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Articles

Insights From New Data on Australian Housing Investors

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Photo: Andrew Merry – Getty Images

Abstract

This article provides a materially richer view of housing investors than previously possible, enabled by newly available data from the Australian Bureau of Statistics' Person Level Integrated Data Asset (PLIDA). These administrative data provide coverage of the full population of housing investors in Australia and allow a more granular assessment of housing investor characteristics over time. The analysis shows that investor characteristics have remained broadly stable over the past 20 years, a period over which investors have tended to default on their loans at a lower rate than owner-occupiers. Investors are typically higher income earners, supporting their creditworthiness, and most own only one investment property. One demographic shift has been the increase in the share of the investor population comprising older cohorts. The share of investors with an outstanding loan has not materially changed over time, although investors have tended to borrow with higher property-related debt-to-income ratios than owner-occupiers; around one-fifth of investors had high levels of housing debt relative to their incomes in 2021. To date, this has not translated into higher default rates, though Australia has not experienced a severe housing downturn over this period that might have otherwise tested these investors' capacity to service debt.

Introduction

Housing investors differ from owner-occupiers in both their incentives and behaviour. Their housing purchase decisions are primarily driven by expected financial or capital returns rather than finding a place of residence, and tax incentives such as deductibility of interest expenses further shape their behaviour. Unlike in many countries, households in Australia comprise a significant share of the investor base in the residential property market; this is one factor contributing to Australia's relatively high level of household debt. While investors have historically recorded lower default rates than owner-occupiers, and account for a smaller share of overall housing credit, they have tended to exert a greater influence on housing market cycles.

The RBA has previously noted that housing investors, on average, have higher incomes, greater wealth, and larger liquid asset buffers than owner-occupiers (RBA 2014; RBA 2022a; RBA 2022b; RBA 2023a). However, several structural characteristics of investor lending can heighten vulnerabilities in select segments of the investor population. Investors are more likely to use interest-only loans, may hold multiple properties, and an increasing share are older (RBA 2014; RBA 2017).

More recently, the RBA has highlighted the relatively pro-cyclical nature of investor borrowing: compared with owner-occupier borrowing, it tends to pick up more when interest rates fall, is more sensitive to expected price changes, and is more likely to amplify market swings through entry during periods of rapid price appreciation and exit during downturns (RBA 2025a; RBA 2025b). For these reasons, the RBA has noted for some time that heightened investor activity could lead to a build-up in financial vulnerabilities if this behaviour significantly amplified the housing credit and price cycle, including by contributing to owner-occupiers taking on more debt than otherwise (RBA 2025a; RBA 2025b; RBA 2026).

This article uses newly available micro-level data to deepen our understanding of housing investor characteristics and leverage positions. By moving beyond previously available semi-aggregate and survey measures, this comprehensive administrative dataset provide new insights into the implications of investor activity for financial stability. Investors are important for financial stability because, if their activity were to drive unsustainable increases in housing prices, leverage or weaker lending standards, the economy would become more vulnerable to macroeconomic shocks.

Data

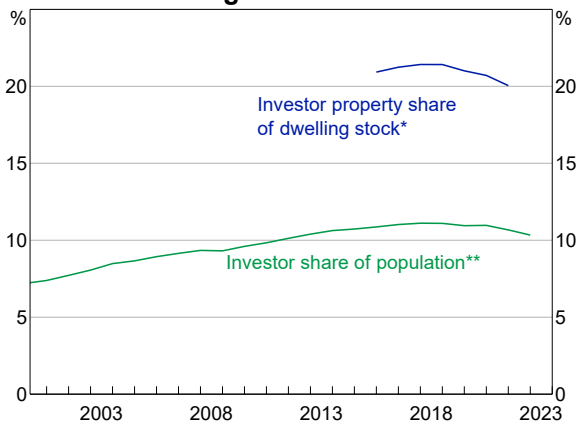
This article uses person-level data from the Australian Bureau of Statistics' (ABS) Person Level Integrated Data Asset (PLIDA), which has been enhanced by the recent Wealth and Housing Assets Module (WHAM) project. PLIDA-WHAM is a linked administrative dataset containing de-identified information on the Australian population (Bradshaw *et al* 2025). The key input for this analysis is newly available rental property schedule data, which cover individuals who lodge a tax return reporting rental property-related income and expenses. As such, the dataset captures the whole population of tax-complying individual housing investors in Australia.[1] These data maintain strong privacy and confidentiality protections. The ABS de-identifies all data prior to the RBA accessing the data and thus we cannot identify any specific individual.

The rental property schedule data are linked to several complementary administrative sources, including residential address histories, annual income from tax records from the Australian Taxation Office (ATO), core demographic characteristics, and household-level owner-occupier mortgage payments from the 2021 Census.

The analysis in this article covers the period from financial years 1999/2000 to 2022/23. Data covering the most recent two financial years – a period of strong investor credit growth – are not yet available. However, lending quality throughout this most recent period did not show a material change, suggesting trends over the last three years might be somewhat similar, although rising house prices may have contributed to some change in borrower characteristics.[2] Annual data updates will allow us to track how the characteristics analysed in this article continue to evolve.

As at 2022/23, there were 2.3 million individual housing investors, equivalent to roughly 10 per cent of the working-age population. This number is consistent with previous work using semi-aggregate ATO taxation statistics (RBA 2017). Investment properties accounted for around 20 per cent of the dwelling stock.[3] The share of investors relative to the working-age population rose steadily over the 2000s and 2010s, but has been broadly stable, more recently (Graph 1).

Graph 1
Housing Investor Shares



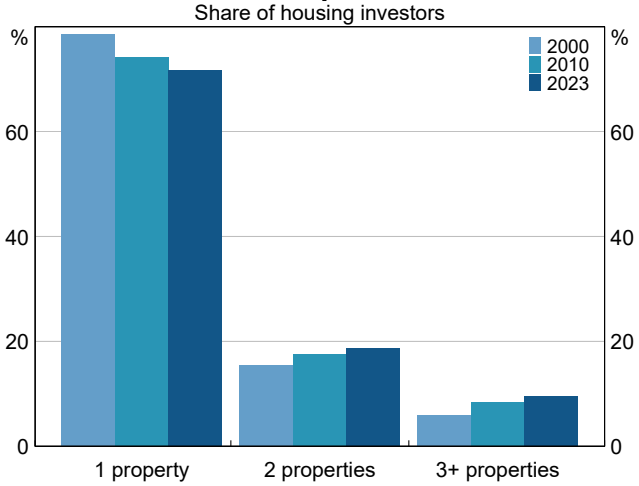
* Properties only include those owned by individuals (rather than by partnerships and trusts) that have lodged an rental property schedule. Dwelling stock is the total stock of dwellings including unoccupied dwellings. Dwelling stock data starts in 2016 and goes to 2022.
** Working age population, adults aged over 15.
Sources: ABS; RBA.

Individual investor characteristics

Most housing investors own a single investment property

As at 2022/23, around 70 per cent of housing investors owned just one investment property. The remaining 30 per cent owned multiple properties, though those with multiple investment properties owned around half of all investment properties. The share of investors owning more than one property has increased by 7 percentage points over the past two decades (Graph 2).

Graph 2
Number of Properties Owned
Share of housing investors



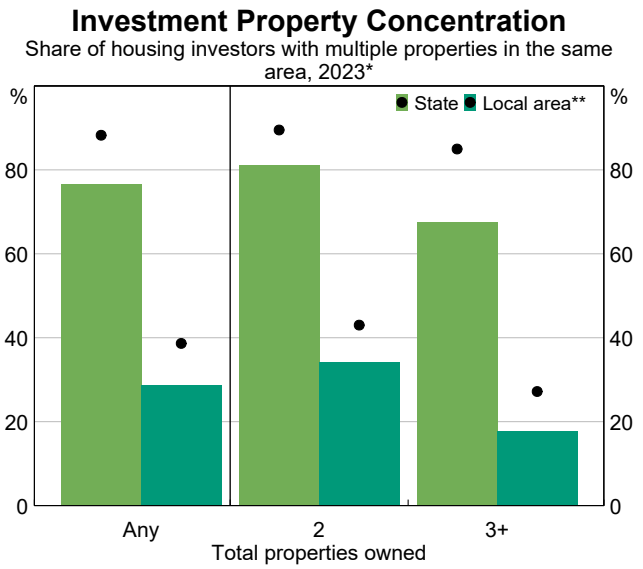
Sources: ABS; RBA.

The financial stability issues associated with housing investors holding multiple properties are nuanced. Owning multiple properties can provide benefits during a negative economic shock, from diversifying income streams and asset values. However, investors holding multiple properties tend to carry more debt. Resilience could be undermined if the portfolio of properties is highly leveraged (with little equity cushion). In a negative shock, synchronised sales of highly leveraged investment properties could depress the value of all properties (given prices are set at the margin) and thus amplify the housing price cycle in a downturn. Any diversification benefits from holding multiple investment properties could also be foregone if these holdings were geographically concentrated or similar in type.

Owners of multiple properties tend to own investment properties in a single state

Around 80 per cent of housing investors who own multiple properties hold them in the same state or territory (Graph 3).[4] In addition, a more granular view of concentration risk shows around 30 per cent of multiple property owners hold all their investment properties within the same local housing market.[5] Translated to the overall stock of investors, 8 per cent own multiple properties that are located in the same local housing market. Both the state and local housing market concentration measures suggest substantial geographic concentration in investment property portfolios, although investors who own more properties tend to be a bit more geographically diversified. Relative to 1999/2000, investors have steadily become less geographically concentrated in their property holdings. This could reflect lower frictions to out-of-area purchases as buyer agents and cross-state property management have become more prevalent, and property listings have become more available online.

Graph 3



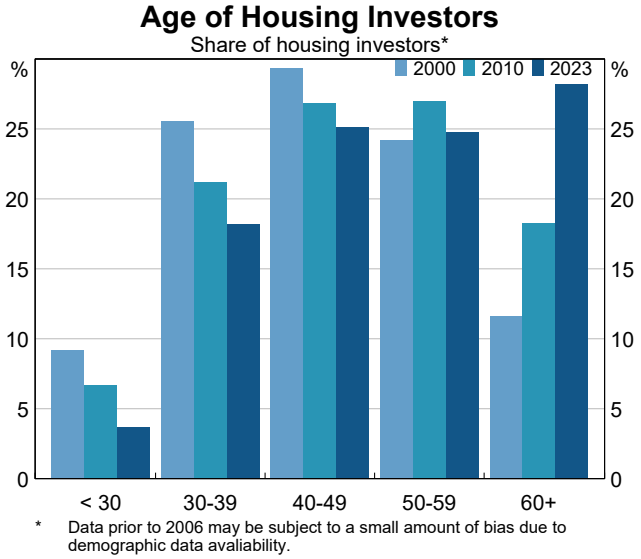
* Dot represents the same statistic for 2000.
** Local area is defined as the Statistical Area Level 3.
Sources: ABS; RBA.

The more geographically diverse a housing investor's holdings are, the less vulnerable they are to localised economic downturns, natural disasters, or state-specific regulatory changes. In line with this, regions close to each other tend to experience similar cycles of listing activity, vacancy rates, rental yields, and housing prices. On the other hand, investing across state borders could be riskier if investors have less knowledge of distant property markets.

Housing investors tend to be older and higher income earners

The median age of housing investors increased from 45 to 51 years between 1999/2000 and 2022/23. Over this period, the share of housing investors aged over 60 years has risen from 12 to 28 per cent (Graph 4). This shift reflects both broader population ageing and an increasing incidence of property ownership among older cohorts, with around 40 per cent of the change attributed to broader population ageing.

Graph 4



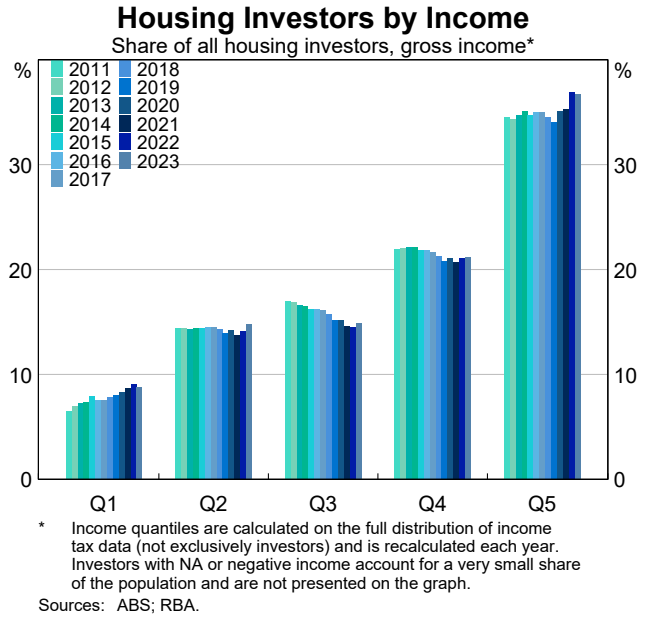
* Data prior to 2006 may be subject to a small amount of bias due to demographic data avaliability.
Sources: ABS; RBA.

There has been a notable increase in the share of housing investors aged over 60 with a mortgage over recent decades. However, only around half of investors in these older cohorts had a mortgage against their investment property in 2022/23 (materially below the figure for younger cohorts). In addition, the average retirement age has risen over time, and so older investors are more likely to still be working (even if they are working fewer hours and earning less labour income). Older investors may also have greater accumulated wealth or supplementary sources of income, including from superannuation portfolios, other financial assets held outside the superannuation system, and pensions. That said, a large decline in the value of

asset portfolios (from which income streams are drawn) could reduce the financial resilience of some older investors in the event of an economic downturn.[6]

Alongside the increasing age profile of housing investors, as a group they tend to be higher income earners.[7] Higher income earners are much more likely to own investment properties than those on lower incomes. In 2022/23, the highest income quintile accounted for nearly 40 per cent of all housing investors in Australia. Over the past decade, investor participation has become marginally more skewed towards higher income households away from the middle of the distribution (Graph 5).[8]

Graph 5



* Income quantiles are calculated on the full distribution of income tax data (not exclusively investors) and is recalculated each year. Investors with NA or negative income account for a very small share of the population and are not presented on the graph.

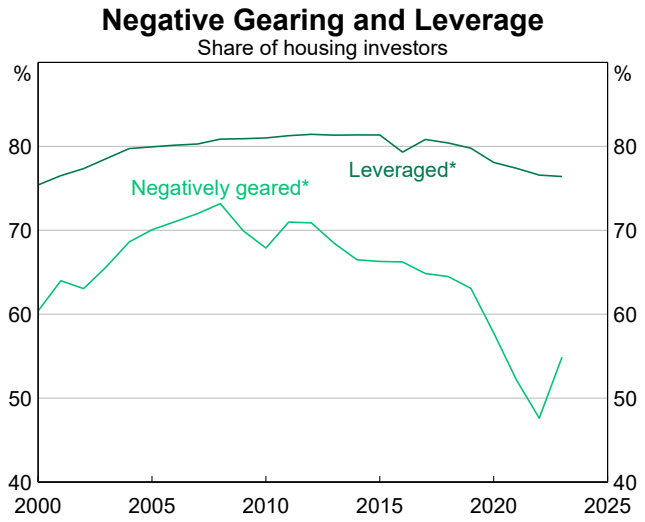
Sources: ABS; RBA.

Several factors explain the large share of high-income housing investors. Higher income investors have greater borrowing capacity and have benefited more from tax concessions such as negative gearing and capital gain discounts. Rising property prices have lifted entry costs, making housing purchases harder for lower and middle-income households over time. For stability of the Australian financial system as a whole, the prevalence of high-income investors is a source of resilience. Higher income households also spend a smaller share of their income on essential expenses, giving them greater capacity to absorb shocks, and they have historically been less likely to become unemployed (RBA 2023b; RBA 2024).

Negative gearing and using leverage are common among housing investors

The share of housing investors with at least one negatively geared property rose in the period prior to the global financial crisis, declined over the subsequent decade, before increasing again more recently (Graph 6). Movements in the share of negatively geared investors have largely reflected changes in interest rates. Lower rates reduce interest expenses and therefore shift some investors from being negatively to positively geared. Given the substantial rise in interest rates since 2021/22, this trend has started to reverse and the share of negatively geared investors is likely to have increased further over recent years.[9]

Graph 6



* At least one property in an individual's investment holdings. The data has been adjusted for a data issue in 2015/16.

Sources: ABS; RBA.

Many housing investors negatively gear their properties to avail of tax deductions on interest and other property-related expenses, with the expectation that long-term capital gains will outweigh short-term losses. However, this reliance on future price growth can leave investors exposed to changes in interest rates, housing demand, and broader macroeconomic conditions. In a downturn, rental income could also be disrupted. This reliance on capital gains alongside negative cash flows may make investors more likely to sell during a downturn or when expectations of future price growth are reassessed. However, negative gearing is more prevalent among higher income investors and less common in older cohorts, which somewhat offsets this

channel as a source of potential vulnerability. These investors are likely to have greater capacity to absorb shocks.

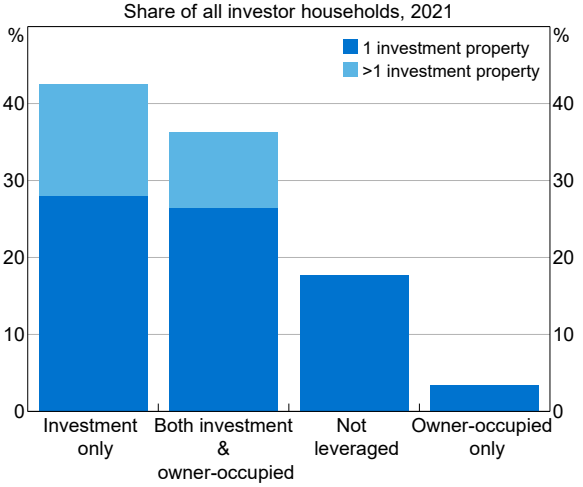
The share of housing investors with at least one leveraged property – that is, a property with an outstanding loan balance – has remained relatively stable and is high at around 80 per cent of investors. A slight decline in more recent years likely reflects an increasing share of older investors, who may have already paid off their housing debt and therefore have lower need and capacity to borrow from banks. The absence of a material change in this share is consistent with broadly stable investor credit profiles. A significant increase over a number of years, if it were to occur, could potentially point to rising indebtedness within the investor segment or a shift towards riskier borrowing behaviour. While the share of investors who are leveraged has remained broadly stable, the share of highly leveraged investors may have shifted over time, potentially affecting overall risk. While possible to examine, this is beyond the scope of this article.

Over one-third of investor households have an outstanding loan on both their investment property and primary residence

As discussed above, the aggregate share of housing investors who are leveraged has been relatively stable. For the years in which Census data are available (e.g. 2021, 2016), we can examine a snapshot of the distribution of leverage across both investment properties and owner-occupier dwellings. These data are not directly available in PLIDA-WHAM and are therefore estimated. For investor loans, estimates use reported interest expenses from rental property schedules, while for owner-occupier loans they use reported mortgage repayments from the Census. In both cases, estimates rely on an assumed interest rate path and a few assumptions (see Appendix A for details).

At the household level, most investor households have a leveraged investment property and around one-third have leverage on both their investment and owner-occupier properties (Graph 7).[10] For households with investor leverage, around one-quarter have more than one investment property.

Graph 7
Types of Housing Investors by Leverage
Share of all investor households, 2021



Sources: ABS; RBA.

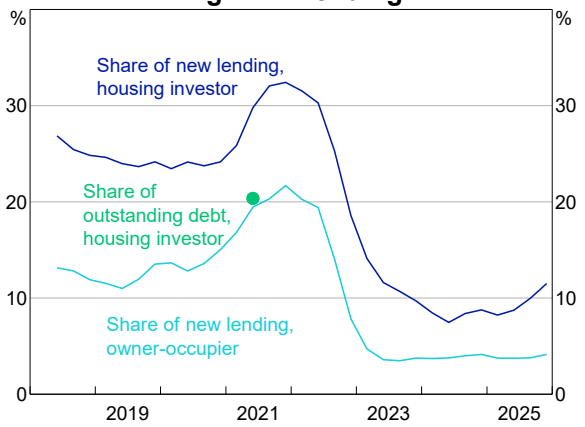
Housing investors with multiple loans must service them concurrently. If these investors are more indebted overall, this would make them more sensitive to shocks due to higher repayment obligations. However, there is some important nuance here. It is possible that an investor household with debt allocated across only investment properties could be more resilient than a household with a similar amount of debt used to purchase an owner-occupied dwelling because the former earns rental income on their investment properties. Leveraged investors could also service a loan with a higher overall debt-to-income (DTI) ratio compared with other borrowers because interest deductibility can be factored into their loan serviceability assessment. It is also possible that an investor selling their investment property to extinguish their debt could be less disruptive to them (although their tenants could be disrupted) than an owner-occupier selling and moving out of their primary residence. Further, all investors would be subject to serviceability tests as each loan commences, based on the combined loan servicing costs from all of their loans.

Housing investors tend to have higher amounts of leverage than other types of borrowers

Based on data as of 2021, around 20 per cent of leveraged housing investors had a housing DTI ratio above 6 when considering their outstanding debts on all their investment properties as well as their owner-occupied dwelling. This corresponds to a time when the flow of new high DTI lending for investors had been strong for some time (Graph 8). Flows of high DTI lending have since decreased, suggesting investor leverage may have declined since then. The RBA and the Australian Prudential Regulation Authority (APRA) consider a DTI above 6 to be of higher risk (APRA 2025).

Graph 8

High DTI Lending



Sources: ABS; APRA; RBA.

The share of housing investors with high outstanding DTI in 2021 suggests investors not only choose to take on high leverage initially but also tend to amortise their loans more slowly than owner-occupiers. This is consistent with investors more frequently using interest-only mortgage terms and presumably reflects tax incentives.[11] More broadly, borrowers with higher levels of outstanding debt relative to their income tend to be more vulnerable to shocks. At the same time, investors tend to have other features that offset this vulnerability such as higher incomes, rental income, and characteristics that make them a lower risk of becoming unemployed (RBA 2024).

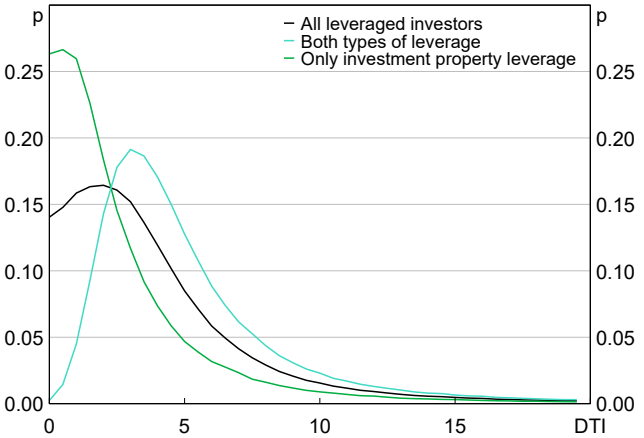
Investor households with owner-occupier debt tend to be more indebted

Households with both investment property and owner-occupier debt are more likely than households with only investor property debt to have high levels of debt relative to their income (Graph 9). Households with both investor and owner-occupier loans tend to have higher DTI ratios, such that these borrowers account for around 70 per cent of the investor households with outstanding debt to income ratios above 6.

Graph 9

Outstanding DTI

Density distribution of housing investors by type of leverage, 2021*



* Restricted to leveraged investors with a DTI below 20.

Sources: ABS; RBA.

Households with a single leveraged investment property tend to hold the smallest amount of debt, around $220,000 for the median household (Table 1). The highest levels of debt tend to be held by households with multiple investment properties and a leveraged owner-occupied dwelling. This group accounts for only 10 per cent of investor households but hold a median of $1 million in outstanding debt. Notably, housing investors with at least two investment properties and no owner-occupied debt hold less debt, on average, than investors with one investment property and a leveraged owner-occupied dwelling, despite the former group owning at least as many properties, if not more. Households with investor and owner-occupier debt are also more indebted relative to their income, compared with households with only investment property debt.

Table 1: Outstanding Housing Debt
Leveraged investors, 2021

	Outstanding total Median, rounded to nearest thousand	Outstanding DTI Median, rounded to one decimal place
Single investment property		
– No owner-occupier loan	$224,000	1.6
– Owner-occupier loan	$655,000	4.1
Multiple investment properties		
– No owner-occupier loan	$498,000	3.2
– Owner-occupier loan	$1,054,000	5.9

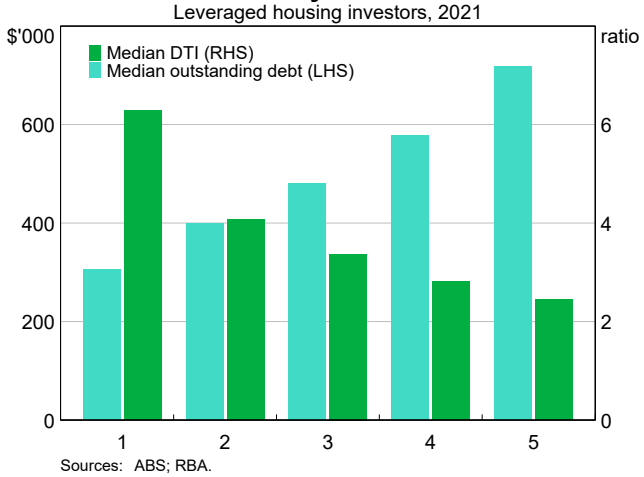
Sources: ABS; RBA.

The results indicate that outstanding debt increases with not only the number of leveraged properties but also depends on which property type the debt is associated with. It could be the case that a housing investor's owner-occupier dwelling is more likely to be higher value and hence have larger associated debt than their investment property. For example, a household's investment property could be an apartment with a higher rental yield but lower value than their owner-occupied stand-alone house. However, debt recycling, where households deploy some of the equity in their owner-occupier loan for investment purposes, may blur the distinctions between the two property types an investor could hold. Depending on how households are responding to the Census question on mortgage expenses for their own home, this may lead to upward bias on our estimates of outstanding debt (see Appendix A for details).[12]

Debt levels increase with income while DTI decreases

The highest income quintile holds median outstanding debt of around $720,000, compared with around $300,000 for the lowest income quintile (Graph 10). This reflects a greater capacity of the higher income quintile to service larger loans. However, increases in loan size across the income distribution are not proportional to increases in income.

Graph 10
Debt and DTI by Income Quintile
Leveraged housing investors, 2021



Sources: ABS; RBA.

The income quintiles are constructed using the investor household population, who typically have higher incomes than the broader population. As a result, the lowest income quintile does not correspond to a typical low-income non-investor household.[13] Nevertheless, the data indicate that lower income investors tend to be the most indebted relative to their income. While this group may represent a segment of vulnerability to monitor, it does not necessarily constitute a source of systemic risk.

Conclusion

Newly released data from ABS PLIDA-WHAM provides the most comprehensive view to date of housing investors in Australia. The dataset covers the full population of housing investors and allows a more granular assessment of investor heterogeneity and how key characteristics have evolved over time. This materially richer evidence base strengthens the RBA's understanding of investor behaviour and associated financial stability risks.

Overall, housing investor characteristics have remained broadly stable over the past 20 years, a period in which housing investors have defaulted at lower rates than owner-occupiers. Investors continue, on average, to have higher incomes, and appear well placed to service their loans, supporting assessments of ongoing investor creditworthiness. These characteristics have historically underpinned investor resilience, even if investor activity can potentially contribute to an increase in housing-related vulnerabilities by amplifying housing and credit cycles.

At the same time, these data highlight areas of potential vulnerability that warrant monitoring in the period ahead. The housing investor population is ageing, which could reduce resilience in a downturn due to the extent that some of these investors may be relatively more reliant on rental income. In addition, around 20 per cent of investors had high DTI ratios in 2021, suggesting there are pockets of elevated leverage that could be more sensitive to adverse income, interest rate or housing price shocks. At the same time, high DTI investors could be more resilient to shocks compared with other high DTI borrowers given their relatively higher incomes, diversified collateral, and the ability to sell their property with less disruption to extinguish their debt.

This article presents a large body of descriptive analysis on investor households in Australia, highlighting a range of investor characteristics, some of which point to potential sources of vulnerability while others underscore why loan arrears have remained relatively low for many years. While the facts presented have offsetting implications for financial stability, on balance the evidence points to a resilient housing investor population. Future work will examine how these data can be used in applications of dynamic modelling, including to test how investor households would cope with an adverse macroeconomic shock involving shocks to incomes, asset prices and interest rates. This analysis is part of a program of work aimed at deepening the RBA's understanding of the changing nature of vulnerabilities in the Australian financial system.

Appendix A: Further detail on leverage estimation

Estimating investment property portfolio leverage

For each investment property, a housing investor reports claimed interest expenses on the rental property schedule of their tax return. These interest expenses are a function of the outstanding loan balance and the applicable interest rate. From this fact, an investor's outstanding loan balance is estimated using the following relationship:

$$outstanding\ loan\ balance = \frac{interest\ expenses}{interest\ rate} \times 100$$

This provides a reasonable estimate of debt on average, conditional on the assumed interest rate being representative of rates faced by investors.

There are, however, important caveats. Actual interest rates vary across borrowers, with some investors facing rates above or below the average. For example, due to differences between fixed and variable rates or discounted loan products.

Estimating private dwelling leverage

Households report monthly mortgage repayments for their primary residence in the Census. These reported repayments are used to estimate outstanding mortgage debt, applying an approach based on a Credit-Foncier-style loan structure. This assumes fixed, regular repayments that cover both principal and interest, with the loan fully amortised over its term.

Under this structure, repayments follow an amortising schedule: each payment services the interest due and reduces the outstanding principal. Over the life of the loan, the interest component of repayment declines while the principal component increases, although the total repayment remains constant.

The estimation takes place in two stages.

Stage 1 involves estimates of the initial loan amount given a reported monthly repayment and an assumed interest rate path. The method applies a reverse amortisation approach, starting from the end of the loan term (where the outstanding balance is zero) and working backwards month by month to the loan origination date. In each iteration, the opening balance for a given month is set equal to the closing balance from the preceding month, after which the applicable interest rate for that month is applied.

For each month, this method:

1. Computes interest paid in the month:
   $interest_t = balance_{t+1} * interest\ rate_t$
2. Computes the principal component in the month:
   $principal_t = monthly\ payment_t - interest_t$
3. Updates the previous balance:
   $balance_t = balance_{t+1} + principal_t$

This process continues until the starting month is reached, giving an estimate of the initial loan balance.

Stage 2 involves projections of the loan balance forward from the origination date using the initial loan amount estimated in Stage 1. For each month, the applicable interest rate is applied to the outstanding balance to determine the interest component and the remaining as the principal payment. The balance is then updated. This process is repeated sequentially for each month until the specified point in time is reached. The calculation mirrors the structure of Stage 1 but is implemented in the forward direction.

For each month, this method:

4. Computes interest paid in the month:
   $interest_t = balance_{t-1} * interest\ rate_t$
5. Computes the principal component in the month:
   $principal_t = monthly\ payment_t - interest_t$
6. Updates the next balance:
   $balance_t = balance_{t-1} - principal_t$

Assumptions

Several assumptions are required to implement the owner-occupier estimation:

- **Loan term:** The term is assumed to be 30 years for all loans, consistent with standard practice in Australia.
- **Loan start date:** The date is set to the earliest year household members recorded an address as their residence. To accurately assess the date, only residence periods commencing after 1 January 2006 are considered due to the availability of location data.
- **Interest rate:** All loans are assumed to follow the same interest rate path for a given loan period. Beyond the last observed value, rates are assumed to remain flat.
- **Mortgage repayments:** Census data provide monthly repayments, which are assumed to remain fixed over the loan term (this implies that households do not make additional repayments to lower their loan balance).

Interest rate

The choice of interest rate is critical to estimating both owner-occupier and investment housing debt. The most representative measure of the interest rate faced by borrowers is the average of actual rates on outstanding loans, published in RBA Statistical Table F6 (RBA n.d.). However, this series is only available from July 2019. To extend the history, we use advertised rates from RBA Statistical Table F5 (RBA n.d.). Using outstanding loan rates from the securitisation dataset as a benchmark, data from Table F5 are spliced back to extend the average outstanding rates series back to 1959. For simplicity, we assume constant fixed-rate loan share of 17 per cent (the observed average based on securitisation data), which is used to create a weighted average of the fixed and variable discounted interest rates. Separate interest rate paths are constructed for owner-occupiers and housing investors using the same approach.

Debt recycling

In Australia, tax deductibility is determined by the purpose of the borrowed money, not the property the loan is secured against. For a household that owns both an owner-occupied property and an investment property, debt recycling means they aim to turn part of their non-deductible home loan debt (owner-occupier leverage) into tax-deductible investment debt.

A household that has accumulated equity in their non-deductable owner-occupier loan (by paying down their loan balance and/or experiencing growth in the value of their collateral) can take some of this accumulated equity secured against their primary residence to invest in an income-generating asset, such as an investment property. The interest expenses for the portion of the loan used for this purpose are tax deductable and would appear on an individual taxpayer's rental schedule.

It is possible that when responding to the Census question on monthly mortgage payments on their primary residence, respondents are reporting their entire mortgage expense, even if a portion of this has been used to purchase an investment property and is also claimed as deductible interest on a rental schedule. This could lead to some double counting in our estimation.

Household unit

An investor household is one where at least one household member has completed a rental schedule to indicate that they have an ownership interest in an investment property. Leverage is calculated at a constructed household level and incorporates both investment property and principal place of residence debt. Household income is taken from the 2021 Census to be consistent with household size and owner-occupier mortgage repayments.

The household construction shows 60 per cent of investor households comprise only one individual with an interest in an investment property. This may reflect sole investment activity, ownership acquired prior to household formation, or alternative ownership arrangements driven by tax or other considerations. As the analysis relies on aggregated household-level liabilities and income, the resulting estimates may differ from borrower-level measures produced by banks, depending on how debts are distributed across individuals. Consequently, the derived DTI ratios are definitionally different from the APRA measure. Nevertheless, a household-level view of debts and income may be more relevant in a stress-testing context, where resources are typically shared within households.

Endnotes

* The author is from Financial Stability Department. The author would like to thank Richard Evans, Tomas Cokis and James Bishop for helpful discussions and feedback on this work.

1 Individuals with interest in a rental property are required to submit these forms. Parternships and Trusts with interest in investment properties are also required to submit these forms, however, analysis in this article focuses only on rental schedules associated with properties owned by individuals. These data do not cover investors in Australia that have interest in a foreign rental property as income from such a property is treated as foreign income, not rental income. However, foreign investors who have interest in a property in Australia are included in the data.

2 Over the past two financial years, riskier forms of lending were contained. As a share of banks' new lending, interest-only lending and high loan-to-value ratio lending to investors were stable, while the share with high DTI ratios declined.

3 The dwelling stock estimate in Graph 1 includes unoccupied dwellings and those with missing tenure information on the Census, while previous estimates of the share of properties that are rented excluded this (e.g. Graph 1 in Agarwal, Gao and Garner 2023). In addition, not all rented dwellings in the Census generate a rental property schedule (e.g. public housing, employer-provided housing and dwellings in caravan parks). The data in this article covers individuals only, excluding partnerships and trusts.

4 If investors randomly selected their property from the national housing stock, we would expect this number to be around 20 per cent. Our results therefore indicate strong within-state concentration beyond what the property stock distribution alone explains.

5 'Local area' is defined as Statistical Area Level 3 (SA3), which is a geographic unit used by the ABS for analysing regional data. There are 359 SA3s covering the whole of Australia without gaps or overlaps. SA3s represent regions with populations typically between 30,000 and 130,000 people. Examples include Sydney Inner City, Parramatta, and Pittwater.

6 The effect of an ageing investor population on financial stability is currently unclear. Older investors may rely more on fixed incomes, but they are also less exposed to unemployment shocks and typically carry lower leverage, having paid down much of their debt.

7 The 'income' definition used in this article is a measure of gross income before deductions from tax and interest. It accounts for all income from investments, other sources, own incorporated business income, superannuation, annuity amount, and employment income.

8 The income data used in this article is available from financial years 2010/11 to 2022/23. There is a complementary source available for the earlier period back to financial year 1999/2000. The income distribution across these earlier years shows a very similar trend over time and the shares are similar. The largest difference is in the lowest income quintile where the share is closer to 10 per cent across the period.

9 The share of negatively geared investors is likely to increase more in subsequent data updates. First, the 2022/23 data point captures the period where rates were increasing, so the average rate over the period is lower than the terminal rate. Second, there would have been some fixed-rate investors who had not yet seen their interest expenses increase.

10 60 per cent of investor households have just one person with interest in an investment property. This may reflect individuals genuinely investing alone (including single-person households), owning property before forming a household, or for other optimal ownership considerations. Among households with multiple investors, most share leverage equally, measured as each investor's interest payments relative to the household total. Unequal leverage typically arises when ownership shares differ or when one investor owns additional properties.

11 Since 2018, around 40 per cent of new investor lending was interest-only, compared with just 8–12 per cent for owner-occupiers.

12 If a household responds to the Census and says their mortgage payment for the owner-occupied dwelling is $X, but they have recycled $Y to purchase an investment property, we will double-count $Y as it will also be reported on the rental property schedule.

13 The thresholds for the quintiles of household income are (rounded to the nearest 1,000): Q1 < $78,000; Q2 < 130,000; Q3 < 156,000; Q4 < 234,000; Q5> 234,000. These thresholds are more than double the population-wide estimates at the individual level, suggesting incomes are higher even if you were to account for household size.

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Margins, Mark-ups and Consumer Prices: Theory, Measurement and Implications

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Photo: d3sign – Getty Images

Abstract

Profit margins can provide useful information about how prices have evolved relative to costs, but simple narratives in which margins are said to have 'driven' inflation can be misleading. This article sets out a framework for understanding profit margins and their relationship with inflation. Margins can rise or fall for a variety of reasons, including changes in demand, costs or competitive conditions. The relationship between margins and inflation depends on why margins have changed: in some circumstances margins can rise alongside inflation, while in other situations margins can fall when inflation is rising. Developments in margins can sometimes provide useful insights into inflation dynamics, particularly when complemented by information from firms on the reasons for changes in their margins. Some of the disinflation observed in the first half of 2025 is likely to have reflected softer demand and downward pressure on margins, particularly in the retail and residential construction industries. In the second half of 2025, many firms indicated that downward pressure on margins had eased. In some cases, this reflected less discounting following a pick-up in demand, but in other cases it reflected efforts to cut costs or improve productivity rather than stronger prices growth.

Introduction

The prices that firms charge reflect two factors: their costs and their profit margin, with the margin capturing the share of revenue accruing to the firm's owners after subtracting costs. Therefore, looking at changes in margins can provide some useful insights into what is happening with inflation, augmenting the other frameworks that the RBA uses to understand inflation dynamics, like the degree of excess demand or supply in the economy.[1]

Nevertheless, analysing developments in margins, by itself, generally cannot tell us what is causing inflation. This is because, depending on the underlying cause (i.e. the 'economic shock'), an increase in margins can be accompanied by an increase or an easing in inflation.[2] For example, if the underlying cause of an increase in margins is stronger demand, inflation could indeed rise alongside expanding margins. By contrast, an appreciation of the Australian dollar that lowers the cost of imported goods could lead margins to rise when inflation falls. This may arise because firms update their prices infrequently: if only some firms lower their prices immediately in response to lower costs, then overall costs in the economy could decline more quickly than prices. This would give rise to a scenario in which overall margins in the economy expand for a time, even as inflation eases. Assessing the implications of changes in margins for inflation therefore requires understanding why margins have changed.

In this analysis, the RBA tends to focus on shorter-run drivers of changes in margins, like shifts in demand or costs. While other factors like competition can affect the level of profit margins, changes in competition tend to evolve relatively gradually and so are generally less relevant for inflation over the horizon in which monetary policy seeks to return inflation to target. That said, longer-run influences on margins can be important for economic growth and productivity.

This article explains the concept of mark-ups and their connection to profit margins, and reviews the theoretical and empirical evidence on the relationships between mark-ups, margins and inflation. The article outlines a range of margin measures monitored by the RBA and discusses how these are used, alongside information from business liaison, to inform our assessment of inflation dynamics. While these measures differ in coverage and methodology, and can at times give divergent signals, tracking them remains valuable for building a broader picture of developments in prices and costs.

Mark-ups and margins compare prices to costs

Margins show the difference between revenue and costs. There are several different types of margins, each subtracting a different grouping of costs. A change in a specific type of margin indicates a change in total revenue relative to the corresponding grouping of costs, and hence a change in *average* price received relative to the *average* cost incurred.

Mark-ups show the difference between the price of an item and a firm's *marginal* cost – that is, the cost of producing one more unit. Economic theory suggests that firms keep producing and selling up to the point where the cost of producing an extra unit exceeds the price that can be charged for it; as such, it is the marginal cost of an additional unit that matters for decision-making, not the average cost.[3] According to this theory, firms set their price as a mark-up over marginal costs. The level of the mark-up chosen by the firm depends on the price sensitivity of demand – how much the quantity demanded changes in response to the price – which is influenced by the degree of competition and the consumers' ability and willingness to shop around (see Appendix A for more detail).

Therefore, mark-ups and margins may not always behave in the same way because marginal and average costs are not the same. For example, the use of overtime to expand production would cause the marginal cost of labour to be higher than the average wage, if overtime pay rates are above average wage rates (Rotemberg and Woodford 1999). Similarly, when the labour market is tight, new hires may be brought on at higher wage rates than existing staff (Nekarda and Ramey 2020).[4] In many cases, though, mark-ups and margins would be expected to move together, but mark-ups would generally be more volatile.

Although marginal costs and mark-ups are more theoretically relevant to price-setting decisions than average costs and margins, in practice mark-ups and marginal costs are difficult to observe. Due to data availability, most empirical analysis tends to focus on measures of margins and average costs. From here on, this article focuses on margins rather than mark-ups.

The relationship between margins and inflation depends on what caused margins to change

At first, it might seem natural to observe rising (falling) margins in the economy and then infer that margins have caused inflation to be higher (lower) than otherwise. However, economic theory and empirical evidence suggests that the relationship between profit margins and inflation is not that simple for two reasons.

First, firms' margins should not be thought of as moving independently from other economic developments. Margins change in response to more fundamental developments in the economy – such as shifts in demand, changes in costs, or changes in competition – rather than because firms unilaterally choose to adjust their margins. Observed margins are better thought of as an outcome of these more fundamental 'economic shocks', rather than as a standalone driver of inflation.

Second, theory and evidence suggest that different economic shocks can drive margins and inflation in different directions. Some shocks will raise margins and increase inflation. But other shocks can raise margins while lowering inflation. The same is true for economic activity: some shocks can raise margins and economic activity, while others can raise margins but decrease economic activity. Accordingly, it is hard to make a definitive statement about changes in margins 'causing' inflation. Similarly, it can be hard to assess how margins move with the business cycle: whether they tend to increase when the economy is in a cyclical upswing (i.e. whether they are procyclical), or whether they rise in downturns (i.e. whether they are countercyclical).

Examples

In short, margins can increase for different reasons, and those reasons matter for what happens to inflation. In this section, we run through some of the key shocks and their effect on margins and inflation, as shown in Figure 1.

Figure 1: The Relationship Between Selected Shocks, Margins, and Inflation[(a)]

Shock	Effect on margins	Effect on inflation
Declining competition (increasing market power for firms)	Increase	Increase
Shock directly increasing input costs (positive cost or negative productivity shock)	Decrease	Increase
Positive demand (e.g. unexpected monetary policy easing)	Ambiguous	Increase

Source: RBA.

(a) The results in this figure can be reached intuitively based on a typical New Keynesian model marginal cost specification, and is consistent with Nekarda and Ramey (2020) and Macallan *et al* (2008).

One case where margins and inflation can rise together is when firms' pricing power increases. If customers become less sensitive to price increases, or if competition weakens, firms may lift prices relative to costs (i.e. the mark-up and margin increases). In this case, the increase in margins and prices may lead to higher inflation.[5] Output may also weaken, as higher prices weigh on demand. In practice, changes in competition tend to be more structural in nature, and their impacts on margins are likely to play out over a number of years. As such, while competition is important for setting the level of margins, it tends to be less important in accounting for shorter-term changes in margins and inflation (though there can be exceptions from time to time in individual sectors or for individual goods or services).

When prices are 'sticky', other shocks can cause margins to *decrease* alongside rising inflation. For example, an input cost shock, such as an increase in oil prices, can cause margins to *decrease* alongside rising inflation. This is because costs rise immediately, but firms may only pass those costs through to prices slowly, resulting in a pick-up in inflation alongside (temporary) margin compression.[6]

The same point applies in reverse when input costs fall. For example, if the Australian dollar appreciates, then foreign inputs will be cheaper for Australian firms. If some firms are slow to lower their prices, their costs could fall more quickly than their prices, leading to a widening in economy-wide margins even while inflation is easing.

Shocks to demand can also cause margins and inflation to change, but the relationships are more complex. When demand strengthens, firms will try to meet that extra demand by producing more. This will push up their costs, and they will want to raise prices accordingly. Whether margins rise or fall depends on how quickly prices adjust relative to costs. If overall costs in the economy rise more quickly than prices – for example, because some firms have long-term sales contracts – economy-wide margins may be compressed for a period even though inflation is increasing. But if prices adjust more quickly than costs, margins may rise alongside higher inflation.

Empirical evidence

The empirical evidence is consistent with the theoretical discussion above. It does not find a stable relationship between margins, the business cycle and inflation. Empirical evidence suggests the relationship between margins and inflation depends on the nature of the underlying shocks.

A large literature attempts to identify the correlation between margins and the business cycle. It tends to find no stable relationship between margins and the business cycle.[7] An emerging literature attempts to estimate the causal effect on margins of particular economic shocks, and provides somewhat clearer insights. Nekarda and Ramey (2020) find evidence in line with Figure 1, with margins expanding in response to positive demand shocks, or deflationary cost or productivity shocks.[8] Cantore *et al* (2020) have similar findings for demand shocks, including for Australia. These findings for demand shocks suggest that prices change more quickly than costs.[9]

The RBA monitors a range of margin measures, as each measure has strengths and limitations

Estimates of margins can be constructed from a variety of data sources and consider different sets of costs and revenues. These measures differ in terms of firm or industry coverage, which affects how relevant they are for understanding developments in the consumer price index. Each measure has its own strengths and limitations, as outlined below. In practice, a range of margin measures are typically considered to form a more complete view of the developments in profitability that may be relevant for understanding inflation dynamics.

National accounts

Measures of margins can be constructed using statistics published by the Australian Bureau of Statistics (ABS). These measures are useful indicators of margins, since they are of a high quality and comprehensive. Nonetheless, they can be somewhat unintuitive, reflecting the definitions of national accounting concepts. The most common national accounts measure of profits is gross operating surplus (GOS), which can broadly be considered the value of profits before

deducting the returns to capital.[10] There are four key caveats to consider when interpreting GOS as a measure of profits.

First, because returns to capital are not deducted from GOS, this measure of profits combines returns to capital used in production (i.e. the income required to compensate owners of capital for depreciation, risk and the opportunity cost of funds) and economic profits (additional returns often associated with market power, scarcity or temporary factors). In general, we are more interested in variation in economic profits, but changes in these profits could be masked by changes in returns to capital.[11]

Second, an intuitive way to convert GOS into a margin is to express it as a share of output, which would be loosely similar to the accounting concept of an operating margin in financial reports (discussed below). However, these data on output are available only at an annual frequency and with a substantial delay, with data released 12 months after the end of the financial year.

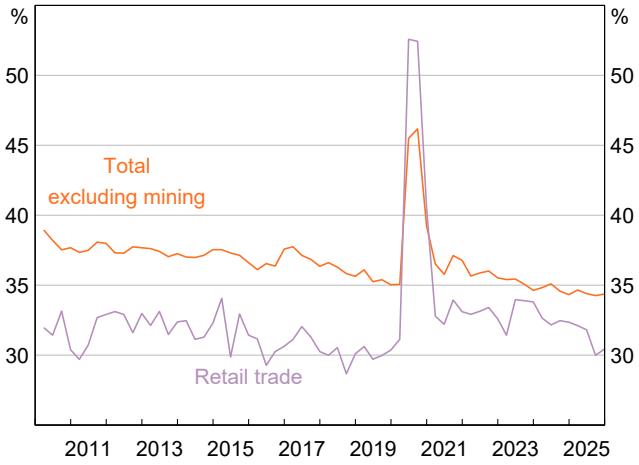
Third, as a result of this delay, it is more common to express GOS as a share of gross value added (GVA), since this can be calculated at a quarterly frequency about two months after the end of the reference quarter. Although this measure of margins is much more timely, it will exhibit counterintuitive and potentially misleading behaviour when intermediate input costs – such as fuel costs – are changing. This issue arises because GVA is calculated as the value of output less intermediate input costs, and so as a result both GOS and GVA exclude these costs. For example, if firms increase prices in response to an increase in fuel costs, so as to keep their prices as a constant percentage wedge over total costs, both GOS and GVA would increase by the same dollar amount (assuming all else constant).[12] Because GOS excludes labour costs and is therefore smaller than GVA, the same absolute increase in both will raise the ratio of GOS to GVA. In other words, firms passing through an increase in the cost of an input such as fuel could incorrectly be perceived as increasing their margins.

Fourth, national accounts measures of profits, such as GOS, capture a very different industry mix to the Consumer Price Index (CPI), making it hard to map changes in GOS to CPI. National accounts measures of margins consider total profit and income for an industry, or across the economy. Developments in GOS for industries whose output is largely sold to other businesses or exported, such as mining, therefore may be less relevant for understanding dynamics in consumer price inflation. The mining industry contributes the largest share to total national GOS, yet its outputs are not directly consumed by households and are therefore excluded from the basket of goods and services measured in the CPI. Developments in GOS for industries where the final consumer is likely to be mostly households, such as the retail trade industry, may be more informative (Graph 1).

Graph 1

National Accounts Margin Measures

GOS and GMI as a share of GVA*



* Gross mixed income is income from unincorporated businesses, combining returns to labour and capital.

Sources: ABS; RBA.

Accounting records

Data from firms' accounting records – such as public financial reports for listed firms or tax records and administrative data for other firms – can also be used to construct various measures of margins based on different groupings of costs. A gross margin shows revenue relative to the direct cost of goods sold (i.e. the costs directly involved in production and sale). An operating margin considers all income received (including revenue as well as other income) and deducts the cost of goods sold as well as operating costs not directly related to the production and sale of goods and services (such as wages, marketing expenses or consulting fees). An example of an operating margin is 'earnings before interest, taxes, depreciation and amortisation' (EBITDA) over revenue. A net margin deducts all costs faced by a firm, including taxes and interest expenses. A visual comparison of these measures is available in Appendix B.

These different measures may tell different stories about developments in profitability. For example, gross margins could widen if revenue increases relative to the cost of goods to be sold but, at the same time, net margins may narrow due higher operating costs (e.g. wages, property rents, compliance costs).

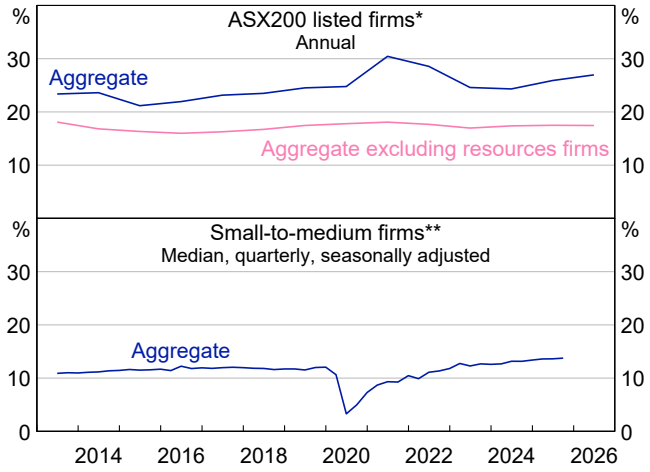
As with national accounts measures, margins for some industries will be more relevant than others for consumer price inflation. Aggregate measures based on listed firms' published financial statements may be less informative as, for example, they include mining firms whose outputs are not directly consumed by households; these aggregate measures suggest margins have picked up recently (Graph 2). By contrast, measures focused on specific consumer-facing industries, such as consumer staples or consumer discretionary firms, may be more relevant for understanding consumer price inflation dynamics. In recent periods, operating margins for these industries have remained stable or eased slightly (Graph 3). Changes in the sample of listed firms over time, however, can mechanically affect margin measures even if firms' revenue and costs have not changed. Many firms also operate across multiple industries, meaning that industry classifications are necessarily imperfect. Moreover, listed firms tend to be large and mature businesses, meaning their margins may not be representative of all firms relevant to consumer price inflation (Chow and Harris 2024).

In addition to listed firms' published financial statements, these measures of margins can also be constructed using firm-level data from the Business Longitudinal Analysis Data Environment (BLADE), compiled by the ABS (Graph 2). BLADE consists of administrative data from the Australian Taxation Office (ATO) on the near universe of firms matched with ABS survey microdata, such as the Business Characteristics Survey (ABS 2026). Although these data provide wider coverage of the firms relevant to consumer price inflation, they also imperfectly capture the margins relevant for consumer price inflation because they do not distinguish between domestic sales and exports.

Graph 2

Operating Margin

EBITDA as a share of revenue

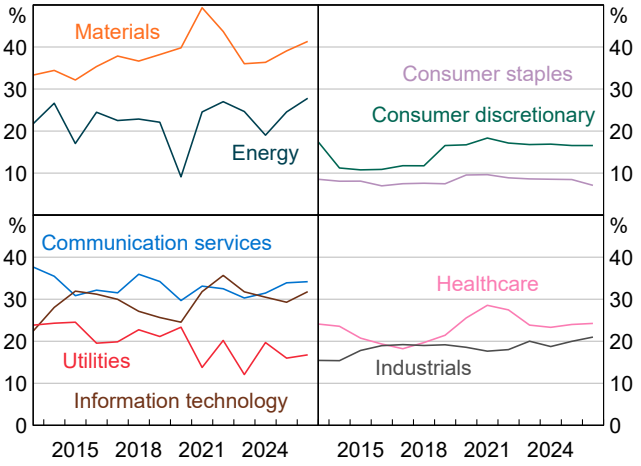


* Final observation is an estimate based on available data to 31 December 2025. Aggregate covers all sectors excluding financials and real estate.
** Firms with annual revenue less than $50 million.
Sources: ABS (BLADE); Morningstar; RBA.

Graph 3

Operating Margin by Sector*

EBITDA as a share of revenue, annual, ASX 200 firms



* Final observation is an estimate based on available data. Data updated to 31 December 2025.
Sources: Morningstar; RBA.

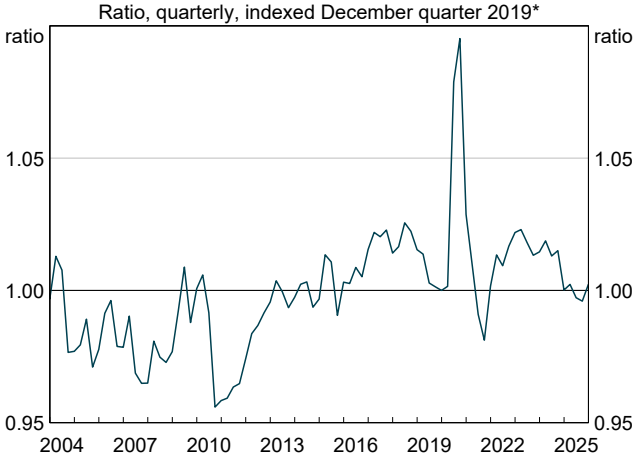
Price-cost ratios

Price-cost ratios are sometimes used as a rough proxy for developments in margins. These ratios compare final prices with input prices, and offer an intuitive way to assess whether the prices of final goods and services are growing faster or slower than the key inputs used to create them. Examples of price-costs ratios include the ratio of consumer prices to unit labour costs (Graph 4), or the ratio of the price of a new dwelling to the cost of building materials (Graph 5).

Graph 4

Consumer Prices to Unit Labour Costs

Ratio, quarterly, indexed December quarter 2019*



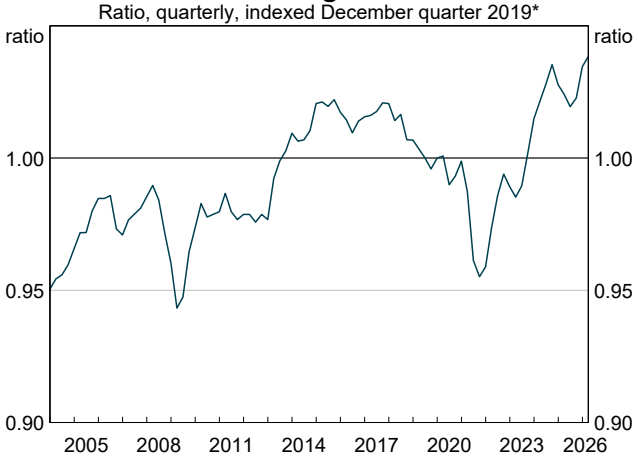
* Price series is trimmed mean inflation based on data from the quarterly collection CPI. Unit labour costs series excludes mining and agriculture.

Sources: ABS; RBA.

Graph 5

New Dwelling Prices to Building Material Costs

Ratio, quarterly, indexed December quarter 2019*



* Adjusted for the tax changes of 1999-2000.

Sources: ABS; RBA.

Price-cost ratios may or may not be a good proxy for developments in firm's margins. Most price-cost ratios do not consider all costs faced by firms during production and so it is possible margins may be moving in a different direction than suggested by the movement in the price-cost ratio. Nevertheless, price-cost ratios are still useful given they can be used to compare price growth with cost growth for specific items within the CPI basket. This allows for a more granular comparison of price and cost growth than other data sources, which are limited in industry level detail. For example, while other margin measures only allow us to proxy margin movements at the industry level (i.e. construction), price-cost ratios enable analysis of potential movements for specific goods and services (i.e. detached residential construction), which are more relevant to consumer prices. Some price-cost ratios are also more timely than many measures of margins, including those from national accounts or financial reports.

Surveys

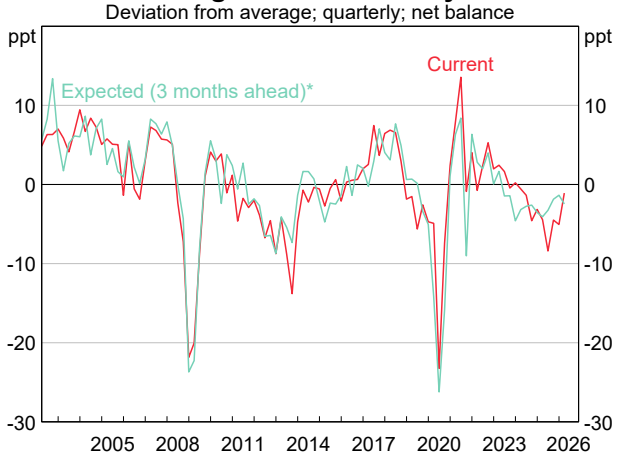
Measures of margins derived from the RBA's liaison program and other business surveys can also be used to compare growth in prices and costs (Graph 6; Graph 7). While survey-based measures are timely, it is often unclear which specific margin concept firms have in mind when responding. In liaison, retailers tend to report gross margins, whereas service-based businesses tend to report EBITDA or net margins. These measures are all bundled together, even when they may be telling different stories about underlying profitability. Regardless, the margins reported in these surveys and discussions are more likely to be comparable to one of the accounting measures rather than GOS as a share of GVA, and so would reflect changes in intermediate input costs in an intuitive way.

Nonetheless, the availability of industry-level data allows margin measures to be constructed that are more closely matched to the kinds of firms whose prices are included in the CPI. Moreover, the commentary that firms share in liaison meetings about the drivers of margin changes, and how costs growth compares with prices growth, can make these measures particularly useful for understanding inflation dynamics.

Graph 6

Margins – NAB Survey

Deviation from average; quarterly; net balance



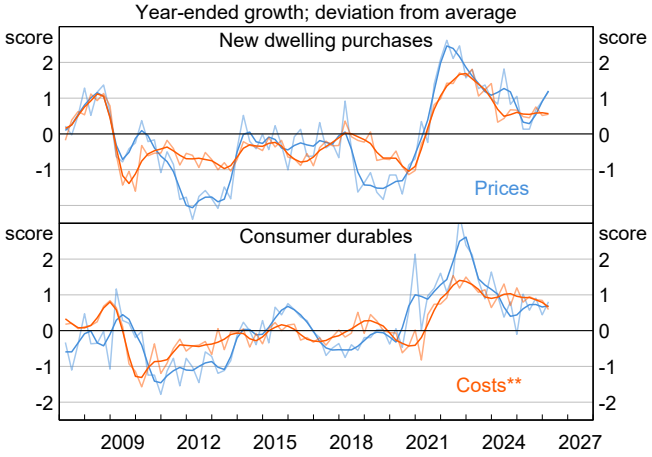
* Series has been shifted 3 months ahead from reference period.

Sources: NAB; RBA.

Graph 7

Liaison Scores*

Year-ended growth; deviation from average



* Darker line is smoothed with a 7-term Henderson trend; data up to March quarter.

** Costs calculated as the average of wages and non-labour costs.

Source: RBA.

Margins data and business liaison commentary are combined to provide insights into inflation dynamics

The available data on margins are analysed alongside liaison and survey information for individual industries. To understand the implication of movements in these data for inflation, the RBA listens to what firms are saying about why their margins have changed, and what they expect to happen in future, as well as their descriptions of how prices are evolving relative to costs. This analysis proved useful in understanding some of the dynamics in inflation over 2025, as reported in the *Statement on Monetary Policy* and speeches.[13]

In early 2025, a range of measures suggested that margins for some consumer-facing firms had declined and costs were increasing faster than prices. National accounts measures of margins declined a little over 2025, and more noticeably for the retail industry. Accounting margins for consumer staples declined somewhat over 2025, though margins for consumer discretionary firms were little changed. Price-cost ratios suggested growth in consumer prices was being outpaced by growth in unit labour costs, and growth in the price of a new dwelling was being outpaced by growth in building materials costs. Survey measures and liaison also suggested that margins for many consumer-facing firms were being compressed.

To better understand the drivers, these data were supplemented by liaison information. Liaison contacts in the residential building industry in some states were noting that soft demand growth had led homebuilders to charge lower prices than otherwise, as they increasingly resorted to discounting and promotions to increase sales. Similarly, some retailers were saying that they were discounting more than usual due to weak demand growth and could not pass strong cost growth through to prices.

In the second half of 2025, there was some evidence that margins were under less downward pressure, and inflation also picked up. National accounts measures of margins ticked up slightly towards the end of 2025, including for the retail industry; however, there is little evidence of this change in accounting measures of margins for firms in the consumer staples and consumer discretionary industries. Price-cost ratios suggested that consumer price inflation picked up relative to unit labour cost growth towards the end of 2025, and growth in new dwelling prices also picked up relative to growth in building materials costs. Survey measures and liaison suggested that margins for many firms were under less downward pressure than earlier in the year.

Again, liaison information helped provide a picture of the drivers. Homebuilders reported they were dialling back on discounting and promotions as demand had picked up. Similarly, fewer retailers reported the need to discount as heavily, noting that demand conditions had recovered somewhat. That said, some retailers reported

that their margins had stabilised or increased due to a shift in the composition of their sales to higher margin products or activities, a reduction in costs, or a pick-up in productivity, rather than an increase in prices.

Overall, these messages together pointed to some disinflationary pressures in the form of soft demand growth weighing on margins in the early part of 2025, which then receded in the second half of 2025. But they also highlight that the drivers of margins movements, and their relationship with inflation, differed somewhat across sectors and firms.

Summary

Profit margins provide useful information about how prices have evolved relative to costs. Profit margins are often used as a proxy for mark-ups, which are central in price-setting theory. Margins can rise or fall for a variety of reasons, including changes in demand or costs. The relationship between margins and inflation depends on why margins have changed. Empirical evidence does not point to a stable relationship between margins, inflation or the business cycle, underscoring the importance of understanding the underlying drivers of margin movements when assessing their implications for inflation.

The RBA monitors information from a range of margin measures – including national accounts, financial reports, price-cost ratios, surveys and liaison – each of which has its advantages and disadvantages. These data are complemented with information from firms to help explain why margins are changing. Taken together, developments in margins and costs provide the RBA with another lens through which to understand developments in inflation, complementing data on costs and the degree of spare capacity in the labour market and economy.

Analysis using these measures of margins and comparing costs growth with prices was informative in our understanding of inflation dynamics through 2025. It appears that some sector-specific dynamics were pushing down both margins and aggregate inflation in early 2025, but then subsequently unwound, accentuating the pick-up in aggregate inflation in the latter part of 2025. Nevertheless, our assessment is that changes in margins had only a modest impact on inflation dynamics overall.

Appendix A: Price-setting theory

This appendix sets out in more detail the theory about how firms set prices.

According to theory, firms will want to set their price (P) as a mark-up over their marginal cost (MC). The size of this mark-up will reflect how much market power they have, or equivalently how easily consumers can change to another provider. This is referred to as the elasticity of demand, ε.

$$P = \frac{\varepsilon}{\varepsilon - 1} \cdot MC$$

Changes to mark-ups (and margins), can therefore reflect changes in the firm's market power. Changes to ε could reflect temporary exogenous changes (e.g. a temporary change in consumer preferences) or permanent ones (e.g. a structural change in competitive structures like a new entrant). Changes in ε could also be endogenous to the state of the economy.

While this is how firms would like to behave, there are often factors that stop them changing their price, such as long-term contracts, periodic reviews, or physical reprinting costs. These are referred to as pricing frictions.

When there are pricing frictions, prices will not always adjust fully or quickly, so mark-ups and margins could change in response to *any* shock that affects marginal costs. This reflects two related channels that mean that the current price no longer solely relates to the current marginal costs. First, because of the frictions, firms may not update their prices every time the marginal cost changes. Second, when firms do update their prices, they will set prices based not only on current marginal costs but also future expected marginal costs. This is because they know they might not be able to change their price tomorrow. Specifically, the price firms choose when they do reset prices takes the form (Gali 2015):

$$P_t^* = \frac{\varepsilon}{\varepsilon - 1}(1 - \psi)\sum_{k=0}^{\infty}(\psi)^k \mathrm{E}_t\left[MC_{t+k}\right]$$

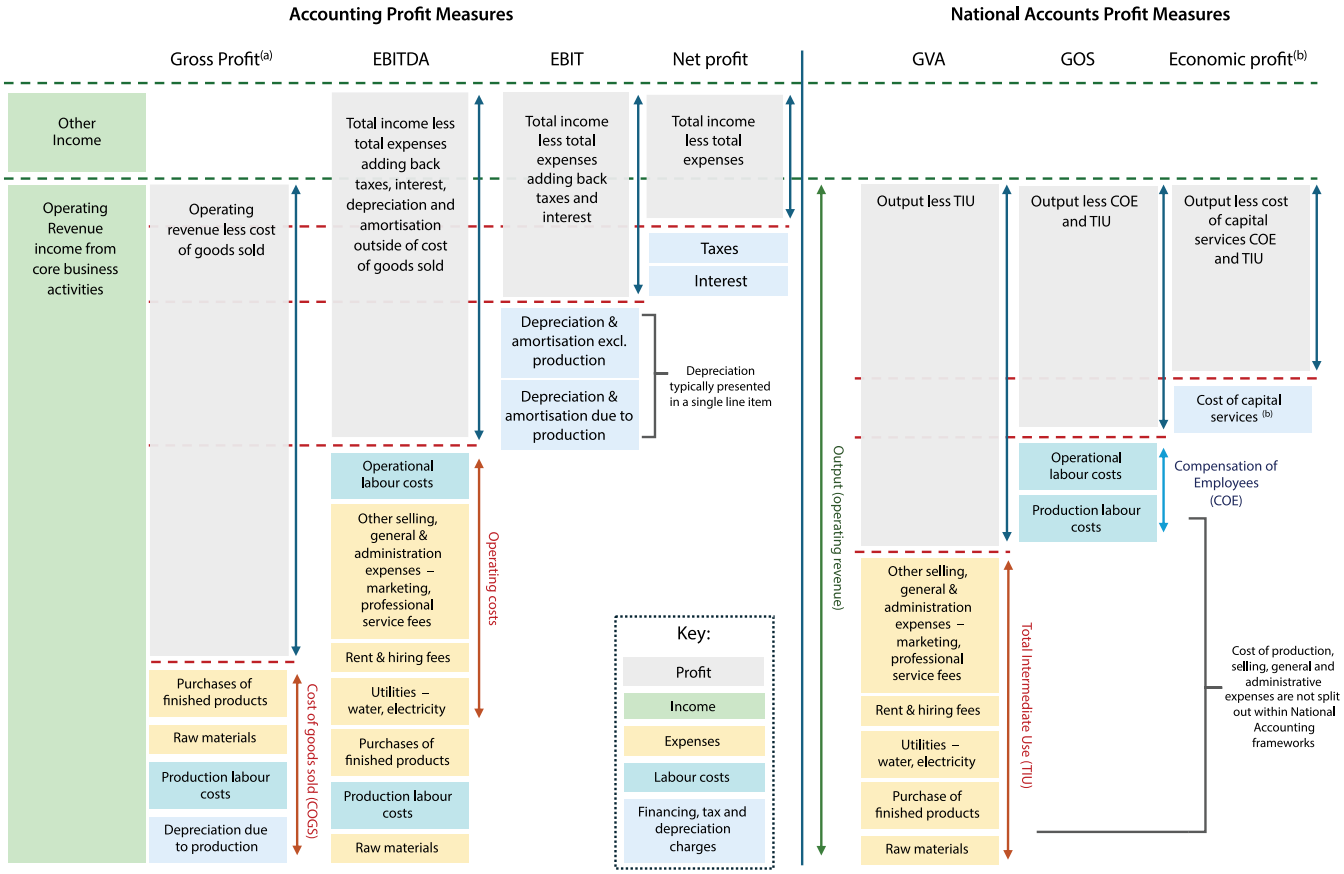
P_t^* is the price chosen by a firm who is resetting prices at time t. $\mathrm{E}_t MC_{t+k}$ is the expected future marginal cost (k periods into the future). Ψ is a constant parameter, between zero and one, which is zero when prices are fully flexible. As a result, when prices are not flexible, mark-ups and margins can also change in response to

any 'shock' that hits the economy which affects marginal costs. This makes it hard to interpret the implications of changes in margins for inflation.

Appendix B: Breakdown of different profit measures

In Figure B.1 we outline in more detail the difference between different notions of accounting and national accounts profits.

Figure B.1: Decomposition of Different Profit Measures



Sources: ABS; RBA.

(a) Many costs splits shown are not typically reported by firms or recorded in published statistics. For example, firms often do not differentiate labour costs between operational activities and the production of goods and services.

(b) Not necessarily included in every financial statement; cost of goods sold is typically associated with manufacturing, retail and wholesale entities.

(c) The cost of capital services is the total user costs of all fixed assets, land, and inventories. The user cost equals depreciation, plus compensation for the time value of money, less expected holding gains and losses on the asset, adjusted for taxes. When the ABS estimates user costs, they assume the cost of capital services equals GOS plus the capital part of GMI, which implies economic profit is zero. However, one can estimate the cost of capital services in other ways that imply positive amounts of economic profits.

Endnotes

* The authors are from Economic Analysis and Economic Research Departments. They would like especially to thank George Davis for providing the analysis of business liaison information, and Grace Elgie and Alessio Galluzzi for providing data and graphs used in this article.

1 For more detail on the framework the RBA uses to understand inflation, see Hunter (2026). More detail on some of the inflation models are explored in Cassidy *et al* (2019).

2 More formally, economic models tend to assume there are some 'exogenous' variables that together are the fundamental determinants of the state of the economy. Fluctuations in these 'exogenous variables' (otherwise known as economic shocks) change the state of the economy, acting as the fundamental causes of variation in 'endogenous' variables (such as mark-ups or margins, and inflation).

3 Although theory suggests firms set prices with respect to marginal costs, there is some evidence that firms focus on average costs, particularly in sectors where fixed costs are a large share of total costs and need to be recouped. For example, see Altomonte *et al* (2015).

4 These factors tend to imply that marginal costs will tend to be more volatile, and more procyclical, than average costs. This is consistent with the evidence for the United Kingdom, which find that estimates of mark-ups are more volatile than margins (Macallan *et al* 2008).

5 As with the rest of this section, we have assumed mark-ups and margins move together. In practice, there are some cases in which mark-ups and margins could move differently. Effects on different measures of margins may also vary depending on the particular shock being considered.

6 On the other hand, in the context of a large oil price shock that hits when inflation is already high, pass-through to prices may be faster than usual. For more information about how increases in oil prices may affect the economy, see RBA (2026a).

7 Nekarda and Ramey (2020) and Rotemberg and Woodford (1999) offer reviews of academic literature, while internal RBA work finds similar conclusions for Australia, though Norman and Richards (2010) find some evidence of procyclicality in Australian margins in a regression framework.

8 Santos *et al* (2022) find some conflicting results, though their shocks appear co-determined with their firm-level mark-up measures that could introduce some biases.

9 This is one area where the empirical evidence diverges from the predictions of basic macroeconomic models, which typically imply that prices change more slowly than costs. Many standard New Keynesian (NK) models imply mark-ups fall in response to positive demand shocks. While some authors suggest this may result from a lack of emphasis on wage rigidity (Nekarda and Ramey 2020), more recent work suggests that in many models, mark-up responses cannot be procyclical irrespective of wage rigidity (Bilbiie and Kanzig 2024; Cantore *et al* 2020).

10 More formally, GOS is the value of profits after deducting the following from the value of output: intermediate input costs, labour costs, and taxes (and adding back subsidies).

11 For example, the return required to use capital could rise (due to higher risk premia, higher depreciation costs, higher interest rates or a rise in the cost of financing or replacing capital), but GOS based margins may be unchanged even when economic profits decline, potentially masking a weakening in underlying profitability.

12 In particular, this assumes prices are set as a wedge over the sum of intermediate input costs, labour costs, and returns to capital. If firms increase prices so as to maintain a constant dollar wedge over total costs, then both GOS and GVA would be unchanged.

13 For example, this was reported in RBA (2026b); Plumb (2026).

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Consumer Payment Behaviour in Australia

Scott Kim and Michael Reschke*

Photo: JohnnyGreig – Getty Images

Abstract

Results from the RBA's 2025 Consumer Payments Survey show that cards have continued to be the most widely used consumer payment method in Australia. In 2025, cards were used for most in-person payments, including for small transactions that historically were made mostly with cash. Cash use for everyday transactions was stable relative to the 2022 survey. Mobile wallet use increased across all age groups, as well as consumer adoption of account-to-account payment methods, particularly PayID.

Introduction

The RBA conducted its seventh Consumer Payments Survey (CPS) from October to early December 2025. This article considers the results of the survey, with a particular focus on electronic payment methods. MacGibbon, Royters and Wang (2026) summarise the results on cash usage, including trends in cash payments since the 2022 survey, the demographics of cash use, reasons for using cash and the accessibility of cash services for Australians.

Survey methodology

Participants in the 2025 CPS recorded every transaction they made for seven days in a payments diary and provided extra information on their payment preferences and attitudes in a post-survey questionnaire. The CPS provides unique insights into Australian consumers' payments behaviour and their changing preferences via both qualitative questions and quantitative analysis of the payments diaries. For the 2025 CPS, around 1,200 people completed the survey and recorded around 14,000 transactions.

The payments diary captured detailed information on every transaction that a consumer made in a week. The information included:

- *the payment method* – for example, debit card, credit card, cash or bank transfer
- *the payment location* – whether in-person or online
- *the execution of the payment method* – for example, by inserting a card into the terminal, or tapping a physical card or mobile device
- *the payment purpose* – for example, supermarket, household bills, leisure or transport.

The sample was collected to ensure it was representative of the Australian population across a range of demographics, including respondent age, sex, geographical location and household income.

Results overview

The results suggest that the way Australians make payments has broadly stabilised following a period of heightened adoption of electronic payment methods, which coincided with the COVID-19 pandemic. While longer run trends of increased adoption of electronic payments remained evident, changes in payment shares across methods were small.

Cash use stabilised to around 15 per cent of payments, compared with 13 per cent in the 2022 survey (Table 1). The share of payments made using cards declined, while the use of internet banking to make account-to-account payments increased. Other payment methods, including BPAY, PayPal and 'buy now, pay later' (BNPL) services, remained broadly stable as a share of total payments. Cheque use continued to decline and was negligible, accounting for 0.02 per cent of all payments.

Table 1: Consumer Payment Methods[(a)]
Share of number of payments, per cent

	2007	2010	2013	2016	2019	2022	2025
Cash	69	62	47	37	27	13	15
Card	26	31	43	52	63	76	73
– Debit cards	*15*	*22*	*24*	*30*	*44*	*51*	*49*
– Credit and charge cards	*11*	*9*	*19*	*22*	*19*	*26*	*23*
BPAY	2	3	3	2	2	2	2
Internet/phone banking[(b)]	–	2	2	1	3	3	4
PayPal	–	1	3	3	2	2	2
Cheque	1	1	0.4	0.2	0.2	0.1	0.02
Other[(c)]	1	1	2	1	1	2	2

(a) Excludes payments over $9,999, transfers (payments to family and friends), transport cards and automatic payments. Total may not sum to 100 due to rounding.

(b) Payments made using banks' internet or telephone facilities; does not include other payments made using the internet.

(c) 'Other' methods include prepaid, gift and welfare cards, bank cheques, money orders, BNPL and Cabcharge.

Sources: RBA calculations, based on data from Colmar Brunton, Ray Morgan Research and Ipsos.

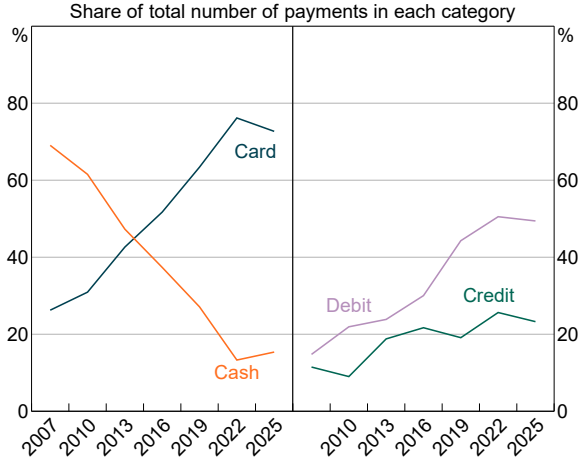
Card payments

The 2025 CPS shows that electronic payments, particularly cards, continue to be the most common payment method for Australian consumers. This reflects the longer run shift towards more convenient payment technologies, which was accelerated by changes in consumer payment behaviour during the COVID-19 pandemic. Card payments offer fast and convenient contactless functionality, reduce the need for consumers to hold cash, benefit from widespread merchant acceptance, and have adapted to innovations in the payments ecosystem, including the ability to store cards in mobile wallets.

The share of payments made using cards declined from 76 per cent in 2022 to around 73 per cent in 2025 (Graph 1). This reflected a stabilisation in cash use over the period, following increased use of electronic payment methods over the COVID-19 pandemic.

The decline in card usage mostly reflected a decrease in credit card use, along with a slight reduction in debit card use. Since the CPS was first conducted in 2007, consumers have steadily increased their use of debit cards. Debit cards now account for around half of all payments, more than three times their share in 2007.

Graph 1
Cash and Card Payments
Share of total number of payments in each category

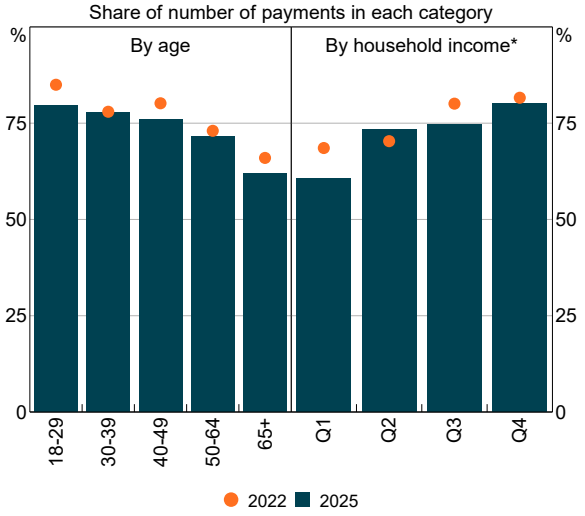


Source: RBA calculations, based on data from Colmar Brunton, Roy Morgan and Ipsos.

This increase has been supported by the expansion of debit card functionality, including contactless payments, online payments and compatibility with mobile wallets. Growth in credit card usage since 2007 has been more moderate, with credit cards accounting for around one-quarter of payments in recent surveys. The stronger uptake of debit cards partly reflects consumers' preferences to use their own funds rather than borrowed funds, as well as a decline in the perceived attractiveness of credit card reward schemes in recent years.

Cards remained the dominant payment method across all age and income groups, despite card use having stabilised relative to 2022 (Graph 2). Younger consumers continued to use cards most intensively, with those aged 18–29 years making around 80 per cent of their payments using cards, compared with around 60 per cent for consumers aged 65 years and over. In the 2022 CPS, there was a pronounced increase in card use among consumers aged over 40 years. While these consumers have historically been the most intensive users of cash, the increase in 2022 largely reflected their greater use of cards for low-value transactions. Although card use declined slightly across all age groups in 2025, card usage among older consumers remained well above pre-pandemic levels, suggesting a more persistent shift in payment preferences for this cohort.

Graph 2
Card Payments
Share of number of payments in each category

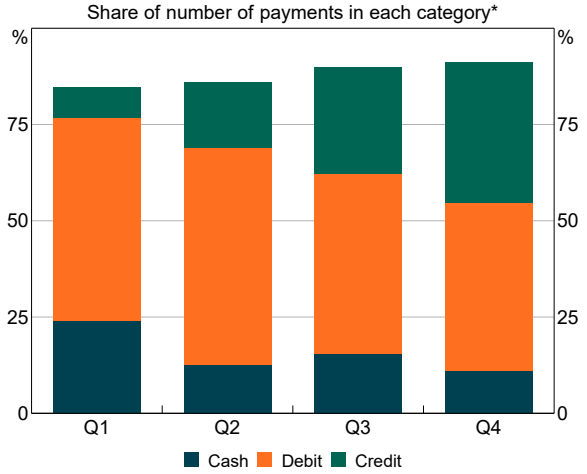


* Because of the overlap between age and income groups, the figures for income quartiles are adjusted for respondents' age.
Source: RBA calculations, based on data from Roy Morgan and Ipsos.

Consumers with higher household incomes were more likely to use cards to make payments (Graph 2). Card use among consumers in the lowest household income quartile declined to around 60 per cent, returning to around its pre-pandemic level in 2019 (Nguyen and Watson 2022). Card use among consumers in the highest household income quartile remained high at around 80 per cent of their payments.

Consumers from lower income households used debit cards and cash for a larger share of their payments than those from higher income households (Graph 3). Consumers in the lowest income quartile used debit cards for around 53 per cent of their transactions, compared with around 44 per cent among those in the highest income quartile.

Graph 3
Debit, Credit Card and Cash Payments by Income
Share of number of payments in each category*

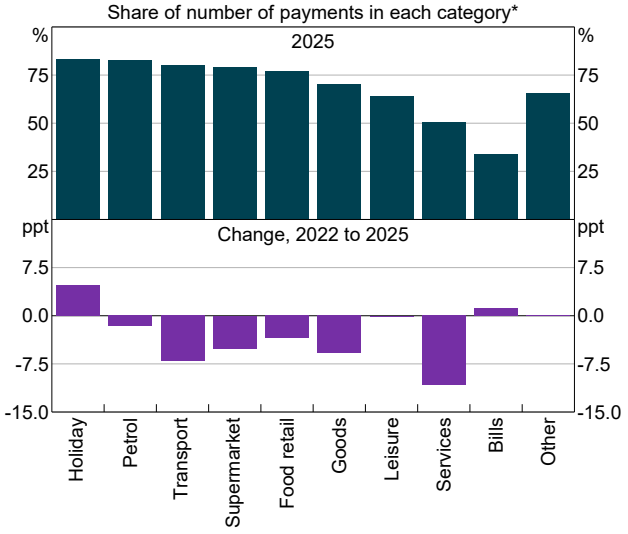


* Because of the overlap between age and income groups, the figures for income quartiles are adjusted for respondents' age.
Source: RBA calculations, based on data from Ipsos.

Higher income households made greater use of credit cards. Consumers in the highest income quartile used credit cards for over one-third of their transactions, more than four times the share for consumers in the lowest income quartile (around 8 per cent). These differences are consistent with higher income households being more likely to be eligible for credit card products. In addition, higher income households may be more strongly incentivised to use credit cards through product features such as rewards programs. Among respondents who held a credit card, around 80 per cent of those in the highest income quartile reported having a rewards credit card, compared with around 43 per cent of respondents in the lowest income quartile.

Cards were the predominant payment method used when making payments at most types of businesses in 2025 (Graph 4, top panel). Cards accounted for more than three-quarters of payments at supermarkets, food retailers, transport and holiday-related businesses, and petrol service stations. Card usage was lowest for household bills, where consumers tended to rely on lower cost electronic payment methods such as bank transfers and BPAY.

Graph 4
Card Payments by Sector
Share of number of payments in each category*

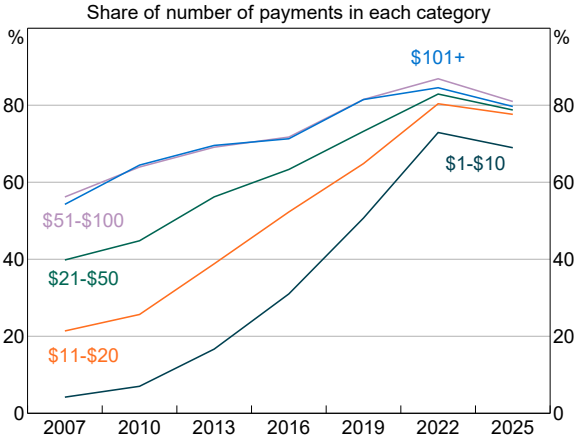


* Excludes transport cards.
Source: RBA calculations, based on data from Roy Morgan and Ipsos.

Since 2022, the share of payments made using cards has declined across most types of businesses (Graph 4, bottom panel). This decline was evident across a broad range of sectors, with the main exceptions being holiday-related spending and household bills, where card usage was little changed or increased modestly. The reduction in card use at some businesses may partly reflect greater use of alternative payment methods, such as account-to-account payments like PayID, as well as increased surcharging on card payments over this period. Despite this recent moderation, card use remained high across all sectors in 2025 and well above pre-pandemic levels observed in 2019 (Nguyen and Watson 2023). Cards continued to account for a large share of payments at supermarkets and food retailers, including cafés, pubs and takeaway food outlets, consistent with the longer run shift away from cash for frequent, low-value transactions.

Australian consumers continued to predominantly use cards for transactions of all sizes in 2025 (Graph 5). The decline in card use relative to 2022 occurred broadly across transaction value ranges. Card use for low-value transactions under $10 – historically the transactions least likely to be made using cards – remained high, with cards used for around 70 per cent of these payments. For transactions above $10, card usage had largely converged across value buckets, with cards accounting for around 80 per cent of payments irrespective of transaction size. These patterns are consistent with the continued high use of cards at food retailers, such as cafés and takeaway outlets, which comprise a large share of low-value payments.

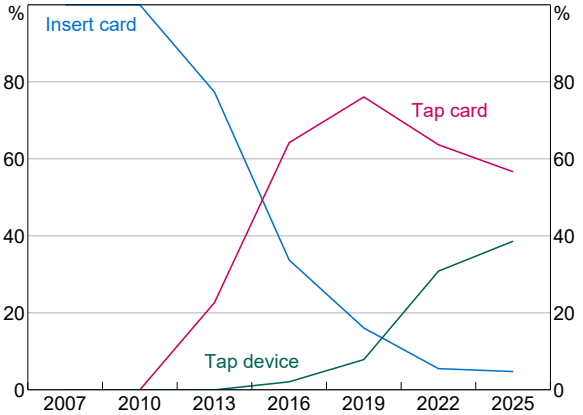
Graph 5
Card Payments by Size
Share of number of payments in each category



Source: RBA calculations, based on data from Colmar Brunton, Roy Morgan and Ipsos.

The use of device-based payment methods, such as mobile wallets, increased further in 2025 (Graph 6). Device-based payments accounted for around 40 per cent of card payments, up from 31 per cent in 2022. This increase largely reflected a decline in the share of payments made by tapping cards, which declined by 7 percentage points over the same period. The share of payments made by inserting cards was little changed at around 5 per cent.

Graph 6
Card Payments by Channel
Share of total number of in-person payments in each category

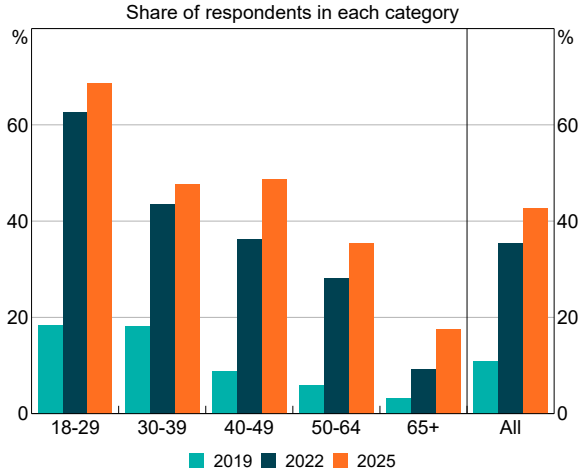


Source: RBA calculations, based on data from Colmar Brunton, Roy Morgan and Ipsos.

In the 2025 CPS, the adoption of mobile wallets (such as Apple Wallet, Google Wallet and Samsung Wallet) continued to increase across all age groups with 43 per cent of consumers using a mobile device to make a contactless payment during the diary week, relative to 35 per cent in 2022 (Graph 7). This increase occurred following a sharp increase in mobile wallet adoption between 2019 and 2022.

Mobile wallet use remained more prevalent among younger consumers. Over half of respondents aged under 50 years used a mobile device to make a payment during the diary week. Nonetheless, respondents aged 65 years and over recorded the largest relative increase in mobile wallet use, doubling to around 19 per cent relative to 2022.

Graph 7
Use of Mobile Devices for Card Payments*
Share of respondents in each category

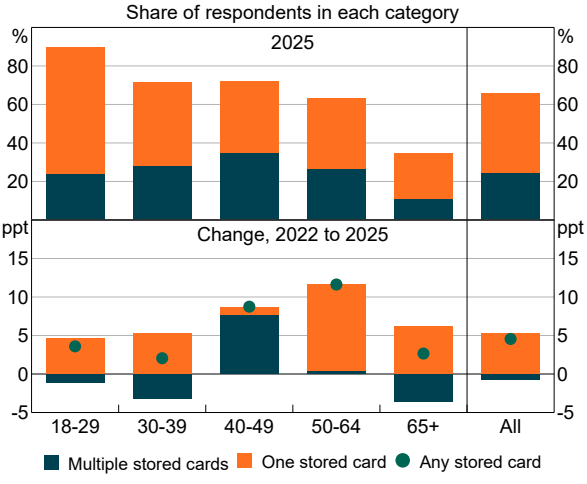


* Used at least once in the diary week of the Consumer Payments Survey.
Source: RBA calculations, based on data from Roy Morgan and Ipsos.

As in 2022, consumers were more likely to have a single card stored in a mobile wallet than multiple cards (Graph 8, top panel). The increase in mobile wallet adoption since 2022 was driven by growth in single-card wallets (Graph 8, bottom panel).

The likelihood of holding multiple cards in a mobile wallet varied across age groups. Respondents aged 40–49 years were the most likely to have multiple cards stored in a mobile wallet. This pattern is consistent with the age cohort holding a larger number of cards, with respondents in this age group holding two cards each on average.

Graph 8
Use of Mobile Wallets by Age
Share of respondents in each category



Source: RBA calculations, based on data from Roy Morgan and Ipsos.

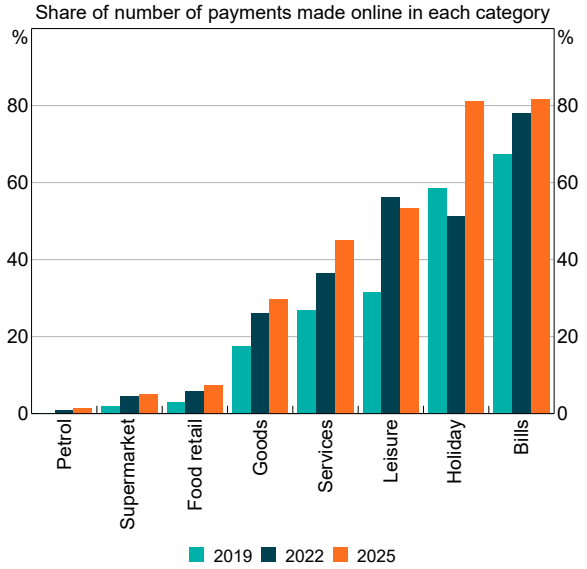
Online payments

Online payments accounted for a larger share of retail payments in 2025 than in 2022, comprising around 20 per cent of all consumer payments (Table 2), relative to 18 per cent in 2022 and only 4 per cent in 2007. This increase reflects a continued adoption of e-commerce, with online purchasing remaining prevalent following the removal of pandemic-era restrictions and associated stabilisation in payment behaviour. Except for leisure-related spending, the share of payments made online increased across all categories between 2022 and 2025 (Graph 9).

The increase in online payments reflected small increases in the use of debit cards and other payment methods, including PayPal and BNPL services. Payments made through mobile apps accounted for a larger share of online payments in 2025, rising to almost half of all online payments, consistent with broader changes in consumer preferences and the increased use of mobile devices for making payments.

Consistent with an increased adoption of online commerce, 68 per cent of respondents made at least one online payment during the diary week in 2025, up from 64 per cent in 2022. The use of online payments also varied substantially across types of goods and services. Purchases such as petrol, supermarket items and food retail – which are often less convenient or more costly to obtain online – continued to account for a relatively small share of online payments. By contrast, more than 80 per cent of holiday-related purchases, such as accommodation, were made online in 2025, well above the shares recorded in 2019 and 2022.

Graph 9
Online Payments by Sector
Share of number of payments made online in each category



Source: RBA calculations, based on data from Roy Morgan and Ipsos.

The figures in Table 2 refer to online payments that participants initiated and completed during the diary week. The CPS also collects information on automatic payment arrangements, such as household bills paid by direct debit (e.g. rent or electricity), recurring debt repayments like mortgage and credit card bills, and other recurring payments charged to cards such as subscription services. These arrangements are set up ahead of the payment occurring and are recorded

Table 2: Online Payments
Share of number of consumer payments (excluding automatic payments), per cent

	2007	2010	2013	2016	2019	2022	2025
BPAY/internet banking	2	4	5	4	4	5	5
Credit cards	1	1	3	3	2	4	4
Debit cards	0	1	2	3	4	6	7
Other[(a)]	0	1	3	4	2	3	4
Total	4	7	13	14	12	18	20
Mobile/app as a share of online payments[(b)]	–	–	6	20	40	37	46

(a) 'Other' methods include PayPal, prepaid, gift and welfare cards, and BNPL services.

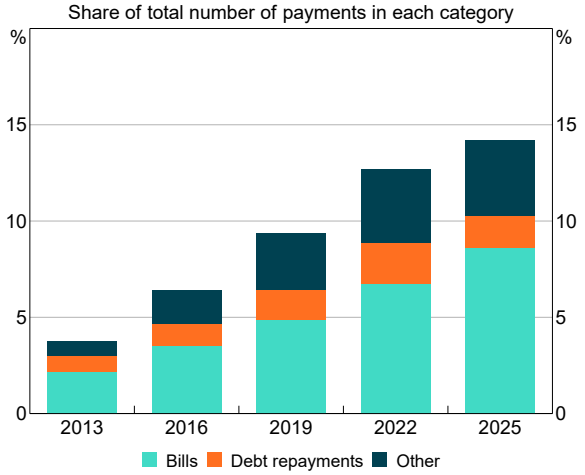
(b) 'Mobile phone' was recorded as a separate category of online payments only in 2013 and 2016, while in 2019 this was recorded as 'App'.

Sources: RBA calculations, based on data from Colmar Brunton, Roy Morgan and Ipsos.

separately through a post-diary questionnaire, with participants referring to their bank statements when reporting this information.

The share of payments made automatically during the diary week has increased steadily over recent years to around 14 per cent of all transactions in 2025 (Graph 10). This reflects changes in how consumers pay for regular expenses, including a greater use of automatic bill payments and subscription services. In 2025, around 70 per cent of household bill payments were made automatically, a 6-percentage-point increase from 2022 and more than three times the share in 2013. This shift towards automatic payments for certain types of transactions is consistent with a stronger consumer preference for more convenient payment methods.

Graph 10
Automatic Payments
Share of total number of payments in each category



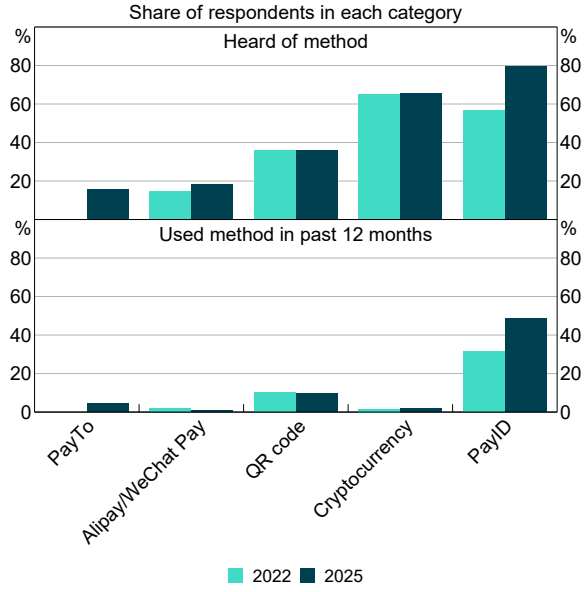
Source: RBA calculations, based on data from Colmar Brunton, Roy Morgan and Ipsos.

Other payment methods

In recent years, a range of alternative payment methods – beyond cash, cards and traditional bank transfers – have emerged and expanded in Australia. Many of these payment methods use the same or similar underlying payment infrastructure as existing methods but offer additional features, such as faster processing or increased convenience.

Knowledge and adoption of most alternative payment methods was little changed between the 2022 and 2025 surveys (Graph 11).[1] PayID was the exception, recording strong growth in awareness and use. In 2025, around 80 per cent of respondents reported being aware of PayID, an increase from 57 per cent in 2022. Around 50 per cent of respondents reported having used PayID in the prior year, compared with 32 per cent in the 2022 survey.

Graph 11
Alternative Payment Methods
Share of respondents in each category



Source: RBA calculations, based on data from Ipsos.

Awareness of cryptocurrency remained relatively high in 2025, with 66 per cent of respondents reporting familiarity with the technology as a payment method, although this may reflect more general awareness. Usage remained limited, with only around 2 per cent of respondents reporting having used cryptocurrency to make a payment in the past year. Cryptocurrency was one of the least commonly used alternative payment methods in the survey.

QR code payments, which have seen widespread adoption in some southeast Asian countries, such as Indonesia,[2] also recorded little change in adoption in Australia in 2025. While awareness was modestly higher relative to previous surveys, uptake remained low with 10 per cent of respondents having used QR codes to make payments in the prior year. This is consistent with feedback from payments industry stakeholders indicating that Australian consumers place a high value on convenience when making payments, with QR-based payments often perceived as less convenient than contactless 'tap-and-go' card payments.

Awareness of Alipay and WeChat Pay, Beem and PayTo (a New Payments Platform (NPP) service that enables pre-authorised, account-to-account payments initiated by the merchant) remained low in 2025 at below 20 per cent. Usage of these payment methods was also low, with fewer than 5 per cent of respondents reporting having used each of these methods in the past year.

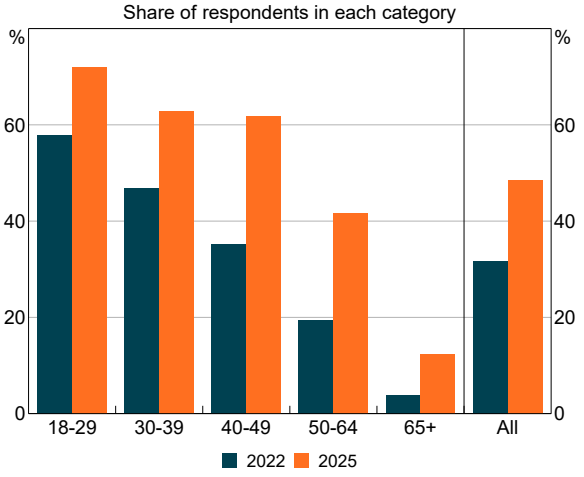
PayID

PayID is a payments service that allows consumers to make payments using a mobile phone number, email address or Australian Business Number (ABN), rather than entering bank account details. PayID also provides the recipient's name prior to payment, which can help reduce the risk of misdirected payments and fraud. PayID was introduced in 2018 as part of the NPP. Use of PayID increased by 18 percentage points in 2025, with around 50 per cent of respondents reporting having used PayID at least once in the past year.

PayID use increased among all age groups (Graph 12). Younger consumers aged 18–29 years remained the most likely to use PayID, with 72 per cent reporting use in the past year. However, much of the increase in adoption since 2022 reflected greater uptake among older consumers. In particular, the share of respondents aged 65 years and over who reported using PayID more than tripled over this period.

Most respondents reported using PayID for transfers to family and friends (Graph 13, left panel). Around 45 per cent of respondents who had used PayID in the prior 12 months used the service to make payments for goods and services, consistent with increased adoption of this payment method as a substitute for other consumer-to-business payment methods.

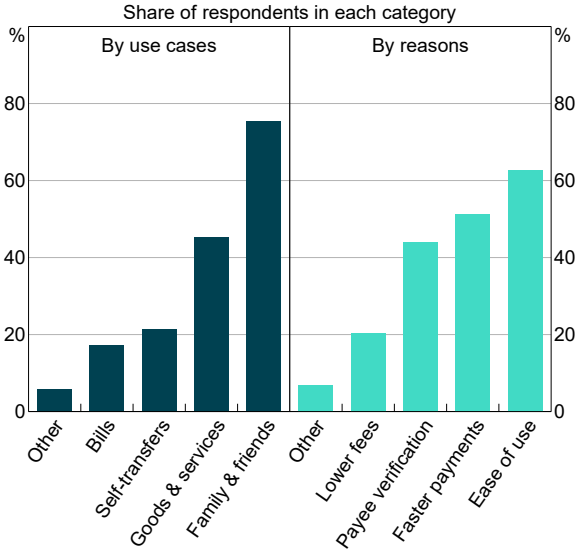
Graph 12
PayID Use by Age*
Share of respondents in each category



* Respondents include those who used PayID at least once in past 12 months.
Source: RBA calculations, based on data from Roy Morgan and Ipsos.

Most consumers used PayID for its simplicity and faster transfer speed (Graph 13, right panel). Payee verification was also a common reason for use. The ability to confirm the name of the recipient prior to payment can reduce the risk of misdirected payments and fraud. A similar name-checking function has also begun rolling out to participating banks from July 2025 through Confirmation of Payee for account-to-account transfers. Around 20 per cent of respondents also cited lower fees as a reason for using PayID, which may reflect the presence of surcharges on some other payment methods, particularly card payments.

Graph 13
PayID Use Cases and Reasons*
Share of respondents in each category



* Respondents include those who used PayID at least once in the past 12 months
Source: RBA calculations, based on data from Ipsos.

PayTo

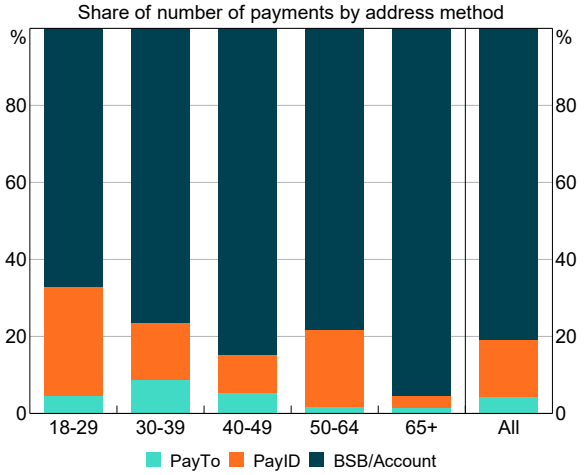
The 2025 CPS asked consumers about their use of PayTo, a service available through the NPP that allows consumers to pre-authorise merchants to draw payments from their bank accounts. PayTo provides consumers with greater control over their payment arrangements relative to direct debits, including greater visibility over payment details and the ability to pause or cancel authorisations. The service can be used for both one-off payments and for ongoing payments, such as subscriptions.

PayTo was not widely used by consumers in the 2025 CPS, accounting for 4 percentage points of account-to-account payments (Graph 14). This was substantially lower than the use of PayID, which accounted for around 15 per cent of account-to-account payments. As with other emerging payment methods, PayTo was more commonly used by younger consumers.

Graph 14

Account-to-Account Payments*

Share of number of payments by address method



* Excludes BPAY and transfers to friends, family, and personal accounts.

Source: RBA calculations, based on data from Ipsos.

Among respondents who reported not using PayTo, the most commonly cited reason was that existing payment methods were sufficient for their needs, reported by 66 per cent of respondents. A lack of familiarity with how to use PayTo, or not having access to the necessary tools, was also cited by a sizeable share of respondents (36 per cent). Security and privacy concerns were reported by around 22 per cent of respondents, while around 15 per cent indicated that PayTo was not accepted by the merchants they transact with.

Conclusion

The results of the 2025 CPS indicate that consumer payment behaviour has broadly stabilised. Cards have remained the predominant payment method for in-person and online transactions across all transaction sizes. Consumers have continued to shift towards digital forms of payment and consumption, as illustrated by a continued increase in mobile wallet and online payments. Alternative payment methods beyond cash and cards have gained traction, particularly PayID. However, these methods accounted for a small share of total consumer payments.

Endnotes

* The authors are from Payments Policy Department. The authors are grateful for the assistance provided by others in Payments Policy Department and Note Issue Department, in particular Faye Wang, Kieran MacGibbon, and Michelle Royters.

1 PayPal and BNPL were omitted from the 2025 CPS and PayTo was added.

2 See, for example, Juniper Research (2025).

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Bank Fees in Australia

Eleanor Rogerson and Tina Tao*

Photo: d3sign – Getty Images

Abstract

This article updates RBA analysis of bank fees charged to Australian households, businesses and government. Over the year to June 2025, total fee revenue earned by banks increased by 3 per cent, though fee revenue remained stable as a share of banks' assets and deposits. Fee revenue was supported by growth in new housing and business lending, the continued withdrawal of home loan cashback deals (which reduce fee revenue) and international transactions fee revenue associated with growth in overseas spending by Australian households. Large businesses continued to contribute most to banks' fee revenue, followed by households and medium-sized businesses.

Introduction

This article updates previous RBA research on bank fees and covers the year to June 2025. Since 1997, the RBA has collected information on the fees charged to households and businesses by banks through their Australian operations. The 2024/25 data captured 43 lenders, which accounted for 88 per cent of total credit outstanding.

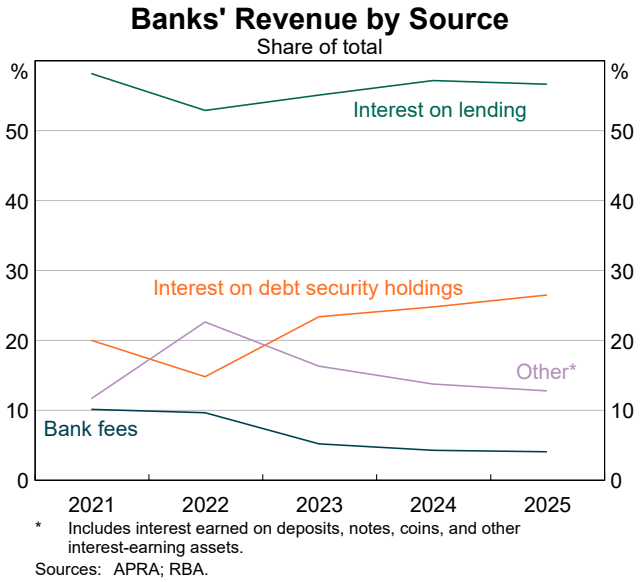
Banks charge fees to their customers for the services they provide to them, such as the provision of loans, deposit services and payment services. Although fees comprise a small share of banks' revenue (Graph 1), monitoring bank fees over time is important in understanding the costs Australians incur for accessing and using banking services. These fees broadly fall into the following categories:

- **Account servicing fees** charged to cover account-keeping costs. These include regular servicing fees (such as annual and monthly credit card fees) and application, settlement and establishment fees for loans.
- **Transaction fees** charged on international transactions, ATM withdrawals from deposit accounts, and drawdowns and redraws for loans.
- **Merchant fees** charged for providing payment processing services. These include transaction, joining, and payments terminal rental fees.
- **Other fees** include break fees (charged when a customer prematurely terminates a contract, such as a fixed-term deposit or loan) and exception fees (charged when a customer breaches a contract, such as making a late payment on a loan or having insufficient funds in their deposit account).

Total fee revenue

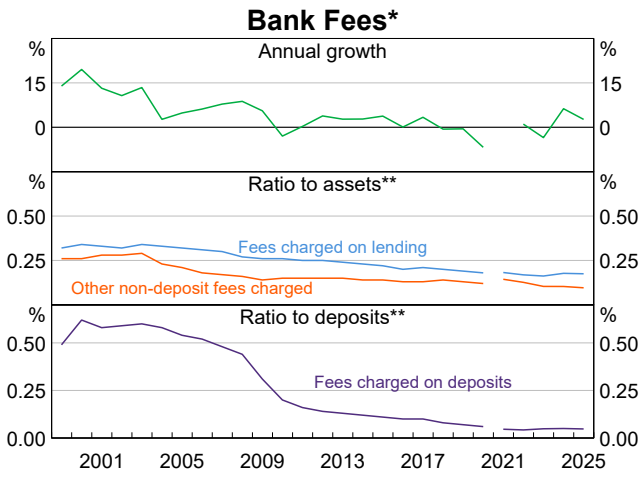
Banks' total fee revenue increased by 3 per cent over the year to June 2025, though as a share of assets and deposits remained stable at a low level (Graph 2). The share of fee revenue paid by households has increased a little in recent years, while the share paid by large businesses has declined a touch (Graph 3). Even so, large businesses continued to pay the largest share of total bank fees. Households and medium-sized businesses each paid around 25 per cent of total fee revenue, and small businesses accounted for around 10 per cent. These trends are explored in more detail below.

Graph 1



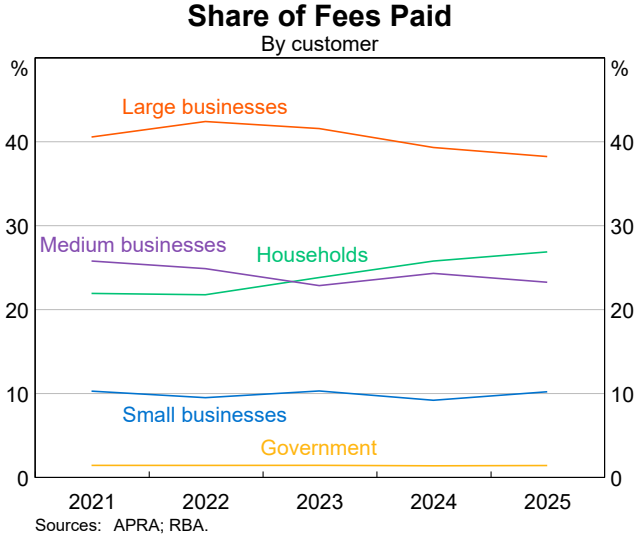
* Includes interest earned on deposits, notes, coins, and other interest-earning assets.
Sources: APRA; RBA.

Graph 2



* Series break between 2020 and 2021.
** Average assets and deposits over reporting period.
Sources: APRA; RBA.

Graph 3

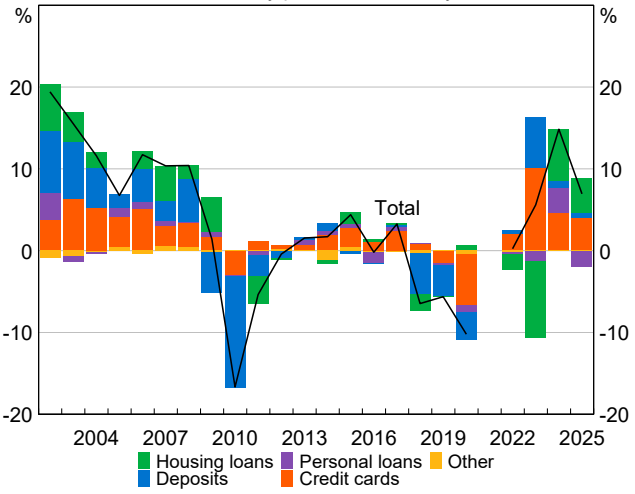


Sources: APRA; RBA.

Fees charged to households

Fee revenue from households grew by 7 per cent in the year to June 2025, reflecting strong growth in earnings from fees charged on housing loans and credit cards and modest growth in deposit fee revenue. This more than offset a decline in revenue from fees charged on personal loans (Graph 4).

Graph 4
Growth in Fees Charged to Households
Contribution by product, financial year*

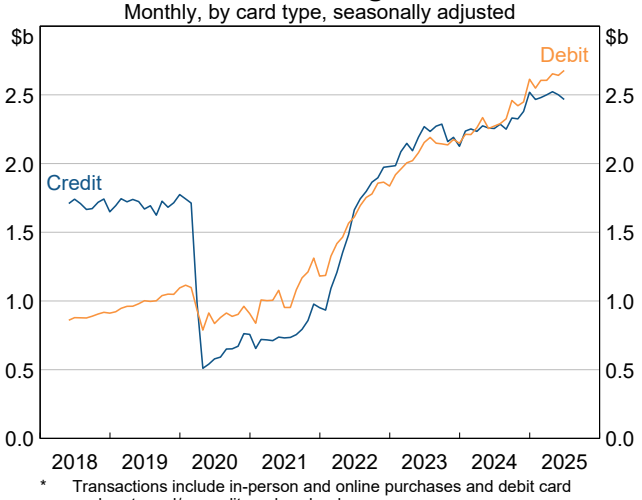


* Series break between 2020 and 2021.
Sources: APRA; RBA.

Fee revenue from housing loans increased by 17 per cent in the year. This largely reflected the continued withdrawal of cashback deals for new and refinancing mortgage borrowers (as cashbacks reduce income received from account servicing fees). Growth in new housing lending and refinancing also contributed to an increase in fee revenue for negotiating and establishing new loans, as well as break fees associated with discharging previous loans.

Fee revenue from credit cards increased by 10 per cent. This was largely driven by an increase in overseas spending and foreign currency conversion fees (Graph 5), alongside a similar increase in international travel (ABS 2025). Increases to annual and establishment fee revenue also contributed to the growth in credit card fee revenue. Credit cards remained the largest source of bank fees paid by households, comprising around 40 per cent of household bank fees in the year to June 2025.

Graph 5
Australian Card Usage Overseas*
Monthly, by card type, seasonally adjusted



* Transactions include in-person and online purchases and debit card cash-outs and/or credit card cash advances.
Source: RBA.

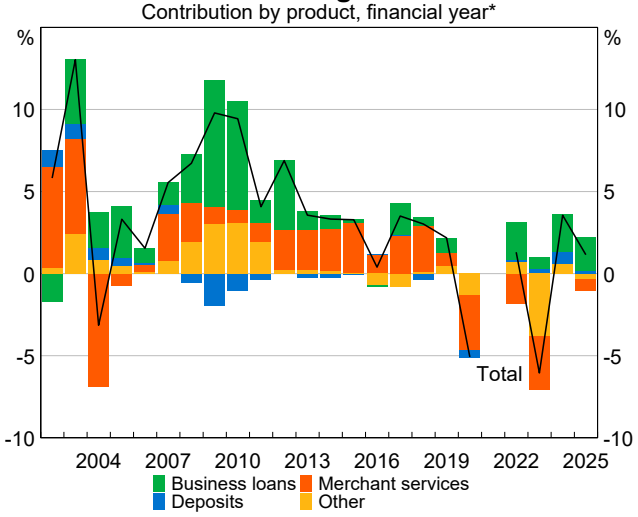
Fee revenue from personal loans declined by 19 per cent over the year. This was largely because some lenders ceased offering new personal vehicle finance and sold their vehicle loan books to non-bank entities that are not required to report their fee income to APRA.

Fee revenue from household deposits increased by 3 per cent, partly reflecting a continued rise in households' overseas debit card spending (which generates fees from foreign currency conversions and international transactions; Graph 5). However, growth in this source of fee revenue was partially offset by some lenders refunding fees to households in response to ASIC's 2024 'Better Banking for Indigenous Consumers' report (ASIC 2024), which found that some banks kept low-income customers on inappropriate high-fee accounts between November 2021 and November 2022.[1] Further refund activity is expected to occur during 2025/26, including in response to ASIC's 2025 'Better and Beyond' report (ASIC 2025).

Fees charged to businesses and government

Fee revenue from institutional customers increased by 1 per cent in the year to June 2025, almost entirely driven by fee revenue earned on business loans (Graph 6).[2] Fees charged on business loans remained the largest component of banks' institutional fee revenue, comprising a little over half of earnings from fees charged to institutions, and a little over one-third of total fee revenue.

Graph 6
Growth in Fees Charged to Institutions
Contribution by product, financial year*

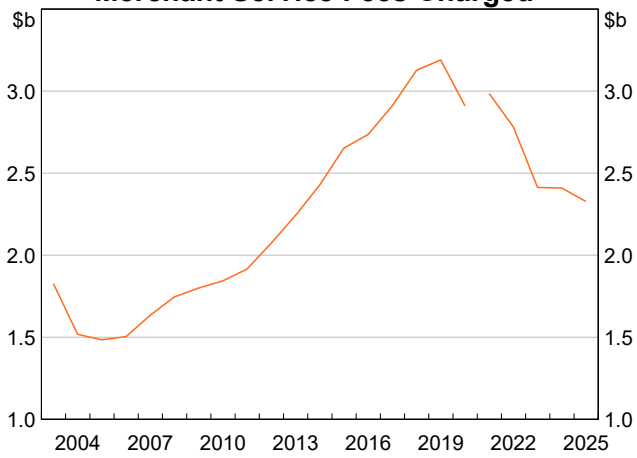


* Series break between 2020 and 2021.
Sources: APRA; RBA.

Fee revenue from business loans increased by 4 per cent over the year, supported by continued strength in business credit growth (RBA 2025a). As with households, the majority of banks' institutional fee income continues to come from account servicing fees, which include application, settlement and establishment fees. Fees paid by large businesses accounted for 55 per cent of the growth, although fees paid by small- and medium-sized businesses also increased in the year. As a share of business credit outstanding, revenue from fees on business loans was broadly stable at 0.5 per cent.

Banks' earnings from merchant services fees declined a little over the year (Graph 7). Fee revenue earned from merchant services fees declined strongly between 2019 and 2023, partly reflecting several banks selling off their merchant service businesses to entities that are not required to report their fee income to APRA (Dunphy 2024; Gao 2025). Trends in merchant fees charged by all providers (including non-banks) are available in the RBA's retail payments statistics (RBA 2025b). The RBA published a Conclusions Paper in March 2026 that sets out the final decisions of the Payments System Board on the Review of Merchant Card Payment Costs and Surcharging (RBA 2026a).

Graph 7
Merchant Service Fees Charged*



* Series break between 2020 and 2021. Excludes interchange payments related to four party schemes, and is net of rebates and concessions.
Sources: APRA; RBA.

Fee revenue from business deposits increased by 3 per cent in the year, as an increase in account servicing fee revenue more than offset a decrease in transaction fee revenue. This partly reflected an increase in foreign currency deposits, which attract higher account servicing fees, and changes in fee pricing structure for some banks.

Other fees charged to institutions decreased by 1 per cent. Other fees include miscellaneous fees relating to activities such as deed transmissions and guarantees. Fee revenue from commercial bills continued to decline over 2024/25.

Conclusion

Fees charged by banks through their domestic operations represent a small share of banks' total earnings, accounting for around 4 per cent of total revenue in 2024/25. Banks' total fee revenue increased modestly for the second year in a row but remained stable as a share of banks' assets and deposits.
Fee revenue was supported by recent strength in new housing and business lending, as well as the continued withdrawal of home loan cashback deals and increased overseas spending by Australian households.
By customer type, large businesses continued to contribute most to banks' fee revenue, followed by households and medium-sized businesses.

Endnotes

* The authors are from Domestic Markets Department. The authors would like to thank Jess Young, Peter Wallis, Sam Buckland and Michael Reschke for their assistance. For underlying data on domestic banking fees charged, see RBA (2021) and RBA (2026b).

1 Refunds are reported in the year they are processed, rather than the year in which the fees were charged.

2 Institutional customers are defined as private and public sector businesses and general government. Fees charged to general government comprise a small share of fees charged to institutions.

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Developments in Banks' Funding Costs and Lending Rates

Paul Hutchinson, Patrick Manning and Emma Searle*

Photo: Andrew Merry – Getty Images

Abstract

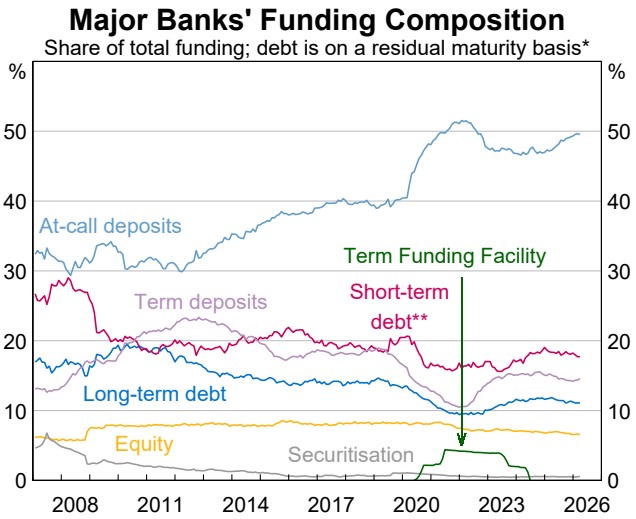
Bank funding costs and lending rates declined in 2025 as the RBA cut the cash rate and have risen in early 2026 alongside increases in the cash rate. Bank funding costs are estimated to have declined relative to the cash rate since January 2025. This decline reflects a fall in the estimated cost of banks' interest rate hedging, while changes in the cash rate have passed through to banks' (unhedged) deposit and debt costs in line with historical experience. Over the period, lending rates have moved broadly in line with the cash rate and other reference rates. Accordingly, the spread between banks' lending rates and funding costs has widened, though it remains narrower than pre-pandemic levels.

Introduction

Banks' funding costs and lending rates are important in the transmission of monetary policy. The cash rate and expectations for the future path of the cash rate have a strong influence on banks' funding costs, which, in turn, are a key determinant of the interest rates at which banks lend to households and businesses. This article examines developments in the banks' funding costs and lending rates over 2025 through to March 2026.[1]

Banks raise funding from a range of sources, including deposits, debt and equity.[2] Deposits account for around two-thirds, debt almost one-third and equity less than one-tenth of major banks' funding (Graph 1). The share of funding sourced from at-call deposits has increased a little since the beginning of 2025, alongside strong growth in credit. At the same time, there has been a small shift from term deposits to at-call deposits, consistent with a modest decline in the spread between term deposit rates and at-call deposit rates.

Graph 1



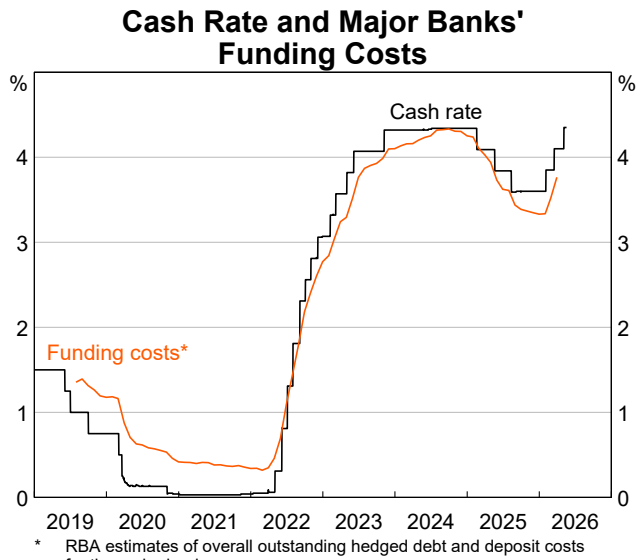
* Debt is adjusted for movements in foreign exchange rates.
** Includes deposits and intragroup funding from non-residents.
Sources: ABS; APRA; Bloomberg; LSEG; RBA.

Major banks' funding costs are estimated to have declined relative to the cash rate since January 2025

Changes in the cash rate typically pass through almost fully to bank funding costs. That is, when the cash rate rises or falls, banks' funding costs generally increase or decrease by a similar amount. This happens because banks structure most of their liabilities to have variable-rate payments, either directly or after hedging. They do this to mitigate interest rate risk, as most of their assets are variable-rate loans. The rates banks pay on their variable-rate liabilities, and hence their overall funding costs, tend to move broadly in line with the cash rate over the medium term.

However, we estimate that major banks' funding costs have declined relative to the cash rate since January 2025 (Table 1; Graph 2). This decline has been driven by interest rate hedging costs, which we estimate to have fallen significantly in 2025 relative to previous easing phases. The rates banks paid on deposits and debt (before hedging) fell by a little less than the cash rate over 2025 and rose by a little less than the cash rate in early 2026, which is in line with past episodes when the cash rate was changed. However, actual funding costs may vary from our estimates, which rely on simplifying assumptions about hedging practices. Individual banks' funding costs may also vary depending on their specific funding and hedging strategies.

Graph 2



* RBA estimates of overall outstanding hedged debt and deposit costs for the major banks.
Sources: APRA; ASX; Bloomberg; LSEG; major bank liaison; RBA.

Table 1: Estimated Costs of Major Banks' Funding
As at March 2026

	Latest value	Change since January 2025	Contribution to change
	Per cent	*Basis points*	*Basis points*
Total funding costs	3.76	–47	
Outstanding deposit rates	3.45	–29	–18
– At-call deposits[(a)]	*3.24*	*–18*	*–9*
– Term deposits	*4.15*	*–57*	*–9*
Outstanding debt rates	3.76	–39	–13
Funding composition			–1
Hedging costs			–15
For reference: cash rate target	4.10	–25	

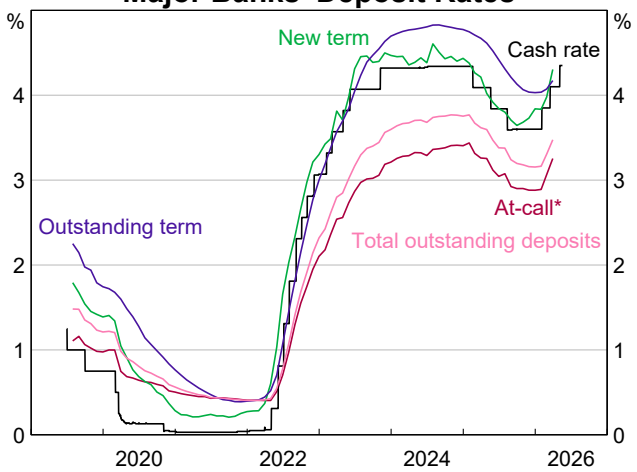
(a) Includes (non-interest bearing) transactions deposits, savings deposits and deposits in loan offset accounts.

Sources: APRA; ASX; Bloomberg; LSEG; major bank liaison; RBA.

Deposit costs

Deposit costs declined by less than the decline in the cash rate over 2025 and rose by less than the cash rate as it was increased in early 2026. This is consistent with past easing and tightening phases (Graph 3). On average, at-call deposit rates have adjusted by less than the cash rate. By contrast, new term deposit rates have adjusted broadly in line with the cash rate. This reflects the fact that most term deposits are priced against bank bill swap rates (BBSW), which are strongly influenced by expectations for the cash rate (Black and Titkov 2019).

Graph 3
Major Banks' Deposit Rates



* Includes (non-interest bearing) transaction deposits, savings deposits and deposits in loan offset accounts.
Sources: APRA; RBA.

The weaker pass-through of cash rate changes to at-call deposit rates mainly reflects two factors. First, cash rate changes have limited influence on the rates paid on those at-call deposit accounts that offer little or no interest (e.g. transaction accounts). Second, for savings accounts that offer a base rate plus a bonus rate of interest, there tends to be weaker pass-through of cash rate changes to the base rates than to the bonus rates (ACCC 2023). Around one-fifth of deposits in these savings accounts receive only the base rate due to depositors not meeting the conditions required for receiving the bonus rate.

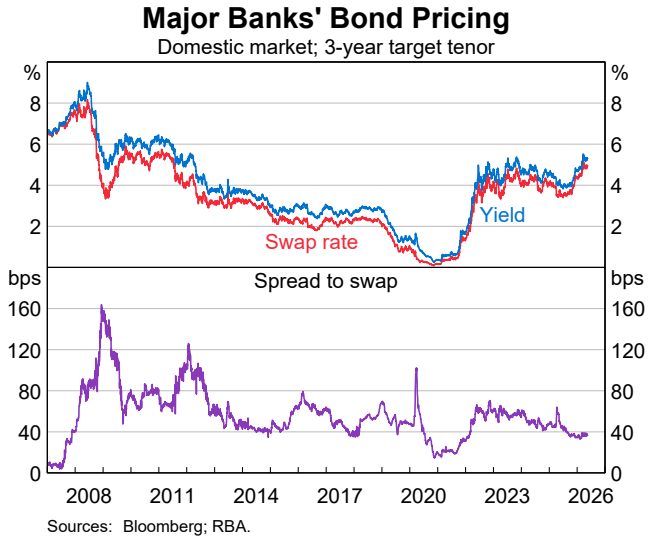
Over the past year, some banks have said that stronger competition for deposits has weighed on profitability. At the same time, deposit balances – particularly term deposit balances – have become a little less concentrated among banks, which is often correlated with more competitive pressure in deposit markets (Drechsler, Savov and Schnabl 2017). While more competition could result in a widening in spreads between deposit rates and their corresponding reference rates, such as the cash rate or BBSW, there has been little evidence of this at the aggregate level. However, there has been some indication of increased competition for deposits in non-price factors. For example, a few banks have promoted savings accounts that do not require depositors to meet bonus conditions to achieve competitively priced deposit rates.

Wholesale debt costs

Major banks' wholesale debt costs declined over most of 2025 and have risen since late 2025. In line with past experience, there has been strong (though less-than-full) pass-through from changes in the cash rate to wholesale debt costs. This reflects the link between the bulk of banks' wholesale debt and Australian short-term market rates that move closely with the cash rate. Banks' domestic debt is mostly composed of bank bills and floating-rate bonds, on both of which banks usually pay BBSW (plus a spread), while only a small share is fixed-rate bonds (Johnson 2022). And banks generally swap the principal and interest payments on their offshore debt into Australian dollar exposures, at Australian short-term interest rates, using foreign exchange swaps and cross-currency basis swaps (Atkin and Harris 2023).

Wholesale market conditions have generally been favourable for bank issuance over 2025 and into 2026. This has been reflected, for example, in the spread between bank bond yields and swap rates having declined to its narrowest level since 2022 (Graph 4). Consistent with favourable funding conditions and strong credit growth, the pace of bank bond issuance in 2025 and early 2026 has been in line with its average of the past decade, relative to GDP. The pace of issuance slowed a bit at the onset of the Middle East conflict but has since recovered. The spread between bank bond yields and swap rates was little changed over the period (RBA 2026).

Graph 4



Sources: Bloomberg; RBA.

Hedging costs

Banks use hedges to reduce the interest rate risk that arises from making interest payments on their liabilities that are generally less sensitive to broader interest rate changes than are the interest earnings on their assets. This hedging involves banks entering into interest rate swaps on which they pay floating-rate cash flows (typically at BBSW) and receive fixed-rate cash flows (at the swap rates that prevailed when the hedges were established). As such, the cost of these hedges generally rises and falls with the cash rate as the floating-rate cash flows paid on the hedges rise and fall.[3] Without hedging, declines in the cash rate could reduce banks' net interest margins (NIMs) and profitability, as the interest banks earn on their assets would typically fall by more than the interest they pay on their liabilities.

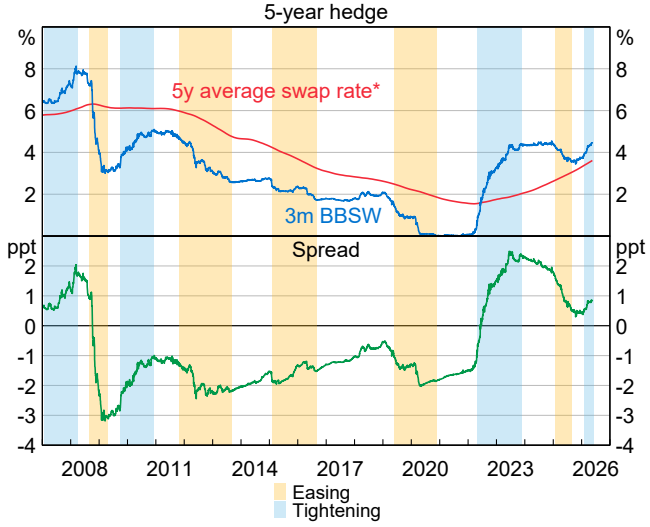
We cannot observe banks' hedging costs directly. Instead, we estimate these costs using observed changes in market interest rates and models that use simplifying assumptions about banks' hedging practices, which have been informed by liaison. While our estimates of hedging costs are broadly consistent with bank commentary, the actual hedging costs faced by banks may differ from our estimates.

Over 2025, we estimate that major banks' hedging costs fell by more than would typically occur for the given reduction in the cash rate. This is explained by the period of historically large and rapid cash rate rises in 2022–2023, during which the swap rate received by banks on newly transacted interest rate swaps increased. As a result, the average swap rates that banks received on their hedges rose over 2025, as the hedges that were entered earlier at lower swap rates were replaced by hedges with higher swap rates (Graph 5). This differs from previous easing phases, which did not come so soon after tightening phases that were as sharp. At the same time, the BBSW paid on these hedges declined with the cash rate over 2025. As a result, hedging costs are estimated to have declined significantly. In their 2025 profit reports, some banks pointed to lower hedging costs as one factor supporting their NIMs.

Graph 5

Stylised Interest Rate Hedge

5-year hedge



* 5-year rolling average of 5-year swap rates.
Source: ASX, Bloomberg, RBA.

Banks have passed through changes in the cash rate to lending rates

Major bank lending rates to households and businesses declined through 2025 and have increased in 2026, broadly in line with changes in the cash rate. Spreads between lending rates and the cash rate have remained at their narrowest levels in almost two decades, reflecting low bank funding costs (relative to the cash rate) and strong competition between lenders (Jennison, Spiller and Wallis 2026). The narrow spread between lending rates and the cash rate means that financial conditions are more accommodative than would otherwise be the case and is one of many factors that has been considered in the setting of monetary policy (Kent 2026).

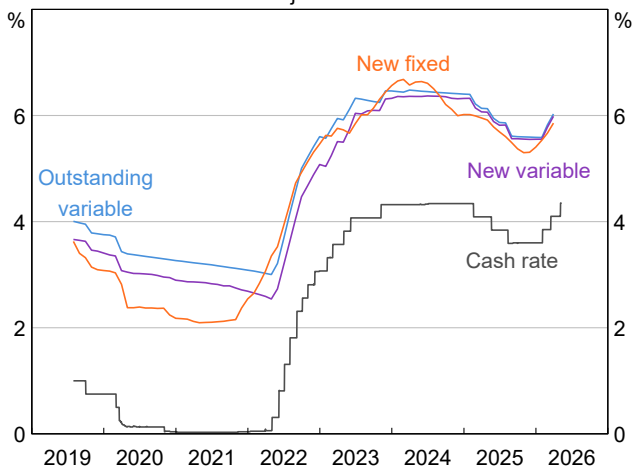
Housing lending rates

Banks fully passed through cash rate reductions to lending rates on new variable-rate housing loans in 2025 and have increased lending rates broadly in line with the cash rate in early 2026. (Graph 6). The spread between the average outstanding and average new variable rate has narrowed a little further since the beginning of 2025, to just 4 basis points. This is likely to reflect some borrowers continuing to secure lower rates on their mortgages by refinancing with another lender or negotiating with their existing lender. In addition, the substantial share of borrowers who, over recent years, secured larger discounts (relative to standard variable rates) have not seen these discounts unwind (Jennison, Spiller and Wallis 2026). New fixed mortgage rates declined through most of 2025 and began to increase around the end of 2025, following movements in tenor-matched swap rates, which they typically reference.

Graph 6

Housing Lending Rates

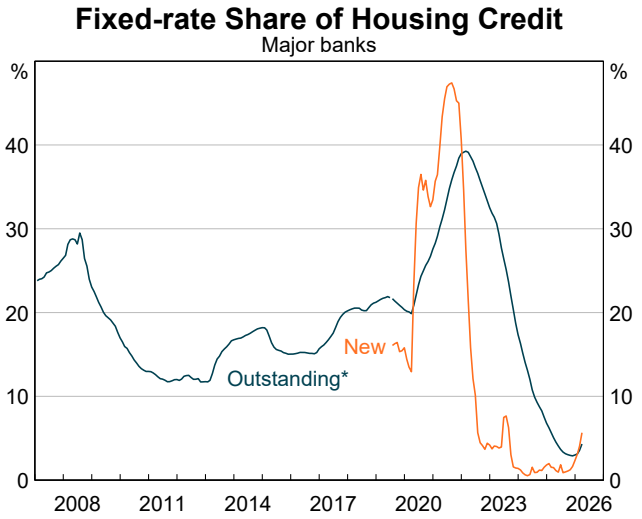
Major banks



Sources: APRA; RBA.

The share of outstanding housing loans with fixed rates fell to a historical low of less than 5 per cent in 2025 (Graph 7). This reflects the large volume of fixed-rate loans taken out during the pandemic having rolled onto variable rates, while only a small share of new mortgage lending by major banks has been at fixed rates since late 2023. All else equal, a lower fixed-rate share of lending increases the sensitivity of household cash flows to changes in interest rates, increasing the strength of monetary policy transmission through that channel (Kent 2024). However, many households have sizeable buffers in mortgage offset and redraw accounts, which can be used to smooth consumption in response to changes in mortgage repayments.[4] Over the past five years, the share of housing loan facilities with an offset account has increased from around 40 per cent to 55 per cent, and the share with redraw facilities has increased from around 70 per cent to 80 per cent.

Graph 7

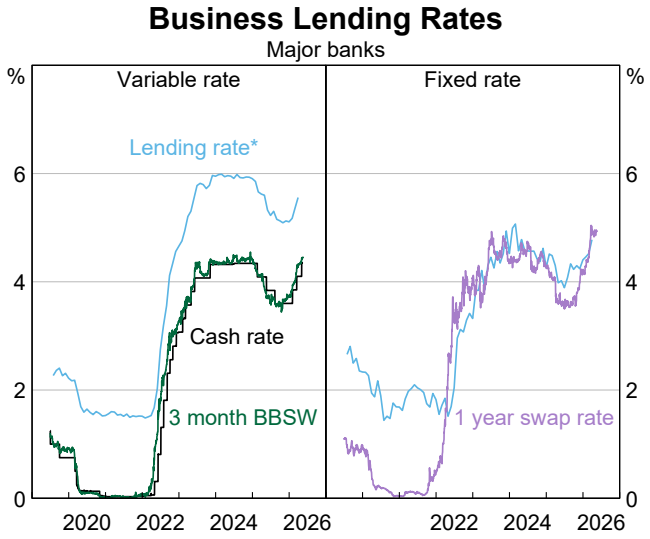


* Series break in July 2019 due to introduction of the Economic and Financial Statistic collection.
Sources: APRA; RBA.

Business lending rates

Variable-rate business loans are typically priced with reference to short-term interest rates, such as the cash rate or BBSW. New variable rates declined in 2025 and have increased in 2026, in line with movements in these short-term rates (Graph 8). Similarly, new fixed rates declined in early 2025 and have increased since late 2025, following movements in the tenor-matched swap rates that they are generally set against. Fixed-rate lending remains a small share of total business lending.

Graph 8



* Average interest rate on loans funded in the month.
Sources: APRA; Bloomberg; RBA.

Lending spreads and net interest margins remain low relative to pre-pandemic levels

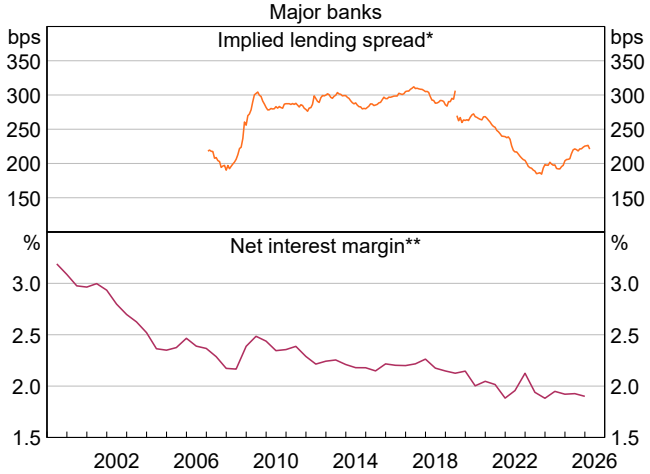
We estimate that the spread between banks' lending rates and funding costs has increased since early 2025 but remains well below its pre-pandemic levels (Graph 9). The widening in this lending spread reflects our estimate that funding costs have declined relative to the cash rate, due to a strong decline in hedging costs, while lending rates have moved broadly in line with cash rate changes. By contrast, banks' NIMs – a broader measure of bank profitability – stabilised in 2025 around historical lows. NIMs measure the difference between total interest income (on loans and other interest-earning assets) and interest expenses, divided by interest-earning assets, while the lending spread excludes the effect of non-loan interest-earning assets. Bank commentary suggests that competition in deposit and lending markets weighed on NIMs and lending spreads in 2025, while a shift by some banks towards higher margin business lending supported these metrics.

The difference between recent trends in NIMs and estimated lending spreads may partly reflect the breadth of the measures. It may also reflect that NIMs capture banks' actual hedging costs, whereas our measure of lending spreads is derived from our estimates of funding and hedging costs. The stabilisation in NIMs alongside the increase in estimated lending spreads may therefore indicate that we have over-estimated the recent decline in hedging costs.

Graph 9

Lending Rates and Funding Costs

Major banks



* Aggregate outstanding lending rates less funding costs. Series break in July 2019 due to introduction of Economic and Financial Statistics collection.

** Domestic. Data for a given period relate to banks' public profit reports released in that half. IFRS basis from 2006, AGAAP prior.

Sources: ABS; AFMA; APRA; ASX; Bloomberg; CANSTAR; LSEG; major bank liaison; major banks' websites; RBA; Securitisation System; Tullett Prebon; US Federal Reserve.

Conclusion

Banks have passed on the cash rate reductions in 2025 and increases in early 2026 to deposit and lending rates, in line with previous easing and tightening phases. However, we estimate that overall funding costs have declined relative to the cash rate over this period, due to a large decline in the costs banks face in hedging interest rate risk. As a result, the estimated spread between lending rates and funding costs has risen from low levels. By contrast, banks' NIMs remain around historical lows.

Endnotes

* Paul Hutchinson and Patrick Manning are from Domestic Markets Department and Emma Searle completed this work while in Domestic Markets Department. The authors would like to thank Iris Chan, Michael Thornley, Vikas Vashishtha, Josh Spiller and Peter Wallis for their assistance.

1 Data on banks' funding costs and lending rates are currently available up to March 2026.

2 In this article, our estimates of the costs of banks' funding include deposit and debt costs, which are strongly influenced by monetary policy settings, and exclude the costs of equity funding.

3 Banks use two main types of interest rate hedges: a 'replicating portfolio' hedge for zero or near-zero rate deposits and a 'whole-book' hedge to reduce interest rate risk across their entire balance sheet (De Zoysa, Dunphy and Schwartz 2024). These hedges transform the fixed (or zero) interest rate payments on banks' liabilities into floating rate payments, such as BBSW, that move with changes in the cash rate.

4 There is evidence from 2022 to 2023 that households facing higher mortgage payments drew down on savings buffers to smooth consumption when interest rates were rising. For example, the spending of households with variable-rate mortgages remained similar to households with fixed-rate mortgages for at least two years after interest rates started to increase (Elias *et al* 2025).

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The Bank's Story in Ten Objects

Jacqui Dwyer and Virginia MacDonald*

'Reflections of Martin Place', an installation of archival photographs at the Reserve Bank of Australia's head office, Martin Place, as part of our 50th anniversary celebrations in 2010. Photo: Peter Tabor – RBA

Abstract

The Reserve Bank of Australia has an unusually large and rich historical archive. This is because we descend from the original government-owned Commonwealth Bank of Australia (which had itself absorbed earlier government banks of colonial origin). As a result, our collection captures over 200 years of Australia's economic, financial and social history. The collection supports many veins of research. It also enables us to trace the development of our central banking responsibilities and the events that have shaped our place in history and character as an institution. In this article, we tell the Bank's story in ten objects.

The beginning of things

The original government-owned Commonwealth Bank, from which we descend, was established by the *Commonwealth Bank Act 1911* before opening its doors for business on 15 July 1912. The new Bank was to operate as both a trading and savings bank. Known as 'the people's bank', expectations for the institution were high and its opening was of national significance. Just before the opening, a storeman found a halfpenny on the floor of the strongroom. He considered it to be a 'good omen' that the Bank would never be without a 'shot in the locker'. He had the coin mounted as a memento for the first Governor, Denison Miller, and engraved with a date stamp for the Bank's opening. In an eloquent letter (reproduced in full in Appendix A) that accompanied the halfpenny, the storeman expressed these wishes to the Governor:

> … In years to come when the great institution over which you have been called to preside has been established throughout Australia and has even extended its operations beyond our own territories it may serve to recall the beginning of things. It [the halfpenny] records the date on which the Commonwealth Bank of Australia first opened its doors for the receipt of the people's savings, and for that reason alone may be of interest.
>
> Yours sincerely,
> W. Campbell Milne

What has come to be known as the 'lucky penny' (shown in Figure 1) has been shown to Governors and staff over the years, but perhaps most pertinently to Governor Glenn Stevens after the collapse of Lehman Brothers, as central banks were confronted with the most defining moment of the global financial crisis.[1] The coin is among a number of rare and symbolic items in our rich numismatic collection.[2]

Figure 1: The Lucky Penny

A 1907 halfpenny found in the strongroom of the Commonwealth Bank just before its opening and presented to Denison Miller by storeman W. Campbell Milne in 1912. The head of the monarch has been removed and replaced with an engraved inscription marking the opening date of the Bank, 15 July 1912. Source: RBA Archives MU-000163. Photographer: Bryan Oh (RBA).

A war-time bond

At the commencement of the First World War, the Commonwealth Bank had been established for just two years. The enormity of the challenge facing the institution is unimaginable to us today. The Bank was seeking to establish itself as a national institution at the same time as it grappled with the consequences of war for the nation – and for its staff. When the war broke out, the Bank had 228 male staff; of those, 206 would enlist. As the Bank took on very few men of military service age in the years that followed, this contribution was remarkable.

During the war, Ernest Hilmer Smith, the Superintendent of the Hobart Branch, was among those who wrote moving and detailed descriptions of life on the frontline to Governor Denison Miller, highlighting the rapport the Governor had with officers of the Bank. These letters include one that Hilmer Smith wrote after the landing at Gallipoli (reproduced in full in Appendix B). An extract of his letter is provided below and an image in Figure 2.

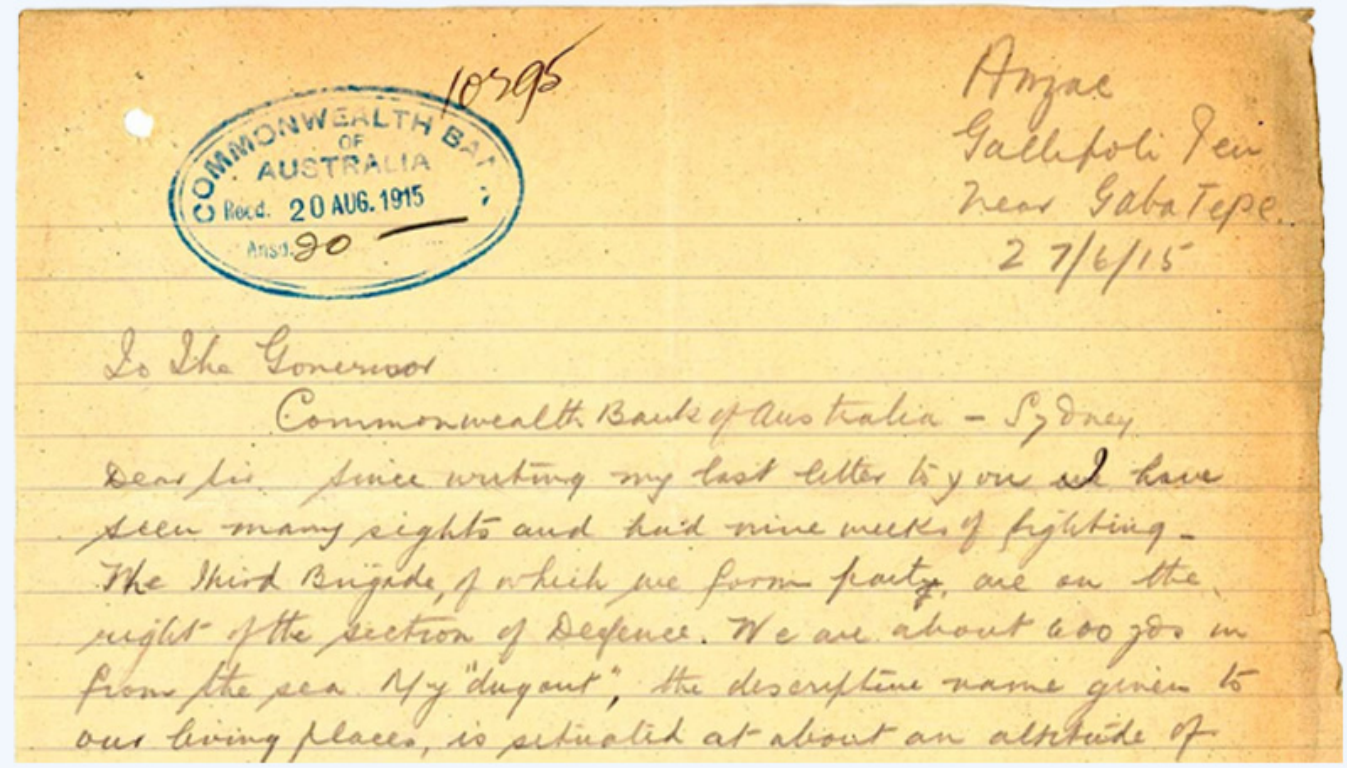
Anzac
Gallipoli Pen
near Gaba Tepe
27/6/15

… Our first week of service here was one that none of us are likely to forget. Landing at 4 am on the 25th April we were kept exceedingly busy for over a week, in beating off the Turks, who are by no means an enemy to treat lightly. We had a slight cessation of hostilities for about two days and then at it again. The final effort so far was made by the enemy on the 18th/19th May when he fought for all he was worth, but failed to dislodge us.

It is estimated that there were 7000 casualties in these two days, so you can imagine the vigor with which the attack was made. …

I have no more paper with which to continue so will postpone giving further news till more paper arrives. Wishing yourself and members of the Staff all happiness & prosperity – Believe me – Sir – Sincerely yours, E. Hilmer Smith Lt. Col. of 12th Bn.

Figure 2: Letter from Gallipoli



Letter sent to Governor Denison Miller in 1915 by Bank officer Ernest Hilmer Smith. The letter is written while Hilmer Smith was fighting on the Gallipoli Peninsula, near Gaba Tepe. Source: RBA Archives ST-PR-22.

Hilmer Smith, who would be awarded the Companion of the Order of the Bath (CB), arrived in one of the first landing parties at Gallipoli on 25 April 1915. He remained there for most of that campaign (including as Commandeer of the 12th Battalion) before serving in France and Belgium. His letters to the Governor were not only poignant but at times poetic, humorous and heartbreaking.[3] They provide a firsthand account of the realities of war, a deep appreciation of the pastoral care provided by the Governor, and a vocational commitment to the new institution. Like most letters written to the Governor by staff on the frontline, of which our archives contains a rich collection, they closed with well wishes for the Bank.

The First World War presented the Bank with the great challenge of how to finance the war effort, and how to finance Australia's international trade under war conditions. In addressing these matters, we established our first central bank function of being banker to the government, and a leadership role in what would later become our responsibility for the payments system. We did so amid a deep war-time bond between all staff.

When war first broke out, three of Governor Miller's sons volunteered for service. The eldest, Clive Miller, served throughout the Gallipoli campaign before being killed in action at Messines, Belgium on 4 July 1917. News of his death was met with deep sorrow among Bank staff, who raised funds to commission a portrait of Clive for the Governor and his wife. Condolences were received from across Australia and overseas, including from King George V and Queen Mary, with many of these preserved in our archives.

In June 1920, Governor Miller was knighted by the visiting Prince of Wales (later Edward VIII). The honour recognised his personal leadership as Governor and the significant achievements of the Commonwealth Bank during his tenure, especially during the war years.[4] When Sir Denison Miller died suddenly in office on 6 June 1923, the response was extraordinary. Staff, political and business leaders and the general public in Australia and abroad expressed profound grief. Miller's leadership during the War, his public service and influence had earned him a reputation as a father figure. At a public meeting in Sydney on 10 June 1923, it was unanimously resolved that the title 'Governor' should not be used for his successors, and that a new title, such as 'President', should be created so that 'the people down through the centuries to come will think of Sir Denison Miller as always being with them as Governor of their Commonwealth Bank assisting in the shaping of Australia's great destiny' (RBA Archives GDM-23-10). The title of Governor was ultimately retained. However, this episode indicates the public's expectation of permanency of the central bank, its importance for the nation's economic welfare and their deepest regard for its first leader.

The central bank's first economist

In 1930, Bank of England officials came to Australia to assist Australian governments with their budgetary problems and found, to their surprise, that the Commonwealth Bank did not have a professional economist on its staff. They urged the Governor to appoint a qualified economist and recommended Leslie Melville, Professor of Economics at the University of Adelaide.

Melville immediately established what became known as the Economist's Branch. He began to collect and analyse economic data, and prepared regular reports for the Bank's Board on economic and financial conditions in Australia and overseas. He established intellectual traditions and approaches to policy deliberation – including objectives for monetary policy – that shaped the institution and laid the foundations for more central banking functions.[5]

The importance of Melville's appointment and contribution to public policy is detailed in Cornish (2021). In brief, before joining the Bank, Melville had already helped shape Australia's economic response to the Great Depression. In 1931 he served on the Copland Committee that crafted the Premiers' Plan, a program of economic stabilisation later praised by John Maynard Keynes as having 'saved the economic structure of Australia' (Keynes 1932). Melville subsequently attended the historically significant Imperial Economic Conference in Ottawa in 1932 – for which we have a photograph – and the World Economic Conference in London in 1933, where he contributed to debate about how to manage economic recovery from the Great Depression (Figure 3).[6] Returning home from the conference in Ottawa via London, he sought the views of economic experts there, notably Keynes. Keynes invited Melville to his home, and later to his famous Monday evening discussion group at King's College, Cambridge. Melville was to meet Keynes on a number of occasions and they became frequent correspondents, with this relationship a measure of Keyne's regard for our first central bank economist.

Figure 3: Image of Leslie Melville

Leslie Melville (circled) at the Imperial Economic Conference, Ottawa, July 1932. Source: RBA Archives PN-019030.

Melville would go on to play a defining role in how countries responded to the dismantling of trade barriers at the end of the Second World War, with the United States and other powerful nations committing to domestic policies aimed at maintaining full employment (the 'Full Employment Approach' or 'Positive Approach'). Melville would also lead Australia's delegation to the United Nations (UN) Monetary and Financial Conference at Bretton Woods, which created the International Monetary Fund (IMF) and the World Bank. However, in 1948 his career was set back when Prime Minister and Treasurer, Ben Chifley, nominated Dr HC Coombs to be Governor of the Commonwealth Bank – a position that Coombs himself had argued to the Prime Minister should have gone to Melville.

Governor Ian Macfarlane gave the public lecture at the Australian National University to celebrate the 100th birthday of the then Sir Leslie Melville. Having researched Melville's contribution to the Bank, Macfarlane concluded that 'you could be forgiven for thinking that Melville was the central bank'. In assessing Melville's influence as a central banker and adviser to Australian governments (from the 1920s to the 1970s), Macfarlane said that 'any objective assessment of achievements would place Sir Leslie among the most distinguished Australians of the past century' (Macfarlane 2002).

A gold standard[7]

Both depression and war present central banks with unique responsibilities, with the Second World War furthering the Bank's role as banker to the government and requiring new approaches to delivering these services, given the geographic scale of the war. In fact, battleships became floating Bank branches that ensured the continuation of banking business and payment of service personnel. But perhaps one of the most surprising and dramatic episodes in our history relates not to a battleship but to the sinking of the *RMS Niagara* – a passenger steamer that served the route between Australia, New Zealand and Canada. On 19 June 1940, during a regular voyage from Sydney to Vancouver, it struck a German mine off New Zealand's North Island and sank.[8] All passengers and crew were rescued. Unbeknown to the public, however, the ship was carrying a consignment of gold on behalf of the British Treasury. Stored in the *Niagara*'s bullion room were 295 boxes containing nearly eight tons of gold bullion (valued then at approximately £2.5 million – around $1.7 billion today). Intended as payment to the United States for munitions, recovery of the gold was essential to the allied war effort.

The Commonwealth Bank, acting as the Bank of England's agent in Australia, was asked to assist. Gordon Murray Shain, Deputy Governor of the Bank, was appointed to coordinate what would become one of the most remarkable salvage operations of the Second World War, and an extraordinary commitment to another central bank and our responsibilities as banker to the government.

Captain John Protheroe Williams and the United Salvage Pty Ltd syndicate were assigned the salvage task. Williams was an experienced master mariner and salvor, who would later be knighted for his service to the Empire. Wartime shortages meant that the salvage vessel had to be improvised. A small 200-ton coastal steamer, the *Claymore*, was found in Auckland Harbour and hastily restored for the operation.

For months, Williams and his crew of 10 men worked in heavily mined waters in an active theatre of war, battling strong currents and frequent storms. Operating in secrecy, they attempted a salvage at what was then a record depth; they twice struck unexploded mines. Despite these dangers, they located the *Niagara*, blasted an entry to its hull, and began the delicate task of retrieving the bullion. The first box of gold was recovered in October 1941. By December, over 90 per cent of the lost gold had been raised.[9]

Various silver items and utensils were also recovered from the wreck, among them a silver-plated dish cover located in the ship's bullion room. Captain Williams had the dish inscribed and presented it to the Deputy Governor in recognition of his leadership in co-ordinating the recovery. Shown in Figure 4, the dish stands as both a personal tribute and an artefact from what was one of the most ambitious and successful salvage operations in maritime history. On 12 March 2002, the dish was donated to the Bank by Gordon Murray Shain's daughter (Mrs Dorothy Todhunter), ensuring its long-term preservation and connection to our wartime service and history.

Figure 4: Silver-plated Dish Cover

Silver-plated dish cover salvaged from the *RMS Niagara* and inscribed and presented to the Bank's Deputy Governor, Gordon Murray Shain by Captain J.B. Williams of the salvage vessel the *Claymore* in circa 1940s. This dish was donated to the Bank in 2002 by Mrs Dorothy Todhunter, the daughter of Deputy Governor Shain. Source: RBA Archives MU-000632. Photographer: Bryan Oh (RBA).

A sign of the times

During the post-war period, the Commonwealth Bank progressively acquired more responsibilities of a central bank. The scale of these responsibilities warranted a separate body. But there was also a conflict of interest as the Bank had become both a regulator and a competitor of other banks. Ultimately, there was 'separation' of its commercial and central banking functions under the *Reserve Bank Act 1959*. The Commonwealth Bank would be renamed the Reserve Bank of Australia and act as the nation's central bank, while the newly created Commonwealth Banking Corporation would operate as a trading bank. We commenced operations on 14 January 1960.

Dr HC Coombs was our first Governor, having been the last of the Commonwealth Bank – where he had served as Governor from 1949, following his leading roles in Australia's war-time administration and post-war reconstruction, including development of employment policy and a white paper on 'Full Employment in Australia'.[10] Furthermore, along with Melville and LF Giblin, Coombs was an architect of the 'Full Employment Approach' that supported growth in small open economies like Australia as war-time trade barriers were removed. Often described as the nation's greatest civil servant, he was renowned for facilitating progress – including beyond policy advice to government and central banking. Dr Coombs won acclaim for his work in promoting the arts, the rights and welfare of First Nations Australians, and preservation of the natural environment.

Coombs' ethos was to build a central bank that was 'planned for progress'.[11] As explained by the Bank's Curator, John Murphy, this would be evident in the new head office building at 65 Martin Place, which adopted the modern international style of architecture and, for a central bank, was symbolic of transparency to the public and an openness to international developments. It was also evident in his choices for the building's interior design, artworks, technology and approaches to engaging staff.[12]

Among his progressive ideas was an enthusiasm for abstract forms, nowhere more so than in the artworks selected for our public spaces and our logo. Coombs commissioned the renowned industrial designer Gordon Andrews to create the logo. It proved to be a challenging commission for the designer who ultimately sought advice from the Governor. Andrews wrote in his autobiography that Coombs' suggestion of producing something abstract 'liberated his creativity'. In being abstract, the logo attracted much public interest and comment. In response, Andrews said:

> The Reserve Bank's design … does not imitate or symbolise anything. It is quite distinctive, with its own personality. It is simply a design which echoes something from heraldry, from coinage, and is therefore suitable for a bank. I feel that the emblem will last because it is a sound and stable design. … But only time will tell. If, five years from now, people agree that it is a successful emblem, recognisable everywhere as the Reserve Bank's, then I will be content. (RBA 1960)

Of course, 65 years on, the logo is recognisable as ours (shown in Figure 5). Importantly, unlike those of other central banks, it is not an appropriation of an existing national symbol or representation of a central bank building, but a unique form that was very much a sign of the times.

Figure 5: The Reserve Bank Logo

Reserve Bank of Australia logo designed by Gordon Andrews. This version is produced in gun metal. Source: RBA Archives MU-000463. Photographer: Bryan Oh (RBA).

The decimal revolution[13]

In the late 1950s, the Australian Government began thinking about the practicalities of replacing pounds, shillings and pence with decimal currency – a money system that would greatly simplify calculations and increase financial efficiency, but entail radical change to the way the nation undertook all of its transactions. In 1963, the government announced its intention to make the change with a conversion date (known as 'C-Day' for Changeover Day) set for 14 February 1966. Such a change required a vast program of work – both educational and logistical that would reach every household and business. The government established the Decimal Currency Board to oversee the conversion and the Bank played a critical role. We were responsible for the design, production and distribution of the new banknotes ($1, $2, $10 and $20 denominations at the time). This brought to public consciousness the central bank function of note issuance and associated us with a major milestone in the nation's social and economic history.

Dr HC Coombs invited seven renowned designers to take part in a competition to design the new decimal currency banknotes. Four agreed: Gordon Andrews, Richard Beck, Max Forbes and George Hamori.[14] Beyond the use of the Queen on the $1 banknote, few instructions were given regarding themes and portraits other than the designs should capture the diverse and unique aspects of Australia (and a list of suggested historical characters and topics was supplied). While all the designs were considered highly commendable, the advisory committee was unanimous in its selection of Andrews' designs, which was approved by Coombs and the Treasurer and Prime Minister.

In keeping with Andrews' innovative design of our logo, his banknote designs were bolder and more vivid in colour than Australia's previous banknotes and the alternative designs put forward. As Andrews explained:

> … I had envisaged a bold, colourful note. My rationale was that we are a strong vigorous nation and our currency should reflect this characteristic (Andrews 1993).

Andrews viewed banknotes as vehicles for representing national identity and his designs included carefully researched imagery. Many of the inspirational materials used for the design of the decimal currency banknotes remain in our archives. Among these are some remarkably fragile objects, like the original shaft of wheat used in the design of the $2 banknote (shown in Figure 6).[15]

The revolutionary design of Australia's decimal currency banknotes would continue to be a signature of future Australian banknotes series, with innovation and distinct national character evident in our polymer banknotes.

Figure 6: Design of the $2 Banknote

Back of the $2 banknote, showing William Farrer. Source: RBA Archives NP-003855; Original ink keyline drawing of wheat design for the $2 decimal banknote by Gordon Andrews. Source: RBA Archives NP-002027; Samples of wheat used in designing the wheat on $2 decimal banknote. Source: RBA Archives MU-000375.

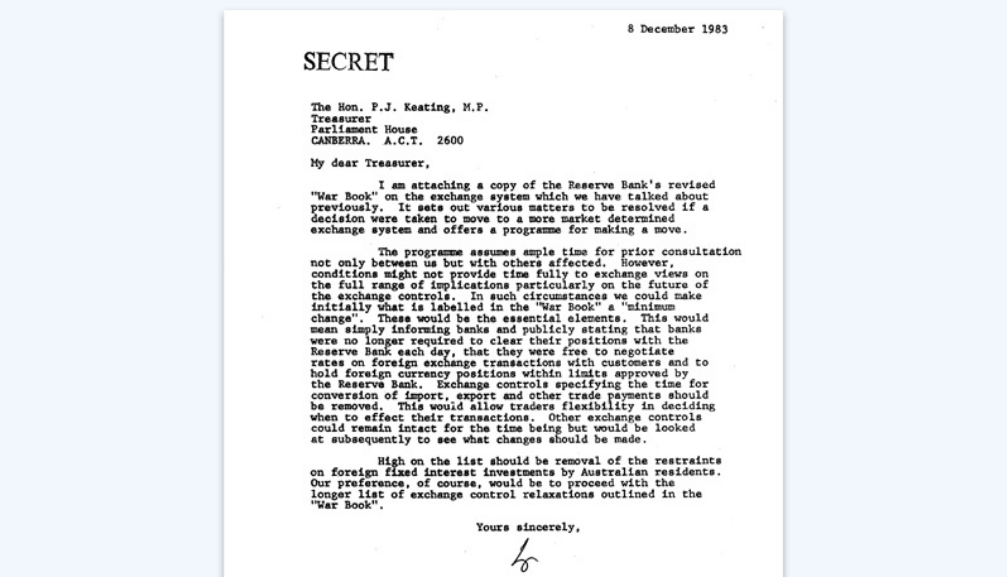
The floating of the dollar

The floating of the Australian dollar on 12 December 1983 was one of the most significant economic policy decisions in Australia's history. Having a market-determined exchange rate would fundamentally change Australia's economy. It gave the Bank control over the amount of cash in the money market so that we could set the short-term price of money based solely on domestic considerations – the 'hallmark of modern monetary policy' (Stevens 2013).[16] It also enabled the economy to better respond to events, acting as a 'shock absorber' and reducing swings in inflation and activity.

The Hawke Government's decision to float was made on Friday 9 December and enacted by the Bank when markets opened on Monday 12 December. Ultimately, the regime change was abrupt. But it was a long time in the making. As Cornish and Hawkins explained, the idea first took hold in 1953 when Dr Coombs visited Canada – one of the few countries with a floating exchange rate at that time and with an economy similar in many respects to Australia (Cornish and Hawkins 2023). On his return, Coombs wrote that the Bank should consider Canada's experience and Austin Holmes, Chief Manager of our Research Department, became an advocate of the change. By 1966, Holmes had made a formal proposal advising that the Bank should consider floating the currency in the event of a balance of payments crisis. As Cornish noted, Holmes would continue to advance reasons in favour of floating the dollar, and his successors in Research Department did the same (Cornish 2014). Following the collapse of the Bretton Woods system of pegged exchange rates in the early 1970s,[17] there were ongoing discussions about whether to float, as exchange rates around the world were becoming increasingly flexible (Debelle and Plumb 2006). However, as Governor Stevens said, 'the right combination of intellectual climate and circumstances did not arrive until 1983' (Stevens 2013). Broader recognition of the economic merit of a market-determined exchange coincided with an episode of destabilising capital flows during 1983 that saw speculators gain at the expense of the public interest. This triggered the final decision to float.[18]

Given the possibility that the Bank might need to execute a regime change suddenly, operational readiness was key. We have long maintained a 'War Book' that detailed the procedures to be followed in the event of a decision to float; an updated version was delivered to the Treasurer the day before the decision (shown in Figure 7). The War Book was a hefty file rather than a book, and its title was intriguing. It was closely guarded and for many years after the float, remained in the safe of the Assistant Governor (Financial Markets). On the occasion of the 40th anniversary of the float, it was released to the public on our digital archive, Unreserved.

Figure 7: The 'War Book'



8 December 1983

SECRET

The Hon. P.J. Keating, M.P.
Treasurer
Parliament House
CANBERRA. A.C.T. 2600

My dear Treasurer,

I am attaching a copy of the Reserve Bank's revised "War Book" on the exchange system which we have talked about previously. It sets out various matters to be resolved if a decision were taken to move to a more market determined exchange system and offers a programme for making a move.

The programme assumes ample time for prior consultation not only between us but with others affected. However, conditions might not provide time fully to exchange views on the full range of implications particularly on the future of the exchange controls. In such circumstances we could make initially what is labelled in the "War Book" a "minimum change". These would be the essential elements. This would mean simply informing banks and publicly stating that banks were no longer required to clear their positions with the Reserve Bank each day, that they were free to negotiate rates on foreign exchange transactions with customers and to hold foreign currency positions within limits approved by the Reserve Bank. Exchange controls specifying the time for conversion of import, export and other trade payments should be removed. This would allow traders flexibility in deciding when to effect their transactions. Other exchange controls could remain intact for the time being but would be looked at subsequently to see what changes should be made.

High on the list should be removal of the restraints on foreign fixed interest investments by Australian residents. Our preference, of course, would be to proceed with the longer list of exchange control relaxations outlined in the "War Book".

Yours sincerely,

The 'War Book' was a detailed set of procedures to be followed in the event of a decision to float the Australian dollar. An updated version was delivered to the Treasurer on 8 December 1983, the day before the press conference where then Treasurer Paul Keating and then RBA Governor Bob Johnston announced the float. Source: RBA.

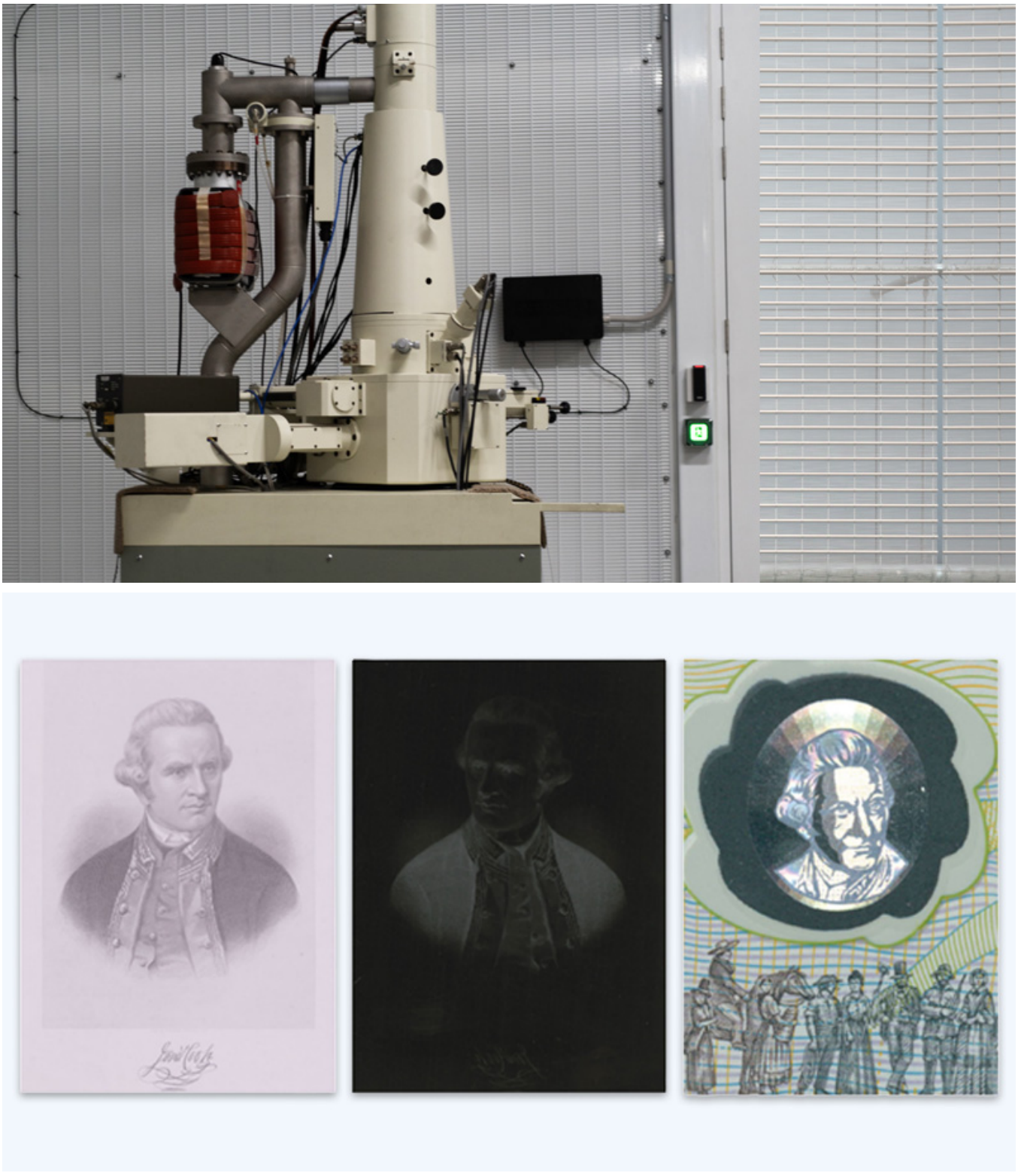
The reinvention of banknotes[19]

When Australia's decimal currency banknotes were introduced in 1966, in addition to their bold and innovative design, they were thought to contain the most advanced security features available.[20] However, within a year of issuance, the $10 banknote had been counterfeited. Dr Coombs saw the need to develop stronger security features. He sought a long-term solution from Australia's scientific community, leading to a partnership between the Bank and Commonwealth Scientific and Industrial Research Organisation (CSIRO) that would yield one of Australia's great inventions.

The initial idea was to develop a banknote that could not be copied through photographic means. This led to exploration of a hologram-like 'optically variable device', the appearance of which would change according to changes in external factors, like the angle of viewing. The device produced better optical effects when applied to a smooth, transparent surface. This led to development of a clear plastic film (polymer) as the substrate of the banknote. By 1974, experimental polymer banknotes had been successfully developed and the Bank officially engaged the CSIRO on a project that would reinvent our banknotes. In 1988, Australia became the first country to produce a banknote that incorporated an optically variable device and was printed on polymer – the Australian Bicentenary commemorative $10 banknote. It was released on 26 January 1988, the bicentenary of Governor Arthur Phillip's naming of the colony at Sydney Cove. The banknote was designed by Harry Williamson and incorporates an optically variable device that portrays Captain James Cook. On one side, it incorporates a representation of HMS *Supply*, the first ship to drop anchor in Sydney Cove, and a frieze of figures beginning with convicts and continuing with subsequent waves of migration to Australia. On the other side, it incorporates representations of the culture of Aboriginal people, through layered imagery and patterns with an Aboriginal youth surrounded by ancient rock paintings from Deaf Adder Gorge, Western Arnhem Land, a ceremonial Morning Star Pole and details from different styles of Aboriginal artwork.

The commemorative banknote served as a trial and its success resulted in a decision to develop an entire series of polymer banknotes known as the 'New Note Series'. For this series, the focus shifted from the optically variable device to less expensive alternatives, resulting in the introduction of a clear window that was equally as effective in hindering counterfeiting (shown in Figure 8). With the introduction of the New Note Series, issued between 1992 and 1996, Australia became the first nation to successfully convert its paper-based currency to polymer banknotes.

Figure 8: Hologram Machine and its Use



The hologram machine (top) used to create the optically variable device (bottom) used on the commemorative $10 banknote, first issued in January 1988. Source: RBA; RBA Museum. Top image – Photographer: Bryan Oh (RBA); Bottom image: RBA Museum (The Risk of Counterfeit section of The Reinvention of Banknotes online resource).

Targeting inflation

In the early 1990s, along with other central banks, the Bank introduced a new framework for monetary policy – inflation targeting. Central banks embraced inflation targeting in different contexts and in different ways. In Australia, the move was motivated by a desire to 'lock in' the benefits of the low inflation that had accompanied the early 1990s recession, including the opportunity to structurally reduce inflation expectations.[21] In a speech in March 1993, Governor Bernie Fraser said, '[t]he appropriate degree of price stability to aim for is a matter of judgment. My own view is that if the rate of inflation in underlying terms could be held to an average of 2 to 3 per cent over a period of years, that would be a good outcome' (Fraser 1993). This statement would mark the practical beginnings of inflation targeting in Australia (with formalisation in August 1996[22] and the target variable later evolving to be the headline rate of inflation in 1998).

As Stevens explained, the choice of '2 to 3 per cent' recognised that the best average inflation performances since the Second World War were in the vicinity of 'two point something', with a wide variation around that average (Stevens 2003). The idea of Australia seeking to achieve an inflation outcome 'on average' over a period of years, rather than at times or within hard edged boundaries, differed from the approach of most other central banks at the time. This difference was motivated by our judgement that inflation was hard to control precisely, and that attempts to hit a narrowly defined target over short periods risked exacerbating the sort of economic instability that we were trying to lessen (Stevens 2003, pp 3–4). This argument was considered especially relevant for a small open economy, like Australia, where swings in world prices or exchange rates can drive significant short-term fluctuations in inflation.

When it was introduced, the Australian approach to inflation targeting was widely thought to be 'a bit too soft'. However, Stevens and Debelle (1995) said that 'if, some years hence, we can look back and observe that the average rate of inflation has a "2" in front of the decimal place, that will be regarded as a success'. Decades on, inflation targeting in Australia has been a success. As noted in the RBA Review, 'over the past 30 years, inflation has averaged around the midpoint of the RBA's target of 2 to 3 per cent, and the variability of output and unemployment has been lower than in earlier decades' (Australian Government 2023).. Importantly, Debelle noted, 'The flexible nature of [our] framework, which was there at its inception, has proven to be resilient to the quite substantial changes in the macroeconomic environment that have taken place since' (Debelle 2018).

The introduction of inflation targeting was a time of great economic debate at the Bank. And debates about the efficacy and durability of the regime have been sustained. One of the rooms in which they occurred was the 'chart room' – an annex to the office of the Assistant Governor (Economic). It contained a mounted display of graphs of the key economic variables in prevailing monetary policy discussions. In a quaint tradition, the graphs in the chart room were replaced after each meeting of the then Reserve Bank Board. Figure 9 shows the last occasion on which they were changed, as the head office building in 65 Martin Place was decommissioned ahead of its refurbishment.

Figure 9: Chart Room Graphs

Graphs in specially commissioned frames that were displayed in RBA's Economic Group meeting room. These graphs were regularly updated to reflect current economic conditions. Source: RBA. Photographer: Bryan Oh (RBA).

A real-time settlement solution

In June 1998, the Bank introduced real-time, high-value settlement to Australia. Commonly known as RITS, the Reserve Bank Information and Transfer System allowed banks, and other payments service providers, to pay each other securely and efficiently in real time. The implementation of this real-time gross settlement (RTGS) functionality was transformational. Instead of banks and other payments service providers building up 'promises to pay' to each other throughout the day, with settlement occurring later, settlement occurred immediately. This eliminated the build-up of large unsecured credit exposures between payments service providers and materially reduced systemic risk in the financial system. It also fundamentally increased the speed with which payments could be sent between providers' payments services. As a result of this reform, we became the custodian and operator of critical national infrastructure.

Payments processed through RITS are settled via funds in Exchange Settlement Accounts (ESAs) held with the Bank. Each transaction is completed via simultaneous credits and debits in these accounts, ensuring that settlement is final and irrevocable. Payments may be submitted directly into RITS or through approved feeder systems.[23] While RITS primarily supports real-time settlement of high-value and time-critical payments, it also facilitates deferred net settlement of lower-value transactions, such as cheques, direct entry payments and retail card transactions.

In February 2018, Australia's payments system was further transformed for the digital age with the introduction of the New Payments Platform (NPP), a 24/7 real-time fast payments system supporting online payments services (Osko and others). To enable real-time settlement of NPP payments between financial institutions, the Bank developed the RITS Fast Settlement Service (FSS) allowing continuous RTGS settlement across ESAs on a 24/7 basis. The Bank also built services utilising the NPP for government customers.

RITS and the NPP remain hallmarks of innovation in Australia's payments system, with confidence and trust in these systems dependent on their reliability.

This photograph (shown in Figure 10) is one taken on the day the RTGS platform went live, marking the culmination of years of planning, development and coordination with banks, financial institutions and governments in Australia and overseas. While real-time payments are now an accepted part of daily life, the launch of RITS at the time, and later the NPP and FSS, was a monumental achievement, as captured in the expressions of those present and marking a significant moment in our history. The photograph is accompanied by images of the old spiral bound manuals that were used to instruct those in make this transition to real-time payments.

Figure 10: The Launch of RTGS

Launch of RTGS (main image), which went live on 22 June 1998 and RITS manuals (insert), one of which appears on the desk (next to the clock) in the main image. Source: RBA. Main image – RBA Annual Report 1998; Insert image – Photographer: Bryan Oh (RBA).

More stories

The 10 objects discussed in this article have been chosen to capture milestones in our development as a central bank. Many more stories can be told. Our archival collection not only covers a span of over 200 years. It comprises nearly 5 kilometres of physical records and items of different forms and millions of digital records. Together, these physical and digital collections contain rich material about the institution and its place in our economic, financial and social history. They also enable stories to be told about others. Our archives house primary source information about the people, places and organisations that we – and government banks before us – have interacted with. Readers wishing to find more information, or conduct their own research, can explore:

- Unreserved, the Reserve Bank of Australia's digital archive
- The Reserve Bank of Australia's Official Oral History (see the Series Guide)
- The Reserve Bank of Australia's Museum website.

Appendix A: The 'lucky penny'

> Dear Sir,
>
> When my assistant, Mr Batty, and I were arranging stores, etc, in the Strongroom at the Melbourne Savings Bank Agency on 13th ultimo, he found the enclosed halfpenny on the floor where it had escaped the observation of the workmen who swept the place out for us. He handed it to me but I told him to keep it as it might bring him luck. Evidently the youth is lacking in sentiment, for he said he did not want it and I might have it, and as no true Scotsman was ever known to refuse a bawbee* I accepted it, because it had, to me, a special value.
>
> It seemed a good omen to find cash in the strongroom even before the business had commenced, and I trust we may take it as a sign the Commonwealth Bank will never be without "a shot in the locker". I gave the coin, together with an impression of the date stamp you designed for the office, to the firm that made the stamp and asked that it might be engraved as shown on the stamp. The result does not quite please me though, but such as it is I beg your acceptance of it as a small memento of the opening of the Savings Bank.
>
> Yours sincerely,
> W. Campbell Milne

* A bawbee is a halfpenny, name of the Laird of Sillebawby, 16th century.

Source: RBA Archives GDM-21-1.

Appendix B: A war-time bond

Anzac
Gallipoli Pen (Peninsula)
near Gaba Tepe
27/6/15

To the Governor

Commonwealth Bank of Australia – Sydney

Dear Sir, since writing my last letter to you I have seen many sights and had nine weeks of fighting – The Third Brigade, of which we form part, are on the right of the section of Defence. We are about 600yds in from the sea. My "dugout", the descriptive name given to our living places, is situated at about an altitude of 300ft above sea level, and looks out immediately on the Islands of Imbros and Samothrace. Our conditions are hardly what can be described as pleasant but everybody is wonderfully cheerful and the health generally is good. We have been in the firing line now for nine weeks continuously and have done a tremendous lot of digging in addition to fighting. The hills we occupy are just a maze of underground tunnels and fire pits. I have rather lost touch with the members of the Bank staff whom I met in Egypt. Brooke of the Hobart Branch was wounded on the first day. I have not yet heard how he is progressing. Chambers also of the Hobart Branch joined the 12th Bn recently, since the 25th April I have been in command of the 12th Bn and have been promoted to the Rank of Lieut. Colonel. I find Sir that the worries of a Battalion on active service are even more than those of managing a Savings Bank. Our Battalion however is doing very well and we are all looking forward to the day when we will advance. We are continuously under shell fire. It's a grand sight to see a bombardment. Recently the HMS ------- came close into shore and heavily bombarded the Turkish fortifications. Watching the effect of the shells from our lines was awe inspiring. The whole of the position shelled was one mass of fire. It's hard to imagine how anyone could live through it. Yet on the first day we had a similar experience for eight hours and although we suffered very heavily a good % of us escaped, how it was I do not know. Personally I had some miraculous escapes. My clothing & equipment was perforated in no less than six places. One learns rapidly however, the art of this warfare and does not waste much time in not taking precautions. The main thing is to get underground if you want to live. There are very many items of interest I would like to describe to you but unfortunately censorship has not yet been raised. We hear very little news about the war and have to be content by reading news some weeks old. I hear occasionally from Mr Douglas & other members of the Staff and am pleased to know that the Bank is still making good progress. We are unable to state yet the probable date of our return but all sincerely hope it will be before Xmas. Our first week of service here was one that none of us are likely to forget. Landing at 4am on the 25th April we were kept exceedingly busy for over a week, in beating off the Turks, who are by no means an enemy to treat lightly. We had a slight cessation of hostilities for about two days and then at it again. The final effort so far was made by the enemy on the 18th /19th May when he fought for all he was worth, but failed to dislodge us. It is estimated that there were 7000 casualties in these two days, so you can imagine the vigor with which the attack was made. We were fortunate in having a good strong position and our Machine Guns & Rifles did great damage, in 250 yds we buried over 200 Turks, and got many wounded into our lines. My Hd Qtrs after the battle more resembled an auction room than anything else. We had articles of equipment, rifles, Coppers, tents, belts, crockery, trinkets and all sorts of articles which were collected at night time from the valley on our front. I have no more paper with which to continue so will postpone giving further news till more paper arrives. Wishing yourself and members of the Staff all happiness prosperity – Believe me – Sir – Sincerely yours, E. Hilmer Smith Lt. Col. of 12th Bn.

Source: RBA Archives ST-PR-22.

Endnotes

* Jacqui Dwyer is Head of Knowledge Management Department and Virginia MacDonald is the Manager of the Bank's Archives. We would like to thank the following people who have assisted in the preparation of this article: Carol Au, Elisabeth Grace, Maggie Ma, Tessa Morris, Bryan Oh and Juraj Vidovenec. The approach in this article borrows from that used by the Bank of England. See Adam (2019).

1 While the global financial crisis is considered to have commenced in mid-2007, the collapse of Lehman Brothers on 15 September 2008 generated a peak in financial stress and triggered a panic in financial markets globally.

2 The earliest item in our collection is a 1666 Great Britain gold sovereign. Other early coins held are Indian Mohur, Dutch Gulden (Guilder) and gold sovereigns from the Melbourne and Adelaide mints, all from the 1800s.

3 Letters from Ernest Hilmer Smith to the Governor can be found at Letters from the Front in the online exhibition on our Museum website From Bank to Battlefield, which commemorates the role of Bank staff in the First World War. After the war ended, Hilmer Smith returned to the Bank.

4 A film held in our archives and available on the RBA website captures Sir Denison Miller being congratulated by senior staff on the day the knighthood was announced. See Knighthood of Sir Denison Miller, 1920 (RBA Archives AV-000001).

5 In 1932, Melville appointed Mary Willmott Debenham, a distinguished graduate of the University of Sydney with first-class Honours in Economics, who joined his department as an assistant. For the times, this appointment was a progressive one, but Melville simply saw her as the best person for the role. As was the norm, Willmott Debenham was obliged to resign in 1935 when she married John Grant Phillips, who would later be appointed Governor of the RBA.

6 Melville had a particular interest in how monetary and exchange rate management could secure desired outcomes for output and employment.

7 This section draws on various files from our archives, mostly RBA Archives S-a-1311 to S-a-1337.

8 It sank in 133 metres of water at the entrance to the Hauraki Gulf.

9 Later salvage operations on the wreck recovered all but five bars of gold.

10 See Cornish (1982) for a detailed account.

11 This aspiration of Coombs is captured in a promotional film about the independent central bank and the construction of its new head office building. See Planned for Progress. It is further explored in a retrospective exhibition in our Museum about the Bank for its 50th anniversary, similarly titled Planned for Progress.

12 For a summary of the extent to which the Bank's head office building and interiors were progressive, see RBA (2009a; 2009b). Furthermore, Dr HC Coombs noted, ahead of the opening of the new head office building: 'The massive walls and pillars used in the past to emphasise strength and permanence in bank buildings are not seen in the new head office. Here, contemporary design and conceptions express our conviction that a central bank should develop with growing knowledge and a changing institutional structure and adapt its policies and techniques to the changing needs of the community within which it works …'. See A Modern Building on our Museum website.

13 This section draws on contributions by the Bank's Curator, John Murphy, to a physical exhibition for the 50th anniversary of decimal currency held at the Bank entitled *The Decimal Revolution*, a hardcopy booklet that accompanied the exhibition, and a comprehensive online resource available on our Museum website also entitled The Decimal Revolution.

14 They were guided by an advisory committee that included Australian artist Russell Drysdale, along with eminent designers Hal Missingham, Douglas Annand and Alistair Morrison.

15 Similarly, the original skene of wool used in the design of John MacArthur's merino sheep on the other side of the $2 banknote is also preserved in our archives.

16 The ability to set the short-term price of money arose because we were now free of obligations to stand in the foreign exchange market at a particular price. An earlier decision (by the Fraser government) to issue government debt at tender meant that the Bank did not have to stand in the government debt market either. Both changes contributed to control of monetary policy.

17 The Bretton Woods system (1944–1971) was a global system of pegged currencies, in which the US dollar became the reserve currency and was convertible to gold.

18 In March 1983, a large outflow of capital occurred in the lead-up to an expected change of government and causes a spike in interest rates. After the government was reinstated, a decision to devalue contributed to a large capital inflow as money that had left the country before the devaluation returned, with speculators making sizeable profits.

19 This section draws on an earlier exhibition in our Museum entitled *The Reinvention of Banknotes*, its accompanying pocket guide and an online resource available on our Museum website also entitled The Reinvention of Banknotes.

20 They contained a watermark, metal thread, quality rag paper and sophisticated printing techniques that were intended to make counterfeit difficult.

21 This history is discussed in an RBA research conference devoted to the 25th anniversary of inflation targeting (Simon and Sutton 2018).

22 Following verbal endorsement of the approach to inflation targeting in 1993, there was a formal statement of the 'common understanding' of the Governor and the Government about this new monetary policy framework. See The Treasurer and RBA (1996).

23 These include the SWIFT Payment Delivery System, Austraclear and the Continuous Linked Settlement (CLS) system, which is a global multi-currency settlement platform. See RBA (2025).

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