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Why Australian Workers Feel Poorer

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ABSTRACT

Since December 2019, pay for the same job, before tax, has fallen about $180 a week behind what Australian employee households spend. It buys 7.6% less of their living costs than it did then, and most of that fall came after June 2022: measured from then, it buys 7.1% less. The consumer price index (CPI) shows a fall of only 4.8%, mainly because it leaves out home-loan interest, a bill that more than doubled as rates rose and loans grew. Against where pay was heading, its 1998–2019 trend, the shortfall is larger: 11.7%, about $290 a week. On average wages after inflation, a broader measure, Australia gained only 0.7% from 2019 to 2025, against 8.3% in the United States and 5.3% in New Zealand. Income tax widens the loss lower down the pay scale. Take two full-time workers whose pay rose with the wage price index. After tax, the one at the bottom quartile buys 9.1% less, and the one at the top quartile 5.7% less.

KEYWORDS cost of living, living cost indexes, real wages, mortgage interest, monetary policy, pension indexation

JEL D12, E31, E52, H55, I38, J31

1 Introduction

AUSTRALIAN WORKERS FEEL POORER, and on the measure of what their households pay out, they are. Before tax, pay for the same job is about $180 a week short of what it would take to buy what the average employee household bought in December 2019. An hour of that pay buys 7.6% less of what employee households spend their money on than it did before the pandemic (Figure 1).

That household's spending cost $1,820 a week in December 2019 and $2,378 in June 2026. Pay that matched it at the start and rose with the wage price index covered $376 of that rise; the rest is the shortfall (Figure 2).

The usual measure of the cost of living captures only part of this loss. The consumer price index (CPI) is built to measure inflation. It prices the purchase of new homes and leaves out the interest paid on home loans (Australian Bureau of Statistics 2025f). The Australian Bureau of Statistics also publishes living cost indexes that count that interest, one for each type of household; this paper measures pay against the one for employee households. Their interest bill more than doubled as rates rose and loans grew, adding 8.3 points to the 30.6% rise in their living costs. On the CPI an hour of pay buys only 4.8% less, and the shortfall shrinks to $110 a week (Section 2.3).

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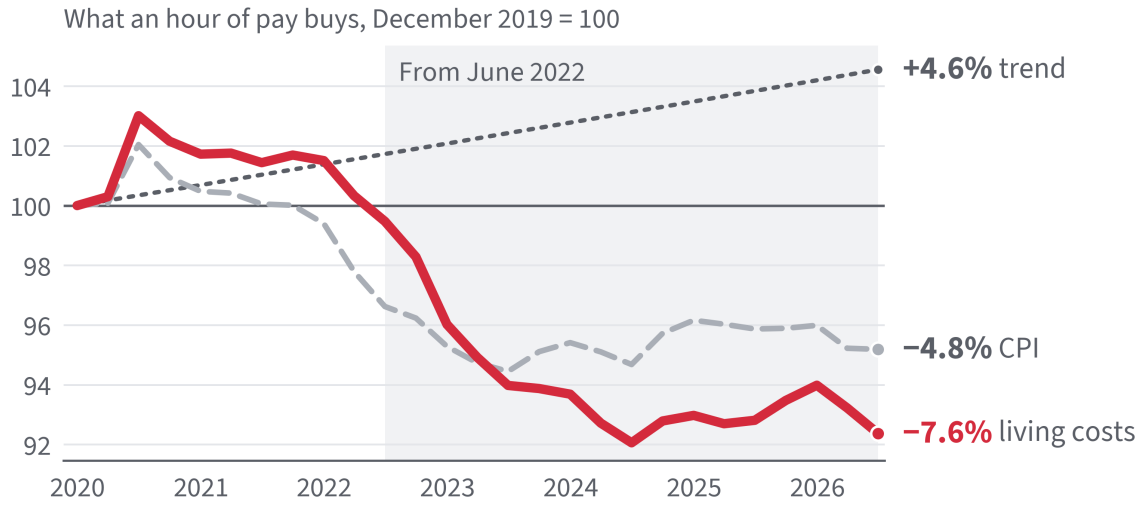
FIGURE 1

An hour of pay buys 7.6% less of what employee households spend their money on than six and a half years earlier, December 2019 to June 2026.



Notes. The wage price index divided by employee living costs (red) and by the CPI (grey, dashed), each 100 in December 2019, to June 2026. The dotted line carries forward the 1998 to 2019 trend of the red line. The shaded area marks the quarters from June 2022, the first in which an hour bought less than in December 2019.

The loss came in two steps. Until mid-2022 the prices of nearly everything other than home-loan interest outran pay, while a falling interest bill hid it. After that the interest bill climbed while pay only kept pace with other prices, so measured from June 2022 alone an hour buys 7.1% less.

Rate rises have not always gone with such a fall. Of the four rounds of rises since 1998, the one from 2022 brought the largest fall: over its seven quarters an hour of pay lost 6.6% on employee living costs. The round from 2002 is the natural comparison, the only other one in which home-loan interest rose about as much. Over its first seven quarters an hour of pay gained 1.5%. Its rises were spread over six years of a commodity boom, and output per hour grew. The 2022 rises came in seven quarters, onto larger debts, while output per hour fell. Two rounds cannot say which of those differences mattered (Section 4.3).

Against where pay was heading, the loss is larger. On its 1998–2019 trend an hour of pay would now buy 4.6% more than in December 2019. It falls 11.7% short of that path, about $290 a week (Section 4). Treasury's forecasts from before the pandemic and a statistical model of the pre-2020 economy point the same way.

Most advanced economies did better. On average wages after prices, a broader measure than pay for the same job, Australia gained only 0.7% from 2019 to 2025, against 8.3% in the United States (Section 4.4).

The loss is not shared evenly. Take full-time workers whose pay rose with the wage price index. After tax, one at the bottom quartile, now on $64,500 a year, buys 9.1% less than in December 2019; one at the top quartile, on $123,600, buys 5.7% less. The difference is income

tax: offsets worth more to lower earners have ended or shrunk, and the tax-free threshold has not moved as pay rose (Section 2.2). Transfer payments did better. The age pension, indexed to the higher of consumer prices and a pensioner cost index, kept pace with pensioners' costs, and JobSeeker gained through increases legislated outside indexation (Section 6).

Setting the two indexes side by side is not new (Fair Work Commission 2025b). This paper adds a dollar figure, an after-tax measure along the pay scale, benchmarks for where pay was heading, and a comparison with economies where pay rose. It also finds that a one-point change in the cash rate has gone with employee living costs moving 1.15 percentage points more than age pensioners'. That comes mainly from how the indexes weight home-loan interest. The measures are descriptive: they say how far pay fell behind, not what caused the fall.

Section 2 measures the loss, Section 3 sets out the data and Section 4 asks how unusual it is; Sections 5 to 7 cover the cash rate, indexation and robustness.

2 How much harder it has become

Pay for the same job has fallen behind what employee households spend, income tax has widened the fall for lower earners, and transfer payments kept pace. Throughout, what pay buys is pay divided by living costs, each measured from the start quarter. Before tax, pay is the wage price index, which follows the pay of the same jobs. After tax, it is a full-time worker's pay less income tax (Section 2.2). Living costs are what employee households pay out, interest on home loans included; Section 3 gives the formulas.

2.1 The loss in percent and in dollars

Pay for the same job rose 20.7% from December 2019 to June 2026, and employee living costs rose 30.6%. An hour of pay therefore buys 7.6% less (Table 1). Measured from June 2022, the first quarter in which it bought less than before the pandemic, it buys 7.1% less.

In dollars, households whose main income is from employment spent on average $1,717 a week on goods and services in 2015–16 (Australian Bureau of Statistics 2017). The same goods and services cost $1,820 a week in December 2019 and $2,378 in June 2026, $558 a week more.

Take a household whose pay before tax just covered that spending in December 2019. Rising with the wage price index, its pay is now $2,196 a week. That covers $376 of the $558 extra cost, leaving the employee household about $180 a week short, or about $9,400 a year.

Figure 2 sets that shortfall beside two other yardsticks. Priced on the CPI, the same spending costs $2,307, so on that measure the employee household is only $110 short. Had what an hour buys kept its 1998–2019 trend, pay would be $2,490 a week, $290 more than it is (Section 4.1).

TABLE 1

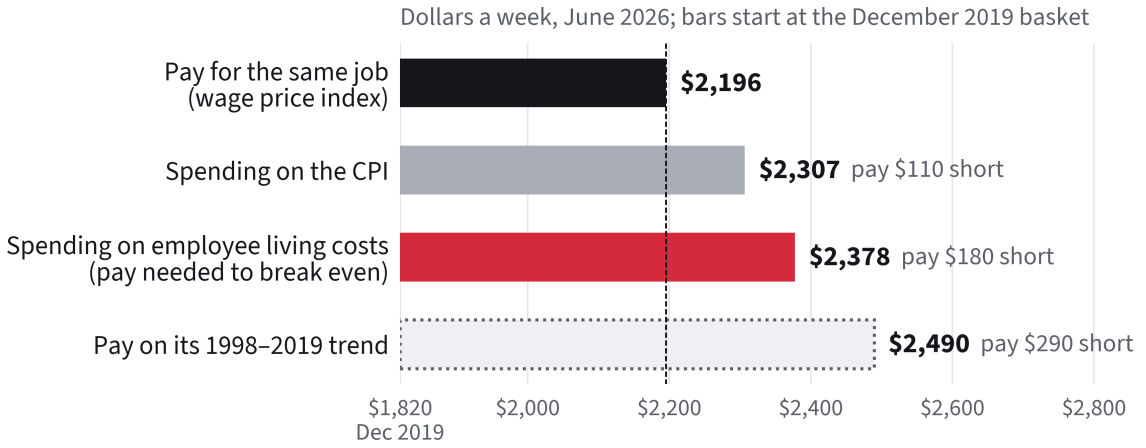
What pay buys: income growth against price growth

Income	Prices	Income rose (%)	Prices rose (%)	Change in what it buys (%)
From December 2019 to June 2026				
Full-time job, pay after tax	**Employee living costs**	**21.1**	**30.6**	**−7.3**
Hourly pay before tax (wage price index)	Employee living costs	20.7	30.6	−7.6
Same hourly pay	CPI	20.7	26.8	−4.8
Same hourly pay	Employee living costs without home-loan interest (estimate)	20.7	24.2	−2.8
Full-time weekly earnings	Employee living costs	25.6	30.6	−3.8
Award minimum wages	Employee living costs	23.9	30.6	−5.2
Age pension being paid (single)	Age pensioner living costs	29.4	28.1	1.0
JobSeeker being paid (single)	Other transfer recipient living costs	44.7	29.7	11.6
From June 2022 to June 2026				
Full-time job, pay after tax	**Employee living costs**	**13.8**	**23.9**	**−8.1**
Hourly pay before tax (wage price index)	Employee living costs	15.1	23.9	−7.1
Same hourly pay	CPI	15.1	16.8	−1.5
Same hourly pay	Employee living costs without home-loan interest (estimate)	15.1	15.6	−0.4
Full-time weekly earnings	Employee living costs	17.7	23.9	−5.0
Award minimum wages	Employee living costs	18.8	23.9	−4.1
Age pension being paid (single)	Age pensioner living costs	22.1	19.0	2.7
JobSeeker being paid (single)	Other transfer recipient living costs	25.8	21.1	3.9
Memo: weekly shortfall, $	Average employee household spending			180
Memo: shortfall against trend, $	Same spending, against the 1998–2019 trend			290

Notes. From unrounded index numbers. The first row of each panel is after income tax (Table 2); the others are before tax. Living costs are the Australian Bureau of Statistics Selected Living Cost Indexes for each household type (Australian Bureau of Statistics 2026g); the other transfer recipient index also covers households on disability and carer payments, which follow the pension rule. The estimate without home-loan interest is set out in Section 2.3. Payments are the maximum basic single rate in force in each quarter's middle month, without supplements (Department of Social Services 2026a, 2026b). Full-time earnings are adult ordinary time earnings, November 2019 and May 2022 to May 2026 (Australian Bureau of Statistics 2026c). Award minimum wages compound the Fair Work Commission's annual percentage increases in force at the end of each window (Fair Work Commission 2020, 2021, 2022, 2023, 2024, 2025a).

FIGURE 2

What the same job pays against what the same spending costs, dollars a week, December 2019 to June 2026.



Notes. The average employee household's spending, carried forward by the employee living cost index, was $1,820 a week in December 2019 (Australian Bureau of Statistics 2017). The bars start there, where pay before tax just covered it. Pay grows with the wage price index. The CPI bar prices the same spending on the CPI; the living cost bar is the pay needed to buy it in June 2026. The trend bar is what pay would be had what an hour buys kept its 1998 to 2019 trend.

The dollar amounts carry 2015–16 spending forward on an index whose weights are updated, so they are approximate; the shortfalls are rounded to ten dollars.

Figure 1 shows when the gap opened. Until March 2022 an hour of pay bought at least as much as in December 2019; it has bought less in each of the 17 quarters since. The gap was deepest in June 2024, at 7.9%, and had narrowed to 6.0% by December 2025.

In the two quarters to June 2026 it widened again, as living costs rose 2.9% and the wage price index 1.1%.

These figures follow the same job before tax and super. Broader measures of pay did better. Full-time weekly earnings, which follow changes in the mix of jobs, buy 3.8% less (Table 1). Average pay per hour, which adds bonuses, super and moves to better-paid jobs, rose 2.0% against employee living costs (Section 4.2). Household income per person after tax and transfers rose 2.7% from December 2019 (Reserve Bank of Australia 2026f). The super guarantee rose from 9.5% to 12.0% of ordinary earnings (Australian Taxation Office 2026a), but super cannot be spent before retirement.

2.2 Lower earners lose more after tax

Income tax makes the loss larger lower down the pay scale. Table 2 follows three full-time workers whose pay rises with the wage price index. One sits at the bottom quartile of full-time pay in 2019, on $53,500 a year, and one at the top quartile, on $102,500 (Australian Bureau of Statistics 2025e). The third earns the average full-time wage, $86,200 (Australian Bureau of Statistics 2026c).

After tax, the bottom-quartile worker buys 9.1% less than in December 2019, the worker on the average wage 7.3% less and the top-quartile worker 5.7% less. Before tax all three lose the same 7.6%, so the difference is income tax.

Tax is each year's resident income tax, less the low income and the low and middle income tax offsets, plus the 2% Medicare levy (Australian Taxation Office 2026b, 2026c, 2026d, 2026e). Changes to it since 2019 pulled both ways.

The cut of July 2024 lowered rates at every level of pay. For the bottom-quartile worker it is worth $1,290 a year, 2.0% of pay in 2025–26. Two other changes raised tax at lower pay, offsetting that cut. The offsets that worker received in 2019–20, worth $1,280, have since ended or shrunk. The low and middle income tax offset ended after 2021–22, and the low income offset phases out as pay rises. And the tax-free threshold stayed put while pay rose, so more of each dollar is taxed.

On balance, tax rose from 16.3% to 17.7% of the bottom-quartile wage, and fell from 26.1% to 24.5% of the top-quartile wage.

TABLE 2

What a full-time worker's pay buys after income tax

Worker	Pay before tax, Dec 2019 (dollars a year)	Pay before tax, Jun 2026 (dollars a year)	Tax, 2019–20 (% of pay)	Tax, 2025–26 (% of pay)	After tax, from Dec 2019 (%)	After tax, from Jun 2022 (%)
Bottom quartile	53,500	64,500	16.3	17.7	−9.1	−10.5
Average wage	86,200	104,100	23.4	23.1	−7.3	−8.1
Top quartile	102,500	123,600	26.1	24.5	−5.7	−6.9
Memo: before tax, any job					−7.6	−7.1

Notes. The quartiles are of full-time employees by weekly pay in their main job, August 2019 (Australian Bureau of Statistics 2025e): 25.0% of them were paid less than the bottom-quartile worker, 64.1% less than the average wage and 75.0% less than the top-quartile worker. The average is adult ordinary time earnings in November 2019, for 52 weeks (Australian Bureau of Statistics 2026c). Each worker's pay rises with the wage price index (Australian Bureau of Statistics 2026h). From June 2022 the start year is 2021–22. After tax is pay after tax against employee living costs. Other offsets, the levy surcharge, study loans and family payments are left out.

About a fifth of employees are paid the minimum rate in their award, which the Fair Work Commission reviews each year (McCarthy et al. 2024). Over the six decisions from July 2020, award minimum wages rose 23.9%, faster than the wage price index. Against employee living costs they buy 5.2% less than in December 2019 (Table 1). No published index prices the spending of households on award wages, so the row uses the employee basket.

2.3 Why the CPI shows a smaller loss

On the CPI, the same pay buys 4.8% less than in December 2019 and 1.5% less than in June 2022. The CPI misses more than a third of the loss, mainly because it leaves out the interest households pay on their home loans.

That is by design. Since September 1998 the CPI has measured inflation by pricing the purchase of new homes, and it excludes home-loan interest. The living cost indexes count that interest instead, and it moves with loan sizes as well as with rates (Australian Bureau of Statistics 2025f).

That interest added 8.3 percentage points to employee living costs from December 2019, more than the whole gap of 3.9 points between the two indexes (Table 3). The gap is smaller than the interest because the CPI counts new dwellings, which added 3.3 points to it, and weights the rest of the basket differently (Figure OA.1). Table OA.1 breaks the rise down by spending group.

TABLE 3

Why employee living costs rose more than the CPI

Change (% or percentage points)	Dec 2019 to Jun 2026	Jun 2022 to Jun 2026
Employee living costs rose	30.6	23.9
CPI rose	26.8	16.8
Gap (points)	**3.9**	**7.1**
Home-loan interest, counted in living costs only	8.3	9.2
Less: new dwellings, counted in the CPI only	3.3	1.6
Everything else	−1.1	−0.5
Memo: home-loan interest rose (%)	109.2	160.3

Notes. Percentage changes, and their difference in percentage points. Home-loan interest (the Bureau's mortgage interest charges) is its share of employee outlays in the 2024 weighting pattern (Australian Bureau of Statistics 2024a), carried back to the start quarter by its index, times its rise; the share was about 7.6% in December 2019. New dwellings use their 2024 CPI weight, carried back the same way. Everything else is the rest of the two baskets, weighted differently, and consumer credit.

The interest bill also set the timing of the loss. While rates were cut, home-loan interest fell 19.6% to June 2022. That masked prices that were already outrunning pay: until then the CPI showed a 3.4% fall in what pay buys, against 0.5% on employee living costs.

Without that interest, an hour of pay buys 2.8% less than in December 2019, and that loss had happened by June 2022. Since then, without it, what an hour buys has barely moved, between −0.4% and +0.3% across three weightings (Australian Bureau of Statistics 2025a).

So the loss came in two steps: prices outran pay first, while a falling interest bill hid it, and then the interest bill rose. Section 4.3 sets this beside the rate rises of 2002 to 2008.

2.4 What rose fastest, and where

The loss was not confined to one or two prices: most everyday items outran pay, though not all. Table 4 compares nine things households buy every week or month with the wage price index. From December 2019 seven of the nine rose faster than wages. Insurance rose fastest, by 54.0%. Food rose 29.0%, against 20.7% for wages. Gas, electricity, health and rents also rose faster than wages in both windows.

Child care rose more slowly than wages, and urban transport fares fell from December 2019; the fare index is national and leaves out road tolls. Automotive fuel rose 26.7% from December 2019 but costs 0.6% less than in June 2022 (pump prices by state are in Table OA.2).

TABLE 4

Nine everyday prices against the wage price index, to June 2026

Item	From Dec 2019 (%)	Price against wages (%)	From Jun 2022 (%)	Price against wages (%)
Insurance (employee households)	54.0	27.6	42.9	24.2
Gas and other household fuels	44.2	19.5	37.4	19.4
Health	30.5	8.1	19.9	4.2
Food and non-alcoholic beverages	29.0	6.9	18.1	2.6
Electricity	28.0	6.1	37.5	19.5
Automotive fuel	26.7	5.0	−0.6	−13.7
Rents	24.4	3.1	24.0	7.8
Child care	15.4	−4.4	14.1	−0.8
Urban transport fares	−12.1	−27.2	−8.7	−20.7
Wage price index	20.7		15.1	

Notes. Percentage changes to June 2026, from unrounded index numbers, ordered by the rise from December 2019. Insurance is the employee living cost index for insurance; the other rows are CPI classes. Against wages is the price change compared with the change in the wage price index, as in Table 1. Home-loan interest is in Table 3. Rents cover all rented dwellings, old leases as well as new (Agarwal, Gao and Garner 2023), and are measured net of Rent Assistance (Australian Bureau of Statistics 2023). Electricity is measured after government rebates (Australian Bureau of Statistics 2024b).

Rents moved differently across the capitals. Table OA.3 compares each capital's rent index with the wage price index of its state, to June 2026, the last quarter of the capital-city series. Rents outran wages in four of the eight capitals from December 2019 and in six from June 2022. The rent figures understate what a household faces when it moves. The CPI and the living cost indexes both measure rent across all leases, old and new (Agarwal, Gao and Garner 2023), so a household signing a new lease can face a much larger rise. State bond data show it, each state to its latest published quarter (Table OA.4). From December 2019 the median on new bonds rose 37.5% in Victoria, 71.1% in Queensland and 67.2% in South Australia. The national index rose 24.4% to June 2026.

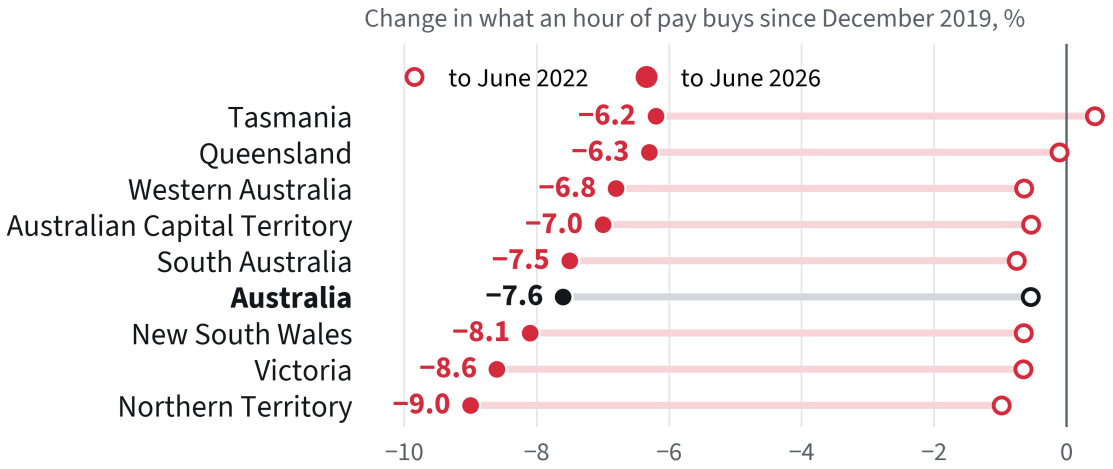
An hour of pay buys less of the national employee basket in every state. Since December 2019 the fall runs from 6.2% in Tasmania to 9.0% in the Northern Territory. Living costs for employee households are not published by state, so every state is compared with the same national basket. The differences between states therefore come from wages alone, not from local prices. Figure 3 ranks the states and marks where each stood in June 2022. Pay also buys less in every one of the 18 industries (Table OA.5). Since December 2019 public-sector pay buys 8.0% less and private-sector pay 7.5% less.

2.5 Who carries it: households by housing tenure

The employee living cost index averages the interest bill across all employee households, including renters and outright owners who pay none. At the 2021 Census, from a third to over four in ten of all households in each capital had a mortgage (Table OA.6). The fewer households carry the bill, the larger each one's part of it. If half of employee households have a mortgage and carry the whole bill, an hour of pay buys them 12.0% less than in December 2019. If only four in ten have one, the fall is 14.0% (Table 5). Both shares are assumptions, not estimates: the published indexes do not split employee households by tenure.

FIGURE 3

An hour of pay buys less of the national employee basket in every state, mostly since June 2022, December 2019 to June 2026.



Notes. Each state's wage price index divided by the national living cost index for employee households: the change from December 2019 to June 2022 (open circle) and to June 2026 (filled circle). The national employee living cost index is not published by state, so every state is compared with the same basket. Australia is the national wage price index.

From December 2019 rents rose 24.4% and the basket without home-loan interest 24.2%. Measured from June 2022, when rents had barely moved since the pandemic began, rents rose 24.0% and that basket 15.6% (Table 5). For renters, then, the squeeze came late: since June 2022 rents have outrun the rest of what households buy. Outright owners are closest to that basket, though it still counts rents they do not pay; on it an hour buys 2.8% less.

TABLE 5

Who carries the fall: worked examples by housing

Households	From Dec 2019 (%)	From Jun 2022 (%)
What an hour of pay buys		
Employee households (published index)	−7.6	−7.1
Mortgage holders, if half of households hold one	−12.0	−13.0
Mortgage holders, if four in ten hold one	−14.0	−15.7
Owned outright (basket without home-loan interest, an approximation)	−2.8	−0.4
Renters: how much prices rose		
Rents	24.4	24.0
Basket without home-loan interest	24.2	15.6

Notes. The mortgage-holder rows give the whole employee interest bill to the stated share of households; the shares are assumptions, not estimates. Mortgage holders are assumed to have the same total outlays as the average employee household, so the mortgage share of their basket is the average share divided by the share holding a mortgage. What an hour buys is not shown for renters, because rent before Rent Assistance is not observed. Pay is the wage price index, before tax. Changes to June 2026.

2.6 The pension kept pace; JobSeeker gained through legislated increases

Transfer payments did better than pay, because their rules index them to prices and parliament added to JobSeeker.

The single age pension being paid in June 2026 was 29.4% above its December 2019 rate. Age pensioner living costs rose 28.1%, so the basic rate buys 1.0% more. It is $11.07 a fortnight above the December 2019 rate raised with those costs.

Pensions are raised each March and September for prices that have already risen (Commonwealth of Australia 1991). The pension therefore bought less than in December 2019 in 14 of the 26 quarters, by up to 3.3% in September 2022. The energy supplement paid with it has not been indexed since 2014 (Department of Veterans' Affairs 2026), so the whole payment rose by less than the basic rate.

The single JobSeeker rate rose 44.7% and buys 11.6% more of the other transfer recipient basket. No index is published for JobSeeker recipients alone; that basket also covers households on disability and carer payments. The gain came mainly from two increases legislated outside indexation, $50 a fortnight in 2021 and $40 in 2023 (Department of Social Services 2026a). On its indexation rule alone it would have fallen behind (Section 6).

Self-funded retirees, who live mainly on superannuation, savings and investments, have their own living cost index. It rose 25.4% from December 2019, less than the CPI. Their incomes are not published as an index, so this paper cannot say whether they lost ground.

3 Data and design

The data are public quarterly indexes and published payment rates. Most come from the Australian Bureau of Statistics and the Reserve Bank; the OECD and the World Bank supply the other economies. Table OA.7 lists every series with its source and span. The household-type living cost indexes run from 1998 for employees, age pensioners, other government transfer recipients, and self-funded retirees, and from 2007 for the pensioner and beneficiary index. Each uses its own households' expenditure weights. The cash rate is the quarterly average of the Reserve Bank's target; rate decisions are from its table of target changes. The comparisons end in June 2026, the latest quarter in which wages, prices and the living cost indexes are all published; Section 5 prices average weekly spending in September 2026.

Measures. What an hour of pay buys is the change in a wage index W over the change in a price index P between a start quarter s and quarter t:

$$B_t = \frac{W_t/W_s}{P_t/P_s} - 1. \tag{1}$$

The ratio W/P is what an hour of pay buys. The trend fits the logarithm of W/P on a count of quarters from June 1998 to December 2019 and carries the slope forward from the start quarter. The national accounts split W/P into four parts that multiply exactly. Here Y is real GDP, H hours worked, C compensation of employees and P_Y the GDP deflator, the price of what Australia produces. The parts are output per hour Y/H, the labour share $C/(P_Y Y)$, the price of

output against employee living costs P_Y/P, and the wage price index against compensation per hour $W/(C/H)$:

$$\frac{W}{P} = \frac{Y}{H} \times \frac{C}{P_Y Y} \times \frac{P_Y}{P} \times \frac{W}{C/H}. \tag{2}$$

Each part is compared with its own 1998 to 2019 trend. The trends are log-linear, so they multiply to the trend of W/P and the gaps multiply to its gap. Living costs with home-loan interest P against without it P^* split the same gap a second way.

Normal run. The normal run is a benchmark: where the economy would have gone had it kept behaving as it did before 2020. It is a vector autoregression, a model that predicts each of six quarterly series from the past values of all six. The series are growth in the terms of trade, output per hour and W/P, and the levels of unemployment, consumer price inflation and the cash rate. Inflation is the household consumption deflator. It is fitted from March 1999 to December 2019, with the lag length chosen by the Bayesian information criterion, and run forward to June 2026. Its bands come from residual bootstrap draws that each re-estimate the model. A structural version with two lags divides the model's forecast error for W/P among surprises in each series. The division depends on the order in which the series enter, so it is computed in every order of the six series.

Breaks. Breaks in mean growth of W/P are found with the sequential test of Bai and Perron (2003a) on four-quarter growth, with autocorrelation-consistent variance. The test uses their 5% critical values (Bai and Perron 2003b), and a block bootstrap gives an interval for each date. A break in the trend of a log level is tested by the largest F statistic over all dates. Its critical values are simulated from a random walk whose growth matches the series' mean, spread and persistence.

Other economies. A synthetic Australia weights the other economies to match Australia's path from 2000 to 2019. Its gap after 2019 is judged against the same gap for each other economy treated in turn (Abadie, Diamond and Hainmueller 2010). A panel wage equation with country fixed effects relates growth in real compensation per hour to output per hour growth. A panel adaptation of the local projections of Jordà (2005) relates real household disposable income to changes in the policy rate and their interaction with household debt. It has country and year fixed effects, and both panels cluster standard errors by country.

Each question has its own sample, set out in Table 6.

TABLE 6

Samples and inference by question

Question	Sample	Excluded	Inference
How much harder (Section 2)	Index and rate changes, December 2019 and June 2022 to June 2026	None	None; descriptive
Against a benchmark (Section 4)	Models fitted March 1999 to December 2019, run to June 2026; economies 1995 to 2025	Ireland, from the comparisons across economies	Bootstrap bands; break tests; placebo p; clustered errors
Pass-through (Section 5)	Quarterly changes, September 1998 to September 2026	March 2020 to December 2021	Newey-West, 4 lags
Indexation (Section 6)	Indexation days, September 2020 to September 2026; one column from September 2009	None	Statutory factors; paid rates

Notes. The comparisons in Section 2 are changes between two quarters and carry no sampling inference. Quarterly changes in Section 5 do not overlap; lags of the cash rate reach back before 1998. In Section 4, 99% of the 500 bootstrap runs of the model end above the outcome.

Pass-through. The outcome is the quarterly log change, times 100, in one household type's living cost index minus another's. It is regressed on the change in the cash rate in the same quarter and the four before. The cumulative pass-through is the sum of the five coefficients, in percentage points of living cost growth per percentage point of cash rate. Its standard errors are Newey-West, which allow for correlation between neighbouring quarters. Rate episodes start at the first decision that reverses the direction of the previous one.

Tests. The formal estimates of Section 4 are the normal run and its breaks and the comparisons across economies. Section 5 adds the pass-through and what remains of it without home-loan interest; Section 7 adds the structural split. Every other estimate is descriptive or a robustness check. An exploratory comparison across the capital cities, which the main results do not rely on, is in the Online Appendix.

4 How unusual the loss is

Measured against where pay was heading rather than against December 2019, the loss is larger, and it lies outside what a model of the pre-2020 economy produces. Most of the gap is pay falling behind prices other than home-loan interest; on the national accounts its largest part is output per hour. Earlier rounds of rate rises did not all bring such a fall, and real wages rose faster in most other advanced economies.

4.1 The trend, the official forecasts and a model

From 1998 to 2019 an hour of pay gained about 0.69% a year on employee living costs. On that trend it would now buy 4.6% more than in December 2019; in fact it buys less, as Section 2 measured. Comparing the two levels, a ratio rather than a difference of the two changes, leaves what an hour buys 11.7% below the trend (dotted line in Figure 1).

On the average employee household's basket, that gap is about $290 a week: the cost of the basket now, times the difference between the trend and the outcome.

A trend fitted from 2009 gives a gap of 13.5%. Measured with the CPI, which leaves out interest, the gap to its own trend is 8.9%.

Official forecasts made before the pandemic also expected what pay buys to rise. The December 2019 budget update expected wage growth to rise from 2.5 to 3% a year and consumer price inflation from 2 to 2.5% (Commonwealth of Australia 2019a). On those rates pay would buy 2.7% more on the CPI by June 2026.

Wages in fact grew 20.7%, close to the forecast, but consumer prices ended 8.5% above it. Pay now buys 7.3% less than that forecast implied. Against the April 2019 pre-election outlook, which expected a gain of 6.0% (Commonwealth of Australia 2019b), it buys 10.2% less.

A model of the pre-2020 economy gives the last benchmark, called the normal run here. It is a vector autoregression fitted to the 84 quarters from March 1999 to December 2019 and run forward without the data that followed. It holds the terms of trade, output per hour, unemployment, consumer price inflation, the cash rate and what an hour of pay buys. The bands come from 500 bootstrap draws that re-estimate the model each time (Section 3; Table OA.8).

On the median of the bootstrap runs an hour of pay would buy 6.0% more of the employee basket in June 2026 than in December 2019. The model's own forecast, without shocks or re-estimation, is 8.8%. Its 90% band runs from −3.5% to 19.1% (Figure 4). The outcome lies below the band.

Of the bootstrap runs, 99% end above the outcome; measured with the CPI, 96% do. That share describes this model's runs; it is not a probability.

The model can be checked where the answer is known. Fitted only to data up to December 2012 and run forward to December 2019, it forecast that an hour of pay would buy 6.0% more; the outcome was 6.1%. From December 2009 and December 2014 the outcome also lies inside the 90% band (Table OA.8; Section 7).

The run expected output per hour to grow 3.5%, and it changed by −0.1%. Of the runs, 27% end lower, so that slowdown lies within the range of the model's runs. The fall in what pay buys lies outside it.

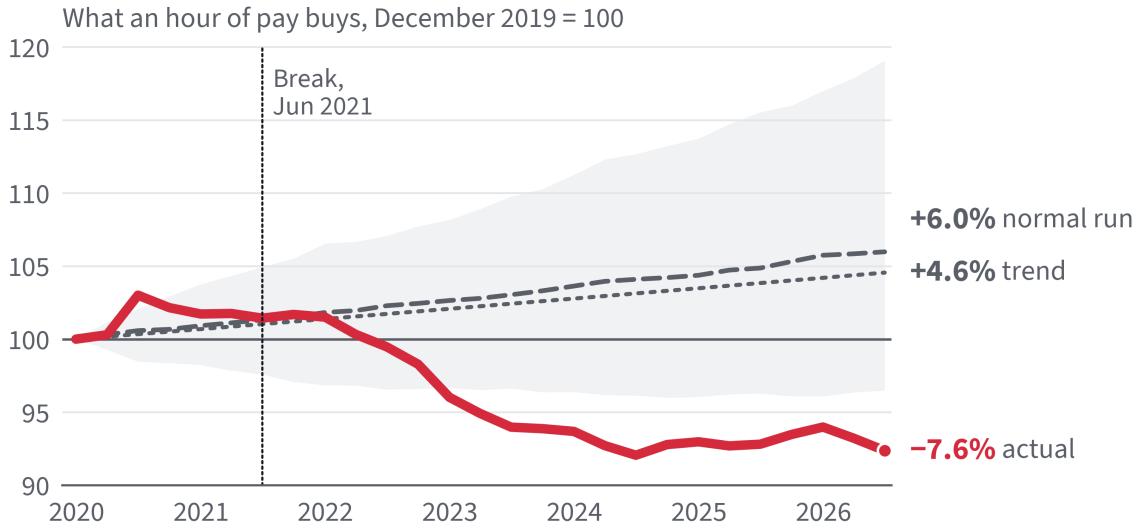
Growth in what an hour buys broke once, in the June quarter of 2021, from 0.7% a year before to −1.7% after. The test looks for shifts in mean growth across 109 four-quarter changes (Bai and Perron 2003a). It finds one break at the 5% level (Bai and Perron 2003b) and no second (Table OA.9). The 90% interval for the date runs from December 2015 to September 2022.

4.2 What the gap is made of

Table 7 splits the gap to trend two ways, by living costs and by the national accounts. In each the parts multiply exactly to the total.

FIGURE 4

What an hour of pay buys against a normal run of the pre-2020 economy, December 2019 to June 2026.



Notes. The wage price index over the employee living cost index, December 2019 = 100 (red). The grey dashed line is the median of 500 bootstrap runs of the vector autoregression fitted from March 1999 to December 2019, and the shaded area its 90% band. The dotted line is the trend before 2020, and 100 marks no growth. The vertical line marks the break in growth in the June quarter of 2021.

TABLE 7

Two accounts of the gap between what pay buys and its trend

December 2019 to June 2026	Actual (%)	On 1998–2019 trend (%)	Gap (%)
A. By living costs			
What an hour buys	−7.6	4.6	−11.7
Rest of the basket (without home-loan interest)	−2.8	4.6	−7.1
Home-loan interest	−4.9		−4.9
Interest share of the gap (%), the two trends			35 to 41
Interest share of the gap from June 2022 (%), the two trends			64 to 69
B. By the economy behind pay			
Real GDP per hour worked	−0.1	8.6	−8.0
× Labour share of GDP	3.7	−0.9	4.6
× Prices of what Australia produces against what employees buy	−1.6	1.8	−3.4
× Pay for the same job against average pay per hour	−9.4	−4.6	−5.1
= What an hour buys	**−7.6**	**4.6**	**−11.7**
Memo: pay per hour against living costs	2.0	9.6	−6.9

Notes. Panel A: the wage price index over employee living costs, with and without home-loan interest, at price-updated 2024 weights (Australian Bureau of Statistics 2026g, 2026h). The two trends give the rest of the basket the whole basket's trend or its own; its own, 5.3%, leaves it 7.7% below. Against the CPI's own trend gap, 8.9%, the interest share is 24%. On a trend from 2009, with a gap of 13.5%, it is 35% to 53%. Panel B: national accounts (Australian Bureau of Statistics 2026a); pay per hour is compensation of employees per hour worked. Each row has its own 1998 to 2019 log-linear trend, and the rows multiply to the bold row.

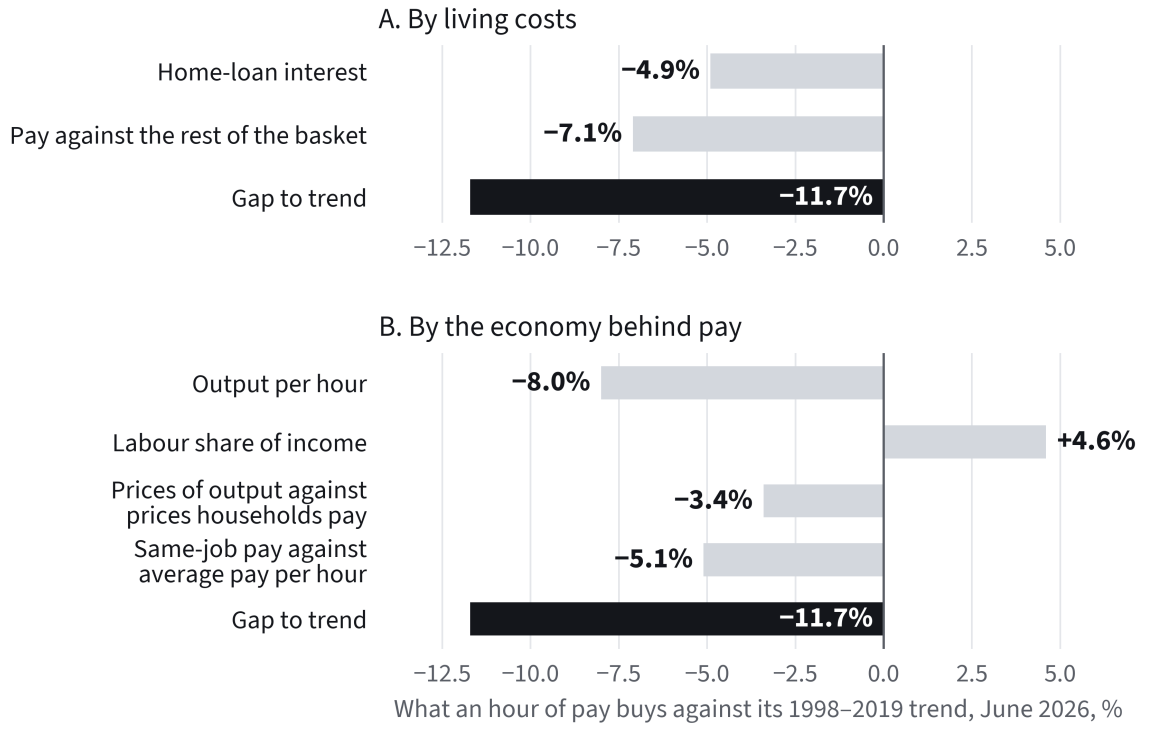
By living costs the gap has two parts: home-loan interest, and pay against everything else in the basket. Since December 2019 the interest is 35% to 41% of the gap, depending on whether

the rest of the basket keeps the whole basket's pre-2020 trend or its own. Pay against the rest of the basket is 7.1% below its trend, the larger part (Figure 5).

Since June 2022 the order reverses: the interest is 64% to 69% of the gap to the same trend, most of the shortfall. The loss against the rest of the basket had come before June 2022 (Section 2.3).

FIGURE 5

What the gap to trend is made of, by living costs (A) and by the national accounts (B), December 2019 to June 2026.



Notes. The gap between what an hour of pay buys in June 2026 and its 1998 to 2019 trend, split two ways. Panel A splits it by living costs: home-loan interest, and pay against the rest of the basket. Panel B splits it by the national accounts. In each panel the parts multiply to the gap, so the bars do not add exactly. Values are those of Table 7.

On the national accounts, output per hour is the largest part, 8.0% below its trend. A rising labour share added 4.6%. Prices of what Australia produces rose 3.4% less, relative to employee living costs, than their pre-2020 trend. Pay for the same job rose 5.1% less, relative to average pay per hour, than its pre-2020 trend.

That last part separates two measures of pay. Average pay per hour gains from promotions, bonuses, the super guarantee and the shift towards better-paid jobs; the wage price index holds the job fixed. From the June year 2019 to the June year 2026, a broader measure, all labour income per hour worked including the self-employed, rose 3.2% against employee living costs (Australian Bureau of Statistics 2026e). Over the same years the wage price index fell 5.8% against them.

4.3 Earlier rounds of rate rises

The 2022 round brought the largest fall of the four rounds of rate rises since 1998 (Table 8). In its seven quarters what an hour buys fell 6.6% on employee living costs. The round from 2002 is the natural comparison, the only other one in which home-loan interest rose about as much, by 126.6% against 126.2%. Over its first seven quarters an hour of pay gained 1.5%.

TABLE 8

Rounds of rate rises since 1998

Round of rises	Cash rate (%)	Quarters	Whole round: what an hour buys, living costs (%)	Seven quarters: what an hour buys, living costs (%)	Seven quarters: what an hour buys, CPI (%)
Nov 1999 to Aug 2000	4.75 to 6.25	4	−3.2	−2.7	−2.7
May 2002 to Mar 2008	4.25 to 7.25	24	2.0	1.5	1.9
Oct 2009 to Nov 2010	3.00 to 4.75	5	−0.8	−1.8	0.3
May 2022 to Nov 2023	0.10 to 4.35	7	−6.6	−6.6	−2.4

Notes. Each round runs from the quarter before the first rise to the quarter of the last (Reserve Bank of Australia 2026a). The figures are what an hour of pay buys: the wage price index against the employee living cost index, or against the CPI. Seven quarters are counted from the quarter before the first rise, the length of the 2022 round, so that every round is compared over the same span as the most recent one. The rises from February 2026 are left out: fewer than seven quarters of them can yet be observed (Table OA.10).

Wages grew at about the same pace in both rounds, 3.9% and 4.0% a year, so the difference in what an hour bought lies in prices.

The interest bill rose much faster from 2022. In the seven quarters from March 2022, home-loan interest rose 4.2 points, from 2.9% to 7.2% of household disposable income. In the first seven quarters of the 2002 round it rose 1.3 points (Australian Bureau of Statistics 2026a).

The 2002 round took six years to add 4.7 points. Its peak, 8.7% of income in June 2008, is still above the 7.5% reached after 2022.

What came with the bill also differed. The 2002 rises came during a commodity boom: the terms of trade rose 47.0% and output per hour grew 1.1% a year. The 2022 rises started from a record-low cash rate, with household debt at 184.7% of disposable income, against 119.5% in 2002 (Reserve Bank of Australia 2026b). Output per hour had risen 5.3% from December 2019 to the start of the 2022 round, then fell 2.7% a year while rates rose.

So a rising interest bill does not always cut what pay buys. In 2022 the bill rose quickly, onto larger debts, while output per hour fell and other prices were already ahead of pay. Two rounds cannot say which of those differences mattered.

Evidence across economies bears on one of them, debt. A panel adaptation of local projections (Jordà 2005) covers the 22 economies with policy rate and debt data. At average debt, a one-point rise goes with real household disposable income per person 0.16% lower (standard error 0.17), which cannot be told apart from zero.

For every 100 points of debt above the average, income is a further 0.34% lower (standard error 0.12). At Australia's 2015 to 2019 average debt, 212% of net disposable income on the OECD measure, that gives 0.48% lower (standard error 0.27; Table OA.11). So more debt goes with rate

rises cutting income further, but at Australia's debt the estimate is too imprecise to settle the question.

4.4 Other advanced economies

Real wages rose only 0.7% in Australia from 2019 to 2025, against 8.3% in the United States; Norway, New Zealand, Denmark and Singapore also did better (Table 9). These are the OECD's average wages after consumer prices, which follow average pay rather than pay for a fixed job; Singapore's come from its own statistics office (Department of Statistics Singapore 2026).

Those economies also raised output per hour faster: by 11.8% in the United States and 17.2% in Singapore, against 0.6% in Australia. That is the OECD's annual measure for 2019 to 2025; on the quarterly national accounts, from December 2019 to June 2026, Australia's output per hour changed by −0.1% (Table 7).

TABLE 9

Australia against comparable economies, 2019 to 2025

2019 to 2025, % change	Real average wage	Output per hour	Real household disposable income per person
Australia	**0.7**	**0.6**	**2.8**
United States	8.3	11.8	11.1
Singapore	10.5	17.2	
Norway	6.9	4.7	7.4
New Zealand	5.3	6.0	10.3
Denmark	3.3	6.6	5.9
Median of the eight trait-matched peers	2.9	4.8	6.6
Median of all advanced economies	3.3		5.5

Notes. OECD annual data (OECD 2026a, 2026c); Ireland excluded. Output per hour is GDP per hour worked at constant prices. The real average wage is the OECD average annual wage at constant prices. Income is real net household disposable income divided by population. The OECD measures deflate by consumer prices. Peers are the eight economies closest to Australia on 2015 to 2019 traits. Singapore: average monthly earnings per employee deflated by its CPI, and value added per actual hour worked, from the Department of Statistics Singapore (Department of Statistics Singapore 2026).

The wider comparison covers 31 advanced economies (OECD 2026a, 2026c). Ireland, whose GDP is inflated by the accounts of multinational firms, is left out, which leaves 30. Peers are chosen before any outcome is looked at, on income per person, population growth, the commodity share of exports and household debt over 2015 to 2019 (OECD 2026b; World Bank 2026). The eight closest to Australia are Iceland, Canada, New Zealand, Norway, the Netherlands, Sweden, Denmark and the United Kingdom.

Across all 30 economies, Australia's output per hour grew the fourth weakest, against a peer median of 4.8%. Its real average wage grew the ninth weakest of 29, against a peer median of 2.9%, and real household disposable income per person the fifth weakest of 24, against 6.6%.

Pay has usually followed output per hour. Before 2020, across 30 economies, real compensation per hour rose 0.64% for each 1% rise in output per hour in the same year (standard error 0.07; Table OA.11). On that pattern, slow growth in output per hour, as in Australia, goes with slow growth in pay.

Australia's departure from its own pre-2020 path is not unusual, however. A synthetic Australia is weighted from the other economies to match its path from 2000 to 2019 (Abadie,

Diamond and Hainmueller 2010). It puts output per hour 3.0% and the real average wage 1.4% below the counterpart by 2025. Treating each other economy in turn as Australia gives placebo p-values of 0.40 and 0.66 (Table OA.12).

On the OECD's average-wage measure, then, Australia's 1.4% shortfall from its synthetic counterpart is not unusual among advanced economies. What is unusual is the fall in what pay buys against Australia's own pre-2020 pattern (Section 4.1).

5 The cash rate and household living costs

Changes in the cash rate go with changes in employee living costs in the same direction, and barely with age pensioners'. The difference is the home loan in the index. Interest charges, mostly home-loan interest, carry more weight in employee living costs than in age pensioners': 12.48% of the basket against 1.60% on the 2024 weights (notes to Table OA.13). This section measures how far the two indexes part after the cash rate changes. Home-loan interest accounts for more than all of that parting (Table 10). The result is therefore mainly a property of how the indexes are built: an association, not an estimate of what monetary policy does to households.

The measure, called the pass-through here, is the extra rise in employee living costs over the living costs of another household type. It is summed over the quarter of a cash rate change and the four quarters after it. A one-point change in the cash rate goes with employee living costs rising 1.15 points further than age pensioners' over five quarters (Newey-West t = 8.00, 105 quarters; Table OA.13). They rise more after a rise and fall more after a cut. The average employee household spends about $2,424 a week at September 2026 prices, and 1.15% of that is about $28 a week. That is an average over all employee households, with and without a mortgage.

The relation predates the 2022 episode: on quarters to December 2019 the estimate is 0.93 points. In all eight complete rate episodes since 1998 the gap went the same way as the cash rate (Table OA.10).

Split by spending, home-loan interest is larger than the whole association on both the 2024 and the 2025 weights. On the 2024 weights its contribution passes through 1.27 points per point of cash rate (t = 15.47; Table OA.13), against 1.15 for the whole. Without it, the gap moves −0.11 points (t = −0.89), which cannot be told apart from zero.

What is left without home-loan interest is small, and it is not stable across weights. On the 2025 weights the remainder is −0.25 (t = −2.10), which is significant. With the 2024 weights split as in the household expenditure survey, it is −0.19 (t = −1.60), which is not. The remainder is negative on all three weightings, but its size changes with the weights. The paper therefore does not read it as a second channel, though one cannot be ruled out.

The coefficients by lag are in Table OA.14. The response is not complete after five quarters: with lags to eight quarters it is 1.35 (Table 10).

TABLE 10

Employee against age pensioner living costs after a one-point cash rate change

Estimate	Extra rise in employee living costs per point of cash rate (pp)	t
Five quarters, all quarters	1.15	8.00
Five quarters, quarters to December 2019	0.93	
Home-loan interest part, 2024 weights	1.27	15.47
Without home-loan interest, 2024 weights	−0.11	−0.89
Nine quarters (lags to eight)	1.35	
Five quarters, in dollars a week of employee spending	$28	

Notes. Cumulative association of quarterly employee living cost growth minus age pensioner living cost growth with the cash rate change in the same quarter and the four before (eight before in the nine-quarter row), March 2020 to December 2021 excluded (Australian Bureau of Statistics 2026g; Reserve Bank of Australia 2026a). Newey-West t-statistics with four lags. Dollars price the five-quarter estimate on average employee spending in September 2026, averaged over all employee households, with and without a mortgage.

6 What indexation delivered

The pension rule ended ahead of age pensioner living costs, and taking the higher of two indexes accounts for most of its lead. Counting the September 2026 increase, which pays for prices to June 2026, the rule delivered 31.8% for prices from December 2019 (Table OA.15). Section 2.6 reports a smaller rise, 29.4%, because it stops at the rate paid in June 2026, before that increase. The pensioner and beneficiary factor alone would have delivered 28.6%. Payments trail costs by about three months, so they lagged while prices rose. The half-yearly factors are in Table OA.16.

The rules work as follows. On each 20 March and 20 September the Social Security Act sets a factor for each index. The factor is the latest June or December quarter index divided by the highest earlier one. It is rounded half up at three decimal places and is never below one (Commonwealth of Australia 1991). Because the factor is never below one, a fall in prices is never deducted from a payment. Because the index is compared with its highest earlier value, the recovery back up to that peak brings no increase either. In the half-year to December 2020 the CPI rose 2.47%, but the factor was 1.009. The pension rule multiplies the rate by the larger of the consumer price and pensioner and beneficiary factors. The allowance rule multiplies it by the consumer price factor alone. Cumulating the factors gives what each rule delivered before the earnings floor, a minimum tied to average earnings, and any legislated increase; the published rates give what was paid.

Pensions also have an earnings floor. Before September 2009 the single rate was topped up, if necessary, to 25% of male total average weekly earnings. Since 20 March 2010 the combined couple rate is raised to 41.76% of male total average weekly earnings, and the single rate is 66.33% of the couple rate (Department of Social Services 2022). Parenting Payment Single does not use the pension rule. When the clean energy supplement began, both factors were reduced by 0.7%, not below one, with any unused part carried forward (Department of Veterans' Affairs 2026). The rates paid on 20 March 2013 show the whole reduction taken then.

The consumer price rule delivered 26.8%, behind the 29.7% rise in the living costs of other transfer recipient households. That group also includes disability support and carer households, whose payments follow the pension rule (Department of Social Services 2022).

Over the same indexation days JobSeeker rose 45.8%, 19.1 points more than its rule on unrounded figures; Section 2.6 reports 44.7% because it stops at June 2026. The difference from the rule is the result of increases of $50 a fortnight in April 2021 and $40 in September 2023 (Department of Social Services 2026a). Applying the statutory factor to the previous rate reproduces the JobSeeker rate on 11 of the 13 indexation days (Table OA.17).

Maximum Rent Assistance for a single person rose 60.3% over the same indexation days, 33.6 points more than the consumer price rule (Table OA.15) (Department of Social Services 2026c). CPI rents rose 24.4% over the same span, but the Bureau measures them net of Rent Assistance (Australian Bureau of Statistics 2023), so they cannot tell whether it kept pace with rents.

Indexation therefore kept the age pension ahead of pensioners' costs. The allowance rule alone would have left JobSeeker behind its recipients' costs; legislated increases, not indexation, put it ahead.

7 Robustness

Most results change little under other choices. The exceptions are the size of the fall, which depends on the measure of pay, and the structural split, which depends on the order of the variables. Full-time ordinary earnings, which include changes in the mix of jobs, buy 3.8% less, a smaller fall than on the wage price index. Household income per person after tax and transfers, which adds property income and takes off interest, rose 2.7% from December 2019 but fell 3.3% from June 2022 (Reserve Bank of Australia 2026f).

A trend fitted from 2009 instead of 1998 leaves what an hour buys 13.5% short, more than on the full trend. The normal run leaves 99% of its runs above the outcome with two lags and 99% with four. Fitted from 2004 it leaves 96%, and on the CPI 96%.

Backtests check the model where the answer is known: it is fitted only to data up to an earlier date and run to December 2019. From December 2012 it forecast a gain of 6.0% in what an hour buys, against an outcome of 6.1% (Table OA.8). From December 2009 the outcome lies at percentile 33 of the runs, and from December 2014 at percentile 66. The model is stable, though close to the limit: its largest inverse root is 0.996, and at one a shock would never die out.

The residuals of the equation for what an hour buys show no autocorrelation (Ljung-Box $p = 0.29$ at eight lags). Those of the six equations together do: the portmanteau test rejects at the 1% level with one lag, and gives $p = 0.03$ with two. The bands may therefore be too narrow, which is one reason the paper reports the share of runs with two and four lags as well.

A structural version of the model divides its forecast error for what an hour buys among surprises in its six series. Surprises in prices and in pay arrive in the same quarter, so the split must assume which came first, and the answer turns on that order. If prices move first,

surprises in inflation take 10.8 to 13.8 log points of the shortfall. If pay moves first, surprises in pay itself take 6.3 to 8.9 and inflation 2.1 to 6.3 (Table OA.18).

The lags matter less than the order: with prices first, price shocks take 13.3 log points with one lag, 12.1 with two and 11.3 with four. Across all 720 orders, cash rate surprises take at most 4.2 points; on the CPI, which leaves out the interest bill, they take at most 0.3. So the split bounds the part of cash rate surprises, but it cannot say whether prices or pay moved first.

Output per hour, the largest part of the national-accounts split, slowed on every measure. Real GDP per person rose 4.2% from December 2019, but hours worked per person rose 4.3%, so whole-economy output per hour changed by −0.1%. The market sector leaves out mainly public administration, education and health. There it grew 0.39% a year from 2019 to 2026, against 1.46% from 2012 to 2019 (June years; Table OA.19) (Australian Bureau of Statistics 2026b).

Most of that slowdown is in capital deepening, the part of growth that comes from more capital per hour worked: it fell from 0.78 to 0.13 points a year. Across all industries, capital per hour worked grew 1.8% a year from 2012 to 2019 and 0.3% after, and growth within industries also slowed (Table OA.19; Figure OA.2).

The break test used for pay in Section 4.1 finds no break in the growth of output per hour or of GDP per person since 1981. For output per hour the statistic falls just short of the critical value. Market-sector capital per hour worked grew 3.30% a year to 2016 and 0.30% after, a significant break in its trend (simulated $p = 0.03$).

The same test finds no significant trend break in output per hour. For the market sector the best break is in 2017, with $p = 0.15$, and for the whole economy in 2016, with $p = 0.22$ (Table OA.9).

A wage equation on unemployment and expected inflation leaves wages 3.1% to 5.3% short across specifications, and 4.5% on the main one (Table OA.20). Fitted to 1998 to 2012, though, it over-predicts 2013 to 2019 by 8.6%, so it is not used for the split. If employers passed the rise in the super guarantee back in lower wages, the shortfall on the main equation falls to 2.4%.

Leaving out one rate episode at a time gives a pass-through of 1.13 to 1.26. Adding the cash rate changes one and two quarters ahead, on complete quarters only, gives coefficients of 0.10 ($t = 0.58$) and −0.20 ($t = -2.00$; notes to Table OA.21). The first is small and insignificant. The second is just significant but has the opposite sign, so living costs did not move ahead of the cash rate in the direction the pass-through runs.

All nine variants of the 1.15 point pass-through are significant at 5% and lie between 0.93 and 1.35 points (Table OA.21).

8 Related literature and measurement

Three bodies of work bear on the question: how living costs are measured, why wages slowed, and how interest rates reach household budgets. Jacobs, Perera and Williams (2014) and Yuen and Rozenbes (2022) compare price indexes with living cost indexes. Agarwal, Gao and Garner (2023) study the stock of leases, which is what the rent index measures. Phillips (2019) tracks disposable income over a long period. Against that work, this paper measures what an hour of pay buys on each household type's own index. It compares the fall with the 1998 to 2019 trend

and a model of the economy, and splits the gap to that benchmark exactly. It also compares the indexation rules with each group's costs.

Household surveys report the strain directly. On the Life in Australia probability panel the share of adults finding their present income difficult rose from February 2020 to January 2024 (Biddle and Gray 2023; Biddle, Gray and Phillips 2024). An election panel recorded a rise on the same question from October 2024 to March–April 2025 (Biddle 2025a, 2025b). Other surveys measure rent and mortgage arrears, income against the cost of living, and food insecurity (Foodbank Australia 2025; Gamarra Rondinel et al. 2024; Heap 2024). Table OA.22 lists each result on the sample that produced it. The surveys do not enter the price and wage calculations.

The Fair Work Commission's statistical report for the 2024–25 Annual Wage Review sets the employee living cost index beside the CPI and the non-discretionary series (Fair Work Commission 2025b). Section 5 extends these comparisons to every rate episode since 1998 and to all household types.

A group index hides variation across households (Hobijn and Lagakos 2005; Jaravel 2019, 2021; Kaplan and Schulhofer-Wohl 2017). One index cannot tell a renter from a mortgage holder or an outright owner, so the household-type indexes carry the main results here. Fixed weights also go stale when spending shifts (Cavallo 2020). The Online Appendix uses a necessity price index: the CPI groups for food, housing, health and transport, at their September 2021 weights in each capital. It is close to the Bureau's non-discretionary analytical series (Australian Bureau of Statistics 2025b) and inherits the limit of fixed weights.

Official accounts of the fall in real wages name several sources. Treasury lists lower productivity growth, spare capacity before 2020, high inflation and lower enterprise bargaining coverage (Commonwealth of Australia 2023b). The Reserve Bank finds that productivity fell in the three years to June 2023 (Bruno, Dunphy and Georgiakakis 2023) and models wages with a Phillips curve (McCarthy et al. 2024). It also notes that broader measures of pay fell less than the wage price index (Reserve Bank of Australia 2023). Treasury's long-run projections have real wages growing with productivity, assumed at 1.5% a year in 2021 and 1.2% in 2023 (Commonwealth of Australia 2021, 2023a). The wage, productivity and price parts are measured in Section 4; bargaining coverage is not.

For the episode since 2022, Wood, Chan and Coates (2023) and Beckers et al. (2024) find broad price rises, with interest rates weighing on mortgagors. Renters are about one-third of households (Agarwal, Gao and Garner 2023). Two reports treat hardship as a question of income (Australian Council of Social Service 2023; Goldie 2023).

The 2009 Pension Review proposed one living-cost index for pensioners, excluding rent and home purchase (Harmer 2009). The rule adopted instead takes the higher of two factors (Department of Social Services 2022). Each half-year it pays whichever index rose more, and it never deducts a fall. From December 2019 it delivered 3.2 points more than the better of the two indexes would have alone (Section 6).

Australian wage growth slowed from about 2012. Against the relationship of 1998 to 2012, the wage price index slowed by more than twice as much as the gap in unemployment predicted (Jacobs and Rush 2015). Spare capacity, lower inflation and the fall in the terms of trade

explained part of the slowdown but not all of it (Bishop and Cassidy 2017). In job-level data, smaller pay rises made up most of the fall (Bishop and Cassidy 2017). Firm-level tax data show that somewhat less of each firm's productivity gain reached its workers after 2012-13 (Andrews et al. 2019). This paper finds a similar break: Section 7 fits a 1998 to 2012 wage equation of the same kind, and it over-predicts 2013 to 2019 by 8.6%. So the benchmark here is the 1998 to 2019 trend, which already contains the slower years. The shortfall against it since 2019 comes on top of the slowdown these papers study.

For indebted households, the interest bill is an important channel from monetary policy to the budget. In panel data, lower required repayments went with more durables spending among variable-rate borrowers, and this borrower channel was stronger than the lender channel (La Cava, Hughson and Kaplan 2016). From May 2022 outstanding mortgage rates rose by about three-quarters of the cash rate increase, slowed by fixed-rate loans and competition, and scheduled payments passed their 2008 peak (Ung 2024). In a Reserve Bank scenario for an indebted household, rising interest made up about four-fifths of the fall in spare cash flow (Reserve Bank of Australia 2022). In the published living cost indexes the interest bill is a smaller part: it is 35% to 41% of the gap to trend (Section 4). The two shares measure different things. The Bank's share is of one borrower's spare cash flow. This paper's is of the shortfall in what an hour of pay buys, averaged over all employee households.

A separate debate concerns what the price index leaves out. Creighton and Aird (2026) argue that it understates the cost of living by omitting dwelling prices. The living cost indexes take the outlays approach, pricing the interest households pay; the CPI takes the acquisitions approach and prices new dwellings (Jacobs, Perera and Williams 2014). The Bureau judges outlays best suited to measuring purchasing power and acquisitions best suited to measuring inflation (Australian Bureau of Statistics 2025d). Another approach, the cost of using the home, raised measured inflation by more than two percentage points in a housing boom (Hill, Steurer and Waltl 2023). The United Kingdom now publishes household costs indexes by household group as official statistics in development (Office for National Statistics 2025). This paper takes the outlays approach the Bureau prefers for purchasing power. Section 2.3 shows that the CPI, which prices new dwellings but not interest, records a smaller fall.

9 Conclusion

Australian workers who feel poorer are right, and the evidence fits one account. Pay for the same job, which had gained on prices for two decades before 2020, stopped gaining: everyday prices outran it first, and then the interest bill rose on top. The result, about $180 a week before tax for the average employee household, is a loss against every price index the paper uses, not an artefact of one index.

The loss is also unusual for Australia. What an hour buys is 11.7% below its pre-2020 trend, below Treasury's pre-pandemic forecasts and below almost every run of a model of the pre-2020 economy. Most of that gap is pay falling behind prices other than home-loan interest; on the national accounts, its largest part is output per hour, 8.0% below its trend. Set against how other

advanced economies departed from their own paths, though, Australia's shortfall in average wages is not unusual. Rate rises do not always bring such a fall. Measured from June 2022, what an hour buys has fallen 7.1%. In the first seven quarters of the 2002 round it rose: that round's interest bill climbed as far, but over six years and during a commodity boom.

Income tax deepens the loss lower down the pay scale. For full-time workers whose pay kept up with the wage price index, the loss after tax is 9.1% at the bottom quartile and 5.7% at the top quartile. The age pension, indexed to the higher of consumer prices and a pensioner cost index, kept pace; JobSeeker kept ahead only through increases legislated outside indexation. These are measurements and accounting splits, not estimates of what caused the fall, and the figures for mortgage holders, renters and award-wage earners are worked examples on national indexes.

The lesson is for whoever judges pay against prices. The CPI is built to measure inflation and leaves out the interest households pay. When rates rise it understates how far pay falls behind what they spend on. A one-point change in the cash rate has gone with employee living costs moving 1.15 points more than age pensioners'. A wage review that reads only the CPI would put the loss on pay for the same job since December 2019 at 4.8%, not the 7.6% that employee households bore.

Data availability statement

All inputs are public (Table OA.7). The input workbook, the analysis code, and a README with every series identifier and retrieval date are in the public repository (Sehgal 2026) at gitlab.com/vast-dreams/cost-of-living-au-replication. In release v1.9.2 of that repository, one command rebuilds every number and figure in this paper.

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Disclosures

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Ethics approval: Not applicable. The study uses only published aggregate statistics and published reports; it involves no human participants or personal data.

Use of AI tools: During the preparation of this work the author used Claude (Anthropic) for coding assistance and language editing. After using this tool, the author reviewed and edited the code and text as needed and takes full responsibility for the content of the paper.

Online Appendix

The tables are numbered in the order the paper first cites them. They hold the detail behind Sections 2 and 4 to 7, and a comparison across the capital cities that the main text does not rely on.

What is not published. No public series gives an employee rent weight, a median income by state or city, or a new-bond median for Perth, Hobart, Darwin or Canberra. The employee living cost index is not published by capital, so Section 2 compares every state with the national employee basket.

Road tolls. The urban fares index in Section 2 does not include tolls. In the Household Travel Survey tolls were about 4% of journeys, and higher-income travellers were more likely to use them. The toll review puts the greatest dollar impact in Western Sydney (Fels and Cousins 2024).

Housing costs in dollars. In the 2024 household survey, the median mortgage payment of households with a mortgage in the mainland capitals was $705 a week and the median private rent $536 (Laß et al. 2026). Both are in December 2024 prices.

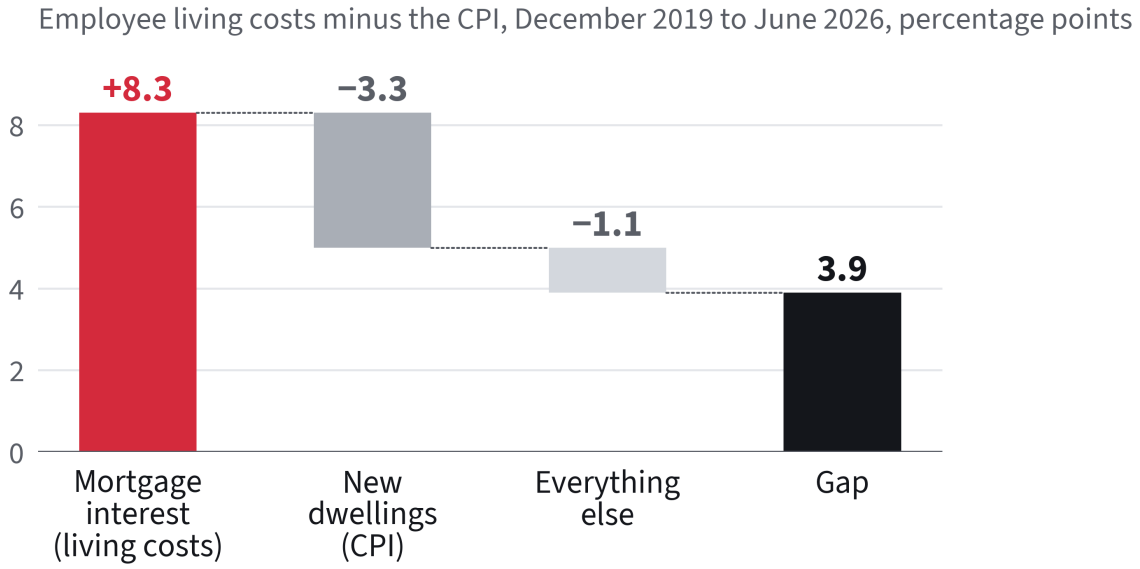
The 2025 weights. Section 2 checks the estimate without home-loan interest against the 2025 weighting pattern, which puts housing at 12.85% of the employee basket and insurance and financial services at 18.69% (Australian Bureau of Statistics 2025a).

Context series. Four more series are tabled below, each for the year it was collected and none in the employee index. They are new-bond rents in Melbourne and Adelaide (Table OA.23) and spending shares by income from the 2015–16 survey (Table OA.24). They also cover housing costs against income by tenure in 2019–20 (Table OA.25) and insolvency counts (Table OA.26).

Household income. Household income per person after tax and transfers (real household disposable income per person) is a national total. It adds transfers and property income, takes off tax and interest paid, and is divided by the civilian population aged 15 and over (Australian Bureau of Statistics 2026f; Reserve Bank of Australia 2026f). Unlike an employee household's pay against its own basket, it is not a measure of what pay buys. Its changes since December 2019 and June 2022 are in Section 7.

FIGURE OA.1

Home-loan interest more than accounts for the gap between the two measures.



Notes. Employee living cost growth minus CPI growth, December 2019 to June 2026, in percentage points. The bars are home-loan interest, which only the living cost index counts; new dwelling purchase, which only the CPI counts; and the rest of the two baskets. The last bar is the gap. From unrounded indexes.

TABLE OA.1. WHERE EMPLOYEE LIVING COSTS ROSE

Spending group	Rise from Dec 2019 (%)	Points added	Rise from Jun 2022 (%)	Points added
Home-loan interest	109.2	9.3	160.3	10.4
Food and non-alcoholic beverages	28.9	5.0	18.1	3.2
Housing: rents, utilities, rates, repairs	28.3	4.0	27.2	3.7
Transport	21.7	2.4	6.2	0.7
Alcohol and tobacco	37.9	2.4	23.0	1.5
Recreation and culture	16.7	2.2	12.6	1.6
Health	31.4	2.0	20.6	1.4
Insurance and other financial services	31.2	1.5	22.1	1.1
Furnishings and household services	19.0	1.5	7.3	0.6
Education	31.6	1.4	22.6	1.0
Clothing and footwear	9.7	0.4	8.4	0.3
Communication	2.0	0.0	5.0	0.1
All groups, 2025 basket		**32.1**		**25.8**
All groups, published index		30.6		23.9

Notes. Living cost index for employee households by group (Australian Bureau of Statistics 2026g). Points added are each group's share of the 2025 basket times its price rise, so they sum to the growth of that fixed basket. The published index re-weights each year, so its growth differs slightly. Home-loan interest is shown apart from the insurance and financial services group that contains it, and that group's rise excludes it. Groups are ordered by points added from December 2019. Table 3 carries the 2024 weight back to each start quarter instead, so its mortgage figure is smaller.

TABLE OA.2. AVERAGE PUMP PRICES BY STATE, CENTS A LITRE

State	Petrol 2019	Petrol 2022	Petrol 2025	Diesel 2019	Diesel 2022	Diesel 2025
New South Wales	141.1	184.9	180.4	147.9	207.7	185.2
Victoria	141.1	184.3	180.3	146.0	207.5	186.9
Queensland	142.8	184.4	183.1	147.1	208.3	186.7
South Australia	142.7	179.7	174.7	147.9	205.9	184.6
Western Australia	141.8	181.9	175.6	148.9	203.8	183.3
Northern Territory	151.4	199.0	196.7	161.4	222.0	208.2
Tasmania	150.7	191.9	179.8	158.8	213.2	186.3
Australia	142.0	184.2	180.0	148.0	207.5	186.1

Notes. Calendar-year average of daily retail prices, cents a litre including the goods and services tax. Australia is the weighted average of the states. Unleaded petrol and diesel. Source: Australian Institute of Petroleum annual retail price data (Australian Institute of Petroleum 2026).

TABLE OA.3. RENTS AGAINST WAGES BY CAPITAL, TO JUNE 2026

Capital	Rents from 2019 (%)	Wages (%)	Rents against wages (%)	Rents from 2022 (%)	Wages (%)	Rents against wages (%)
Sydney	19.7	20.1	−0.3	24.9	14.6	8.9
Melbourne	18.2	19.4	−1.0	20.3	14.0	5.5
Brisbane	35.6	22.4	10.8	28.9	16.2	10.9
Adelaide	31.0	20.8	8.4	23.6	15.5	7.1
Perth	51.0	21.8	24.0	35.0	16.2	16.2
Hobart	15.5	22.6	−5.8	3.3	15.8	−10.8
Darwin	28.9	18.9	8.4	17.8	13.9	3.4
Canberra	16.0	21.5	−4.6	7.1	15.9	−7.6

Notes. Percentage changes from December 2019 and from June 2022 to June 2026, computed from unrounded index numbers. Rents are the CPI rents class for each capital, from the June quarter 2025 release and, after it, the three-month average of the monthly indicator (Australian Bureau of Statistics 2025c, 2026d); wages are the wage price index for the capital's state or territory. Rents against wages is one plus the change in rents, divided by one plus the change in wages, minus one.

The CPI rent class is the stock of leases, after Rent Assistance. From December 2019 to the latest quarter in the file, the median weekly rent of a new bond rose 71.1% in Queensland, 67.2% in South Australia and 37.5% in Victoria.

From the June quarter of 2022 the median rose 34.6% in New South Wales, 31.0% in Victoria, 44.4% in Queensland and 41.0% in South Australia. Each rise is larger than the national rent index from the same start through June 2026. The bond series do not all end in that quarter.

New South Wales lodgements in this file start in 2021, so that row has no December 2019 figure. Western Australia, Tasmania, the Australian Capital Territory and the Northern Territory are not in the file (Table OA.4).

TABLE OA.4. MEDIAN WEEKLY RENT OF NEW BONDS

State	Dec 2019	Jun 2022	Latest	Latest quarter	Since Dec 2019 (%)	Since Jun 2022 (%)
New South Wales	n.a.	520	700	Dec 2025	n.a.	34.6
Victoria	400	420	550	Sep 2025	37.5	31.0
Queensland	380	450	650	Sep 2026	71.1	44.4
South Australia	329	390	550	Mar 2026	67.2	41.0

Notes. Dollars a week. Sources: Homes Victoria; Residential Tenancies Authority (Queensland); South Australian private rental report; NSW Fair Trading. Victoria is the all-properties median for the state in the Homes Victoria rental report. Queensland is the all-dwellings median of new tenancies lodged with the Residential Tenancies Authority. South Australia is the all-dwellings median in the private rental report. New South Wales is the median of Fair Trading bond lodgements in the quarter. The latest quarter is the last one in each file, so the spans are not equal. n.a. means the quarter is not in the file. The smallest of these quarters has 12,830 bonds. These medians are not the CPI rent class.

TABLE OA.5. INDUSTRY HOURLY PAY AGAINST THE NATIONAL EMPLOYEE BASKET

Industry	From Dec 2019 (%)	From Jun 2022 (%)
Accommodation and food services	−8.6	−7.5
Administrative and support services	−8.7	−7.4
Arts and recreation services	−8.2	−7.5
Construction	−7.7	−7.5
Education and training	−7.1	−7.4
Electricity, gas, water and waste	−5.8	−5.0
Financial and insurance services	−8.8	−8.8
Health care and social assistance	−6.1	−5.5
Information media and telecommunications	−8.2	−7.4
Manufacturing	−6.6	−6.7
Mining	−7.3	−6.5
Other services	−8.0	−7.4
Professional, scientific and technical	−8.2	−8.1
Public administration and safety	−8.1	−7.3
Rental, hiring and real estate	−8.5	−7.7
Retail trade	−8.5	−7.6
Transport, postal and warehousing	−8.0	−7.1
Wholesale trade	−7.8	−7.2

Notes. Change in what that industry's national hourly wage buys of the national employee living cost index, to June 2026. Negative means the wage buys less.

TABLE OA.6. HOUSING TENURE BY CAPITAL, CENSUS 2021

Capital	Rented (%)	With a mortgage (%)	Owned outright (%)
Sydney	36.5	33.5	28.1
Melbourne	30.7	37.3	30.2
Brisbane	35.7	36.3	26.3
Adelaide	28.8	37.2	31.3
Perth	27.1	41.9	28.8
Hobart	29.3	34.5	34.4
Darwin	44.4	34.7	18.9
Canberra	31.2	40.2	26.8

Notes. Shares of dwellings with a stated tenure in each Greater Capital City Statistical Area, 2021 Census; not stated and not applicable are excluded from the denominator. Other tenure types, about 2% of dwellings, are not shown. The rows count all households; Section 2.5 sets out what the shares imply for households with a mortgage.

TABLE OA.7. MAIN SERIES

Series	Source	Span	Coverage
Living cost indexes by household type; home-loan interest, insurance	ABS 6467.0 (2026g)	1998 to 2026	Australia
Living cost index weighting patterns	ABS annual weight updates (2024a, 2025a)	2024 and 2025	Australia
Split of interest charges, employee households	ABS, via Yuen and Rozenbes (2022)	2017	Australia
CPI, all groups and selected classes	ABS 6401.0 (2026d)	1997 to 2026	Australia
CPI groups and housing classes by capital; rents to 2026	ABS 6401.0, table 7 (2025c, 2026d)	1997 to 2026	Capitals
CPI weights by capital	ABS 2021 weighting pattern (2021)	2021	Capitals
CPI weight of new dwelling purchase	ABS 2024 weighting pattern (2024a)	2023	Australia
CPI non-discretionary analytical series	ABS 6401.0, table 6 (2025b)	2005 to 2025	Australia
Wage price index, ordinary hourly rates; by sector and industry	ABS 6345.0 (2026h)	1997 to 2026	States
Living cost indexes by spending group; points contributions	ABS 6467.0 (2026g)	1998 to 2026	Australia
GDP, hours, compensation, deflators, terms of trade; household interest and income	ABS 5206.0 (2026a)	1959 to 2026	Australia
Output, hours, compensation and capital by industry; market-sector productivity	ABS 5204.0 (2026b)	1960 to 2026	Industries
Hours worked and labour income, employees and self-employed	ABS 6150.0.55.003 (2026e)	1994 to 2026	Industries
Household debt to disposable income	RBA E2 (2026b)	1988 to 2026	Australia
Output per hour, pay, prices, rates, household income and debt	OECD (2026a, 2026b, 2026c)	1995 to 2025	31 economies
Traits for choosing peers	World Bank; OECD (2026b; 2026)	2015 to 2019	31 economies
Inflation expectations, one year ahead	RBA G3 (2026e)	1993 to 2026	Australia
Average weekly earnings, full-time ordinary	ABS 6302.0 (2026c)	1994 to 2026	States
Household expenditure, employee households	ABS 6530.0 (2017)	2015–16	Australia
Retail pump prices, petrol and diesel	Australian Institute of Petroleum (2026)	2019 to 2025	States
Real household disposable income	RBA H2 (2026f)	1959 to 2026	Australia
Unemployment, underutilisation, participation, population	ABS 6202.0 (2026f)	1978 to 2026	Australia
Resident tax rates and the super guarantee	ATO (2026a, 2026d)	2013 to 2026	Australia
Housing tenure by capital	ABS Census, TableBuilder (2022a)	2021	Capitals
Cash rate target and decisions	RBA A2, F1.1 (2026a, 2026c)	1990 to 2026	Australia
Outstanding owner-occupier lending rate	RBA F6 (2026d)	2019 to 2026	Australia
Housing loans to households	APRA (2026)	2019 to 2026	Australia
Maximum basic rates and Rent Assistance	DSS Social Security Guide (2026a, 2026b, 2026c)	2008 to 2026	Single rates

Notes. All series are public and were retrieved in November 2026, as then published. Index series are rebased to a 2019 average of 100 before any ratio is formed. Payment rates are maximum basic rates for a single age pensioner and a single JobSeeker recipient aged 22 or over (Newstart Allowance before 20 March 2020). Rent Assistance is the single maximum without children; temporary supplements are excluded. ABS is the Australian Bureau of Statistics, APRA the Australian Prudential Regulation Authority, ATO the Australian Taxation Office, DSS the Department of Social Services and RBA the Reserve Bank of Australia. ABS numbers are catalogue numbers; the Census table comes from TableBuilder, which has none.

TABLE OA.8. THE NORMAL RUN, DECEMBER 2019 TO JUNE 2026, AND THREE BACKTESTS

Series	Median forecast (%)	90% band (%)	Actual (%)	Percentile of actual
What an hour of pay buys	6.0	−3.5 to 19.1	−7.6	1
Output per hour	3.5	−6.7 to 15.7	−0.1	27
Backtest: what an hour buys, fitted to December 2009 (44 quarters), December 2009 to December 2019	16.0	−7.4 to 64.2	8.6	33
Backtest: what an hour buys, fitted to December 2012 (56 quarters), December 2012 to December 2019	6.0	−5.6 to 20.4	6.1	51
Backtest: what an hour buys, fitted to December 2014 (64 quarters), December 2014 to December 2019	2.0	−5.1 to 9.7	3.7	66

Notes. Vector autoregression in quarterly growth of the terms of trade, output per hour and W/P (what an hour buys), with unemployment, consumer price inflation (household consumption deflator) and the cash rate in levels. It has 1 lag, chosen by the Bayesian information criterion, and is fitted to the 84 quarters from March 1999 to December 2019 (Australian Bureau of Statistics 2026a; Reserve Bank of Australia 2026a). Bands from 500 residual bootstrap draws, each re-estimating the model. Percentile: the share of draws below the actual outcome. With two lags the median forecast for what an hour buys is 5.7%, with four 7.3%, and fitted from 2004 3.0%. Backtests refit the model to the date shown and run it to December 2019.

TABLE OA.9. BREAK TESTS

Series and test	Sample	Statistic	Critical value or p	Break (90% interval)
What an hour buys, growth: first break	109 quarters from June 1999	14.5	8.58	June 2021 (December 2015 to September 2022)
What an hour buys, growth: second break	109 quarters from June 1999	5.5	10.13	None
Output per hour, growth	182 quarters from March 1981	8.2	8.58	None
GDP per person, growth	182 quarters from March 1981	5.8	8.58	None
Market-sector capital per hour, trend	32 June years from 1995	330.7	p = 0.03	2016
Market-sector output per hour, trend	32 June years from 1995	81.1	p = 0.15	2017 (not significant)
Output per hour, whole economy, trend	47 June years from 1980	95.1	p = 0.22	2016 (not significant)

Notes. Growth rows: sequential supF(l+1|l) test of Bai and Perron for shifts in mean four-quarter growth, autocorrelation-consistent variance with four lags, trimming 15%, against their 5% critical values (Bai and Perron 2003a, 2003b); the interval for the date is from a block bootstrap. Trend rows: the largest F statistic for one break in the slope of the log level, its p-value simulated from a random walk with the series' mean growth, spread and persistence (Australian Bureau of Statistics 2026a, 2026b).

TABLE OA.10. RATE EPISODES SINCE 1998

Onset	Direction	Cash change (pp)	Gap change (pp)
3 Nov 1999	Rise	1.41	0.58
7 Feb 2001	Cut	−1.82	−1.62
8 May 2002	Rise	0.50	0.05
3 Sep 2008	Cut	−4.23	−3.55
7 Oct 2009	Rise	1.50	1.54
2 Nov 2011	Cut	−1.25	−1.29
4 May 2022	Rise	3.21	2.22
19 Feb 2025	Cut	−0.75	−1.83
4 Feb 2026 (3 quarters)	Rise	0.75	0.66

Notes. An episode starts at the first cash rate decision that reverses the direction of the previous one (RBA table A2). Cash change is the quarter-average cash rate in the third quarter after the onset quarter minus the quarter before onset, in percentage points. Gap change is the sum of quarterly log changes (×100) in the employee living cost index minus the age pensioner index over the onset quarter and the next three. An episode with fewer quarters of data is marked with the number available. For an episode not yet complete, the cash change is to the last complete quarter.

TABLE OA.11. REGRESSIONS ACROSS ECONOMIES

Regression	Term	Estimate	Standard error	Economies	Years	Observations
Wage equation	Output per hour growth	0.64	0.07	30	1997 to 2019	652
Income after a rate change	Rate change, at average debt	−0.16	0.17	22	1997 to 2025	571
	Rate change × debt (per 100 points)	−0.34	0.12			
	Rate change, at Australia's debt (212%)	−0.48	0.27			

Notes. Wage equation: annual growth of real compensation per hour on growth of output per hour, the terms of trade, the change in unemployment and the change in inflation, with country fixed effects. Unemployment is the OECD Economic Outlook rate (652 observations). Income after a rate change: the change in real household disposable income per person in the year of a policy rate change on that change and on its interaction with household debt. Debt is to net disposable income the year before, centred on the sample mean of 116%; country and year fixed effects (Jordà 2005). Australia's debt is its 2015 to 2019 average. Both exclude Ireland and cluster standard errors by country (OECD 2026a, 2026b, 2026c).

TABLE OA.12. AUSTRALIA AGAINST A SYNTHETIC AUSTRALIA

Series	Last year	Gap (%)	Placebo p	Donor weights
Output per hour	2025	−3.0	0.40	Spain 0.65; Norway 0.22; Lithuania 0.12
Real compensation per hour	2024	1.1	0.46	Norway 0.49; Finland 0.38; France 0.07
Real average wage	2025	−1.4	0.66	Norway 0.39; the Netherlands 0.25; Japan 0.16; Finland 0.12; Belgium 0.08
Real GDP per person	2025	5.5	0.61	Luxembourg 0.44; Canada 0.43; Korea 0.13

Notes. Each synthetic Australia weights the other economies (Ireland excluded) to match Australia's log level from 2000 to 2019, with 2019 = 0 (Abadie, Diamond and Hainmueller 2010). Gap: Australia minus the synthetic in the last year. Placebo p: Australia's rank among all economies on the ratio of post-2019 to pre-2020 fit error, divided by their number. Peers on 2015 to 2019 traits: Iceland, Canada, New Zealand, Norway, the Netherlands, Sweden, Denmark and the United Kingdom (OECD 2026a, 2026b, 2026c; World Bank 2026).

TABLE OA.13. AFTER A CASH RATE CHANGE, EMPLOYEE LIVING COSTS MOVE FURTHEST, THROUGH HOME-LOAN INTEREST

Outcome	Cumulative (pp per pp)	t	Quarters
Employee minus age pensioner	1.15	8.00	105
Employee minus other transfer recipient	0.85	6.55	105
Employee minus self-funded retiree	1.01	7.23	105
Employee minus pensioner and beneficiary	1.01	6.87	69
Home-loan interest index (% per pp)	15.4	7.90	105
Home-loan interest contribution to the age gap	1.27	15.47	105
Age gap with home-loan interest removed	−0.11	−0.89	105

Notes. Cumulative is the sum of ordinary least squares (OLS) coefficients on the change in the quarter-average cash rate at lags 0 to 4. It is in percentage points of quarterly log change (×100) per percentage point of cash rate; the mortgage index row is in % per percentage point. t uses Newey-West standard errors with four lags. Quarters from March 2020 to December 2021 are excluded; the pensioner and beneficiary index starts in 2007. The last two rows use the mortgage part of the 2024 interest-charge weights, price-updated each quarter; Section 5 gives the 2025 pattern. Interest charges are 12.48% of employee and 1.60% of age pensioner outlays (Australian Bureau of Statistics 2024a), 90.1% of the employee weight being home-loan interest (Yuen and Rozenbes 2022).

TABLE OA.14. PASS-THROUGH COEFFICIENTS BY LAG

Lag (quarters)	Coefficient
0	0.480
1	0.550
2	−0.066
3	0.053
4	0.134

Notes. OLS coefficients on the change in the quarter-average cash rate at each lag for the quarterly employee minus age pensioner living cost growth gap, in percentage points per percentage point; their sum is the cumulative pass-through in Table OA.13.

Indexation rules. Table 1 compares the rates being paid in two quarters, so its payment rows are lower than those of Table OA.15. That table counts the indexation that pays for prices to June 2026. The second column of that table spans the September 2009 pension reform increase and the higher earnings floor from 20 March 2010 (Department of Social Services 2022). CPI rents, which the Bureau measures net of Rent Assistance (Australian Bureau of Statistics 2023), rose 24.4 and 61.5% over the two spans. They therefore cannot tell whether Rent Assistance kept pace with rents.

TABLE OA.15. WHAT INDEXATION DELIVERED

Series	Prices from Dec 2019 (%)	Prices from Dec 2008 (%)
Pension rule (statutory)	31.8	70.3
Pensioner and beneficiary factor alone	28.6	64.0
Consumer price rule (statutory)	26.8	58.4
Consumer price rule as paid	26.8	58.2
Age pension paid	31.9	106.3
JobSeeker paid	45.8	82.0
Rent Assistance paid	60.3	101.3
Age pensioner living costs	28.1	62.9
Other transfer recipient living costs	29.7	67.8

Notes. Each column covers price movements from the stated quarter to June 2026 and the indexation that pays for them. The rules cumulate the factors applied on the 13 indexation days from 20 September 2020 to 20 September 2026 (from 20 September 2009 for the second column) (Commonwealth of Australia 1991). They use the index numbers published in November 2026, with the March 2013 clean energy deduction (Department of Veterans' Affairs 2026). As paid: the same product using the factors implied by the published JobSeeker (Newstart before March 2020) rates. Paid rows are the change in each maximum rate over the same days, excluding temporary supplements and the clean energy and energy supplements (Department of Social Services 2026a, 2026b, 2026c). Living cost rows are index changes over the stated quarters.

TABLE OA.16. HALF-YEARLY MOVEMENTS AND INDEXATION FACTORS SINCE 2009

Half-year to	CPI (%)	PBLCI (%)	CPI factor	PBLCI factor	Factor paid
Jun 2009	0.61	1.01	1.006	1.010	1.006
Dec 2009	1.49	1.63	1.015	1.016	1.015
Jun 2010	1.54	2.15	1.015	1.022	1.015
Dec 2010	1.11	1.74	1.011	1.017	1.011
Jun 2011	2.48	2.76	1.025	1.028	1.025
Dec 2011	0.59	0.45	1.006	1.005	1.006
Jun 2012	0.58	0.60	1.006	1.006	1.006
Dec 2012	1.62	1.57	1.009	1.009	1.009
Jun 2013	0.72	0.75	1.007	1.008	1.008
Dec 2013	1.95	1.67	1.019	1.017	1.019
Jun 2014	1.10	1.40	1.011	1.014	1.010
Dec 2014	0.61	0.23	1.006	1.002	1.007
Jun 2015	0.91	0.81	1.009	1.008	1.008
Dec 2015	0.78	0.54	1.008	1.005	1.008
Jun 2016	0.24	0.39	1.002	1.004	1.002
Dec 2016	1.23	1.32	1.012	1.013	1.013
Jun 2017	0.65	0.74	1.007	1.007	1.006
Dec 2017	1.29	1.50	1.013	1.015	1.013
Jun 2018	0.80	0.97	1.008	1.010	1.008
Dec 2018	0.96	1.04	1.010	1.010	1.010
Jun 2019	0.58	0.81	1.006	1.008	1.006
Dec 2019	1.25	1.10	1.013	1.011	1.012
Jun 2020	−1.56	−0.64	1.000	1.000	1.000
Dec 2020	2.47	1.28	1.009	1.006	1.009
Jun 2021	1.31	1.60	1.013	1.016	1.014
Dec 2021	2.13	1.34	1.021	1.013	1.021
Jun 2022	3.99	3.60	1.040	1.036	1.040
Dec 2022	3.72	3.73	1.037	1.037	1.037
Jun 2023	2.22	3.19	1.022	1.032	1.022
Dec 2023	1.79	1.49	1.018	1.015	1.018
Jun 2024	1.99	2.62	1.020	1.026	1.020
Dec 2024	0.41	0.21	1.004	1.002	1.004
Jun 2025	1.67	2.61	1.017	1.026	1.016
Dec 2025	1.92	1.43	1.019	1.014	1.019
Jun 2026	1.98	3.18	1.020	1.032	1.020

Notes. CPI is the CPI and PBLCI the pensioner and beneficiary living cost index. Movements are the percentage change over the half-year to each June or December reference quarter, on the index numbers published in November 2026. Statutory factors divide the reference-quarter index by the highest earlier June or December index, rounded half up at three decimal places and never below one (Commonwealth of Australia 1991). They apply on the following 20 September or 20 March; the December 2012 factors include the clean energy deduction (Department of Veterans' Affairs 2026). Factor paid is the JobSeeker (Newstart before March 2020) rate on that day over the previous rate, with the September 2023 increase added to the previous rate.

TABLE OA.17. JOBSEEKER RATES PREDICTED BY THE STATUTORY FACTOR AND PAID

Indexation day	Predicted ($ a fortnight)	Paid ($ a fortnight)
20 Sep 2020	565.70	565.70
20 Mar 2021	570.80	570.80
20 Sep 2021	628.90	629.50
20 Mar 2022	642.70	642.70
20 Sep 2022	668.40	668.40
20 Mar 2023	693.10	693.10
20 Sep 2023	749.20	749.20
20 Mar 2024	762.70	762.70
20 Sep 2024	778.00	778.00
20 Mar 2025	781.10	781.10
20 Sep 2025	794.40	793.60
20 Mar 2026	808.70	808.70
20 Sep 2026	824.90	824.90

Notes. Predicted is the previous maximum basic rate (single, 22 or over), plus the $40 increase on 20 September 2023, times the statutory consumer price factor, rounded to ten cents (Department of Social Services 2026a).

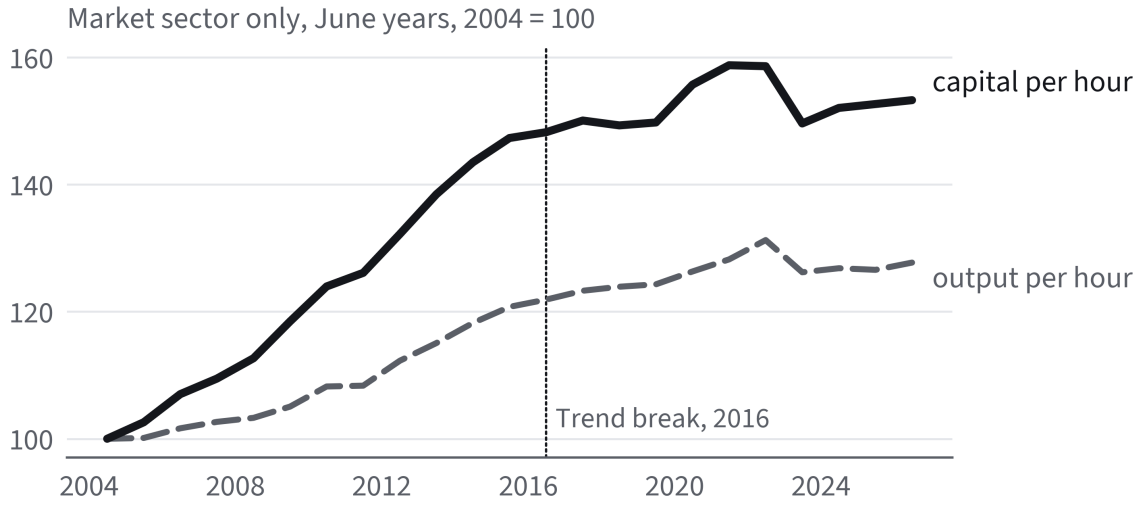
TABLE OA.18. SHORTFALL OF WHAT PAY BUYS AGAINST THE MODEL PATH, BY SHOCK AND ORDER, MARCH 2020 TO JUNE 2026

Shock	Main orders, mean	Main orders, range	Pay after prices, range	Pay before prices, range	CPI, mean
Prices	−12.1	−13.7 to −10.8	−13.8 to −10.8	−6.3 to −2.1	−12.7
What an hour buys (its own)			0.0 to 0.9	−8.9 to −6.3	
Prices and pay together			−13.6 to −9.9	−15.2 to −9.9	
Cash rate	−2.5	−4.0 to −0.6	−4.2 to −0.6	−4.1 to 0.5	−0.1
Output per hour	−0.4	−0.8 to −0.1	−0.9 to −0.0	−0.9 to −0.0	−0.2
All shocks	−14.4		−14.4	−14.4	−9.9

Notes. Log points. Structural vector autoregression with two lags, fitted from March 1999 to December 2019; the forecast error of log W/P split by shock. CPI column: main orders. Main orders: the 24 with the terms of trade first and W/P last. The next two columns split all 720 orders by whether W/P comes after inflation. Across them, own shocks account for −0.1 to 5.2 of the 3.7 points by which the cash rate stood above the model's path in December 2023. With one lag the main-order rows for prices, cash rate, output per hour and all are −13.3, −3.3, −1.0 and −16.4; with four lags −11.3, −5.1, 0.6 and −16.2.

FIGURE OA.2

Market-sector capital and output per hour worked, June years, 2004 to 2026.



Notes. Market sector only. Capital per hour worked (black) and output per hour worked (grey, dashed), June years, 2004 = 100 (Australian Bureau of Statistics 2026b). The dotted vertical line marks the 2016 trend break in capital per hour.

TABLE OA.19. OUTPUT PER HOUR, CAPITAL AND INDUSTRIES, JUNE YEARS

Years	Market output per hour	Capital deepening	MFP	Capital per hour	Within industries (%)	Between industries (%)	Interaction (%)
2004 to 2012	1.46	1.50	−0.04	3.1	5.1	7.7	−3.1
2012 to 2019	1.46	0.78	0.68	1.8	9.8	−1.0	−0.6
2019 to 2026	0.39	0.13	0.26	0.3	1.0	1.8	−1.1

Notes. Market sector growth accounting in % a year (Australian Bureau of Statistics 2026b): output per hour equals capital deepening plus multifactor productivity (MFP). Capital per hour: net capital stock summed over the 19 industries over labour account hours actually worked, whole economy, % a year (Australian Bureau of Statistics 2026e). Shift-share of whole-economy output per hour over each period, %: growth within industries at the start-year mix of hours, reallocation of hours between industries, and their interaction; the three add to the whole-economy change.

TABLE OA.20. WAGE EQUATION, FITTED SEPTEMBER 1998 TO DECEMBER 2019

	Value
Constant (quarterly, points)	1.021
Wage growth in the previous quarter (coefficient)	−0.041
Unemployment rate, previous quarter (coefficient)	−0.096
t-statistic	−2.25
Expected inflation, market economists (coefficient)	0.124
t-statistic	3.21
Quarters with an expectations reading	82
R-squared	0.14
Wage growth predicted, Dec 2019 to Jun 2026 (%)	26.4
Wage growth actual (%)	20.7
Shortfall: main equation (%)	−4.5
Shortfall: underutilisation for unemployment (%)	−5.1
Shortfall: union officials' expectations (%)	−3.1
Shortfall: lagged trimmed mean inflation (%)	−5.0
Shortfall: fitted from 2010 (%)	−5.3
Shortfall, 90% bootstrap band (%)	−6.6 to −2.5
Shortfall if the super guarantee rise was passed back (%)	−2.4
Holdout: fitted to 2012, actual against predicted 2013–2019 (%)	−8.6

Notes. Quarterly log change in the wage price index (×100) on its own lag, the unemployment rate averaged over the previous quarter, and one-year-ahead inflation expectations of market economists (Reserve Bank of Australia 2026e). Newey-West errors with four lags. The prediction runs the equation forward on recorded unemployment and expectations, with its own lag taken from the prediction.

TABLE OA.21. ROBUSTNESS OF THE PASS-THROUGH

Variant	Cumulative (pp per pp)	t	Quarters
COVID quarters included	1.16	7.52	113
Lags 0 to 6	1.17	7.37	105
Lags 0 to 8	1.35	8.88	105
Newey-West with 8 lags	1.15	7.68	105
Last-month average cash rate	1.08	7.56	105
Quarters to December 2019 only	0.93	9.73	86
Control: national electricity price growth	1.14	7.12	105
Controls: electricity and headline CPI growth	1.24	7.18	105
Control: the gap in the previous quarter	1.34	7.46	104

Notes. Each row reruns the employee minus age pensioner pass-through of Table OA.13 with one change. Newey-West errors with four lags unless stated. The last-month row uses the average cash rate target in the final month of each quarter. Leaving out one rate episode at a time gives 1.13 to 1.26. In a model with the cash rate changes one and two quarters ahead, on complete quarters only, their coefficients are 0.10 (t = 0.58) and −0.20 (t = −2.00). On rises only the estimate is 1.44 (t = 10.49), on cuts only 0.96 (t = 9.56); the difference has t = 2.70.

TABLE OA.22. SURVEY MEASURES OF FINANCIAL STRAIN, EACH ON ITS OWN SAMPLE

Survey	Design	Period	Share (%)	Sample
Life in Australia	Probability panel	Feb 2020	26.7	3,228
Life in Australia	Probability panel	Nov 2020	17.3	3,029
Life in Australia	Probability panel	Apr 2023	32.2	4,469
Life in Australia	Probability panel	Aug 2023	30.3	4,204
Life in Australia	Probability panel	Jan 2024	34.2	4,057
Election survey	Online panel	Oct 2024	29.9	3,622
Election survey	Online panel	Jan 2025	33.1	3,514
Election survey	Online panel	Mar–Apr 2025	33.8	3,608
Pulse survey	Stratified cross-section	Feb 2024	7	1,178
Australia Institute	Weighted online panel	Jul 2024	72	1,014
Foodbank	Quota sample	Mid-2025	33	4,260

Notes. Share is the percentage of adults who found their present income difficult or very difficult (Life in Australia and the election surveys, the same question on different panels). For the pulse survey it is the share behind on rent or the mortgage, and for Foodbank the share of households classified food insecure. For the Australia Institute it is the share who said their income had grown more slowly than the cost of living over the past year. The last three sources report whole percentages. Designs differ, so rows from different surveys are not compared, and none enters the living cost indexes. Sources: (Biddle 2025a, 2025b; Biddle and Gray 2023; Biddle, Gray and Phillips 2024; Foodbank Australia 2025; Gamarra Rondinel et al. 2024; Heap 2024).

TABLE OA.23. NEW-BOND RENTS IN MELBOURNE AND ADELAIDE

City	Dec 2019	Latest	Since Dec 2019 (%)	Price against wages (%)	Since Jun 2022 (%)	Price against wages (%)
Melbourne	420	575	36.9	16.6	33.7	19.3
Adelaide	340	570	67.6	40.2	39.0	21.7

Notes. Dollars a week. Sources: Homes Victoria rental report; South Australian private rental report. Melbourne is the published Metro row in the Victorian all-properties rental report. Adelaide is the published Metro total in the South Australian private rental report. Latest is September 2025 in Melbourne and March 2026 in Adelaide. Wages are the state's wage price index to that quarter. Perth, Hobart, Darwin and Canberra have no published new-bond row in this study.

TABLE OA.24. SPENDING SHARES BY INCOME QUINTILE, 2015–16

Item	Lowest quintile (%)	Highest quintile (%)
Housing	23.4	18.0
Fuel and power	4.4	2.1
Food	18.7	14.3
Transport	12.3	15.7

Notes. Share of total goods-and-services expenditure in the 2015–16 Household Expenditure Survey, equivalised disposable household income quintiles (Australian Bureau of Statistics 2017). Not a price change from 2019 to 2026.

TABLE OA.25. HOUSING COSTS AS A SHARE OF GROSS INCOME, 2019–20

Tenure	Median share (%)
Owner without mortgage	4.0
Owner with mortgage	16.4
Private renter	22.3
All households	13.7

Notes. Median ratio of housing costs to gross household income, all households, 2019–20 (Australian Bureau of Statistics 2022b). Not the employee living-cost index.

TABLE OA.26. INSOLVENCIES, FULL YEARS IN EACH FILE

Series	Change (%)
Personal insolvencies, 2020 to 2023	−27.7
Personal insolvencies, 2022 to 2023	18.0
Companies, all industries, 2022 to 2025	127.3
Companies, construction, 2022 to 2025	98.6

Notes. Company counts are firms and are not split by firm size; personal counts are people. Personal insolvencies are the Australian total, one value in each of twelve months, 2020 through 2023. Company figures are first-time external administrations, all industries and construction, calendar 2022 to calendar 2025. The company file starts in July 2021 and does not split firms by size. Sources: Australian Financial Security Authority, personal insolvency statistics; Australian Securities and Investments Commission, insolvency statistics series 1 and 2.

The national employee basket is not published by state or by income. The files do allow that one basket to be compared with other pay. An hour's pay buys less of it in every state (Figure 2). Full-time earnings buy less in every state from June 2022. From December 2019 they buy 0.3% more in South Australia and less in the other states (Table OA.27). Every industry's hourly wage buys less in both windows (Table OA.5).

TABLE OA.27. STATE PAY AGAINST THE NATIONAL EMPLOYEE BASKET

State	Hourly, from 2019 (%)	Hourly, from 2022 (%)	Full-time, from 2019 (%)	Full-time, from 2022 (%)
Australian Capital Territory	−7.0	−6.5	−4.2	−6.8
New South Wales	−8.1	−7.5	−3.9	−4.9
Northern Territory	−9.0	−8.1	−9.9	−6.4
Queensland	−6.3	−6.2	−3.0	−3.5
South Australia	−7.5	−6.8	0.3	−2.0
Tasmania	−6.2	−6.6	−2.5	−5.0
Victoria	−8.6	−8.0	−5.1	−5.9
Western Australia	−6.8	−6.2	−4.1	−7.2

Notes. Change in what that state's pay buys of the national employee living cost index, to June 2026. Negative means pay buys less. Hourly pay is the wage price index. Full-time pay is average weekly ordinary-time earnings, from the November 2019 and May 2022 surveys to May 2026.

The July 2024 tax cut, at five points on the resident scale, is at most 2.8% of pay. That is less than the fall in what an hour of pay buys (Table OA.28).

TABLE OA.28. JULY 2024 TAX CUT AT POINTS ON THE RESIDENT SCALE

Taxable income ($ a year)	Tax cut ($ a year)	Tax cut (% of pay)
45,000	800	1.8
80,000	1,680	2.1
135,000	3,730	2.8
180,000	3,730	2.1
200,000	4,530	2.3
108,400 (full-time ordinary earnings)	2,390	2.2

Notes. Resident tax before the Medicare levy and offsets, 2023–24 rates less 2024–25 rates, at the incomes shown.

Electricity and gas are published by capital to June 2025. Compared with the state's hourly wage, electricity is 2.2% higher in Brisbane and 30.5% lower in Hobart. Gas is 26.4% higher in Melbourne (Table OA.29).

TABLE OA.29. ELECTRICITY AND GAS AGAINST STATE WAGES, TO JUNE 2025

Capital	Electricity against wages (%)	Gas against wages (%)
Sydney	−5.1	11.0
Melbourne	−22.4	26.4
Brisbane	2.2	−5.8
Adelaide	−10.8	14.1
Perth	−6.9	−0.9
Hobart	−30.5	7.6
Darwin	−15.7	12.4
Canberra	−5.6	5.8

Notes. Percentage change in the capital's price relative to the state's wage price index, December 2019 to June 2025. A negative figure means the price rose by less than the state's hourly wage. The capital price series end in June 2025.

Capitals: necessity prices against wages. The main text does not rely on this comparison. It asks whether, from 2023, necessity prices measured against local wages moved further apart across the capitals than inflation and the long-run trend would predict. A literature finds that relative price changes spread out more when inflation is higher, and US cities with above-average inflation also have more dispersed relative prices (Debelle and Lamont 1996). In Australian consumer prices the spread rose with unexpected inflation, though the link fades in the later years of the sample (Nath and Sarkar 2019). The comparison borrows the idea by analogy and conditions on the inflation level.

For capital c in quarter t the necessity burden is $N_{ct} = 100 \sum_g w_g P_{gct}/W_{st}$. Here P_{gct} is the index of consumer price group g (food, housing, health, transport) in capital c and W_{st} the wage price index of its state s. Both are rebased to a 2019 average of 100.

The weights w_g are the national September 2021 shares, renormalised to sum to one: food 29.4%, housing 40.7, health 11.3, transport 18.5 (rounded). The burden measures necessity prices against the price of a fixed set of jobs, not against income. Indexes rebased to the same year start equal, so the test uses the cross-city standard deviation of annual growth in the burden, one June change a year.

The necessity basket tracks the Bureau's non-discretionary series (Australian Bureau of Statistics 2025b). From December 2019 to June 2025 it rose 24.2% against 23.1%, and their June-on-June growth rates have a correlation of 0.94 over 19 years.

Table OA.30 reports the necessity burden by capital and Table OA.31 the group contributions. In June 2025 the burden stands between 102.9 in Hobart and 111.8 in Perth, with the 2019 average at 100. Averaged across the capitals, burden growth was −0.63% a year from 2015 to 2019 and 0.09% from 2023.

TABLE OA.30. NECESSITY BURDEN BY CAPITAL

City	Burden (2019 = 100)	Prices (2019 = 100)	Wages (2019 = 100)	Growth 2015–19 (% a year)	Growth 2023–25 (% a year)
Sydney	105.0	123.5	117.6	−0.19	0.68
Melbourne	105.2	123.2	117.1	−0.38	0.35
Brisbane	107.4	128.1	119.3	−0.63	−0.25
Adelaide	107.6	126.6	117.7	−0.64	1.05
Perth	111.8	132.7	118.7	−1.08	0.73
Hobart	102.9	123.9	120.4	−0.26	−1.19
Darwin	104.8	122.5	116.9	−1.89	−0.59
Canberra	104.5	123.9	118.6	0.04	−0.10

Notes. Burden is 100 times the four-group necessity price index over the state wage price index, both with the 2019 average at 100, June 2025. Growth is the mean four-quarter log change of the burden (% a year); the later period starts in 2023 so no change uses a COVID-period base.

TABLE OA.31. CONTRIBUTIONS TO THE NECESSITY PRICE INDEX SINCE 2019

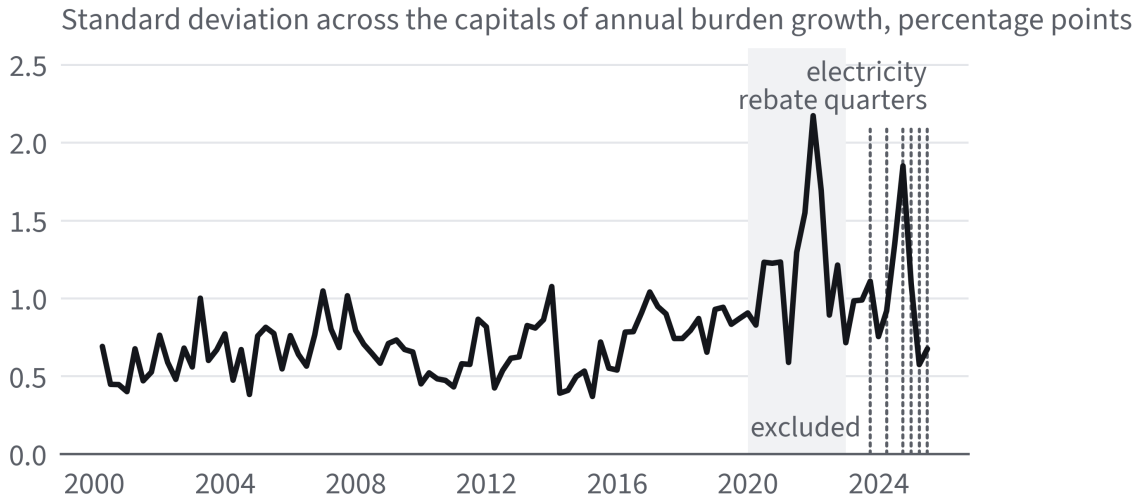
City	Food	Housing	Health	Transport	Index (2019 = 100)
Sydney	7.52	9.03	2.85	4.10	123.5
Melbourne	7.92	8.61	2.84	3.81	123.2
Brisbane	7.54	13.82	3.43	3.33	128.1
Adelaide	8.52	11.18	3.02	3.89	126.6
Perth	7.89	17.99	2.71	4.10	132.7
Hobart	7.39	10.19	2.68	3.63	123.9
Darwin	7.50	7.70	2.86	4.43	122.5
Canberra	7.01	10.10	2.75	4.07	123.9

Notes. Contribution of each group to the four-group necessity price index in June 2025, in index points: the group's basket weight times its index minus 100. Total is the price index level. Transport is the whole CPI transport group for that capital, on the national group weight. It covers vehicles, fuel, maintenance and fares. It does not include road tolls or split a capital. A toll paid by only some households in Sydney is inside that one city index.

Figure OA.3 plots the cross-city standard deviation of annual burden growth, which has drifted up since the late 1990s by 0.012 points a year (t = 2.69). Holding that trend and the inflation level fixed, the June-on-June spread from 2023 is 0.19 points above its prediction. The trend and the June anchor were chosen after other specifications had been estimated, so Table OA.32 reports every alternative.

FIGURE OA.3

The spread of necessity burden growth across the capitals has drifted up since the late 1990s.



Notes. Standard deviation across the eight capitals of the four-quarter log change in the necessity burden, in percentage points, quarterly from 2000. Shaded: 2020 to 2022, excluded from the tests. Grey dotted lines: quarters from 2023 in which a capital's electricity index fell by more than 15%.

Only three June observations fall after 2022, so the inference rests on placebo windows. Each run of three June observations before 2020 is treated in turn as the post-period. That gives 19 placebo estimates, with a standard deviation of 0.10 and a largest absolute value of 0.18. None is as large as the estimate. The placebo p-value is one plus the number at least as large, over one plus the number of windows: 0.05, the smallest these windows allow. Adjusted for the two tests by the Holm method, it is 0.050.

The estimate is fragile in three ways. It rests on one capital: leaving out Perth gives 0.01, while leaving out any other capital gives up to 0.35. It depends on the trend: without it the June estimate is 0.41 ($t = 2.70$). And it depends on the quarter: with the trend, September changes give 0.85 and March changes 0.06, and starting the sample in 2010 turns the estimate negative.

On overlapping quarterly changes the Newey-West t-statistic rises with the bandwidth, from 2.84 at two lags to 4.98 at eight. Those standard errors are unreliable in a short sample with an indicator that switches on only at the end. Once the trend is included, the slope of the spread on the inflation level is −0.013 points per point ($t = -0.56$), not significantly different from zero.

Electricity rebates are one candidate source of the post-2022 spread. The Commonwealth Energy Bill Relief Fund and state rebates differed across capitals in coverage, size, and timing (Australian Bureau of Statistics 2023, 2024b). The cross-city spread of annual electricity price growth rose from 5.0 points in 2015 to 2019 to 24.5 from 2023. Over the same spans the spread of rent growth fell from 3.2 to 2.4.

Removing electricity from each capital's housing group lowers the reported estimate from 0.19 to 0.12, and the quarterly estimate without a trend from 0.39 to 0.28 ($t = 3.64$). It also removes price movements unrelated to rebates.

On ten-quarter changes the capitals ended no further apart: the spread is 1.69 points to June 2025 against 1.78 to December 2019.

Table OA.33 reruns the reported test with other baskets and denominators. The estimate is positive in five of the six variants and significant on its Newey-West error in none (Table OA.33). It is negative with full-time ordinary earnings as the denominator (−0.20), but state earnings have large sampling errors in the smaller states and territories, so that row is noisy. State household income per capita is not used because it includes the transfer payments studied in Section 6.

TABLE OA.32. CAPITAL-CITY TEST SPECIFICATIONS

Specification	Spread above prediction from 2023 (pp)	t	Observations
June, with trend (reported)	0.19	1.10	24
June, without trend	0.41	2.70	24
March, with trend	0.06	0.32	24
September, with trend	0.85	4.78	24
December, with trend	0.14	1.33	24
June, with trend, sample from 2005	0.15	0.65	18
June, with trend, sample from 2010	−0.22	−0.93	13
June, with trend, electricity removed	0.12	0.59	24
Every quarter, with trend	0.28	2.28	96
Every quarter, 2015 to 2019 baseline, no trend	0.20	1.18	30
Every quarter, no trend, 2 lags	0.39	2.84	96
Every quarter, no trend, 4 lags	0.39	3.97	96
Every quarter, no trend, 8 lags	0.39	4.98	96
Every quarter, no trend, electricity removed	0.28	3.64	96

Notes. OLS (ordinary least squares) of the cross-city standard deviation of annual burden growth on the absolute CPI inflation rate and an indicator for 2023 onward, with a linear trend where stated; annual changes ending in 2020 to 2022 excluded. Rows named by month use one annual change a year ending in that month and Newey-West errors with one lag; quarterly rows use every quarter and the stated Newey-West lags (four unless stated). The 2015 to 2019 baseline row uses only quarters from 2015. Electricity removed takes electricity out of the housing group at each capital's September 2021 weight within housing, updated each quarter by the relative price of electricity.

TABLE OA.33. ROBUSTNESS OF THE CAPITAL-CITY TEST

Variant	Spread above prediction from 2023 (pp)	t	Observations
Rents and utilities instead of the housing group	0.19	1.20	24
Equal weights within the basket	0.23	1.48	24
Basket without the housing group	0.13	1.32	24
National wage index for every capital	0.18	1.11	24
Full-time ordinary earnings as the denominator	−0.20	−0.72	25
2022 kept in the sample	0.15	1.05	25

Notes. Each row reruns the reported capital-city test of Table OA.32 (June changes, linear trend, inflation level, annual changes ending in 2020 to 2022 excluded) with one change. Newey-West errors with one lag. Average weekly earnings are surveyed in May and November; the earnings row uses the May surveys as June observations, and its series starts a year earlier, in June 1998.