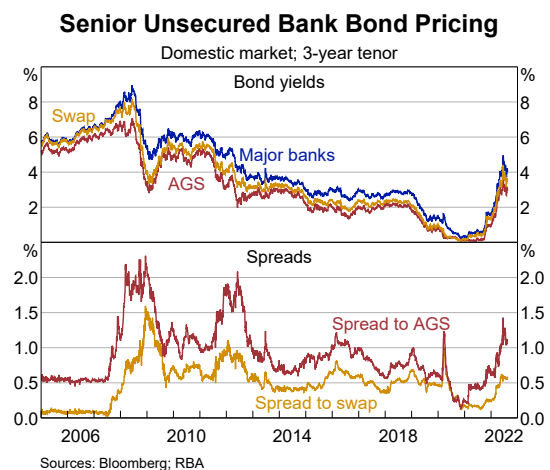
inflation in Australia and globally. Bank bond spreads have also widened, reflecting strong demand for funding and a broader increase in risk premiums. In May 2022, yields on three-year major bank bonds reached 4 per cent for the first time since 2013.

The spreads paid by banks across different economies tend to move together (Graph 11). It follows that the cost to Australian banks of issuing bonds domestically and offshore tends to be closely related (Graph 12). However, there are times when a differential may emerge as financial conditions vary across economies.

Conclusion

Bonds are an important source of funding for banks, and bank bonds account for around half of the Australian non-government bond market. The pandemic and the ensuing policy responses significantly influenced bank bond issuance activity. In particular, banks' bond issuance declined for a period as they accessed funds through the TFF, though issuance has recently increased. ⋎

Graph 11
Advanced Economy Bank Bond Spreads*

*   Option-adjusted spreads of financial corporate bonds to government
      bonds.

Source: ICE data is used with permission

Graph 12
Spread to AGS by Market
Major bank senior unsecured bonds; 4–6 year tenor

*   Annual weighted average. 2022 figure contains data to 30 June 2022.
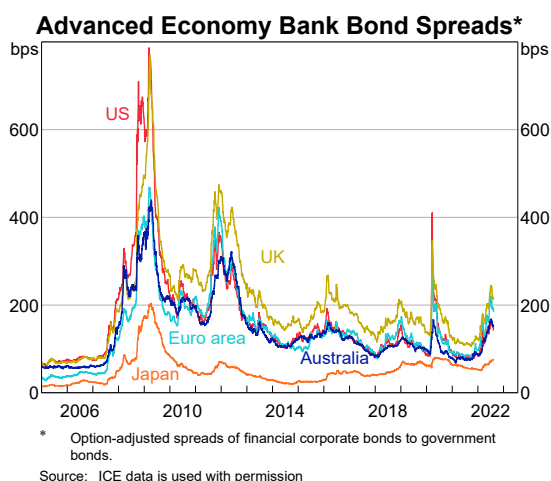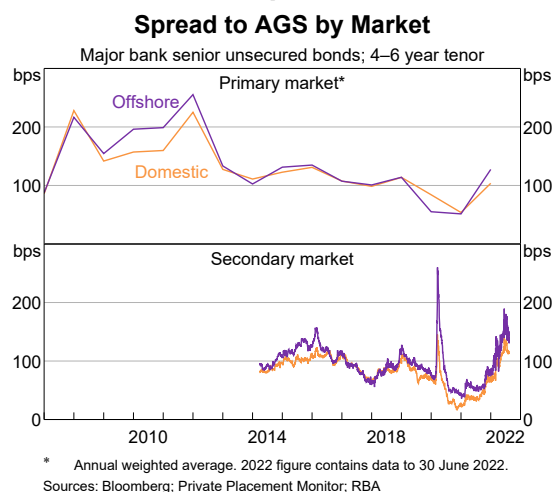
Sources: Bloomberg; Private Placement Monitor; RBA

Endnotes

[*]   The author is from Domestic Markets Department.

[1]   Banks issue three broad types of bonds: senior unsecured bonds; covered bonds; and hybrid bonds. The most common type – senior unsecured bonds – are not secured by particular assets; they are senior bonds because the holders of these bonds are repaid before holders of subordinated bonds in the event that the issuer enters bankruptcy. Covered bonds are secured by a pool of assets. Hybrid bonds can be converted into equity under certain conditions; because of this feature, they can be used to meet some capital requirements, and issuance

patterns often reflect regulatory requirements and risk management considerations.

[2]   This is because banks might choose to issue bonds to fund the purchase of additional high-quality liquid assets (HQLA). On the other hand, many banks have been maintaining an LCR well above the regulatory minimum and so have the option to allow their LCR to decline rather than purchasing additional HQLA. For more information on the CLF, see Brischetto and Jurkovic (2021).

References

APRA (Australian Prudential Regulation Authority) (2022), 'Post-implementation Review of the Basel III Liquidity Reforms', Information Paper, June.

Berger-Thomson L and B Chapman (2017), 'Foreign Currency Exposure and Hedging in Australia', RBA *Bulletin,* December, pp 67–76.

Black S, A Brassil and M Hack (2010), 'Recent Trends in Australian Banks' Bond Issuance', RBA *Bulletin*, March, pp 27–34.

Black S, B Jackman and C Schwartz (2021), 'An Assessment of the Term Funding Facility', RBA *Bulletin*, September.

Brischetto A and L Jurkovic (2021), 'The Committed Liquidity Facility', RBA *Bulletin*, June.

Debelle G (2021), 'Monetary Policy During COVID', Shann Memorial Lecture, Online, 6 May.

Johnson C, K Lane and N McClure (2022), 'Australian Securities Markets through the COVID-19 Pandemic', RBA *Bulletin*, March.

RBA (Reserve Bank of Australia) (2012), 'The Global Financial Environment', *Financial Stability Review,* March.

Schwartz C and N Tan (2016), 'The Australian Government Guarantee Scheme: 2008–15', RBA *Bulletin*, March, pp 39–46.

Sentiment, Uncertainty and Households' Inflation Expectations

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Photo: SolStock – Getty Images

Abstract

High inflation expectations can have significant consequences for the economy as a whole, and can become self-reinforcing. It is therefore noteworthy that inflation expectations of Australian households are persistently higher than actual inflation. This is partly because when consumers are more uncertain about the economy, they tend to report their inflation expectations in round multiples of 5 per cent, which is higher than inflation has averaged over recent decades. In addition, there is a negative relationship between consumer sentiment and inflation expectations. This article examines the relationship between sentiment, uncertainty and households' inflation expectations in Australia, and considers how this uncertainty might be addressed. It suggests that targeted and clear communication about inflation can help to reduce uncertainty and provide consumers with a better understanding of the path of future inflation.

Introduction

Consumer price inflation has picked up significantly over the past year. A key risk that could arise from a period of elevated inflation is that firms and households come to expect continued high levels of inflation into the future – and that this shifts behaviour in ways that are hard to reverse (Lowe 2022). Inflation expectations influence wage negotiations and price-setting behaviour, and can become self-reinforcing. When firms expect inflation to be high, they set their prices accordingly and households demand higher wages, creating high actual inflation. Inflation expectations also determine the stance of monetary policy. All else equal, changes in inflation expectations affect real interest rates (the difference between nominal interest rates and inflation expectations), and in turn households' consumption and firms' investment and hiring decisions (D'Acunto *et al* 2021).

The Reserve Bank monitors a range of measures of inflation expectations, including those of financial markets and professional forecasters, as well as households (Moore 2016). This article seeks to develop a better understanding of the relationship between sentiment, uncertainty and household inflation expectations in Australia.

The data

Alongside other data sources, the analysis uses microdata from the Melbourne Institute, which is derived from a survey of around 1,200 households. The survey has been run every month since 1995. The responses are weighted to ensure the survey matches Australia's population characteristics for sex, age and location. Alongside socio-demographic information (e.g. sex, age, income, occupation, education, location and home ownership), the survey asks about the respondent's assessment of a range of economic variables such as unemployment.[1] On inflation, consumers are asked how they expect the 'prices of things you buy' to change over the next year; if respondents state that prices will go 'up' or 'down', they are then asked to provide a numerical estimate for the expected change. Our analysis covers the period from January 1995 to July 2022, which yields a total of about 358,000 observations. For some of the analysis, we use the middle 70 per cent distribution of responses (cutting the largest 15 per cent and smallest 15 per cent of responses) in order to reduce the effects of extreme responses.[2]

Characteristics of consumers' inflation expectations in Australia

There are a few key characteristics of consumers' inflation expectations that distinguish them from other measures of inflation expectations. These features are generally found to be common across countries.
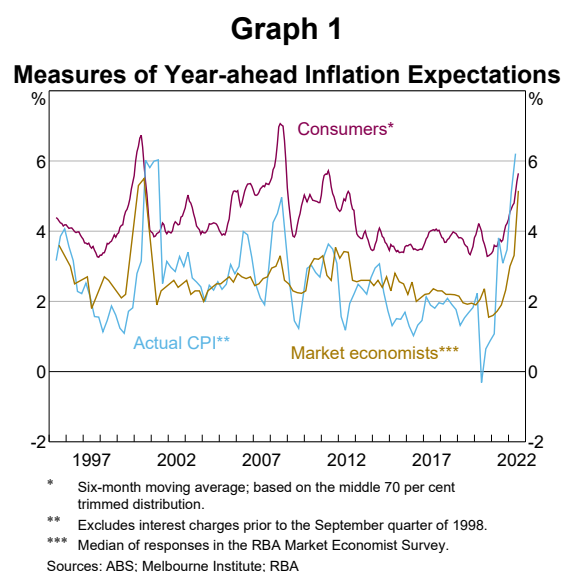
Upward bias in consumers' inflation expectations

Since 1995, Australian consumers' expectations of inflation for the following year have been persistently higher than actual inflation outcomes and other measures of inflation expectations, such as those from professional forecasters (Graph 1).

Inflation expectations averaged about 5.3 per cent over this period (4.3 per cent based on the middle 70 per cent trimmed distribution), while actual inflation averaged 2.5 per cent. The examined time period – January 1995 to July 2022 – coincides with the inflation targeting period, during which time inflation was mostly low and stable; since 1993, the Reserve Bank has sought to keep consumer price inflation to 2–3 per cent, on average, over the medium term. The overestimation of inflation is in part due to consumers paying more attention to the prices of more noticeable items (such as petrol and groceries) when thinking about the inflation outlook, rather than taking into account the full basket of goods and services included in the Consumer Price Index (CPI) (Ballantyne *et al* 2016; D'Acunto *et al* 2021).

While there tends to be a gap between consumers' average inflation expectations and actual inflation, expectations broadly move with trends in inflation – that is, inflation expectations tend to shift higher or lower during periods of high or low inflation. For example, consumers' short-term (one year ahead) inflation expectations have increased over the past year alongside a pick-up in actual inflation. However, most medium- and long-term (5–10 years ahead) measures, including those from financial markets and market economists, remain within the inflation target range.

There is wide variation in inflation expectations across consumers (Graph 2). For example,

Graph 1

Measures of Year-ahead Inflation Expectations

* Six-month moving average; based on the middle 70 per cent trimmed distribution.
** Excludes interest charges prior to the September quarter of 1998.
*** Median of responses in the RBA Market Economist Survey.
Sources: ABS; Melbourne Institute; RBA

25 per cent of respondents in 2019 expected an inflation rate of 6 per cent or more, while another 25 per cent expected a rate of 0 per cent or less. Extreme responses – such as −50 per cent or 100 per cent inflation – are also observed in the data, though they tend to comprise a very small share of the responses. The degree of variation has not fallen over time, despite the mostly low and stable inflation environment since the mid-1990s. In addition, survey responses tend to be clustered around round numbers, such as 5 or 10 per cent.

Differences across socio-demographic groups

There are significant differences in inflation expectations across socio-demographic groups (Graph 3). On average:

- Female respondents have higher inflation expectations than males.

- Respondents with a university education, higher income and in professional jobs have lower inflation expectations.

- Respondents living in regional areas and renting instead of owning their home have higher inflation expectations.

There is not a clear relationship between age and inflation expectations.

### Consumers' sentiment and inflation expectations

Consumers who feel pessimistic about the outlook tend to have higher inflation expectations than those who expect the conditions in the future to be similar or better than they are currently (Graph 4) (see Appendix A, Graph A1). This is the case for all the measures of sentiment in the survey, including employment, personal financial situation and the general economic outlook. For example, households who predict that the unemployment rate will increase over the next 12 months expect year-ahead inflation to be 6.1 per cent on average, compared to around 4.5 per cent for those who expect the unemployment rate to remain stable or decrease. More generally, there is a strong negative correlation between sentiment and expectations for inflation: respondents who are more pessimistic about future economic and employment conditions predict higher inflation (Graph 5). This negative relationship has been stable over time, holds for specific demographic groups and is consistent with studies using data from the United States and the euro area (see Appendix A, Graph A2) (Kamdar 2019; Candia, Coibion and Gorodnichenko 2020).

The role of uncertainty in consumer inflation expectations

One potential explanation for the upward bias in consumers' inflation expectations and differences across socio-demographic groups is that many consumers are uncertain about the future level of inflation. This uncertainty could reflect factors such as consumers updating their information about prices and future economic conditions infrequently due to the costs of acquiring new information, as

Graph 2

Distribution of Household Inflation Expectations

Share of all responses, 1995–2022
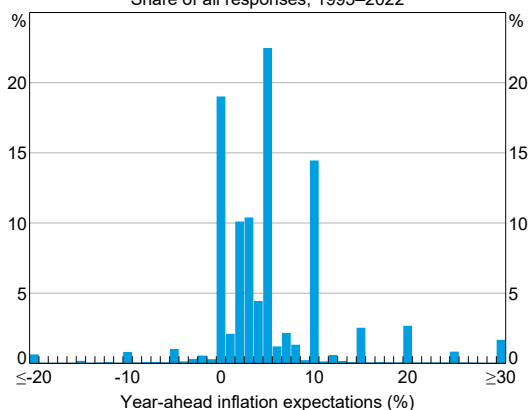
Sources: Melbourne Institute; RBA

Graph 3

Mean Household Inflation Expectations*

For selected demographic groups, six-month moving average
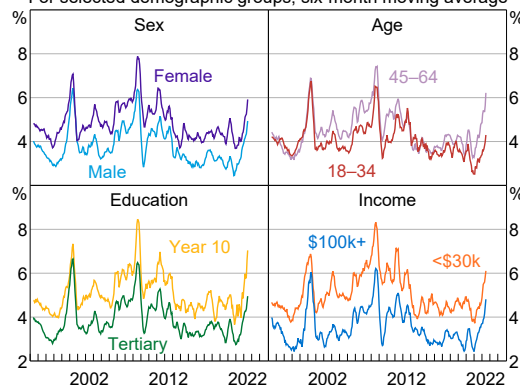
*   Based on the middle 70 per cent trimmed distribution.
Sources: Melbourne Institute; RBA

well as how information on economic conditions spreads from professionals to households over time (Mankiw and Reis 2003; Carroll 2003). This suggests that at any given period only some consumers are informed about the inflation outlook.

Measuring uncertainty

Empirical studies have measured inflation uncertainty in various ways, including by directly asking respondents about their level of certainty or asking them to attach probabilities to different outcomes (Jonung 1986; Armantier *at al* 2013). However, most consumer surveys, including that by the Melbourne Institute, only record an individual's point forecast of inflation, which means they do not directly observe consumers' level of certainty about

Graph 4
Mean Household Inflation Expectations*
By households' year-ahead sentiment, six-month moving average

* Based on the middle 70 per cent trimmed distribution.
Sources: Melbourne Institute; RBA

Graph 5
Consumer Sentiment and Inflation Expectations*
Sentiment responses ranked from more positive to negative

Year-ahead inflation expectations (%)

* Each panel plots a binscatter of consumers' year-ahead inflation expectations and sentiment with those optimistic coded as 1, neutrals 0 and pessimists -1; there are 100 equal size bins.
Sources: Melbourne Institute; RBA

their forecast. As an alternative, some studies have shown that point forecasts can be used to infer information about the respondent's uncertainty (Binder 2017; Reiche and Meyler 2022).

In particular, studies from fields such as cognition, linguistics and communication suggest that the use of round numbers (e.g. multiples of five) in survey responses often indicates more uncertainty, compared to the use of non-round numbers (e.g. digits and decimals) – this has been called the 'round numbers suggest round interpretations' principle (Krifka 2009). We adopted this approach to study the role of uncertainty in households' inflation expectations, defining respondents reporting in round numbers as being more uncertain about the inflation outlook and respondents reporting in non-round numbers as being more certain. It is possible that round responses may instead indicate disengagement or carelessness on behalf of respondents, rather than uncertainty. However, the share of round responses increases materially during times of economic and policy uncertainty, providing evidence that uncertainty is a driver of those responses.

Uncertainty is widespread

Similar to data from other economies, round responses for expected inflation are very common in the Melbourne Institute survey. Close to 50 per cent of respondents typically report their inflation expectations in round numbers. The share of round responses generally increases during times of economic and policy uncertainty – reaching as high as 70 per cent during the global financial crisis, and increasing noticeably at the onset of the COVID-19 pandemic (Graph 6).[3] This suggests that the responses reflect uncertainty about outcomes, rather than inattention on behalf of consumers.

Uncertainty and inflation expectations

Uncertainty appears to play an important role in the upward bias observed in household inflation expec-tations. The round numbers reported when consumers appear uncertain tend to be high relative to observed inflation, putting upward pressure on average surveyed inflation expec-tations. As a result, there is a strong correlation
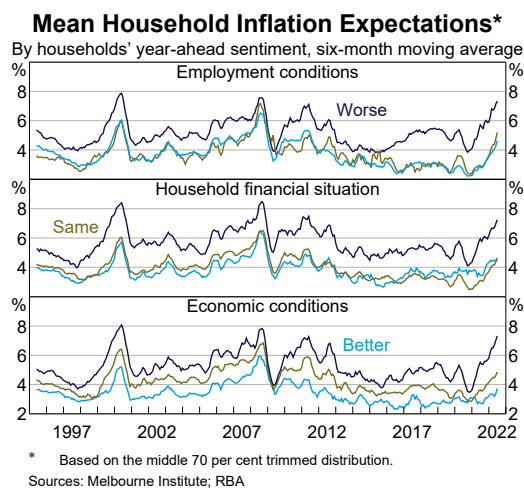
between average consumer inflation expectations and the share of people reporting in round numbers (Graph 7). Moreover, the average infla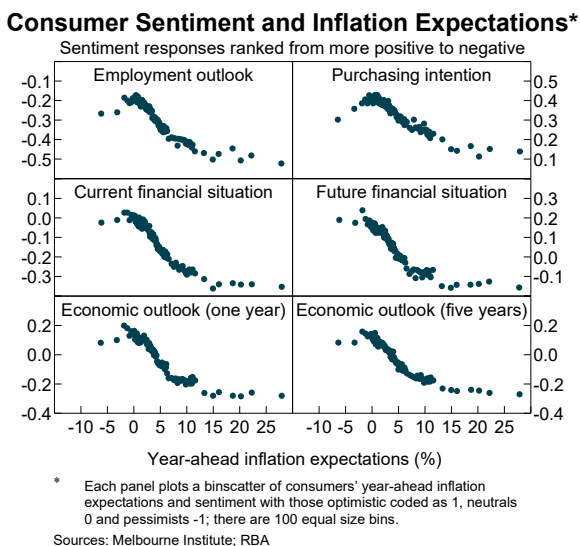tion expectation of those reporting in non-round numbers (including zeros) has been mostly unbiased relative to actual inflation outcomes (Graph 8). By contrast, the average of those reporting in round numbers has been significantly higher than actual inflation, although the average of these responses has a similar trend to actual inflation outcomes. This indicates that uncertain consumers are able to distinguish between periods of low and high inflation, even if they have difficulty precisely articulating their inflation expectations. This supports the argument that rounding includes information about uncertainty rather than pure inattentiveness.

Uncertainty, demographics and sentiment

Socio-demographic characteristics and economic sentiment help to explain consumers' level of uncertainty. The same demographic groups (such as females, less-educated individuals and those more pessimistic about their personal finances and the economy) who have relatively high inflation expectations are also more likely to be uncertain about the inflation outlook (Graph 9).[4] These results are similar to those found for the United States and the euro area (Binder 2017; Reiche and Meyler 2022).

Moreover, statistical models support the idea that uncertainty about the inflation outlook partly explains the differences in average expected

Graph 6

Distribution of Inflation Expectations Responses*

Share of all responses, six-month moving average
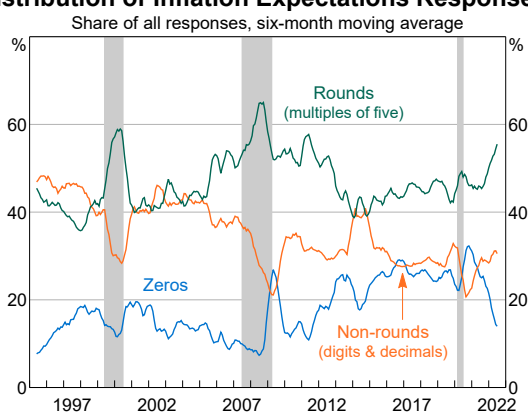
* Shaded regions indicate some periods of heightened economic and policy uncertainty including the introduction of the Goods and Services Tax, the global financial crisis and the onset of the COVID-19 pandemic.

Sources: Melbourne Institute; RBA

Graph 8

Mean Household Inflation Expectations

By response type, six-month moving average
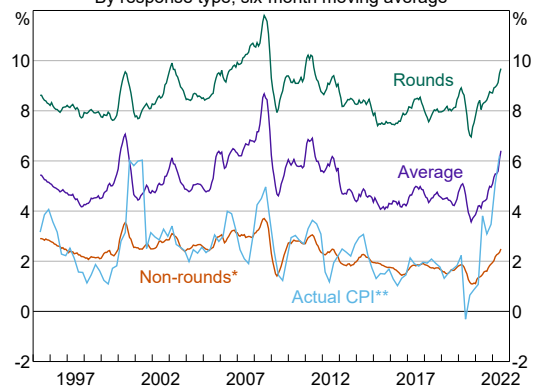
* Includes zeros.

** Excludes interest charges prior to the September quarter of 1998.

Sources: Melbourne Institute; RBA

Graph 7

Inflation Expectations and Rounding

Six-month moving average
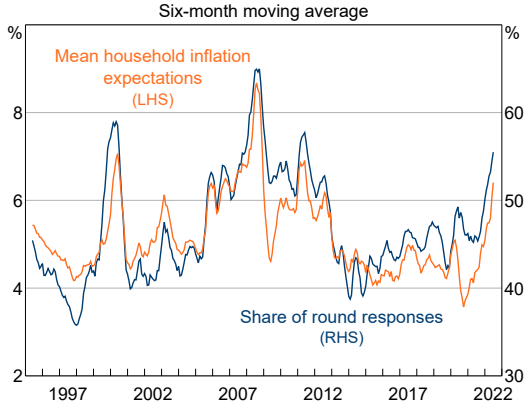
Sources: Melbourne Institute; RBA

Graph 9

Share of Round Responses*

For selected groups, whole sample
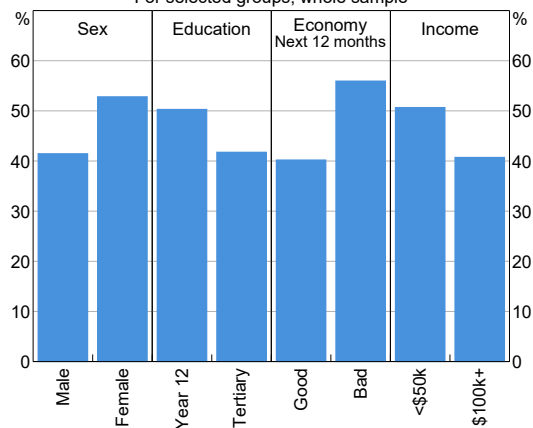
* Exclude zeros.

Sources: Melbourne Institute; RBA

inflation observed across demographic groups. In a model focused only on the 'certain' group (those reporting in non-round numbers), females, renters and those living in regional areas no longer tend to have higher inflation expectations, while the gap between high-income earners and those with university education, and other consumers, is either eliminated or narrows substantially (Graph 10) (see Appendix B for full model results).

The effects of consumers' sentiment on inflation expectations are also reduced once uncertainty is accounted for. However, even accounting for uncertainty, sentiment still appears to play a part in influencing households' inflation expectations. The negative relationship between consumer sentiment and inflation expectations shown above holds for both certain and uncertain groups (Graph 11).

Discussion

There are a few related takeaways from this analysis. First, we find that uncertainty plays an important role in influencing individuals' surveyed inflation expectations. Individuals and groups (such as those less-educated and those pessimistic about the future) who tend to report higher inflation expec-tations on average are also more likely to be uncertain about the rate of inflation. In addition, consumer uncertainty about the inflation outlook typically rises noticeably during times of economic distress; this explains why reported consumer inflation expectations can rise even during

recessionary periods, such as at the onset of the COVID-19 pandemic (Candia *et al* 2020). This also suggests that an increase in households' inflation expectation due to increased uncertainty may contain less information about their current behaviour and reduces the risk of higher inflation expectations becoming entrenched. These findings imply that more targeted communication from central banks and others could be effective in lowering consumers' level of uncertainty, particularly during volatile periods. Some studies have found that intense media reporting about inflation lowered households' inflation bias, and this effect was most pronounced for those with a particularly strong upward bias (Ehrmann, Pfajfar and Santoro 2017). Similarly, Hoffmann *et al* (2022) found that communication from the European Central Bank about the inflation outlook reduced German households' inflation expectations, particularly so when a verbal explanation was provided instead of numerical projections.

Second, we find a negative relationship between consumer sentiment and inflation expectations in Australia. Reiche and Meyler (2022) suggest that negative sentiment leads individuals to become more uncertain and therefore more likely to report high inflation expectations. However, even controlling for uncertainty and demographic characteristics, we find that the negative relationship between sentiment and inflation

Graph 10

Effects of Demographics and Sentiment on Consumers' Inflation Expectations*

Model coefficients for selected explanatory variables
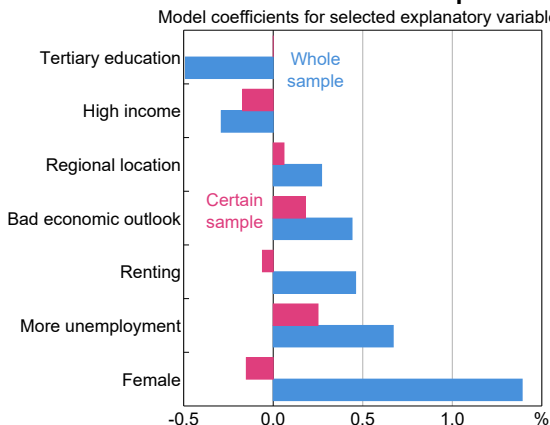
*   Consumers' inflation expectations is the dependent variable.
Sources: Melbourne Institute; RBA

Graph 11

Consumer Sentiment and Inflation Expectations*
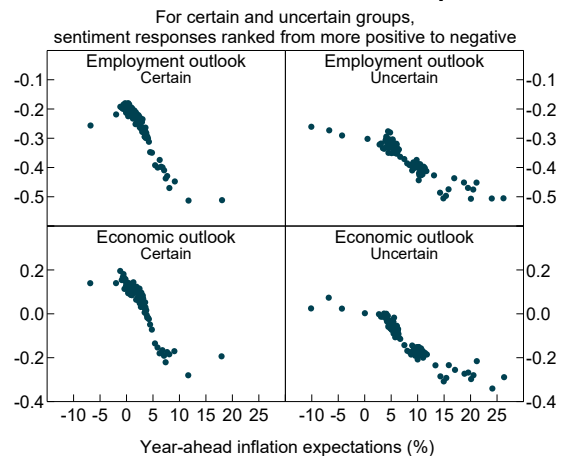
For certain and uncertain groups,
sentiment responses ranked from more positive to negative

Year-ahead inflation expectations (%)

*   Each panel plots a binscatter of consumers' year-ahead inflation expectations and sentiment with those optimistic coded as 1, neutrals 0 and pessimists -1; there are 100 equal size bins.
Sources: Melbourne Institute; RBA

expectations remains. We caution that this result should be interpreted as correlation rather than causation; it could reflect other individual characteristics (not observed in the data) that tend to drive both sentiment and inflation expectations.

The negative relationship between consumer sentiment and inflation expectations means that consumers associate higher prices with negative effects on their household finances, a weaker economy and a higher unemployment rate. This is inconsistent with the Phillips curve idea that inflation is typically driven by strong demand. Candia *et al* (2020) have argued that households have a 'supply-side' view of the economy, meaning that increases in prices are believed to be driven by supply shocks, similar to the experience of the 1970s and 1980s oil price shocks and the recent rise in global inflation. Others have argued that this relationship between sentiment and inflation expectations could reflect consumers having a simple 'good-bad heuristic', leading them to expect co-movement of all that is bad, such as inflation and unemployment (Kamdar 2019; Andre *et al* 2022). Relatedly, Andre *et al* (2022) found that some household groups, such as younger and less-educated consumers, perceive increases in interest rates as inflationary.

Conclusion

Using microdata from the Melbourne Institute, this analysis found that uncertainty partly explains why consumer inflation expectations are persistently 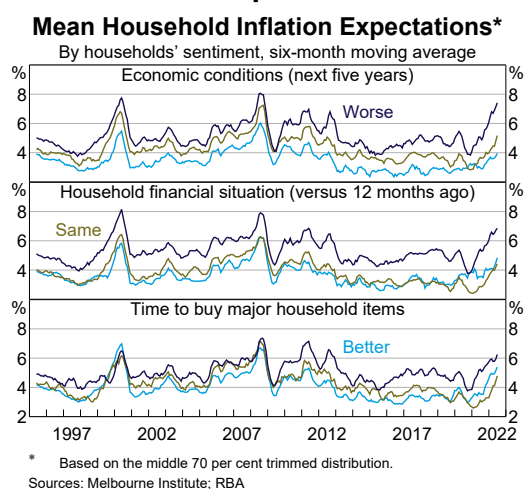higher than realised inflation outcomes, as well as the differences in inflation expectations across demographic groups. Individuals and groups (such as females and the less educated) who tend to have higher inflation expectations on average are more likely to be more uncertain about the inflation outlook. In addition, consumer uncertainty about inflation typically increases in economic downturns, and there is a negative relationship between consumer sentiment and inflation expectations. Our results, which are consistent with studies of households in the United States and the euro area, suggest that more targeted and clear communication about inflation can help to reduce uncertainty and therefore decrease the bias in inflation expectations for consumers. This is particularly important during periods of heightened uncertainty, as is currently the case in both the Australian and the global economy, which is also coinciding with a period of high inflation.

Appendix A: Additional graphs

Graph A1

Mean Household Inflation Expectations*

By households' sentiment, six-month moving average

* Based on the middle 70 per cent trimmed distribution.

Sources: Melbourne Institute; RBA

Graph A2

Consumer Sentiment and Inflation Expectations*

Year-ahead economic sentiment,
responses ranked from more positive to negative

* Each panel plots a binscatter of consumers' year-ahead inflation expectations and economic sentiment with those optimistic coded as 1, neutrals 0 and pessimists -1; there are 100 equal size bins.

Sources: Melbourne Institute; RBA

Appendix B: Regression results

We first estimated the linear effects of socio-demographic and economic sentiment variables and monthly percentage change in oil prices on households' inflation expectations ('baseline model'). We included change in oil prices as one of the independent variables because previous research has shown that consumer inflation expectations are quite sensitive to prices that are more noticeable, particularly past changes in petrol prices. To analyse the role of uncertainty, we then followed the approach of Reiche and Meyler (2022) by splitting the survey into two subsamples: the 'certain' (those reporting in zeros, digits and decimals); and the 'uncertain' (multiples of five). This allowed for distinguishing the effect of socio-demographic and sentiment variables across the two groups. Excluding zeros from the certain sample yielded similar results.

The benchmark group in the models was arbitrarily chosen to have the following characteristics: male, aged 35 to 44 years, with vocational training, works in trades, has a household income of $31,000 to $80,000, votes for the Australian Labor Party, has a mortgage, lives in a capital city, and reports neutral on the economic sentiment variables.

As a robustness check, we also ran regressions on the subsamples of those who have a realistic inflation expectation of 0–10 per cent as well as those with expectations outside that range. We also added macroeconomic variables such as the unemployment rate, actual inflation, the exchange rate and the cash rate to control for aggregate economic conditions. The results were qualitatively similar. ⚕

Table A1: Regression Results[a]

Estimated on January 1995 – July 2022

	Baseline model	Certain model	Uncertain model
Female	1.39***	−0.15***	1.83***
Age			
18–34	−0.32***	−0.20***	−0.34***
45–64	0.27***	0.06***	0.40***
Over 65	−0.06	−0.21***	0.11
Occupation			

	Baseline model	Certain model	Uncertain model
Managers	−0.31***	−0.11***	−0.32***
Professionals	−0.40***	−0.13***	−0.49***
Paraprofessionals	−0.23***	−0.03	−0.23*
Clerks	−0.48***	−0.04	−0.72***
Salespersons	−0.10	−0.07	−0.15
Plants workers	−0.03	−0.02	0.13
Labourers	−0.07	−0.21***	0.07
Retired	−0.18***	−0.13***	0.01
Unemployed	−0.00	−0.23***	0.25**
Occupation refused	−0.09	−0.19	0.33
Education			
Non-secondary	0.45***	0.08***	0.58***
Secondary	0.01	0.05*	−0.03
Tertiary	−0.49***	0.00	−0.63***
Postgraduate	−0.58***	−0.06*	−0.52***
Income			
Under $30K	0.46***	0.06***	0.62***
$81K–$100K	−0.17***	−0.10***	−0.21***
Over $100K	−0.29***	−0.17***	−0.21***
Voting preference			
Liberal	−0.39***	−0.13***	−0.39***
Nationals	−0.36***	−0.16***	−0.30*
Green	−0.26***	−0.07**	−0.24***
Independent	0.08	0.02	0.14
Swing	0.20***	0.12***	0.37***
Unemployment (next 12 months)			
More	0.67***	0.25***	0.55***
Less	0.03	0.03	0.02
Economic outlook (next 12 months)			
Good	−0.15***	0.00	−0.08
Bad	0.44***	0.18***	0.47***
Economic outlook (next five years)			
Good	−0.20***	−0.09***	−0.04
Bad	0.50***	0.25***	0.49***
Financial situation (versus 12 months ago)			
Better	0.23***	0.14***	0.29***
Worse	0.92***	0.48***	0.76***
Financial situation (next 12 months)			
Better	0.10***	0.07***	0.13**
Worse	1.24***	0.66***	0.96***
Time to purchase major household items			

	Baseline model	Certain model	Uncertain model
Good	0.05*	0.15***	0.04
Bad	0.60***	0.27***	0.53***
Home ownership			
Renter	0.46***	−0.06**	0.65***
Own outright	−0.14***	−0.01	−0.16***
Other	0.59***	0.07	0.82***
Other variables			
Regional area	0.27***	0.06***	0.30***
Change in oil prices	1.39***	0.43***	1.33***
Constant	3.51***	1.92***	6.12***
R squared	0.05	0.03	0.04
Observations	353,387	187,275	166,112

(a) The dependent variable is households' year-ahead inflation expectations. ***, ** and * denote statistical significance at the 1, 5 and 10 per cent levels, respectively.

Sources: Melbourne Institute; RBA

Endnotes

[*] The authors are from Economic Group and would like to thank Susan Black, Jonathan Hambur, Tom Rosewall and Tom Williams for their feedback on this analysis.

[1] There are six sentiment variables: unemployment over the next 12 months; household finances compared to the previous 12 months; household finances over the next 12 months; the economic outlook over the next 12 months; the economic outlook over the next five years; and current purchasing intentions for major household items.

[2] To reduce the impact of outliers on the analysis, we also excluded responses including inflation expectations below −50 per cent and above 50 per cent. This led to only a very small share of the sample being excluded from analysis.

[3] A significant share of consumers (about 18 per cent on average) also report zero expected inflation. This high share could partly be because those who respond that prices will remain 'the same' are automatically assigned a value of zero. Similar to multiples of five, responses of zeros tend to increase during times of economic uncertainty.

[4] We also estimated the likelihood of consumers being certain about their inflation forecast through a logistic model. This was done by creating a certainty dummy (equal to one if an individual reports a non-round number and zero otherwise), which was then estimated on a range of socio-demographic and sentiment variables. The results support the descriptive features of the data, but are not reported for brevity purposes.

References

Andre P, C Pizzinnelli, C Roth and J Wohlfart (2022), 'Subjective Models of the Macroeconomy: Evidence from Experts and Representative Samples', *Review of Economic Studies*, pp 1–34.

Armantier O, G Topa, W Van der Klaauw and B Zafar (2013), 'Introducing the FRBNY Survey of Consumer Expectations: Measuring Price Inflation Expectations', *Liberty Street Economics*, Federal Reserve Bank of New York, 4 December.

Ballantyne A, C Gillitzer, D Jacobs and E Rankin (2016), 'Disagreement about Inflation Expectations', RBA Research Discussion Paper No 2016-02.

Binder C (2017), 'Measuring Uncertainty Based on Rounding: New Method and Application to Inflation Expectations', *Journal of Monetary Economics*, 90, pp 1–12.

Candia B, O Coibion and Y Gorodnichenko (2020), 'Communication and the Beliefs of Economic Agents', NBER Working Paper No 27800.

Carroll DC (2003), 'Macroeconomic Expectations of Households and Professional Forecasters', *Quarterly Journal of Economics*, 118(1), pp 269–298.

D'Acunto F, U Malmendier, J Ospina and M Wber (2021), 'Exposure to Grocery Prices and Inflation Expectations', *Journal of Political Economy*, 129(5), pp 1615–1639.

Ehrmann M, D Pfajfar and E Santoro (2017), 'Consumers' Attitudes and Their Inflation Expectations', *International Journal of Central Banking*, 13(1), pp 225–259.

Hoffmann M, E Moench, L Pavlova and G Schultefrankenfeld (2022), 'Words Speak Louder Than Numbers: Central Bank Communication in Times of High Inflation', VoxEU, 3 August.

Jonung L (1986), 'Uncertainty about Inflationary Perceptions and Expectations', *Journal of Economic Psychology*, 7(3), pp 315–325.

Kamdar R (2019), 'The Inattentive Consumer: Sentiment and Expectations', Society for Economic Dynamics Meeting Paper No 647.

Krifka M (2009), 'Approximate Interpretations of Number Words: A Case for Strategic Communication', in E Hinrichs and J Nerbonne (eds), *Theory and Evidence in Semantics*, CSLI Publications, Stanford, pp 109–132.

Lowe P (2022), 'Inflation and Monetary Policy', Speech to American Chamber of Commerce in Australia (AMCHAM), Sydney, 21 June.

Mankiw NG and R Reis (2003), 'What Measure of Inflation Should a Central Bank Target?', *Journal of the European Economic Association*, 1(5), pp 1058–1086.

Moore A (2016), 'Measures of Inflation Expectations in Australia', RBA *Bulletin*, December.

Reiche L and A Meyler (2022), 'Making Sense of Consumer Inflation Expectations: The Role of Uncertainty', ECB Working Paper Series No 2642.

Wage-price Dynamics in a High-inflation Environment: The International Evidence

Neyavan Suthaharan and Joanna Bleakley[*]

Photo: Nick Hirst / EyeEm – Getty Images

Abstract

Headline inflation is at multi-decade highs in most advanced economies, reflecting a confluence of factors. Wages growth has also increased, but not to the same extent. This article examines the risk that a wage-price spiral could emerge in these economies by looking at historical experience and the various factors that could make a spiral more likely. It finds that the current episode has many differences to the 1970s, when a wage-price spiral did emerge. Central banks are now focused on ensuring inflation remains low, medium-term inflation expectations remain anchored and structural changes in the labour market reduce the likelihood that wages and inflation chase each other. Nonetheless, authorities need to be mindful of the risk of a wage-price spiral.

Introduction

Headline inflation has surged in most advanced economies, driven by various factors. Wages growth has also picked up considerably, but more slowly and by less than inflation. Although prices and wages typically move together, supply shocks, such as COVID-19 outbreaks and Russia's invasion of Ukraine, can disrupt this positive co-movement and result in prices rising faster than wages. This initial wedge between prices and wages can then translate into a wage-price spiral depending on various factors such as labour market tightness, institutional elements and inflation expectations.

Assessing the risk of a wage-price spiral and guarding against it is a necessary precondition if central banks are to return inflation to target without materially weakening employment and economic growth.

Why has inflation surged?

Headline inflation in most advanced economies has surged to its highest rate in several decades, with the peak yet to be reached in some countries (Graph 1). In addition to strong growth in food and energy prices, core inflation is at very elevated rates.

The initial increase in inflation in mid-2021 was mostly concentrated in durable goods prices, given that a huge increase in demand for goods occurred at the same time as supply was constrained, and in energy prices which recovered from relatively low levels in 2020. However, inflation has become increasingly broadly based over the past year in many economies, with the share of items with inflation greater than 4 per cent rising from around 30 per cent in late 2021 to around 75 per cent in July 2022 in many cases (Graph 2).

The global surge in inflation has largely been driven by three key factors:

1. **Supply in global goods markets was unable to keep up with surging demand during the pandemic**, leading to shortages across a wide range of consumer goods. One reason for these

imbalances was that consumer demand for goods increased sharply as consumers were inhibited from spending on high-contact services, and it has taken time for supply to catch up. Another reason was that supply capacity was reduced in some cases, as manufacturers anticipated a sharp drop in demand in early 2020 and restrictions to contain the spread of COVID-19 disrupted 'just-in-time' supply chains (most notably for semiconductors and shipping) (Carstens 2022).

2. **Many advanced economies made a stronger-than-expected recovery from the COVID-19 pandemic**, as vaccines allowed economies to reopen and stimulatory fiscal and monetary policy helped boost incomes and demand.

3. **Commodity prices rose sharply**, initially because of the strong and energy-intensive nature of the global recovery and low levels of investment in fossil fuels and electricity storage capacity (BIS 2022). More recently, Russia's invasion of Ukraine has added significantly to energy and food commodity prices.

These sequential supply shocks and other factors, taken separately, might have had only a temporary effect on inflation. Together, they have compounded each other and kept inflation persistently high. Notably, services inflation – which tends to be much more persistent than goods inflation – is now running at their highest rates in a number of decades in most advanced economies (Graph 3).
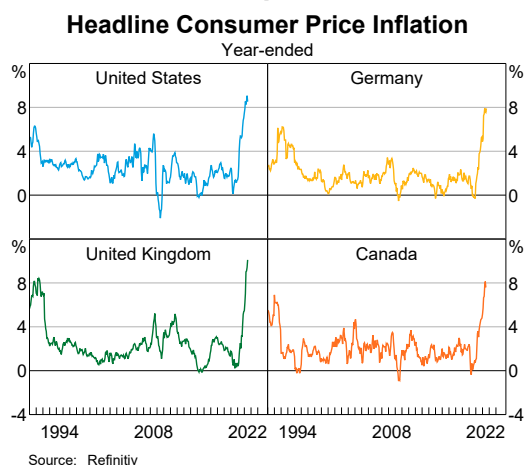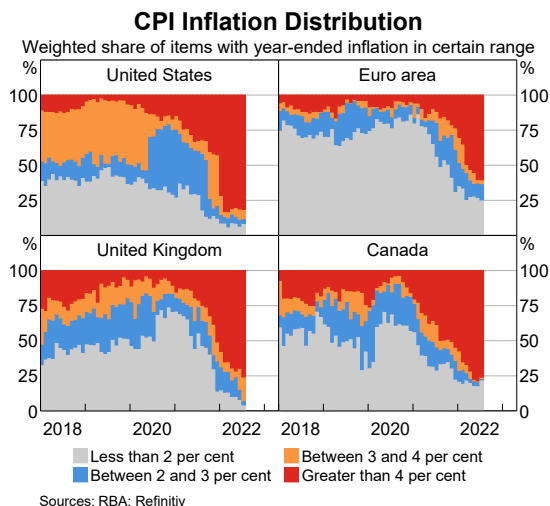
Wages growth has increased as the labour market has tightened

Nominal wages growth has increased as labour demand recovered rapidly since mid-2020. Unemployment rates and vacancy-to-unemployment ratios are at their strongest levels in a few decades, with a high share of firms in many advanced economies citing difficulty in finding workers (Federal Reserve 2022). The increase in wages growth in advanced economies has in most cases been broadly in line with what would have been predicted by the relationship between

Graph 1

Headline Consumer Price Inflation
Year-ended

Source: Refinitiv

Graph 2

CPI Inflation Distribution
Weighted share of items with year-ended inflation in certain range

Sources: RBA; Refinitiv

unemployment rates and wage growth over the 2010s (see the red and yellow dots in Graph 4). However, the recovery in labour supply in the United States and the United Kingdom from the pandemic was incomplete, adding to pressures on labour markets there. Consistent with this, wages have grown notably faster in the United States than would have been expected from the relationship during the 2010s, and are more in line with the relationship seen in the decade before the pandemic.

While nominal wages growth has picked up, it has not been able to keep pace with the rapid rise in inflation. This has resulted in significant declines in real wages in many economies over the past year.

Graph 3
Core Consumer Price Inflation
Six-month annualised

Sources: RBA; Refinitiv

Graph 4
Wages Growth and Unemployment Rates*

* Labour cost indices used where available; compositionally controlled average earnings for the United Kingdom.
Sources: BoE; RBA; Refinitiv

The relationship between prices and wages

Wages growth is an important driver of inflation because wages are a large share of firms' costs. If wages growth exceeds productivity growth and then firms raise prices to preserve margins and profitability, this can drive inflation higher. Alternatively, if inflation is already high for other reasons, then the relationship between wages and prices can be the mechanism by which high inflation persists, since workers often seek larger wage rises when inflation is increasing and is expected to remain high for a protracted period (to compensate for declining purchasing power), which in turn increases firms' costs.

However, during the inflation-targeting period (since the early 1990s), inflation has been low and expectations have been well anchored. In this environment, inflation and wages have largely moved together, driven by common demand factors such as the amount of spare capacity (the output gap or unemployment gap) in the economy. When aggregate demand in the economy moves ahead of what the domestic economy is able to supply, this allows firms to more easily raise prices and generates 'demand-pull inflation' (Figure 1). Likewise, when labour demand increases relative to supply, workers are able to bargain for higher wages. The resulting demand-driven co-movement between prices and wages is the foundation of standard inflation models such as the mark-up model (where prices are set at a 'mark-up' to wages and other input costs) and the Phillips curve (where price and wage inflation are both a function of the unemployment rate or output gap). Consistent with this, causality tests between inflation and wages growth find Granger causality running in both directions.[1]

Price inflation can also be affected by a range of supply-side factors that can disrupt the typically positive correlation with wages. In 'cost-push' inflation, firms face higher non-labour input costs that reduce their profits and erode their ability to pay higher wages. As a result, firms may raise their selling prices to maintain margins while at the same time aiming to limit wages growth (Figure 1). This dynamic relies on firms having enough pricing
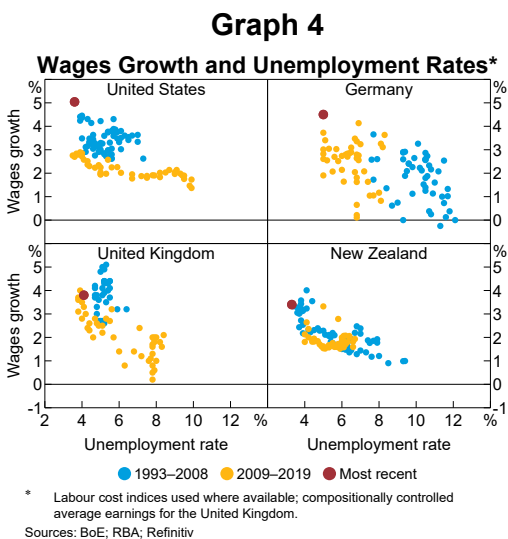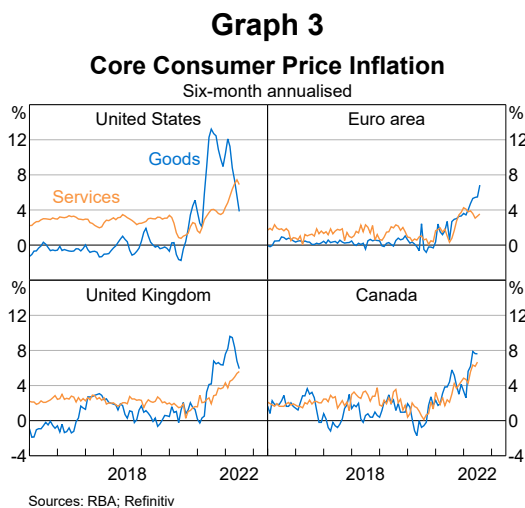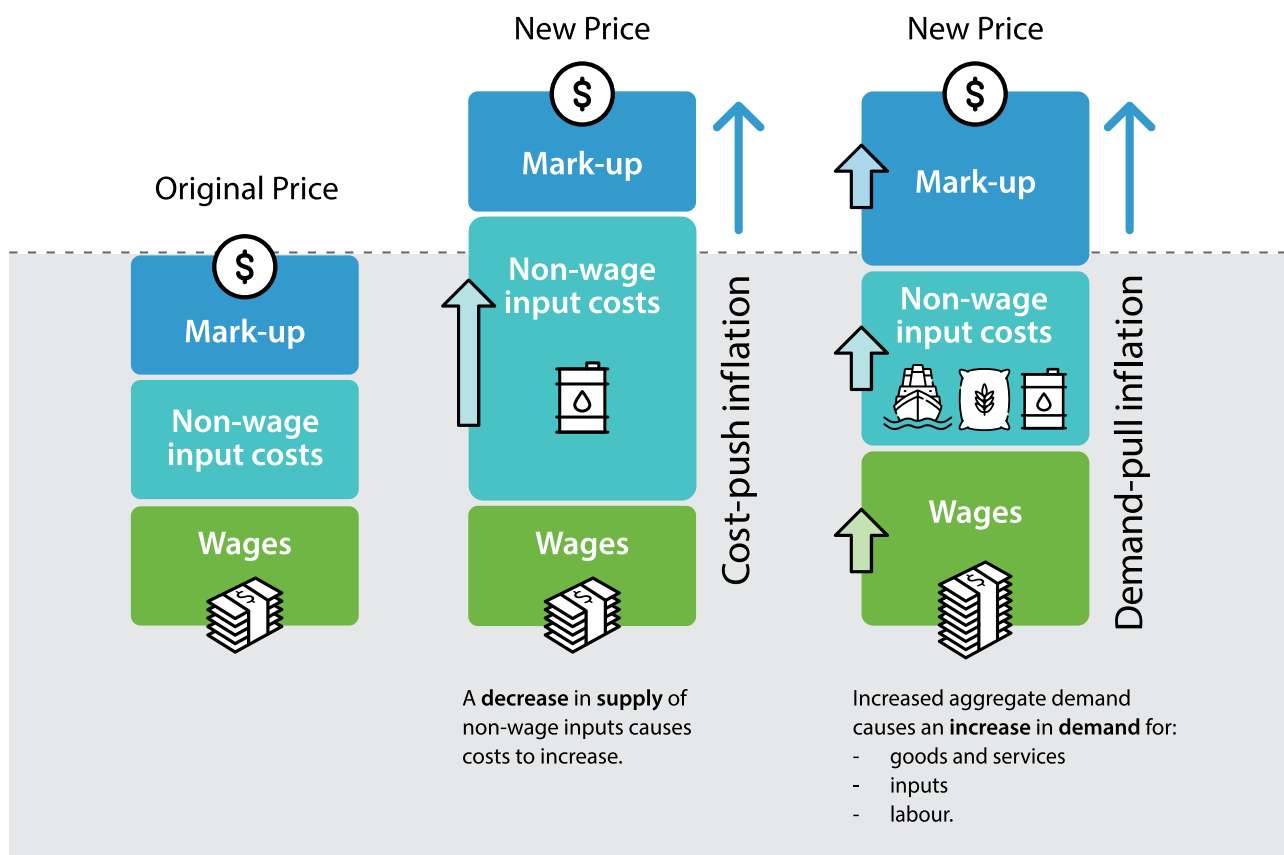
Figure 1: Cost-push and Demand-pull Inflation

power to be able to preserve margins in this way, which depends on the level of competition in the industry. Such outcomes are less common than the demand-driven movement that creates a positive overall correlation between prices and wages growth, but they still arise at times.

During the inflation-targeting era, there have been various examples of adverse supply shocks that have produced higher inflation in advanced economies without a commensurate pick-up in wages growth; these shocks have included sharp increases in commodity prices, large exchange rate depreciations and sustained declines in productivity growth. Notably, these shocks have generally coincided with spare capacity in labour markets, meaning the shock was more likely to be absorbed without generating significant upward pressure on wages. In this context, inflation expectations remained anchored and the rise in inflation proved to be temporary. Examples of such supply shocks include the following:

- After the global financial crisis, oil prices rose to persistently high levels largely due to geopolitical tensions; while inflation rose in many economies as a result, including the United States, wages growth was little changed (Graph 5). Higher oil prices are inflationary because petrol accounts for a sizeable share of the household consumption basket in advanced economies and because of the pervasive effect of oil on the costs of producing, transporting and selling a wide range of goods and services.

- A substantial depreciation in the British pound after the 2016 Brexit referendum pushed headline inflation sharply higher while both wages growth and domestically generated inflation (proxied here by services inflation) was little changed (Graph 5) (Bank of England 2017). A depreciation in the exchange rate raises the domestic price of imported goods without

increasing the ability of firms to pay higher wages.[2]

- Across various economies over the 2010s, a decline in productivity growth raised the cost of production for firms (Arsov and Evans 2018). Standard theory states that real wages should track workers' productivity in the long run (Productivity Commission 2020). This implies that while inflation and (nominal) wages growth move together, each moves around a different average rate, with the wedge between those averages capturing the trend in productivity growth. When the trend rate of productivity growth changes, realised inflation and wages growth can move apart for a period while the new differential in their trends is established.

One example where a shock occurred during a period of tight labour markets was when Australia's terms of trade surged during the late 2000s, largely owing to demand for Australian resources from emerging economies, particularly China (Battelino 2010). Price inflation initially increased, soon followed by a pick-up in wages growth, which kept inflation elevated above target for some time. By the early 2010s, however, the effects of the global financial crisis, a stronger Australian dollar and rising interest rates all dampened growth, which lowered both wages growth and inflation. The additional buffer provided through exchange rate adjustment in a flexible exchange rate regime was a marked difference compared with earlier episodes of terms
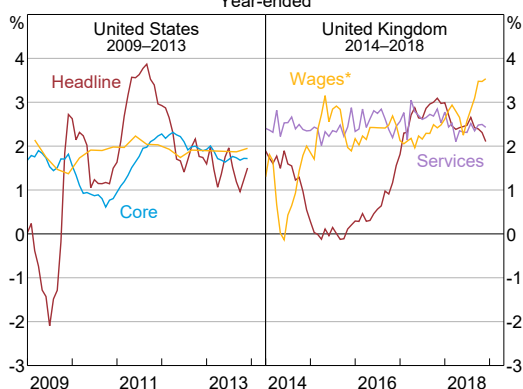
Graph 5
Consumer Price Inflation and Wages Growth
Year-ended

* Employment Cost Index used for United States and three-month moving average of average earnings for United Kingdom.
Sources: RBA; Refinitiv

of trade shocks that occurred when fixed or managed exchange rates were commonplace.

The self-defeating nature of wages chasing inflation in the face of supply shocks

Once a wedge between prices and wages has emerged (e.g. because of a supply shock), attempts by workers to push for higher wages to 'catch-up' to inflation may not necessarily be successful in maintaining real wages over the medium term. In one sense this is because the rise in nominal wages to restore purchasing power can spur firms to increase prices further, which would negate the catch-up effect of the initial increase in wages. But ultimately, this inability to restore real wages reflects that if fundamental factors have increased the equilibrium price of intermediate inputs relative to wages, attempting to reverse that shift in relative prices will create a disequilibrium (unless firms don't have the pricing power to pass on increases in their costs). In those circumstances, wages constantly 'chase' inflation, resulting in a wage-price spiral (Figure 2).

A canonical example of such a spiral occurred in the 1970s in most advanced economies – known as 'The Great Inflation'. Political instability in the Middle East at that time resulted in two severe oil price shocks that pushed inflation to very elevated rates. Workers resisted cuts to real wages, and were supported by high rates of unionisation and automatic inflation indexation clauses (discussed further below). Monetary policy also did not tighten by as much as the increase in inflation, so that real interest rates fell; in part, this reflected that a number of economies still had managed exchange rate regimes in this period, and so monetary policy was directed at keeping the exchange rate at the desired level rather than controlling domestic inflation. (Higher interest rates would have attracted foreign capital and put upward pressure on the exchange rate, which in turn would have required the central bank to expand domestic money supply, thereby easing policy again.) It is also relevant that US fiscal policy was very expansionary, partly because of spending related to the Vietnam War (Federal Reserve 2013).
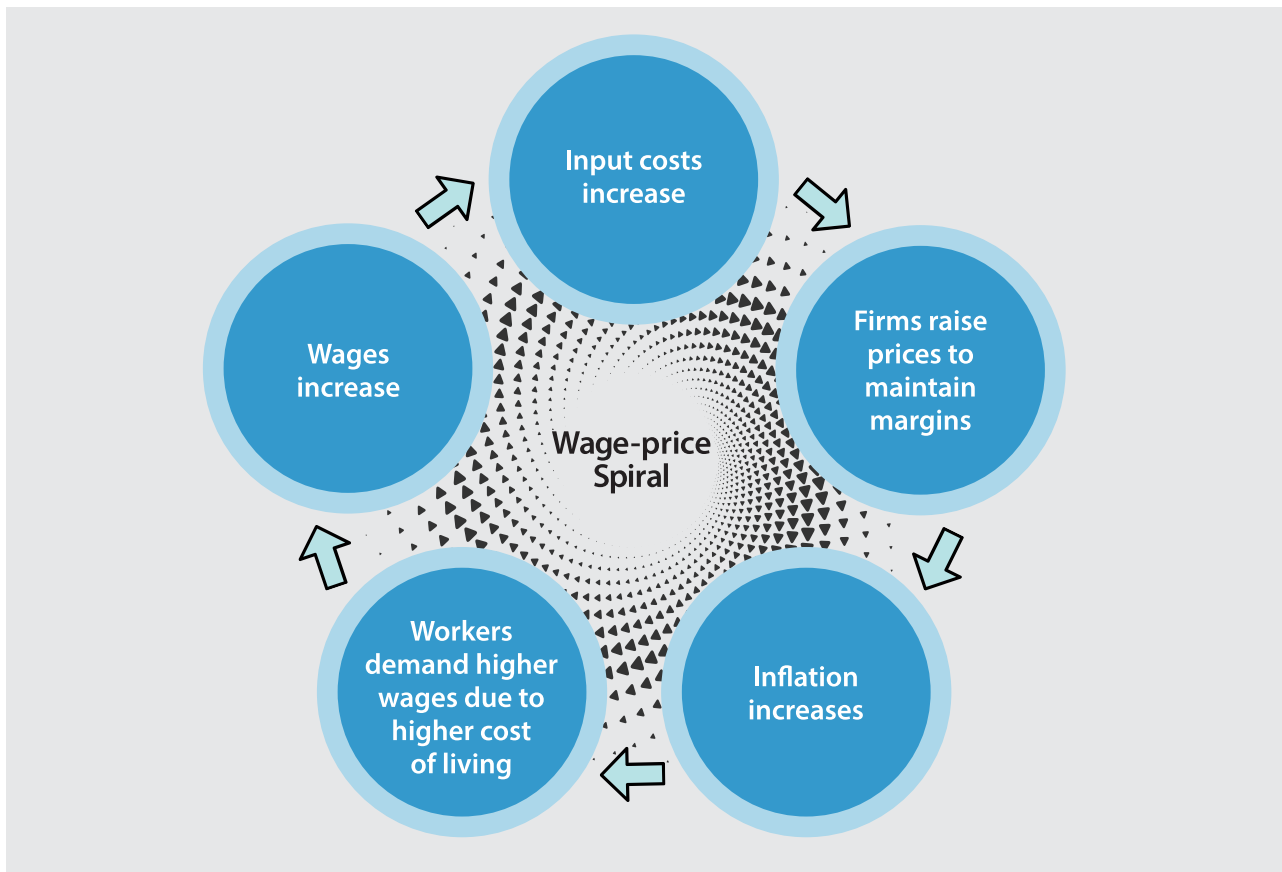
Figure 2: Wage-price Spiral

In spite of all this, the sharp lift in nominal wages growth still fell short of inflation in most economies. This partly reflected the fact that wages tend to respond to prices with a lag because of the nature of wage-setting mechanisms, while prices are able to be reset more frequently in response to changing cost pressures and demand conditions. Historically, it has generally been the case that wages growth has tended to fall below the rate of inflation as the latter moves to high rates (Graph 6).

What causes a wage-price spiral?

While supply shocks can push up inflation, these have not translated into wage-price spirals in the inflation-targeting era. This is because several other factors influence whether an initial shock to inflation will turn into a wage-price spiral, including:

- how tight the labour market is
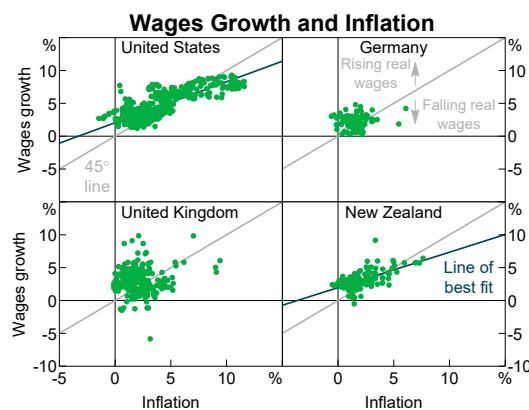- the balance of bargaining power between workers and firms
- the inherent stickiness of wages

- the prevalence of wage indexation arrangements
- the pricing power of firms allowing them to preserve margins
- inflation expectations.

Graph 6

Sources: RBA; Refinitiv

A tight labour market

A tight domestic labour market can support attempts by workers to ensure wages keep pace with inflation. This is because workers have more bargaining power in such an environment, even when there are supply shocks, because it is harder for firms to find suitable labour. A reverse example of this can be observed in the *lack* of wages growth in many economies after the global financial crisis, when demand was weak, and as inflation pushed higher on the back of rising oil prices.
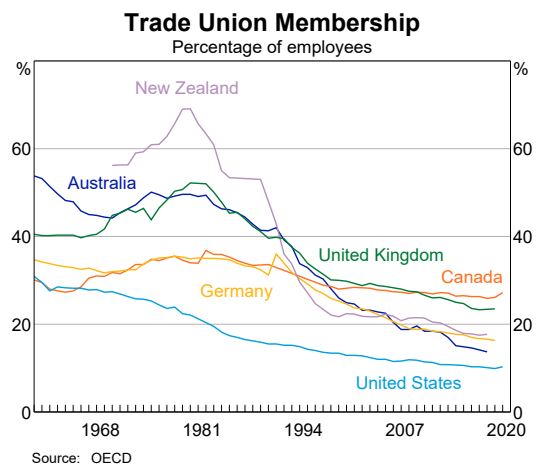
The balance of bargaining power

Institutional factors can affect workers' bargaining power and the likelihood of 'real wage resistance'. For example, high rates of trade union membership or collective bargaining coverage will tend to strengthen workers' power. Both of these factors were high in the 1970s but have declined in most advanced economies since then – especially outside of continental Europe (Graph 7; Graph 8). Similarly, workers in economies with more centralised wage setting – such as in the euro area – have greater bargaining power, and so the responsiveness of wages to prices is likely to be higher (BIS 2022). Moreover, stricter job protection regulations that limit the ability of firms to dismiss workers can give workers greater protection to push for higher wages, which may increase the responsiveness of wages growth (such rules are stricter in the euro area than in the United States and Canada). Higher minimum wages and unemployment benefits (relative to wages) also increase bargaining power and shift up the level of wages, although it is less clear that they amplify the *responsiveness* of wages to inflation. Overall, when workers have stronger bargaining power, their ability to push for larger wage increases (as prices rise) is enhanced (BIS 2022).

Global factors also matter for the balance of bargaining power, since the prospect of replacing domestically produced goods with imports can hold down wages in a tight domestic labour market; in addition, increased availability of imported inputs reduces the impact of non-labour input costs on domestic inflation pressures. This was one factor contributing to low wages growth in the

early 2000s: the US economy was strengthening, with inflation rising steadily and the unemployment rate below estimates of its natural rate, but wages growth did not pick up. Over this period, there had been a boost to global labour supply (relative to demand) as China entered the World Trade Organization in 2001, increasing global competition – particularly for manufacturers in the United States (Goodhart and Pradhan 2020). While increased competition in the goods market reduced manufacturers' pricing power and the relative price of manufactured goods, the implied threat of import competition was broadly based and so weighed more heavily and more broadly on wages growth.

Graph 7

Trade Union Membership
Percentage of employees

Source: OECD

Graph 8

Collective Bargaining Coverage
Percentage of employees

*   1974 for Australia due to data availability.
**   Includes modern awards.
Source: OECD
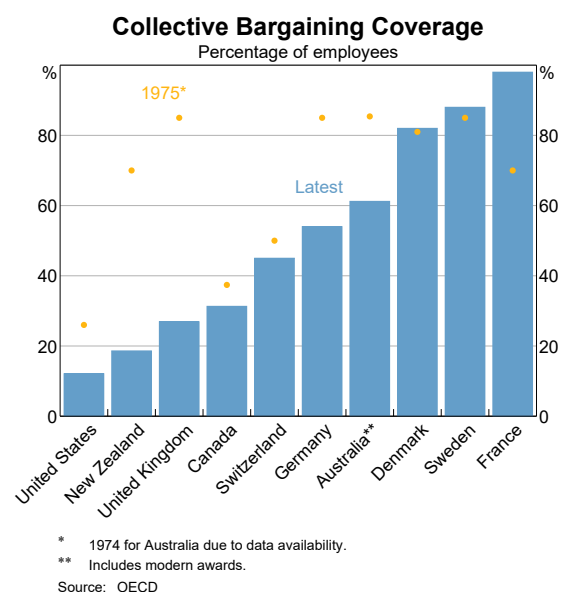
The 'stickiness' of wages

The frequency at which wages are renegotiated can create 'stickiness' that reduces the responsiveness of wages to economic conditions. For example, collective bargaining agreements (CBAs) are usually renegotiated every few years, so can delay the responsiveness of wages to inflation in countries where CBA coverage is high, such as in the euro area where the average duration of CBAs is between about one and three years, depending on the country (Graph 8). Infrequent wage adjustments can sometimes mean that the supply shock to inflation has unwound by the time a large share of wages has been renegotiated; this implies that, although the level of real wages is restored, the period of lower real wages is not caught up afterwards. Economies where wages are less 'sticky' may therefore be more susceptible to meeting the conditions for a wage-price spiral and may find it harder to break out of a spiral once it has begun.

Wage indexation arrangements

Automatic indexation of wages to inflation can increase the likelihood of a wage-price spiral. If wages are automatically indexed to inflation, increases in prices automatically trigger wage increases (although since indexation is almost always backward-looking there may be a lag between the higher inflation and the wage increase). Indexation is more common in countries with a higher inflation history, and the use of indexation has decreased significantly since the 1970s as inflation has declined (BIS 2022). Nevertheless, there are still a number of advanced economies where at least minimum wages are indexed to inflation, particularly in the euro area (Koester and Grapow 2021). For example, in Belgium, virtually all wages are indexed to inflation; in Spain, the share of newly agreed collective bargaining agreements with indexation clauses has approximately doubled this year, to around 30 per cent (Hernández de Cos 2022). Relatedly, economies in which wages in one sector are heavily influenced by wages in another are also more prone to see excess demand in one part of the economy result in rapid wages growth more broadly. This can contribute to a wage-price spiral following a sector-

specific shock. Historically, such arrangements were quite common because of centralised wage-setting mechanisms, but the prevalence of formal mechanisms to maintain relative wages across industries has decreased significantly.

Pricing power of firms

If firms have more pricing power, it is more likely that a wage-price spiral could occur because firms can pass-through higher input costs to prices without losing as much market share, perpetuating any spiral that might be emerging. By contrast, firms with less pricing power are more likely to absorb higher input costs into their margins, instead of raising prices.

Inflation expectations

Inflation expectations play a significant role in whether a wage-price spiral might occur. If firms and workers expect a rise in inflation to be persistent, they are more likely to react strongly, either by raising prices or seeking higher wages. These expectations are largely shaped by the nature of the inflationary shock and agents' anticipation of the policy response to correct any overshoot above target. In the inflation-targeting era, although near-term expectations tend to fluctuate, medium-term expectations have been broadly stable (Graph 9).

Graph 9

Medium-term Inflation Expectations*

* Expectation for the US measure is the expected inflation rate in five years; for the United Kingdom, it is the expected rate over the next 5 to 10 years.

Source: Refinitiv

Conclusion: Assessing the risk of an imminent wage-price spiral

In many countries, inflation is at historically high rates, the labour market is exceptionally tight and wages growth is picking up, so there are risks that a wage-price spiral could emerge in some economies. Large increases in the price of essential household items, like petrol and food, also mean that inflation is more salient than normal, pushing households away from a world of 'rational inattention' to price growth (BIS 2022). Consequently, near-term inflation expectations have increased to their highest rate in several decades. In current wage negotiations, workers are already trying to recoup previous erosion in purchasing power and secure themselves against future price increases (Blanchard 2022); the current tightness of labour markets globally means workers are in many cases well placed to successfully negotiate for higher wages. These factors increase the risk of a wage-price spiral.

There are a number of factors that work against a wage-price spiral emerging, however, implying that the overall risk in most advanced economies is probably quite low, and certainly lower than in the 1970s. One group of these factors relates to the pricing power of workers and firms, which has fallen over the past decades as a result of institutional change and increased globalisation raising competition. Wage indexation is also less prevalent than it once was, though this could reverse if high inflation persists and bargaining arrangements were to respond to this.

The very different arrangements surrounding current monetary policy, as opposed to in the 1970s, also mitigates the risk of a spiral. Most advanced economy central banks now have mandates to achieve a target rate of, or range for, inflation. They have therefore started raising policy interest rates significantly, and their public statements reference strong commitments to ensure that inflation returns to target. This contrasts with the 1970s when real rates fell over a three-year period after the shock to inflation and therefore stimulated the economy.

Largely because central banks have successfully maintained inflation consistent with their targets over many years and have responded to high inflation decisively in recent months, to date inflation expectations beyond the current year have remained in check (Graph 9). Households' expectations for inflation beyond this year remain consistent with central banks' targets, and businesses and financial markets expect inflation to broadly return back towards target. These expectations are likely to feature in price- and wage-setting behaviour. This is starkly different to the 1970s when most agents believed inflation would persistently remain high, which fuelled further price increases. Nevertheless, if inflation remains elevated and if monetary policy doesn't respond sufficiently, there is a risk that medium-term expectations could de-anchor and then feed into firms' pricing decisions and wage outcomes in these economies.

↯

Endnotes

[*] The authors are from Economic Analysis Department.

[1] Granger causality running in both directions means that past values of inflation can help to predict wages growth and past values of wages growth can help to predict inflation.

[2] The reason for the fall in the exchange rate matters – and depreciations driven by rising risk premia perhaps matter most (Forbes 2015).

References

Arsov I and R Evans (2018), 'Wage Growth in Advanced Economies', RBA *Bulletin*, March.

Bank of England (2017), *Monetary Policy Report*, November.

BIS (Bank of International Settlements) (2022), *Annual Economic Report*, June.

Battelino R (2010), 'Mining Booms and the Australian Economy', Address to The Sydney Institute, Sydney, 23 February .

Blanchard O (2022), 'Why I Worry About Inflation, Interest Rates, and Unemployment', PIIE Series, Peterson Institute for International Economics, 14 March.

Carstens A (2022), 'The Return of Inflation', Speech at the International Center for Monetary and Banking Studies, Geneva, 5 April.

Federal Reserve (2013), 'The Great Inflation', Federal Reserve History, 22 November.

Federal Reserve (2022), 'Beige Book', 20 April.

Forbes K (2015), 'Much Ado About Something Important: How Do Exchange Rate Movements Affect Inflation?', Speech at the Macro and Finance Research Group Annual Conference, Cardiff, 11 September.

Goodhart C and M Pradhan (2020), *The Great Demographic Reversal*, 1st ed, Palgrave Macmillan, London.

Hernández de Cos P (2022), 'The Case for an Incomes Agreement in Spain?', Speech at the 50th Anniversary of the Faculty of Economics and Business Studies, Universidad de Sevilla, 26 April.

Koester and Grapow (2021), 'The Prevalence of Private Sector Wage Indexation in the Euro Area and its Potential Role for the Impact of Inflation on Wages', ECB *Economic Bulletin*, Issue 7/2021.

Productivity Commission (2020), 'Recent Productivity Trends', February.

Evolving Financial Stress in China's Property Development Sector

Patrick Hendy[*]

Photo: zhihao – Getty Images

Abstract

Financial stress in China's property development sector has attracted significant attention because it may have systemic consequences for financial stability in the broader Chinese economy. Though China Evergrande Group, one of the country's largest and most leveraged property developers, has received a considerable share of this attention, risks in the sector were building for some time prior to Evergrande's default in 2021. This article reviews contributing factors to the sector's financial fragility and explores the characteristics of the financial stress faced by major developers. It also considers some likely consequences of this fragility for the Chinese property development sector and beyond.

Introduction

Real estate investment associated with rapid urbanisation and households' demand for property as a financial asset has been an important source of economic growth in China in recent decades. Faced with substantial demand over a relatively short period of time, many Chinese real estate developers were able to run a risky and highly profitable business model, which relied on high leverage and rapid project turnover. However, this model also left developers particularly vulnerable to short-term funding stress – a risk that was realised in 2021 with the widely publicised default of China Evergrande

Group. As large parts of China's property development sector have come under severe financial stress over the past year or so, concerns about risks to China's financial stability and the economic outlook have also increased. The wave of defaults and subsequent restructurings that are ongoing in the sector are likely to permanently change the structure of China's property development sector and reduce its capacity to engage in the rapid, large-scale development seen in recent decades.

Urbanisation and residential investment in China

The real estate sector has been a major contributor to China's economic growth, spurred by mass urbanisation over the past several decades. In the late 1970s, when a series of economic reforms and many market-oriented policies began to be introduced, less than one-fifth of the Chinese population lived in urban areas; by 2020, this share had grown to more than three-fifths (United Nations 2021). Because significant investment in urban real estate was required to facilitate this process, dwelling investment as a share of GDP in China increased rapidly over the past few decades (Graph 1).

The growth of the Chinese real estate sector gathered pace in the 1990s as the privatisation process of the housing stock, which had been largely state-owned until that point, began. These reforms unleashed a considerable increase in housing demand as residents were allowed to purchase the homes they had previously been renting from the state and also increase their housing consumption (Wang 2011). Demand was further spurred by households acquiring property as a financial asset; other asset classes like equities or bonds had historically been inaccessible or simply offered lower returns, partly because of artificially low interest rates (Adams *et al* 2021). Cultural factors also contributed to this demand, with home ownership often seen as a necessity for marriage (Glaeser *et al* 2017). Reflecting the characteristics of this underlying demand, Chinese
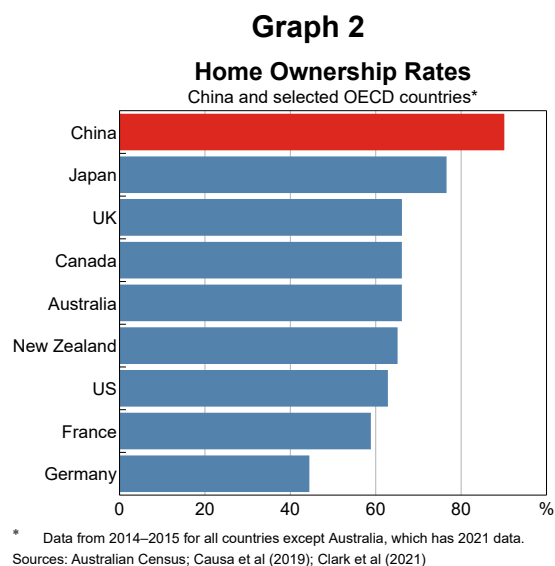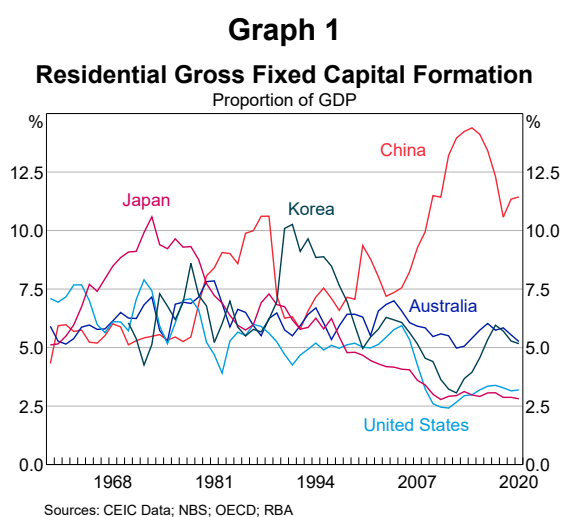
home ownership rates are now among the highest in the world (Graph 2). Second-home ownership is also very common, with more than 20 per cent of urban households owning multiple homes (Huang, Yi and Clark 2020).

This high level of demand for housing enabled real estate development more broadly (including commercial real estate) to become a significant driver of the Chinese economy, directly affecting one-quarter of GDP in 2018 (Rogoff and Yang 2021).[1] As a result, any concerns about the health of the Chinese real estate sector have substantial implications for Chinese economic growth, as well as for major trading partners, including Australia, which benefit from China's demand for iron ore and coal exports (Kemp, Suthakar and Williams 2020).

China's real estate development funding model and its risks

Significant real estate demand has benefited the Chinese property development sector and enabled some Chinese developers to become the largest in the world. The basic business model for most of these developers can be characterised in four steps:

1. Obtain funding to purchase land from local governments.

2. Presell properties to be developed to home buyers.

3. Begin construction on the project.

Graph 1

Residential Gross Fixed Capital Formation

Proportion of GDP

Sources: CEIC Data; NBS; OECD; RBA

Graph 2

Home Ownership Rates

China and selected OECD countries*

*   Data from 2014–2015 for all countries except Australia, which has 2021 data.
Sources: Australian Census; Causa et al (2019); Clark et al (2021)

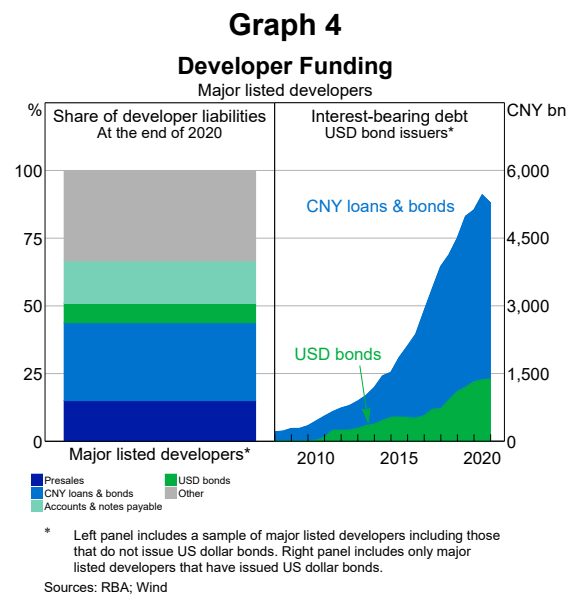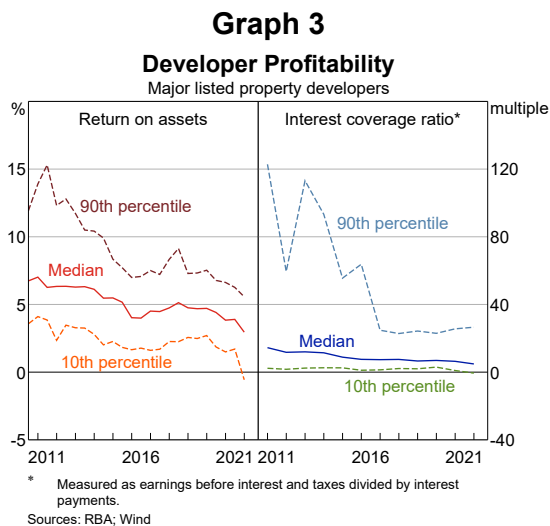4. Use income from the project to secure funding to begin another project.

This reliance on rapid expansion was historically quite profitable, with the median major developer earning around a 7 per cent return on assets at the beginning of the 2010s, and some developers earning returns exceeding 10 per cent (Graph 3).[2]

However, profitability in the property sector has declined over time as China's housing stock has developed, the urbanisation process has begun to slow, and financial markets have matured further and become more accessible for households. Profitability has also declined as authorities have cracked down on housing speculation and sought to rebalance the economy away from reliance on the sector. Indeed, in 2021 a large share of listed property developing companies did not make any profits at all, with around 10 per cent of companies reporting negative returns on assets. Likewise, as profitability has declined and indebtedness has increased, the ability of some of the weaker developers to cover their interest payments out of earnings has also steadily declined. By 2020, around 10 per cent of major listed developers had an interest coverage ratio of less than one – meaning they were not earning enough to service their debt, even before accounting for any maturing loans.

As profitability declined since 2010, developers increasingly innovated in their financing structures and business models, which increased financial risks in the sector. Issuance volumes of US dollar bonds increased through the 2010s, and these bonds grew

to become a notable portion of major listed developers' interest-bearing debt (Graph 4). US dollar bonds were popular among overseas investors who were attracted by high-yielding bonds, while Chinese developers preferred offshore issuance due to the favourable bond pricing resulting from this demand and the limited need to provide collateral. Private real estate developers' US dollar bond issuance has been found to correlate with actual investment outlay, rather than just relative interest rates, implying that US dollar bond issuance was needed by these developers to fund activity (Ding, Huang and Zhou 2019).

In general, property developers face less rollover risk from bond financing than traditional bank loans because of the lower frequency of refinancing and the larger value of bond issuance. However, declining profitability, rising leverage and the way in which bond issuance is structured can make developers vulnerable to changes in investor sentiment. To enable access to offshore equity and debt financing, many private developers shifted to a complex corporate structure whereby a 'holding company' is registered in Hong Kong (often listed on the Hong Kong stock exchange). This holding company retains a controlling equity stake in the onshore (mainland China) 'operating company', which holds all the real estate assets. The holding company would then have additional subsidiary corporate vehicles registered in other jurisdictions, such as the Cayman Islands, which would issue the

Graph 3
Developer Profitability
Major listed property developers

* Measured as earnings before interest and taxes divided by interest payments.
Sources: RBA; Wind

Graph 4
Developer Funding
Major listed developers

* Left panel includes a sample of major listed developers including those that do not issue US dollar bonds. Right panel includes only major listed developers that have issued US dollar bonds.
Sources: RBA; Wind

US dollar-denominated bonds. Because the offshore bondholders are creditors in only the offshore holding company, which itself has only an equity claim in the operating company's onshore assets, offshore creditors are 'structurally subordinate' to onshore creditors – that is, onshore creditors have priority over offshore creditors in the event of bankruptcy. Despite developers' attempts to enhance their offshore credit quality with legal devices like 'keepwell deeds' (the enforceability of which is in question), offshore developer bonds are naturally riskier than onshore credit and are subject to sudden changes in offshore creditors' confidence (Tudor-Ackroyd 2020).[3] Developer funding also relied on non-interest-bearing debt, like accounts and commercial notes payable to suppliers, and funds from presales.

Over the 2010s, many developers expanded their business models well outside of real estate. However, rather than diversifying to improve cash flow stability, a number of developers invested in relatively speculative or unprofitable ventures, including football teams. Evergrande Group was particularly well known for this strategy, having invested in ventures as diverse as electric vehicles, a streaming service and theme parks.

Along with these changes in the composition of their financing and business models, developers were also operating with increasingly high leverage ratios and gearing ratios. This trend prompted a series of regulatory responses, which culminated in a crackdown on developer leverage, known as the 'three red lines' (Kemp, Suthakar and Williams 2020).

Tighter regulation of the property sector

By 2020, Chinese regulators had become increasingly concerned about growing leverage in the real estate development sector.[4] Authorities implemented new regulations on the property sector in August that year, introducing the so-called 'three red lines' policy, which would apply first to 30 major developers before being rolled out to the rest of the sector (Wang *et al* 2020). The thresholds – or 'red lines' – were:

1. The debt-to-asset ratio (not including presales) was not to exceed 70 per cent.
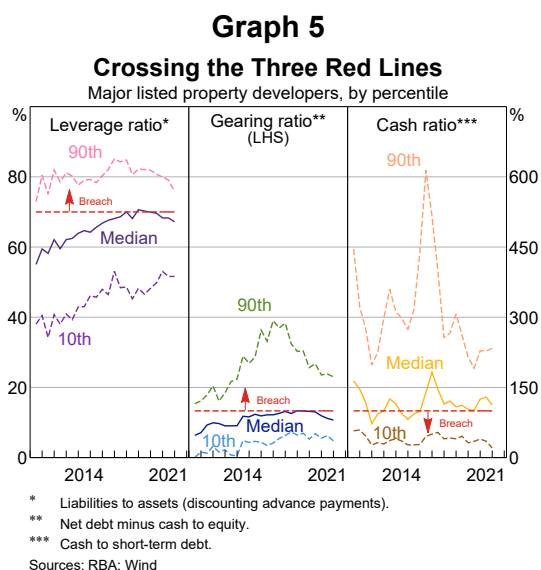
2. The net debt to shareholders' equity was not to exceed 100 per cent.

3. The cash to short-term debt was not to fall below 100 per cent.

The penalty for non-compliance would be strict limits on developers' allowable annual debt growth, depending on the number of red lines crossed. These thresholds were only a little stricter than the ratios actually reported by the median major developer for 2020, while developers in the 90th percentile (or 10th percentile for cash ratios) were well in breach of these ratios (Graph 5). One conclusion from this exercise was that a large number of major developers would need to undergo significant deleveraging in 2021.

Although the three red lines policy was aimed at improving the financial stability of the real estate development sector in the long run, these regulations made the financial position of the riskiest developers even more precarious in the short term as they attempted to quickly deleverage (Graph 6).

Evergrande Group's spiral of financial stress

The level of financial stress faced by property developers was apparent by mid-2021 when two major Chinese developers, China Fortune Land and Sichuan Languang, defaulted on US dollar bonds (Bloomberg 2021a; Bloomberg 2021b). However, it was Evergrande Group that ignited more serious

Graph 5
Crossing the Three Red Lines
Major listed property developers, by percentile

* Liabilities to assets (discounting advance payments).
** Net debt minus cash to equity.
*** Cash to short-term debt.
Sources: RBA; Wind

concerns about the industry later that year. Evergrande was China's largest developer by total assets at the end of 2020, and was known for its high leverage and wide range of business ventures. Evergrande had been increasingly profitable until 2018; however, its earnings fell considerably over the next couple of years, even while its leverage increased, the interest coverage ratio fell and the maturity of its liabilities shortened.
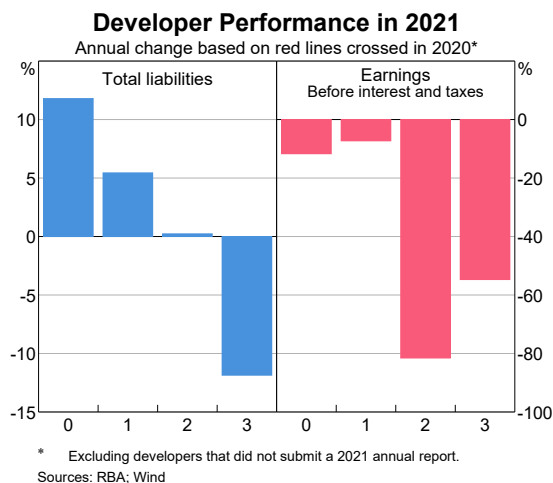
As it became apparent over 2020 that Evergrande's fundamentals had deteriorated, the volatility of the company's bond and equity prices increased and became highly sensitive to negative news about the company (Graph 7).[5] At the end of May 2021, Evergrande's share and bond prices fell rapidly, triggered by news that regulators were examining transactions between Evergrande and Shengjing Bank, in which Evergrande held a major stake. The equity and bond price falls steepened in July on a string of negative news – a court in Jiangsu province froze Evergrande's bank deposits, sales in some Evergrande developments were suspended, and Hong Kong banks suspended new mortgages for Evergrande developments in Hong Kong (Yu 2021; Hale 2021; Reuters 2021; Bloomberg 2021c). Despite Evergrande's size and prominence, financial markets initially did not treat these issues as systemic or sector-wide.

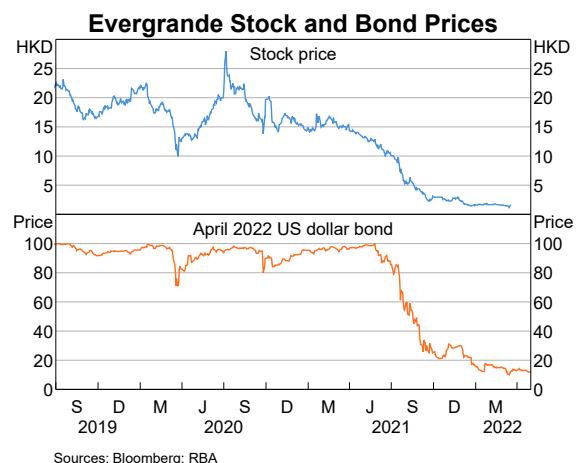## Contagion in the development sector and beyond

Between July and September 2021, bond prices for some other highly leveraged private property developers started falling as markets became increasingly concerned about developers' ability to repay their debts. These concerns were exacerbated by the warnings of imminent default by other developers around this time, including Fantasia Holdings. As concerns about the financial stability of property developers spread, a large number of local governments imposed further restrictions on the withdrawals of presales funds from escrow accounts by all developers (Yu and Jim 2022).[6] Although these measures were aimed at ensuring the delivery of local projects by enforcing existing rules on the *usage* of presales funds, the change in enforcement effectively cut off a large number of developers from having *access* to these funds, which is an important source of developer funding, adding further to their funding stress (Yu and Jim 2022).

While financial markets initially viewed these developments as a liquidity crisis for a few developers, in late 2021 concerns started to shift towards solvency. Around this time, a significant gap opened up between the equity prices of state-owned developers and private developers (Graph 8). Rather than pricing developer bonds on the basis of the parent company's liquidity – their cash and short-term assets – financial markets became focused on their solvency, including whether they would be likely to receive government support. The evolution of this shift in

Graph 6

Developer Performance in 2021

Annual change based on red lines crossed in 2020*

*   Excluding developers that did not submit a 2021 annual report.
Sources: RBA; Wind

Graph 7

Evergrande Stock and Bond Prices
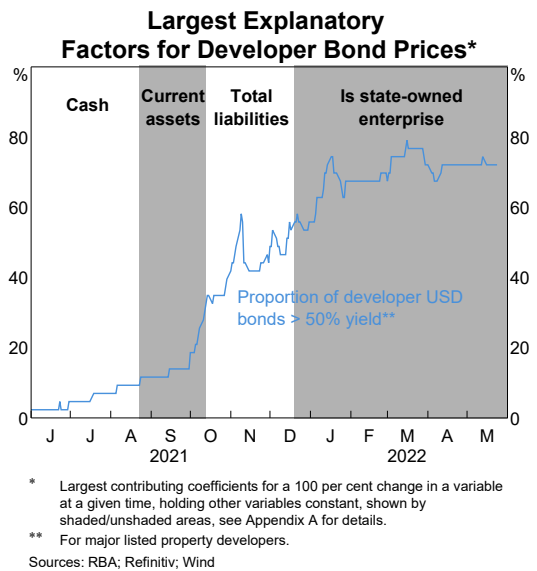

Sources: Bloomberg; RBA

sentiment can be seen in rolling regressions of major listed developers' US dollar-denominated bond prices on their financial characteristics as of 2020 – their cash holdings, current assets, change in net profits since 2019, and total liabilities – and whether they were a state-owned enterprise (see Appendix A). The results suggest that the largest contributing factors for bond price changes (holding all other variables constant) in the early stages of the crisis were the developer's cash holdings and current assets (Graph 9) – that is, developers' liquidity and ability to meet their short-term debt repayments. However, by late-September 2021, the focus had shifted to solvency, with the largest contributing factors being the developer's total liabilities and whether they were a state-owned enterprise, indicating that markets became focused on simply whether a developer had explicit state support.

These developments made it more difficult for private developers to obtain additional financing, further increasing their likelihood of defaulting. Consequently, the vast majority of major listed private property developers, and more than half of all major listed developers (weighted by 2020 assets) have now either already defaulted or been under severe financial stress (Graph 10).[7]

Developers continue facing difficulties in financing themselves as funding markets have dried up and demand for presales has softened. Over the past six months, developers under stress (or that have
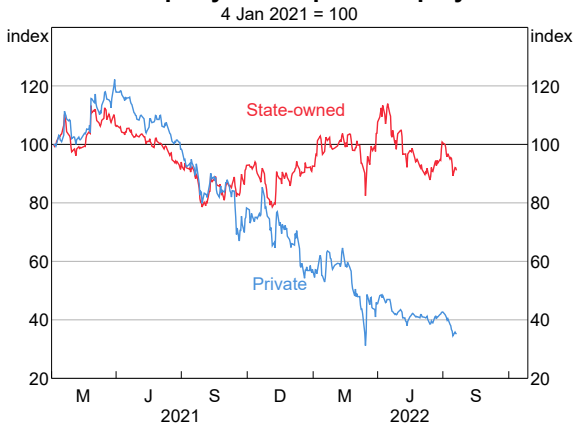
already defaulted on another bond) have had considerable difficulties issuing any bonds, leaving them with significant financing gaps as sizeable offshore bonds mature. By contrast, state-owned developers have largely been able to maintain access to onshore bond markets (where they have historically obtained a large share of their bond funding) (Graph 11). These recent developments suggest that the property development industry is likely to become smaller, more concentrated and more state-led than during the high growth boom of recent decades, as many defaulting developers are likely to either go through debt restructuring, be acquired by healthier developers or go bankrupt.
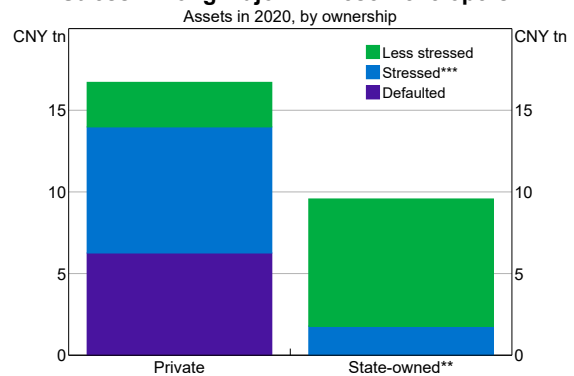
Graph 9

Largest Explanatory Factors for Developer Bond Prices*

* Largest contributing coefficients for a 100 per cent change in a variable at a given time, holding other variables constant, shown by shaded/unshaded areas, see Appendix A for details.
** For major listed property developers.
Sources: RBA; Refinitiv; Wind

Graph 8

Chinese Property Developers – Equity Prices*
4 Jan 2021 = 100

* Selected major property developers excluding China Evergrande Group.
Sources: Bloomberg; RBA

Graph 10

Stress Among Major Chinese Developers*
Assets in 2020, by ownership

* Listed property developers with total assets greater than CNY60 billion.
** State-owned developers includes mixed-ownership developers with majority state control.
*** Includes those developers experiencing bond yields greater than 50 per cent or having requested a bond extension.
Sources: Bloomberg; Fitch; RBA; Wind

Restructuring in the property development sector is likely to be a significant drag on China's economic growth and place additional strains on local govern-ment finances for some time. The restructuring process, even when successful, is typically lengthy, during which a developer's operations slow considerably.[8] Developers undergoing restructuring are likely to demand less land for new properties even as they continue to sell properties close to completion. This slowdown is already evident through slower property sales in 2021 for defaulted developers. Recent evidence also suggests that local governments, which derive a large part of their revenue from land sales to developers, have sought to replace the reduced demand with purchases by local government financing vehicles (Bloomberg 2022a) – a kind of state-owned investment vehicle, which often engage in infrastructure development. As such, these land purchases are likely to add to ongoing concerns about the viability of these vehicles and the financial stability risks they pose (Holmes and Lancaster 2019; RBA 2022).

Along with direct effects on employment and activity in the property development sector and its suppliers, and the consequences to banks of holding non-performing property developer loans on their balance sheets, developer stress may also reduce confidence among home buyers, leading to a decline in housing prices. In July 2022, reports circulated that some home buyers who had not yet received properties they were presold had stopped making mortgage repayments on the properties (Bloomberg 2022b). Maintaining buyer confidence in the housing market even as major property developers remain under financial stress remains a key challenge for the authorities.

Conclusion

China's property development sector came under severe financial stress in 2021. This followed the accumulation of risks in the sector over a number of years – the result of long-term economic and demographic trends that led to high demand for housing, and the highly leveraged business models that developers adopted to expand rapidly in response to this demand. After the authorities implemented regulation aimed at reducing leverage in the sector, a series of high-profile property developer bond defaults followed. These defaults exacerbated pressure on healthier developers as markets became increasingly concerned about developers' solvency risk, rather than only liquidity risk, and the likelihood of state support. The sector is likely to consolidate and become more state-led as a consequence. The ongoing funding stress and difficulty for developers in delivering presold projects poses substantial risks to the real estate market as a whole, and has increased the risks surrounding local government financing.
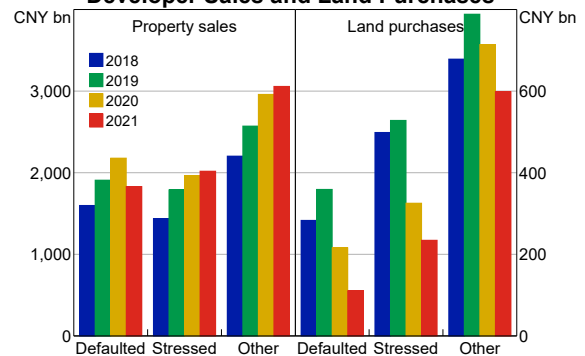
Graph 11
Developer Bond Issuance and Maturities

Major listed developers*
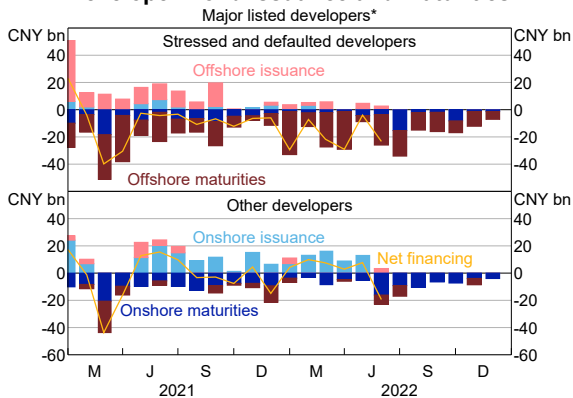
* Issuance to end of June 2022.
Sources: Bloomberg; RBA; Wind

Graph 12
Developer Sales and Land Purchases*

* Major listed property developers.
Sources: RBA; Wind

Appendix A

Data

This analysis uses data on US dollar bonds that were outstanding between the start of 2021 and June 2022 issued by property developers listed in Hong Kong, Shenzhen or Shanghai, along with balance sheet information from the developers.

Bond price data are from Refinitiv, compiled by matching the International Securities Identification Number on bonds from issuers classified as property developers by the Wind Financial Terminal. Developers' balance sheet data are from their 2020 annual reports. An indicator for whether a firm is a state-owned enterprise is derived for listed developers that had greater than CNY60 billion in assets in 2020 from a combination of the Wind Financial Terminal and developer websites; mixed-ownership firms are classified as state-owned enterprises where the central or a local government has a controlling voting stake. This yielded a sample of 63 developers with a total of 321 bonds outstanding over the period.

Model

The following regression model was used to quantify the effect of balance sheet characteristics and state-ownership on bond yields:

$$
\begin{aligned}
price_{jki} &= \beta_0 + \beta_1 \ln(Cash^{2020})_k + \beta_2 \ln(CurrentLiab^{2020})_k \\
&\quad + \beta_3 \ln(CurrentAssets^{2020})_k + \beta_4 \ln(\Delta NetProfit^{2020-2019})_k \\
&\quad + \beta_5 \ln(TotalLiab^{2020})_k + \beta_6 SOE_k + \epsilon_{jki}
\end{aligned}
$$

Where:

- j is the date, k is the developer and i is the bond
- the variable $price$ is the price of the bond
- $Cash$ is the firm's cash and cash equivalent holdings
- $CurrentLiab$ and $TotalLiab$ are current and total liabilities
- $CurrentAssets$ is the firm's current assets
- $\Delta NetProfit^{2020-2019}$ is the percentage change in the firm's net income between 2019 and 2020
- SOE is an indicator variable for being a state-owned enterprise.

Logs were taken for each variable other than the indicator variable so that the coefficients are interpretable as the effect for a 100 per cent change in a variable. Standard errors were clustered at the level of the developer to account for multiple bonds issued by the same developer.

The regression results can be found in Table A1.

To produce the coefficient estimates used in Graph 9, regressions were run over a rolling 60-day window throughout the sample, producing coefficient estimates on data from the previous 60 days. ✦

Table A1: Developer Bond Price Regression Results

	Coefficient (standard error in parentheses)
ln $(Cash^{2020})$	6.300 (9.610)
ln $(CurrentLiab^{2020})_{jk}$	1.036 (22.523)
ln $(CurrentAssets^{2020})_{jk}$	16.451 (26.338)
ln $(\Delta NetProfit^{2020-2019})_{jk}$	4.480 (1.905)
ln $(TotalLiab^{2020})_{jk}$	−20.159 (30.009)
SOE	28.951 (7.596)
Constant	−27.878 (77.958)
R2	0.1551

Sources: Wind; Refinitiv; RBA

Endnotes

[*] This article is based on work done while the author was in International Department. Thank you to Jarkko Jääskelä and Iris Chan for their invaluable guidance and feedback, and to Diego May, whose research contributed important background. Thank you also to Morgan Spearritt, David Norman and William Maher for their helpful comments and assistance.

[1] From estimates using input-output tables (which include residential and commercial real estate as well as multiplier effects).

[2] The focus of this article is on major listed developers, defined as developers with total assets greater than CNY60 billion as at the end of 2020, which were listed in Hong Kong, Shanghai or Shenzhen. This is because these developers pose the greatest financial stability risk, and due to data availability reasons. Major listed developers accounted for around one-third of total property sales in 2019.

[3] 'Keepwell deeds' involve a promise by the operating company to keep the holding company solvent. This in effect gives offshore creditors a supposedly enforceable action onshore against the operating company if the holding company defaults, beyond simply an equity interest, but falls short of a guarantee.

[4] For instance, the People's Bank of China specifically called out the financial risks of large-scale enterprise groups, even naming Evergrande Group (People's Bank of China 2018).

[5] For instance, its bond prices declined in September 2020 as a leaked document circulated that Evergrande claimed was fake (Jim 2020).

[6] In principle, the national Urban Real Estate Management Law requires presales proceeds to be used for the construction of related projects, and local regulations often specify development milestones to be met before developers can access proceeds from supervised escrow (presale) accounts. See, for example, Tianjin Municipal People's Government (2021) and Chongqing Municipal People's Government (2021). However, some developers reportedly accessed these presales funds to cover expenses other than construction costs, which is against the regulations, leading to calls for increased supervision (Zhang 2020).

[7] Defined as US dollar bonds pricing at greater than 50 per cent yield.

[8] For example, Kaisa Group in 2015 became the first Chinese developer to default on a US dollar bond. Kaisa was restructured in 2016, but it was another year before the trading suspension on its stocks was lifted, and it did not resume issuing US dollar bonds until 2019.

References

Adams N, D Jacobs, S Kenny, R Serena and M Sutton (2021), 'China's Evolving Financial System and Its Global Importance', RBA *Bulletin*, September.

Bloomberg (2021a), 'China Fortune Land Becomes First Victim of "Three Red Lines"', *Bloomberg News*, 2 March.

Bloomberg (2021b), 'Sichuan Languang Defaults on US$139 million Bond Payment as Debt Woes Spread among Chinese Developers', *South China Morning Post*, 13 July.

Bloomberg (2021c), 'Four of Hong Kong's Top Banks Halt Some Evergrande Mortgages', *Bloomberg News*, 21 July.

Bloomberg (2022a), 'Property Crisis Means Chinese Cities Sell Land to Themselves', *Bloomberg News*, 26 January.

Bloomberg (2022b), 'Mortgage Boycott Shows How Deep China's Property Crisis Goes', *Bloomberg News*, 19 July.

Chongqing Municipal People's Government (2021), '关于房地产预售资金监管，重庆出新规 [Regarding the supervision of real estate pre-sale funds, Chongqing has issued new regulations]', 22 September.

Ding D, Y Huang and Y Zhou (2019), 'China's Offshore Corporate Dollar Bonds', in A Schipke, M Rodlauer and L Zhang (eds), *The Future of China's Bond Market*, International Monetary Fund, Washington DC, pp 357–379.

Glaeser E, W Huang, Y Ma and A Shleifer (2017), 'A Real Estate Boom with Chinese Characteristics', *Journal of Economic Perspectives*, 31(1), pp 93–116.

Hale T (2021), 'China Evergrande Shares Tumble After Court Freezes $20m Bank Deposits', *Financial Times*, 19 July.

Holmes A and D Lancaster (2019), 'China's Local Government Bond Market', RBA *Bulletin*, June.

Huang Y, D Yi and W Clark (2020), 'Multiple Home Ownership in Chinese Cities: An Institutional and Cultural Perspective', *Cities*, 97, Art 102518.

Jim C (2020), 'China Evergrande Shares, Bonds Suffer Sell-off on Cash-crunch Concern', *Reuters*, 25 September.

Kemp J, A Suthakar and T Williams (2020), 'China's Residential Property Sector', RBA *Bulletin*, June.

People's Bank of China (2018), '中国金融稳定报告 [China Financial Stability Report]', November.

RBA (Reserve Bank of Australia) (2022), 'The Global Financial Environment', *Financial Stablity Review*, April.

Reuters (2021), 'Sales in Two China Evergrande Projects Suspended by Chinese Authorities', *Reuters*, 20 July.

Rogoff K and Y Yang (2021), 'Has China's Housing Production Peaked?', *China and World Economy*, 29(1), pp 1–31.

Tianjin Municipal People's Government (2021), '预售资金监管办法的通知 [Notice of pre-sale funds supervision measures]', Media Release No 11, 30 July.

Tudor-Ackroyd A (2020), 'Bankruptcy Case Casts Doubt on US$96 billion of Offshore Chinese Bonds Claims, Puts Pressure on Financial Products Skirting Capital Controls', *South China Morning Post*, 17 May.

United Nations (2021), 'Urban Population (% of Total Population) – China', *World Urbanization Prospects: 2018 Revision*, World Bank site. Available at <https://data.worldbank.org/indicator/SP.URB.TOTL.IN.ZS?locations=CN>.

Wang S (2011), 'State Misallocation and Housing Prices: Theory and Evidence from China', *American Economic Review*, 101, pp 2081–2107.

Wang J, M Niu, T Shen and G Cross (2020), 'Developers Face New Debt Limits as Property Crackdown Continues', *Caixin Global*, 2 September.

Yu X (2021), 'China's Evergrande Moves to Calm Nervous Investors', *The Wall Street Journal*, 7 June.

Yu X and C Jim (2022), 'China Gives Property Firms Easier Access to Escrow Funds – Report', *Reuters*, 11 February.

Zhang X (2020), '论商品房预售资金的法律监管 [On the Legal Supervision of Pre-sale Funds of Commercial Housing]', *Housing and Real Estate*, pp 13–14.