RESERVE BANK OF AUSTRALIA

Speech

Why Productivity Matters for Central Bankers

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Before I begin, I would like to acknowledge the Gadigal people, the Traditional Custodians of the land on which we are meeting today. We are very lucky in Australia that our First Nations people protect our land and culture to hand down to future generations, and I would like to pay my respects to Elders past and present and to any First Nations people here with us today.

There has been lot of discussion about productivity growth over recent months, that it has slowed, and how we as a country can reverse this. This is an extremely important issue, given the fundamental role that productivity growth has as a driver of rising living standards for Australians.

While these discussions are critical for the country and are very important to me as a private individual, as a central banker my focus has to be on the implications of slower productivity growth for the economic outlook and monetary policy settings.

To achieve our mandate – that is, sustaining low and stable inflation and a labour market at full employment – we need to understand what the economy will likely look like when we're at this point. Some features are easy to identify. For instance, we would need to see inflation holding around the middle of our 2–3 per cent target band. But other features are not as obvious. Specifically, what trend pace of GDP growth would be consistent with sustaining inflation and an economy at full employment?

What influences this trend rate of growth? One of the key drivers is productivity growth, alongside population growth and decisions around participation in the labour market (i.e. how many people want a

job and how many hours they want to work).[1] So understanding productivity growth is crucial in understanding the sustainable rate of growth in the economy.

To cut to the chase, in our latest *Statement of Monetary Policy* (SMP), we published an in-depth chapter that outlined our reasons for downgrading our assumption for the pace of productivity growth. This means our assumption for the sustainable, trend pace of GDP growth is lower than we previously thought and is lower than it has been historically. This new assumption is a key input to how we interpret actual GDP outcomes.

What is productivity and why does it matter for central banks?

Before we dive deeper, it's worth revisiting what economists mean by productivity, why it's important, and how it's been tracking in recent years.[2]

Put simply, productivity measures how much we produce with what we have, whether that's people, machinery, energy or other resources. When productivity increases, we can produce more goods or services, without requiring more inputs. Our economy becomes more productive when we find smarter ways to do things, whether by improving how we allocate resources, investing in new skills or machines, or creating and adopting new technologies. A great example of the latter is the computer – I can tell you it would have taken a lot longer if I had had to write this speech on a typewriter without the ability to easily 'delete', 'cut' and 'paste'!

So why is productivity growth so important? Most fundamentally, it is a key driver of improvements in our living standards over the medium term. As productivity rises it becomes cheaper to produce goods and services, and the economic pie grows as we can produce more with the scarce resources we have.

In the data that economists track, this improvement shows up as an increase in real incomes, which is a dollar value of the goods and services we can buy per hour worked, after stripping out inflation. For example, in 1901 it took 18 minutes on average to earn enough to buy a loaf of bread. Today that average is just 4 minutes.[3]

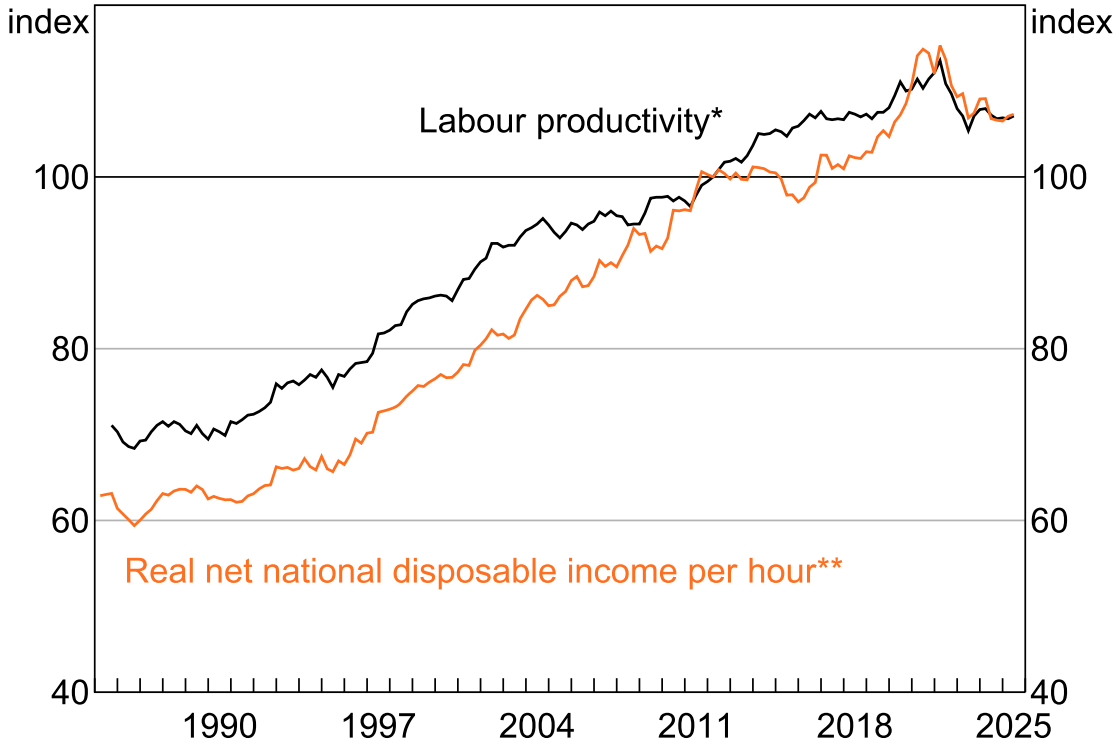
You can see the lift in real incomes per hour worked that comes from productivity growth in this chart (Graph 1). When productivity rises, we produce (and so earn) more. This allows all of us to either consume more, or work less and spend more time doing what we value most, or potentially both! In

fact, Australians have used around one-quarter of the productivity gains since 1980 to work less and have more leisure, with the rest being banked as higher income and consumption. [4]

Graph 1

Productivity and Income

March quarter 2012 = 100



* Non-farm GDP per hour worked.

** Real GDP per hour adjusted for the purchasing power effects of changes to the terms of trade, depreciation of the capital stock and net income transfers to the rest of the world.

Sources: ABS; RBA.

Another reason why productivity growth is important *from a monetary policy perspective* is that it affects both demand and potential supply in the economy, and the balance between them is what ultimately determines inflation.

Productivity growth allows us to produce more than we could before, which means it expands the supply capacity of the economy. This is an important consideration for monetary policy, because it means the economy can sustain a faster pace of growth in demand before it hits capacity constraints and inflation starts to rise. In this way, productivity growth determines the rate of growth the economy can sustain on an ongoing basis.

But productivity growth also supports demand. When productivity and real incomes are growing strongly, households generally lift their spending, and businesses will have an incentive to invest to keep up with growing demand.

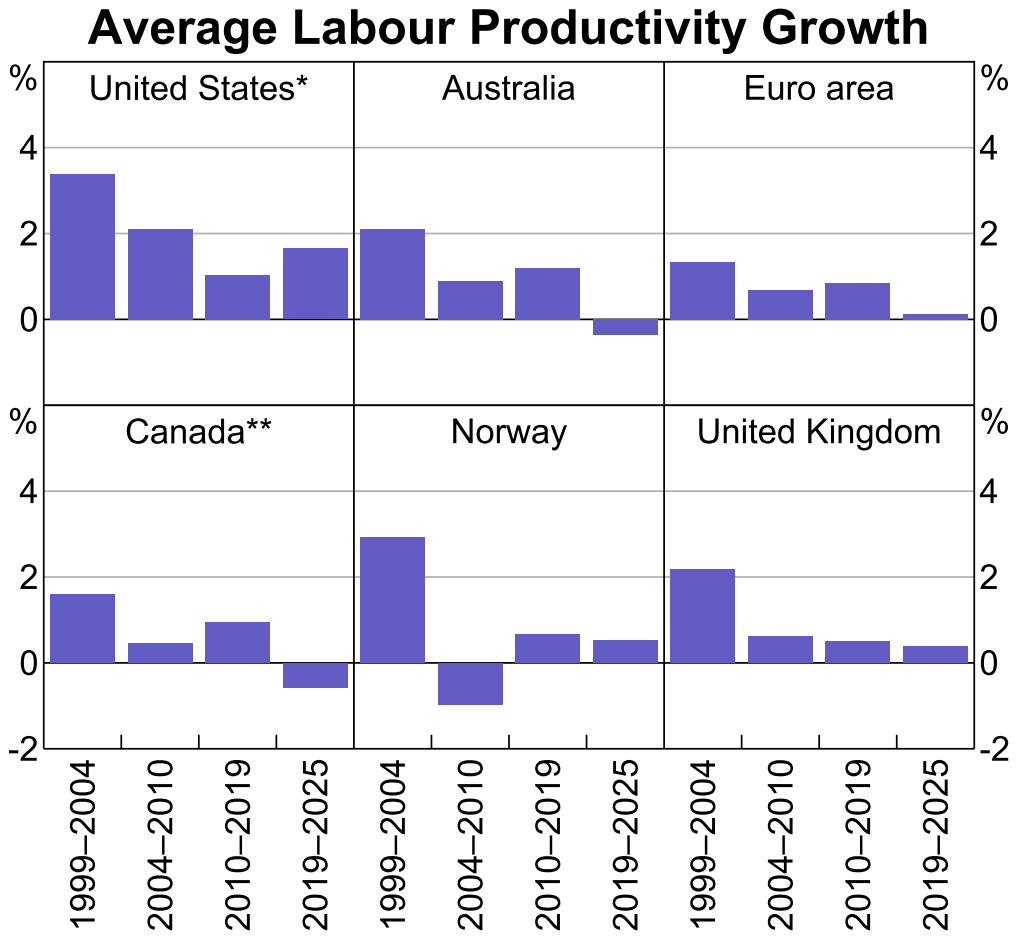
Growth in living standards is of course important to the RBA. We have a mandate to support the economic welfare of the Australian people. It's hard to argue that productivity growth is not a good outcome for the economy, given the role it plays in lifting living standards. But there is very little that central banks can do to directly influence productivity over the medium term, though this is an area of active research.[5]

Instead, our focus is on setting monetary policy to maintain price stability and achieve full employment, creating economic conditions that are conducive for investment and innovation to thrive. Understanding productivity dynamics in the economy is one important factor that we need to be across to be able to make sound monetary policy decisions.

What has happened to productivity growth?

It's now well established that productivity growth has slowed across many advanced economies – including Australia – since the mid-2000s (Graph 2). This trend has persisted in the post-pandemic period, with the notable exception of the United States.

Graph 2



* Non-farm business sector.

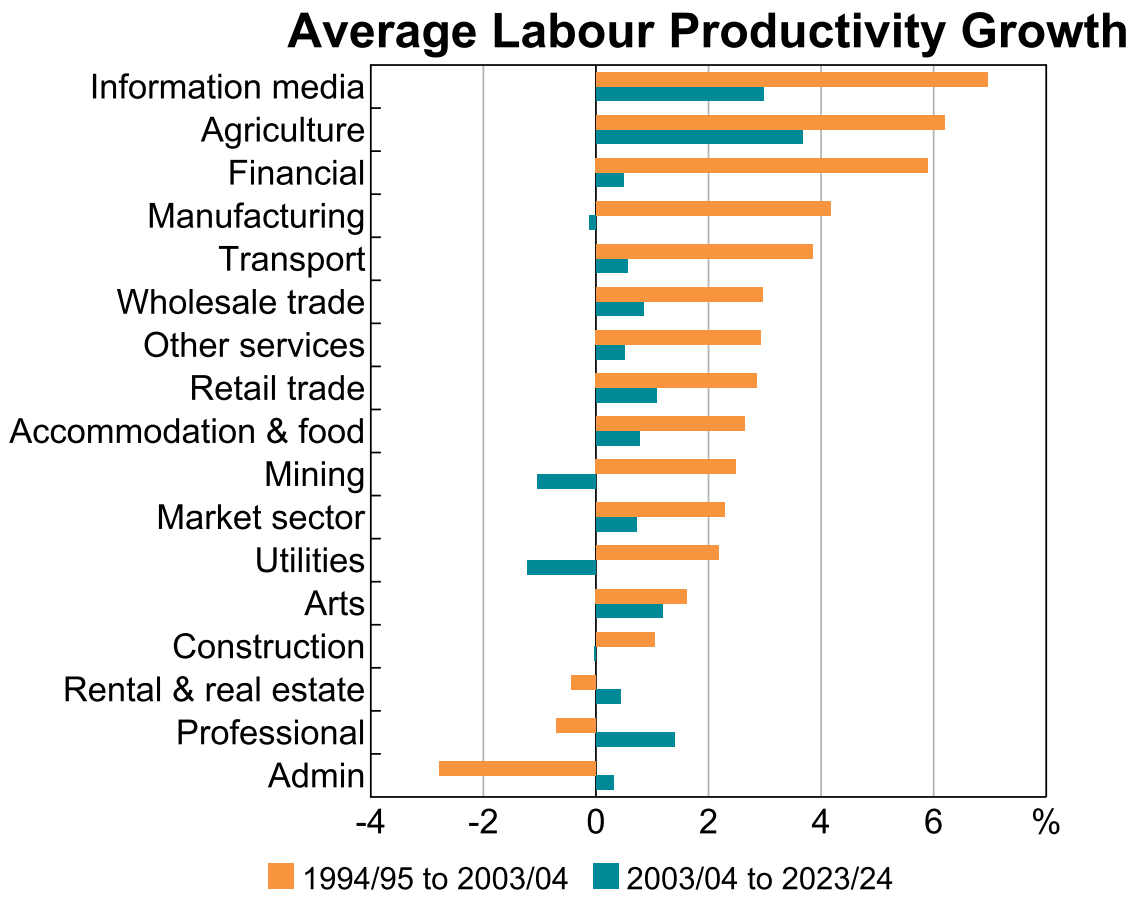
** Business sector.

Sources: ABS; LSEG; RBA.

In Australia, some sector-specific – and likely temporary – factors have weighed on aggregate productivity over the past five or so years. These include strong growth in the non-market sector's share of the economy, where *measured* productivity is low, and sharp declines in productivity in the mining sector, possibly as some miners have tapped less-productive deposits.

But there are also broader factors at work. Productivity growth has slowed in almost all sectors over the long run as can be seen in this chart (Graph 3).

Graph 3



Sources: ABS; RBA.

So, what are the drivers of this broad-based slowdown? The jury is still out, but Australian economic research – including analysis by colleagues at the RBA – has pointed to some key structural trends behind the Australian slowdown:

- Business and labour market dynamism has declined, which means it now takes longer for capital and labour to move to higher productivity firms. [6]
- Technological diffusion has slowed, with Australian firms taking longer to catch up to the global technological frontier – something mirrored in some other advanced economies. [7]
- Competition in the Australian economy appears to have declined, and indeed this is one factor that has contributed to declining dynamism and slowing technological diffusion. [8] In fact, joint work by staff at the RBA and Treasury suggests that returning to mid-2000's levels of competition could improve resource allocation and thereby raise productivity and the level of GDP by up to 3 per cent. [9]

- Capital deepening, which measures the rate of increase in the amount of capital available to each worker, is happening more slowly. That said, this could be a symptom as well as a cause, as slower growth in total-factor productivity should, in theory, lead to slower capital deepening.[10]

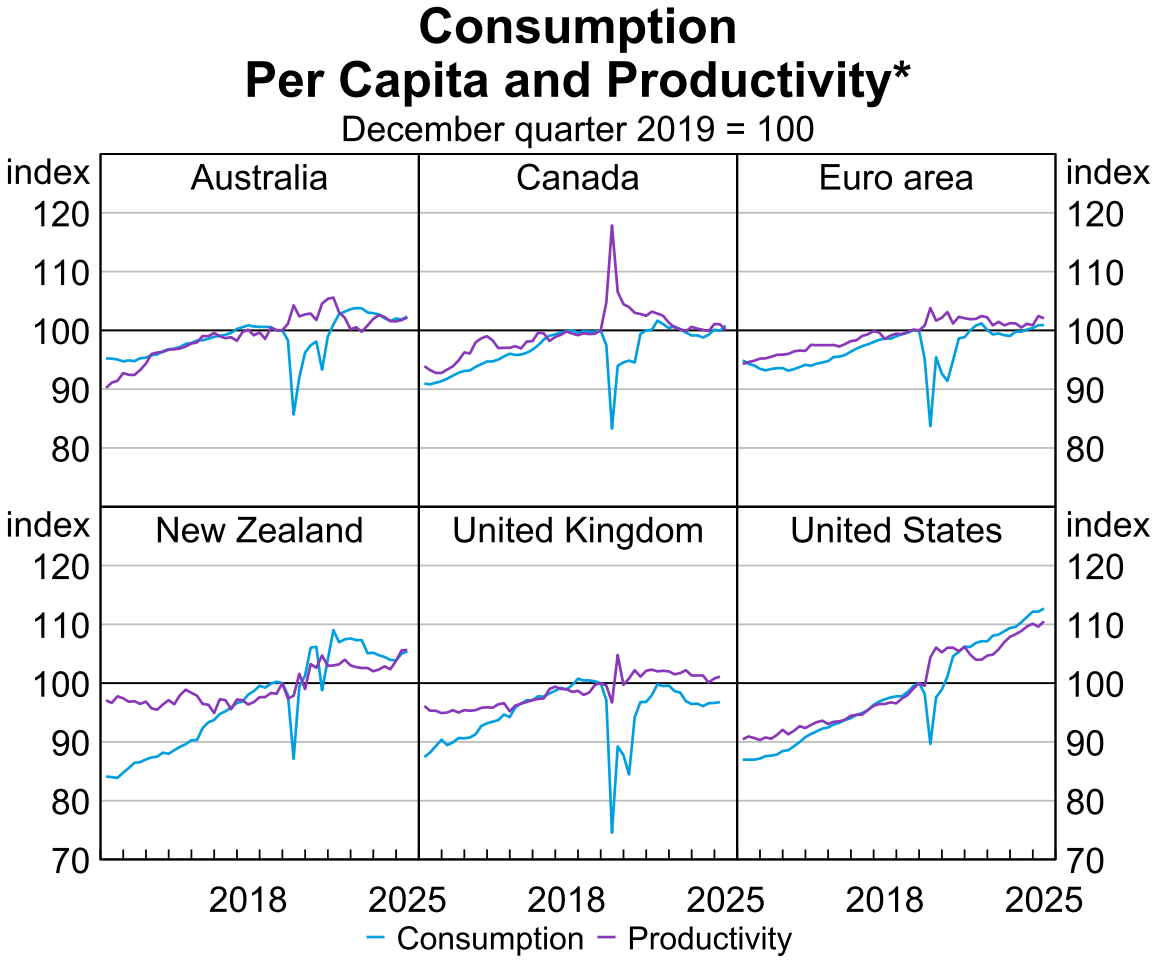
What has this meant for the Australian economy?

So, how has slower productivity growth affected economic outcomes? The first point to note is that the supply capacity of the economy – which economists call 'potential output' – has grown more slowly than it would have had the previous pace of productivity growth been maintained.

Second, as productivity growth has slowed over the last two decades, Australian households and businesses have generally adjusted down their consumption and investment spending to match the lower sustainable pace of growth.

Similar patterns have been evident overseas. In many countries, the pace of productivity growth has slowed recently. And generally speaking, the pace of consumption per capita has matched productivity growth (captured on this chart as GDP per capita); this has been the case for both strong productivity and weak productivity growth outcomes (Graph 4).

Graph 4



* Productivity presented as GDP per hour worked for New Zealand, and non-farm market sector GDP per hour worked for other economies.

Sources: ABS; CEIC Data; Department of Home Affairs; LSEG; RBA.

What are the implications for the outlook for the economy?

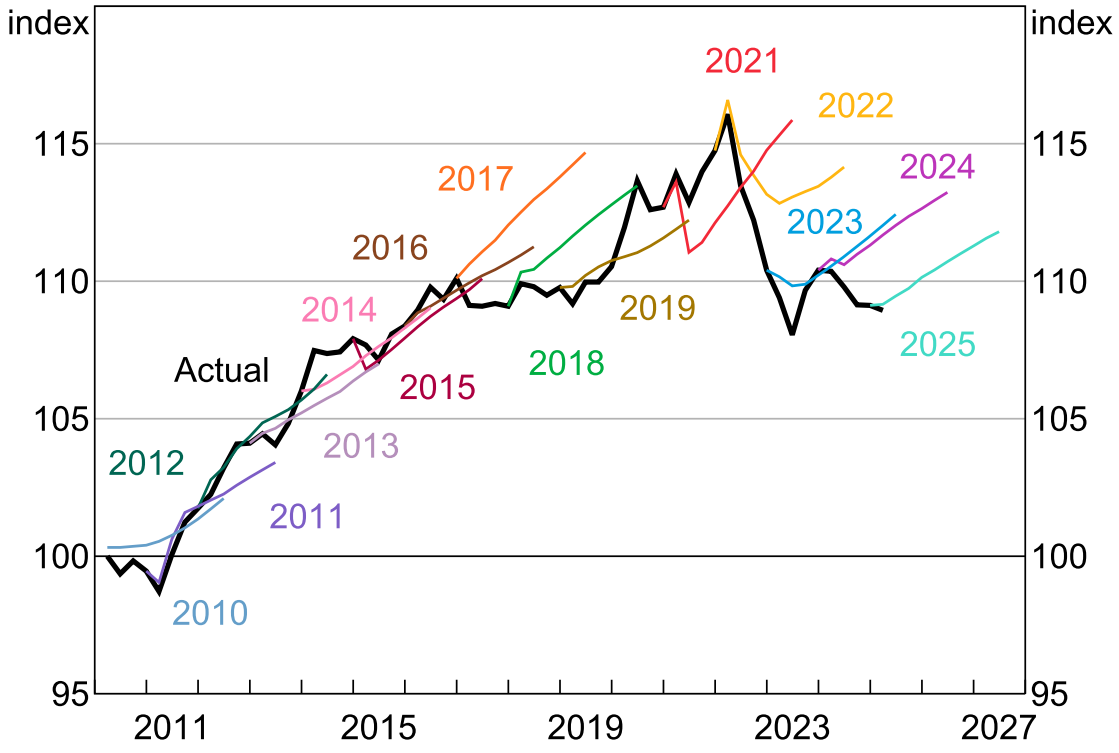
That brings me to the outlook for our economy, and the recent downgrade to the productivity assumption that underpins the RBA's forecasts.

As we presented in our August SMP, for some time we had assumed that the weakness in productivity growth was temporary. This meant that we were effectively assuming that productivity growth was going to be higher than it ultimately turned out to be (Graph 5).

Graph 5

Productivity*

SMP forecasts, March quarter 2010 = 100



* Non-farm GDP per hour worked; May SMP forecasts; May 2020 SMP omitted.

Sources: ABS; RBA.

Recognising this, and the evidence that at least part of the slowdown has reflected structural factors that are likely to persist, we downgraded our medium-term trend productivity growth assumption from 1.0 per cent per annum to 0.7 per cent in the August SMP.

It's worth emphasising that this is an assumption about productivity growth for the next two years or so. It says nothing about the outlook for productivity growth over the longer term which will be shaped by a broad range of developments, including the pace of diffusion of new technologies like AI. And consistent with this shorter time horizon, we will revisit the assumption regularly over time as the outlook for productivity changes.

Implications for the outlook for economic activity

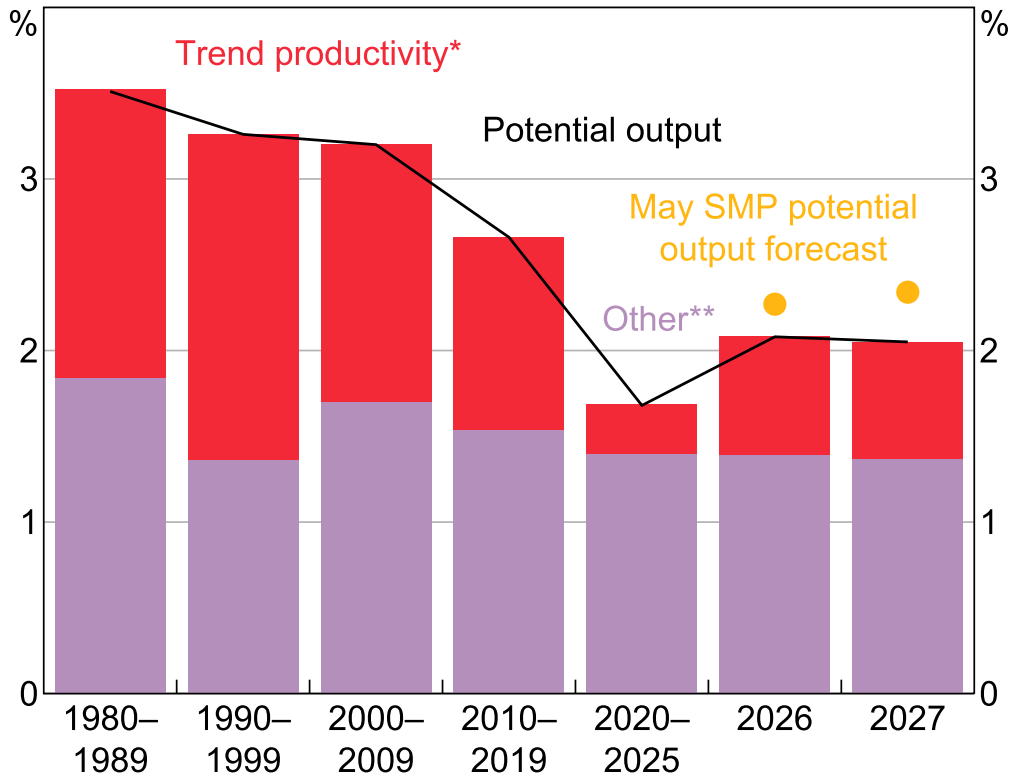
The downgrade to our productivity growth assumption has important implications for our assessment of the pace of growth that can be sustained without generating inflationary pressures. Specifically, our new assumption implies that over the medium term, potential output is expected to grow at around

2 per cent per year, rather than around 2¼ per cent.[11] This is slower than the pace seen in earlier decades, when both population and productivity growth were stronger (Graph 6).

Graph 6

Potential Output Components

Annual average growth



* Using the average of the three models in the potential output model suite (SMOG-PPE, Joint-stars and Production Function model).

** Other contributions from population, participation and average hours growth.

Source: RBA.

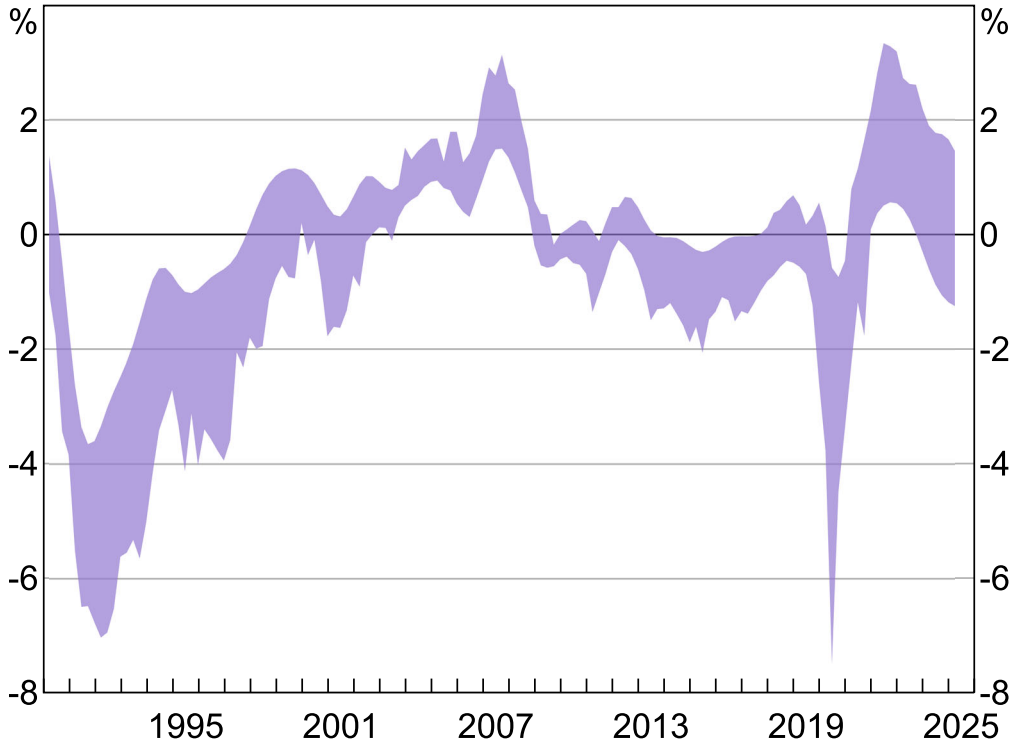
The impact of our revised productivity assumption on the outlook for the supply side of the economy and medium-term growth is clear. What's less certain is how it could affect the balance between potential supply and demand and hence the outlook for economic activity and inflation in the near term. As outlined in the August SMP, it looks like households and businesses have already internalised the slower productivity and income growth that has occurred in recent years. Given this, we downgraded our forecast for year-ended GDP growth by 0.3 percentage points by the end of our forecast horizon, which was in line with the downgrade to our forecast for potential output growth. In doing so we revised all components of GDP downward by roughly the same amount.[12]

So, what does all this mean for our assessment of the outlook for the balance of potential supply and demand and so inflation? In the wash-up, very little. The productivity downgrade has no effect on our assessment of the current balance of demand and supply, as this is based on recent and past data and so already captures slowing productivity growth. This revision also doesn't change our view on the future balance over our two-year forecast horizon. Our August SMP forecasts still had consumption and GDP growth picking up, but by a bit less than we previously expected. The gap between demand and supply still closed gradually, with inflation returning to the midpoint of the target range (Graph 7). [13]

Graph 7

Model Estimates of Output Gap*

Per cent of potential output



* Violet-shaded region shows illustrative range of central gap estimates from a selection of models encompassing different measures and definitions of the output gap; each estimate is subject to estimation uncertainty which is not shown in the graph, as well as revision due to data and model refinements.

Sources: ABS; OECD; RBA.

Where the revision does matter is for how we interpret the actual data we receive moving forward. In the past, when potential output was growing at 2½ to 3 per cent per year, quarterly GDP growth of around 0.5 per cent (equivalent to an annual growth rate of around 2 per cent) would have been seen

as subdued, or below trend. It would have suggested that growth in demand was slower than growth in supply capacity, in which case inflationary pressures would have been easing.

But with our new lower potential output assumption, that same rate of GDP growth would now signal demand and capacity growing largely in line with each other and inflationary pressures holding steady. I'll return to this later in the context of our current forecast for the economic outlook and the most recent national accounts data.

Implications for the outlook for the labour market

One important dimension of the downgrade to our productivity growth assumption that I haven't touched on yet is its implications for the labour market. Lower productivity growth doesn't really affect our outlook for the balance of demand and supply capacity in the labour market – including our forecasts for things like employment growth and the unemployment rate.

But it does have implications for the outlook for wages growth. Ultimately, productivity growth is the determinant of sustainable real wages growth, as it allows nominal wages to increase without leading to a buildup in inflationary pressure. So, while real wages can grow more quickly than productivity for a period without necessarily driving up inflation, over time productivity growth underpins the rate of real wages growth.

It follows then that the long-run rate of annual nominal wages growth that is consistent with our dual mandate – which is to have both inflation at the target and the labour market at full employment – equals the midpoint of the inflation target range (2.5 per cent) *plus* the rate of productivity growth (now assumed to be 0.7 per cent).

So, the productivity downgrade lowers our assessment of this rate from around 3.5 per cent to around 3.2 per cent when wages are measured using Average Earnings in the National Accounts (AENA). Unfortunately, the 'productivity growth plus 2.5 per cent rule' does not work as neatly for the Wage Price Index (WPI) due to the way its constructed. The equivalent calculation for the WPI would suggest a rate slightly below 3 per cent, but this should be interpreted with a bit more caution. [14]

It's important to note that this does not suggest that wages growth that is above these levels for a period will necessarily drive up inflation, or preclude a period of real-wage 'catch-up' that allows workers to recoup previous declines in real wages – indeed the August SMP forecasts include a projection for wages growth that exceeds these rates in the near term, while inflation remained close to the midpoint

of the target range. But the 'productivity growth plus 2.5 per cent' rule of thumb does provide a useful guide to what rate of nominal wages growth could be sustained in the long run, when the economy is sustainably and persistently at full employment. This again underscores the importance of productivity growth in driving ongoing improvements in living standards for Australians.

Risks to the forecasts

From a monetary policy standpoint, our August SMP forecasts looked pretty good. We expected inflation to stay around the midpoint of the target band over the next two years and for labour market conditions to remain broadly stable, with employment growth tracking underlying population growth.

But of course – as always – there were material risks on both sides of that central projection, as we set out in the August SMP and as I have discussed in previous speeches.[15] One such set of risks stems from the outlook for productivity.

Our revised assumption for productivity growth may still be too high. The revision implies that productivity growth picks back up to its 20-year average as some of the temporary drags wane – but this is no certainty. On the flipside, it's also possible that our new assumption is too low, particularly if the diffusion of technologies like AI occurs more quickly than many expect, or if some of the other longer term structural impediments unwind. If productivity growth – and therefore the economy's potential output – turns out to be different to our assumption in either direction, the effect on inflation would then hinge on the extent to which demand adjusts. In this sense, inflation outcomes can provide an important gauge on how these dynamics and risks are playing out.

What have we learnt from the latest data and developments?

So how have recent data flows fit with our forecasts?

If anything, outcomes have been a little stronger than those expected in the August SMP.

In the most recent National Accounts, GDP growth picked up to be 1.8 per cent over the year to the June quarter, slightly above our forecasts. Historically this would have seemed slow. But given our now-lower assessment of medium-term potential GDP growth, the outcome was broadly consistent with demand and potential supply growing at a similar pace.

At the same time, the high frequency data suggests that underlying inflation in the September quarter is likely to be stronger than we anticipated. This may suggest that the labour market, and economic conditions more generally, remain a bit tighter than we had assessed – and we're actively analysing this question ahead of our next set of forecasts which will be released in November. At the same time, employment growth has slowed by slightly more than we previously expected, and uncertainty about the global outlook remains elevated.

Given these signs that private demand is recovering, and indications that inflation may be persistent in some areas, while labour market conditions have been stable, the Board decided that it was appropriate to maintain the cash rate at its current level at the September meeting. Looking forward, we will monitor outcomes and continually reassess our view on the outlook for the economy, and the Board will adjust policy as appropriate as new information comes to hand.

Endnotes

[*] I would like to thank Oscar Douglas and Jonathan Hambur who provided significant support during the drafting of this speech, and Michelle Bergmann, Natasha Cassidy, Georgia Face, Bowen Hao, Andrew Hauser, Chris Kent, Michele Bullock, Brad Jones, Kevin Lane, Claude Lopez, Michelle Van der Merwe, Tom Williams, Suzanne Houweling, Michelle Wright, Samuel Evangelinos and Ada Zhou for their helpful contributions and comments. Any remaining errors and omissions are my own.

[1] This framework is often referred to as the 3Ps (productivity, population, participation) in the Australian economic and policy literature. See, for example, Treasury (2023), '2023 Intergenerational Report', Australian Government.

[2] For longer and more detailed discussions of why productivity matters, and what has happened to it over recent years, see Plumb M (2025), 'Why Productivity Matters', Speech at the Australian Business Economists Annual Forecasting Conference, Sydney, 27 February; Duretto M, O Majeed and J Hambur (2022), 'Overview: Understanding Productivity in Australia and the Global Slowdown', Treasury Round Up, October; Productivity Commission (2025), 'Growth Mindset: How to Boost Australia's Productivity: 5 Productivity Inquiries', Australian Government; Productivity Commission (2025), 'Productivity Before and After COVID-19', Research paper, Australian Government.

[3] Productivity Commission (2024), 'Higher Education and Productivity', Speech by Danielle Wood, Chair, at the National Conference on University Governance, Canberra, 23 October.

[4] Das R (2025), 'All Work and No Play: Productivity and the Choice between Money and Leisure', Productivity Commission *Quarterly Productivity Bulletin*, June.

[5] Some recent papers have argued that expansionary monetary policy can disproportionately support industry leaders, helping to entrench market power (e.g. Liu E, A Mian and A Sufi (2022), 'Low Interest Rates, Market Power and Productivity Growth', *Econometrica*, 90(1), pp 193–221). However, evidence for Australia does not support this finding (Nolan G, J Hambur and P Vermeulen (2023), 'Does Monetary Policy Affect Non-mining Business Investment in Australia', Evidence from BLADE', RBA Research Discussion Paper No 2023-09). Several recent papers have also argued that contractionary monetary policy can weigh on innovation, leading to medium-run declines in productivity (e.g. Moran P and A Queralto (2018), 'Innovation, Productivity and Monetary Policy', *Journal of Monetary Economics*, 93, pp 24–41). While there is some evidence of such a dynamic in Australia, it appears to be more short-lived and heterogenous, particularly once focusing on adoption of technologies not just innovation (O Majeed, J Hambur and R Breunig (2025), 'Does Monetary Policy Impact Innovation? Evidence from Australian Administrative Data', *Journal of Macroeconomics*, 86).

[6] Andrews D and D Hansell (2021), 'Productivity-Enhancing Labour Reallocation in Australia', *Economic Record*, 97(317), pp 157–169; Hambur J and D Andrews (2023), 'Doing Less, with Less: Capital Misallocation, Investment and the Productivity Slowdown in Australia', RBA Research Discussion Paper No 2023-03.

[7] Andrews D, J Hambur, D Hansell and A Wheeler (2022), 'Reaching for the Stars: Australian Firms and the Global Productivity Frontier', Treasury Working Paper No 2022-01; Andrews D, C Criscuolo and P Gal (2016), 'The Best versus the Rest: The Global Productivity Slowdown, Divergence across Firms and the Role of Public Policy', OECD Productivity Working Paper No 5.

[8] Hambur J (2023), 'Product Market Competition and its Implications for the Australian Economy', *Economic Record*, 99(324), pp 32–57.

[9] Hambur J and O Freestone 2025, 'How Costly are Mark-ups in Australia? The Effect of Declining Competition on Misallocation and Productivity', RBA Research Discussion Paper No 2025-05.

[10] In a standard growth model with labour-augmenting technology, the ratio of capital to labour in the economy should grow at the same rate as technology. So if underlying technology and productivity growth is slower, the amount of capital deepening should also be slow. For an excellent treatment of this, see Acemoglu D (2011), '14.452 Economic Growth: Lectures 2 and 3 The Solow Growth Model', Lecture Slides, MIT, 1 and 3 November.

[11] Productivity growth is not the only driver of potential output growth. The pace of population growth and structural shifts in the labour market also play a role; these underlying fundamentals are assumed to remain the same.

[12] The revision to non-mining business investment was a bit larger, as predicted in many economic models; slower productivity growth leads to a lower investment-to-output ratio, as firms don't need to invest as much to ensure that the capital stock keeps up with growth in activity. For a discussion and application to explaining the investment to mining and non-mining output ratios in Australia, see respectively Jenner K, A Walker, C Close and T Saunders (2018), 'Mining Investment Beyond the Boom', RBA *Bulletin*, March; Hambur J and K Jenner, 'Can Structural Change Account for the Low Level of Non-mining Investment', RBA *Bulletin*, June.

[13] There are a couple of other things to highlight in terms of the implications of the downgrade for the economic outlook. First, the lower productivity assumption has led us to downgrade our forecast for wages in the medium term, consistent with the discussion above. Second, there are no implications for our forecasts for employment and unemployment. In some senses this may seem surprising, given the activity downgrade. But ultimately this reflects the fact that each worker is now assumed to produce a little less, so we still need just as much labour in order to produce the lower level of GDP. Moreover, there are no implications for our assessment of the NAIRU, as this is estimated using past data on wages and unemployment, and should theoretically be driven by factors specific to the labour market, such as how efficiently the market matches workers and jobs.

[14] Unlike AENA, which covers overall labour costs, WPI tracks wages growth for a fixed basket of jobs. Productivity growth can reflect increases in productivity within jobs, but can also reflect the reallocation of people from low to high wage and productivity jobs. As it tracks only wages growth within jobs, WPI abstracts from some of the wages growth that may be associated with increased productivity as people move to higher paying, more productive jobs. Simple rule-of-thumb estimates suggest that, on average, WPI captures around half of productivity growth, but this will vary over time.

[15] Hunter S (2025), 'Joining the Dots: Exploring Australia's Economic Links with the World Economy', Speech to the Economic Society of Australia (Queensland) Business Lunch, Brisbane, 3 June.