

Budget blues: why the Stage 3 income tax cuts should wait

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Overview

The Federal Government has taken the highly unusual step of seeking to lock in a series of income tax cuts over the next six years. The three waves of cuts are packaged together, but each stage is different in terms of its cost, economic rationale and distributional effects.

The unlegislated Stage 1 tax cuts – a boost to the Low- and Middle-Income Tax Offset – are temporary and targeted. They would provide a much-needed stimulus as the economy is slowing. Parliament should pass them as soon as possible.

The unlegislated Stage 2 tax cuts are smaller, largely give back bracket creep, and are likely to be affordable.

But the unlegislated Stage 3 tax cuts, scheduled to come into effect in 2024-25, would be a substantial impost on the budget – \$85 billion of revenue would be foregone over the subsequent six years.

The Government has emphasised the economic benefit of the cuts in terms of boosting incentives to work. Over time, bracket creep erodes the incentives to work and invest. Income tax cuts stop this from happening.

But whether these are the right cuts at the right time is far less clear.

Locking in such substantial tax cuts in 2024-25 carries plenty of downside risk in Australia's current highly uncertain economic environment. The economy is softening, the budget position is uncertain, and calls for the Government to use fiscal policy to stimulate

the economy are growing. Tax cuts in 2024-25 are likely to come well after stimulus is needed.

And there are big question marks over whether the Stage 3 cuts are affordable. Unless the Government maintains unprecedented discipline on spending, it will struggle to reconcile tax cuts with its fiscal objective of balancing the budget on average over the economic cycle.

There is also a real risk that the size of the package – unmoored from other structural changes to the system – will 'crowd out' the chance to make more meaningful tax reforms for another decade.

The tax cuts as proposed will make Australia's tax system less progressive: the top 15 per cent of income earners would pay a lower share of their income in tax than they do now, while middle-income earners would pay a higher share of their income in tax.

Indeed, we estimate that if the Stage 3 cuts pass, the income tax system in 2024-25 will be less progressive than it has been at any point since the 1950s. And Australia will go from having a relatively progressive income tax system by international standards to below average among OECD countries. Whether this is desirable is a value choice. But the Government should be transparent that this is the choice being made.

Ultimately the case for – or against – income tax cuts in 2024-25 will be clearer closer to that date. There are few benefits and big risks from the Government locking in major cuts now.

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1 Stage 3 of the tax plan needlessly reduces fiscal flexibility

The Government’s full personal income tax plan will reduce government revenues by about \$300 billion over the coming decade.¹

The Stage 1 tax cuts account for \$36 billion of the total cost and will provide welcome economic stimulus. The Stage 2 cuts are worth \$132 billion and have largely already been passed.

The Stage 3 cuts, which come into effect in 2024-25, account for the remaining \$131 billion cost of the package. The unlegislated component of these cuts – reducing the marginal tax rate from 32.5c to 30c for everyone earning between \$45,000 and \$200,000 – will reduce revenues by more than \$12 billion a year (\$85 billion from 2024-25 to the end of the decade).

Locking in substantial tax cuts in 2024-25 makes little sense in the current highly uncertain economic environment. The case for – or against – the Stage 3 cuts will be clearer closer to that date. Either way, there is no need for the Government to tie its hands now.

1.1 The tax plan is expensive and the biggest cost comes in 2024-25

The Government’s three-stage plan locks in a series of tax cuts over the next six years (Table 1.1). The parts of the plan announced in the 2018-19 Budget have already been legislated. The remainder of the plan was announced in the 2019-20 Budget, and the Government will seek to legislate these parts in July this year.

The plan in its entirety will reduce government revenues by about \$300 billion over the next decade. The unlegislated components account for about half of the total cost (Table 1.1 and Figure 1.1).

Table 1.1: The Government’s three-stage personal income tax plan

Stage	Legislated	Unlegislated
Stage 1 2018-19	A new Low- and Middle-Income Tax Offset (LMITO, or ‘lamington’) of up to \$530	Increase the maximum Low- and Middle-Income Tax Offset from \$530 to \$1,080, and base offset from \$200 to \$255
	Increase the top threshold of the 32.5c bracket from \$87,000 to \$90,000	
Stage 2 2022-23	Increase the top threshold of the 19c bracket from \$37,000 to \$41,000	Further increase the top threshold of the 19c bracket from \$41,000 to \$45,000
	Further increase the top threshold of the 32.5c bracket from \$90,000 to \$120,000	Further increase the maximum Low Income Tax Offset from \$645 to \$700 with a new taper rate
	Increase the maximum Low Income Tax Offset (LITO) from \$445 to \$645	
Stage 3 2024-25	Remove the 37c bracket	Reduce the 32.5c marginal tax rate to 30c (to apply to everyone earning \$45,000-\$200,000)
	Increase the threshold for the 45c bracket from \$180,000 to \$200,000	

1. 2018-19 to 2029-30.

By far the most expensive component of the unlegislated plan is Stage 3, scheduled to come into effect in 2024-25 (Figure 1.2). The unlegislated component of Stage 3 – the reduction in the marginal tax rate from 32.5c to 30c for all income between \$45,000 and \$200,000 – will reduce government revenues by \$12 billion in 2024-25, and that number will grow each year beyond that.² This is about the same as the amount the Government spends on subsidising medicines each year.³

1.2 The Stage 1 cuts are needed to stimulate the economy

The Australian economy is softening.⁴ Inflation is virtually non-existent, new building approvals are drying up,⁵ and real GDP per capita has gone backwards for three consecutive quarters.⁶ Meanwhile the labour market, so long the source of Reserve Bank optimism, is weakening, with unemployment rising to 5.2 per cent.⁷

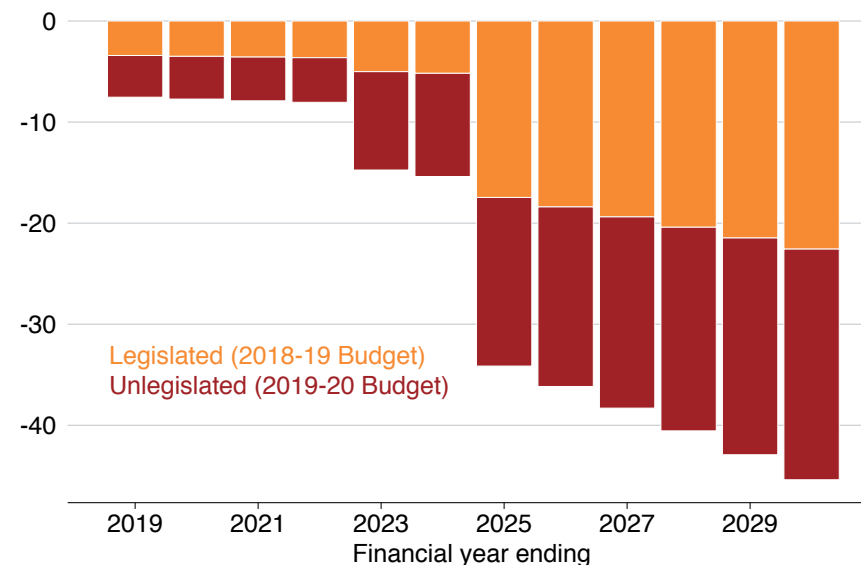
We are not in recession territory yet,⁸ but things can head south quickly. The escalating trade war⁹ between the US and China is just one shadow over the global economy.

The Stage 1 tax cuts are well timed to offer stimulus. The unlegislated component would put up to an additional \$550 in the hands of two-thirds of tax-filers later this year.¹⁰ This should help boost consumer spending, which has been particularly soft. Some have

2. \$16 billion a year by 2029-30.
 3. Government expenditure on pharmaceutical benefits and services is estimated to be just over \$11 billion in 2022-23: Commonwealth of Australia (2019a, Budget paper 1, p.5-19).
 4. Kehoe (2019).
 5. ABS (2019a).
 6. As measured by GDP per person: ABS (2019b).
 7. ABS (2019c).
 8. Cowgill (2019a).
 9. Schomberg (2019).
 10. See Coates and Cowgill (2019) for more on how much Australians earn.

Figure 1.1: The unlegislated components will double the cost of the plan over a decade

Revenue foregone due to personal income tax cuts, \$ billions



Note: Figures are on an accrual basis.

Sources: Grattan analysis based on Commonwealth Budget Papers 2019-20 and ATO Taxation Statistics 2016-17.

estimated that this stimulus could have an impact equivalent to a 50-basis-point cut in interest rates.¹¹

Given the softening economy, passing the Stage 1 tax cuts should be a priority.

The Stage 2 cuts do not come into effect until 2022-23 so are not as well timed to provide stimulus. But the unlegislated component is relatively small and does not raise the same significant concerns that apply to Stage 3.

1.3 The Stage 3 cuts may not be affordable

The Government claims that the full tax package is affordable. Its budget numbers point to a decade of surpluses, exceeding 1 per cent of GDP by 2026-27, even with the tax cuts.¹²

But the promised surpluses look more questionable by the day. The proposed tax cuts are unlikely to be consistent with the Government's fiscal objective to run budget surpluses, on average over the economic cycle.

Surpluses over the forward estimates are under threat from a weakening economy

The 2019-20 Budget forecast a surplus of \$7 billion for 2019-20, the first in a decade. And the forecast is for surpluses to build over the forward estimates.

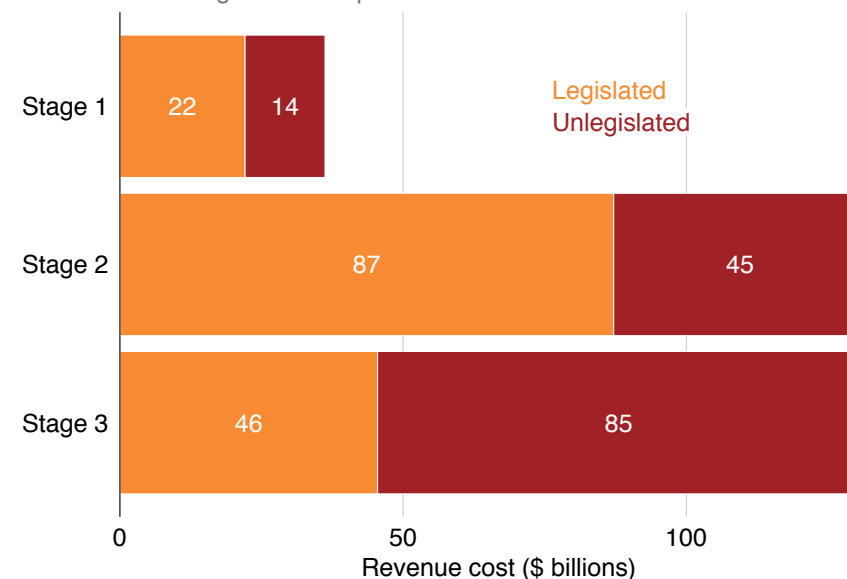
The surpluses forecast over the next two years are based on forecasts of GDP growth of 2.25 per cent in 2018-19 and 2.75 per cent in 2019-20. Yet GDP growth in the year to March was 1.8 per cent, and most commentators believe this softness will continue in the near term.¹³

11. Cranston (2019).

12. Commonwealth of Australia (2019a, p. 3-11).

13. e.g. RBA (2019), Heath (2019) and Scutt (2019).

Figure 1.2: The biggest unlegislated costs are in Stage 3
Total revenue foregone due to personal income tax cuts



Notes: Figures are on an accrual basis. Our costings differ slightly from Treasury numbers. We have followed all Treasury assumptions in the public domain; remaining differences are probably the result of differing assumptions beyond the forward estimates. See Appendix C.

Sources: Grattan analysis based on Commonwealth Budget Papers 2018-19 and 2019-20 and ATO Taxation Statistics 2016-17.

Other economic parameters have also surprised on the downside. Wages growth is sitting below budget forecasts of 2.5 per cent this year and 2.75 per cent next year.¹⁴ And unemployment is slightly above the forecast rate.¹⁵

The bright spot is iron ore prices, which continue to sit well above the budget forecasts, boosting company tax receipts.¹⁶

As the economy slows, there are growing calls for the Government to stimulate growth through expansionary fiscal policy.¹⁷ The Stage 1 cuts will help but the Government may need to do more, particularly if the economy softens further.

The Government should not shy away from fiscal stimulus if it is needed. Indeed, a key reason for budget consolidation in better times is to give government the ‘fire power’ to respond in an economic downturn. But stimulus would put the budget back in the red for some time to come.

Future surpluses rely on economic good fortune and unprecedented spending restraint

Even without stimulus, the Government’s projected decade of surpluses looks highly optimistic. The hope springs from an upbeat assessment of the future path of economic growth and the capacity for government spending restraint.

14. Wages growth over the year to the March quarter is running at 2.3 per cent: ABS (2019d).

15. Seasonally adjusted unemployment is currently 5.2 per cent, compared to the 5 per cent forecast in the Budget: ABS (2019c).

16. Deloitte Access Economics (2019).

17. Kehoe (2019).

On growth, estimates of potential GDP¹⁸ assume labour productivity growth of 1.5 per cent a year, in line with its 30-year average. But this is substantially above the average of 1.3 per cent achieved over the past decade.¹⁹ Lower productivity growth has become the norm across the developed world. Australia’s budget projections ignore the risk that lower growth is the ‘new normal’.

On spending, the projections assume no new spending initiatives for the coming decade.²⁰ Under this assumption, spending as a share of GDP will fall steadily over the decade, from 24.9 per cent today to 23.6 per cent by 2029-30 (Figure 1.3), during a period when the ageing of the population will increase spending pressures.²¹ This would require spending in 2029-30 to be more than \$40 billion lower (\$33 billion in today’s dollars) than if spending stayed as a constant share of GDP.

This will require unprecedented restraint. Real spending growth would need to average around 1.3 per cent per annum over the decade – or 1.8 per cent if the economy performs as strongly as Treasury projects. Either way, this is substantially lower than any previous government has achieved (Figure 1.4). Any new spending commitments, such as responding to the growing calls for higher Newstart payments or a return to demand-driven funding for universities, would cut into projected surpluses.

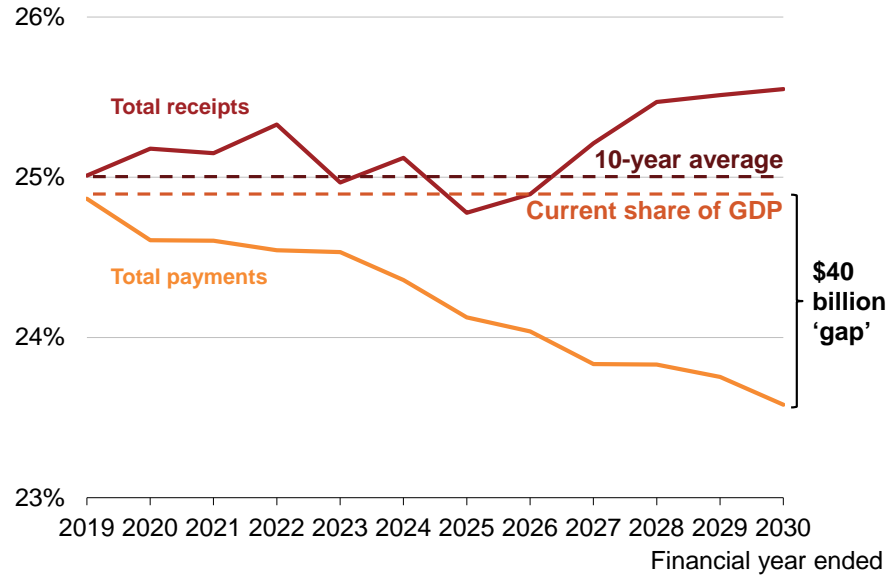
18. ‘Potential GDP’ is the level of output that an economy can produce at a constant inflation rate: OECD (2019). In practice, Treasury estimates potential GDP based on analysis of underlying trends for population, productivity and participation, smoothing out business cycle fluctuations: Treasury (2019).

19. Annual average increase in real GDP per hour worked between 2007-08 and 2017-18: ABS (2018a). Growth was even less between Q1 2009 and Q1 2019 (1.1 per cent): ABS (2019b).

20. It is longstanding Treasury practice is to project government spending based on current policies for most expenditure categories (see Box 1). This is to avoid second-guessing future government decisions. But it means the spending projections are baseline estimates rather estimates of the likely ‘future state of the world’.

21. PBO (2019).

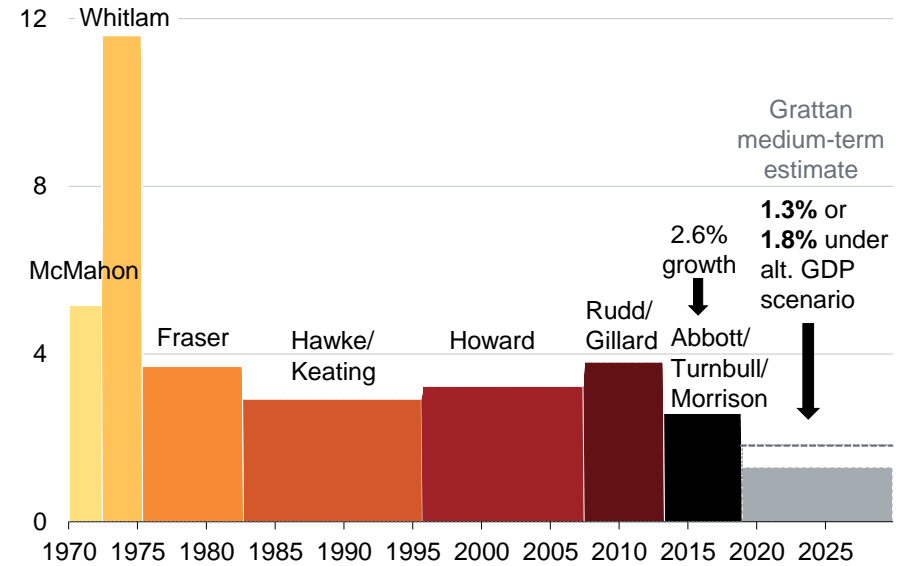
Figure 1.3: Future surpluses depend on heroic spending restraint
Total payments and total receipts projected to 2029-30, per cent of GDP



Source: Commonwealth of Australia (2019a).

Figure 1.4: Spending growth would need to be extraordinarily low by historical standards

Average annual real growth in Commonwealth payments, per cent



Notes: Spending growth in crossover years (years in which government changed hands) are allocated across the governments in proportion to the share of the year in which they held government (to the nearest calendar month). Medium-term growth is estimated from payments as a share of GDP, assuming nominal GDP growth as per the 2019-20 Budget and growth of 4.5 per cent beyond the forwards. A higher GDP growth scenario using the real GDP projections from the budget (2.75 to 3 per cent) plus inflation of 2.5 per cent would imply payments growth of 1.8 per cent over the decade.

Source: Commonwealth of Australia (ibid.).

Box 1: Why is growth in government spending projected to fall?

The Budget papers note that the spending projections are driven by ‘lower than expected growth across a range of programs in the forward estimates flowing through to the medium term’.

Over the next four years, growth in health spending and defence spending is expected to fall. Indeed health spending – the third largest expense category^a – is projected to grow at only 0.7 per cent per annum despite historical growth of 2.7 per cent per annum (Figure 1.5).^b

Social security and welfare payments are also forecast to grow only slightly faster, despite the recent softening of the economy and the ramping up of the National Disability Insurance Scheme.

In compiling its 10-year projections, the Parliamentary Budget Office (PBO) notes that key payments, including the Age Pension, Disability Support Pension (DSP), Medicare Benefits and Carer Income Support payments, all grew more slowly in recent years.

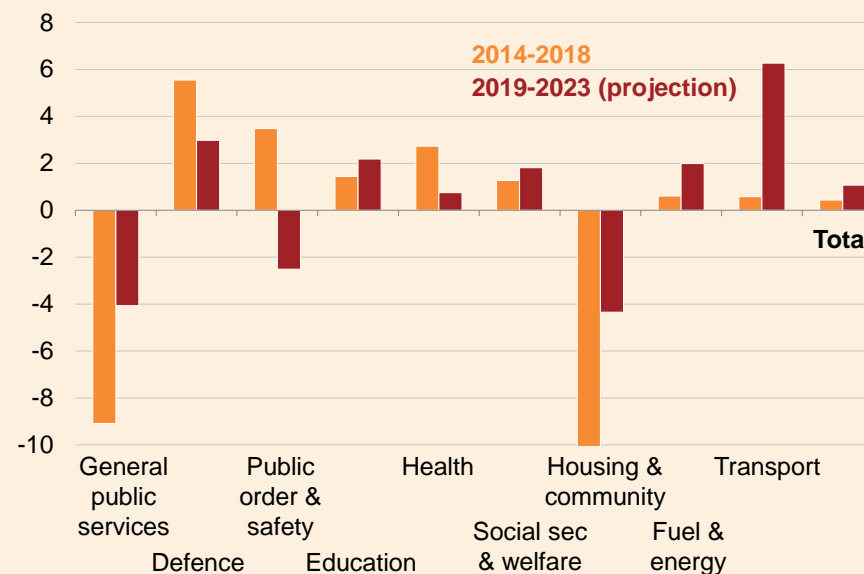
Lower growth rates partly reflect structural changes to payments. Changes to the Age Pension asset test and the DSP work-related impairment test, for instance, have restricted eligibility and reduced take-up. But slower payments growth also reflects recent strength in the jobs market (up until recently the bright spot in the economic data). Optimistic economic assumptions carry forward these cyclical effects for a decade.

Lower payments growth also reflects recent restraint by government – resisting the temptation to boost rates of income support payments or to add substantial new items to the Medicare Benefits Schedule, for example. The spending projections assume this restraint continues for another decade. History suggests this is unlikely.

Low spending growth estimates are reinforced by the effects on government interest payments, which ‘ratchet down’ over the decade as projected surpluses reduce estimates of government debt.

Figure 1.5: Spending growth is forecast to be slower in many areas over the next four years

Average annual spending growth (real), per cent.



Notes: Excludes some of the smaller functions and expenses for ‘other purposes’ (largely GST payments to the states). Total expenses growth is also calculated excluding ‘other purposes’. ‘Housing & community’ was -11.7 per cent in 2014-18 but is cut off to improve readability.

Source: Commonwealth of Australia (2019a).

Notes: (a) After ‘social security and welfare’ and ‘other purposes’; (b) Commonwealth of Australia (ibid.) and past Commonwealth budget papers.

1.4 There is a real cost to government tying its hands

Given the degree of uncertainty about the economy and budget projections, it would be prudent to wait rather than lock in significant tax cuts six years into the future.

Bracket creep should not be allowed to run unchecked forever, but there is nothing to lose from waiting. The economic rationale for the tax cuts – greater simplicity and stronger incentives to work and invest in 2024-25 and beyond²² – won't be lessened by a delay in legislating.²³

Locking in tax cuts in advance is not the same as committing to long-term infrastructure or social spending programs like the National Disability Insurance Scheme. Major investments necessarily have long lead times and need commitments over an extended period. In contrast, tax cuts can take effect almost immediately.

If these tax cuts or other income tax cuts make sense in 2024-25, they can be legislated closer to that date.

Waiting would give the Government the benefit of additional information about the longer-term structural position of the budget from the 2020 Intergenerational Report. It would avoid the risk of sizeable cuts to spending to accommodate the tax cuts if the economy is not as rosy as expected. Waiting would also revive the opportunity for income tax cuts to form part of a broader tax reform package (Chapter 4).

22. There has been little in the way of articulation of the economic case for tax cuts. The Treasurer has referred to simplifying the system and encouraging and rewarding hard work: Frydenberg (2019), see Chapter 4.

23. The permanent income hypothesis suggests that people anticipate the benefits of income tax cuts and smooth their consumption by increasing spending now. The empirical support for such a contention is mixed at best: Haug (1990). Smoothed consumption is particularly unlikely when the cuts are so far into the future and have a degree of political and economic uncertainty attached to them.

2 Stage 3 mainly benefits high-income earners

The unlegislated Stage 3 tax cuts mainly benefit high-income earners. This is on top of the substantial tax cuts already legislated for this group from July 2024.

It is no surprise that the largest tax cuts go to people who pay the most tax. But while the plan reduces average tax rates for high-income earners, low- and middle-income earners will pay a higher share of their income in tax in 10 years than they do today because of the effects of bracket creep.

2.1 Stages 1 and 2 benefit low- and middle-income earners but the big Stage 3 cuts benefit high-income earners

The major part of Stage 1 is the Low- and Middle-Income Tax Offset (the LMITO, or ‘lamington’), which gives everyone earning less than \$126,000 a tax refund of up to \$1,080 each year for the next four years.

Stage 2 also delivers some benefits to low- and middle-income earners (see Table 1.1 in Chapter 1).

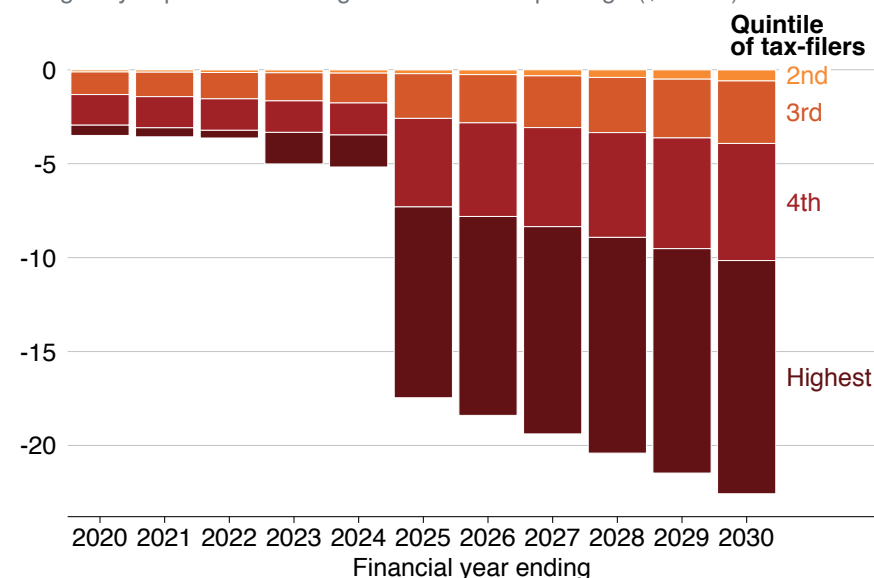
But these benefits are dwarfed by the benefits to high-income earners from Stage 3 of the plan.

2.2 The top 20 per cent of tax-filers get 50 per cent of the benefits

Half of the unlegislated changes, and two-third of the unlegislated Stage 3 cuts, flow to the top 20 per cent of tax-filers (Figure 2.1). This comes *in addition* to the Stage 3 tax cuts that are already legislated and due to come into effect in July 2024.

Figure 2.1: Most of the benefits of the unlegislated package go to high-income earners

Budgetary impact of the unlegislated 2019 tax package (\$ billion)



Notes: Bottom quintile of taxable incomes not shown, because they do not pay personal income tax. Figures are on an accrual basis.

Sources: Grattan analysis based on Commonwealth Budget Papers 2019-20 and ATO Taxation Statistics 2016-17.

Appendix A illustrates the full effect of the Government’s tax plan – legislated and unlegislated – and shows that 60 per cent of the total benefits flow to the top 20 per cent of tax-filers.

If the unlegislated Stage 3 changes go through, the top 20 per cent of tax-filers will receive an average tax cut of \$3,170 in 2024-25 (Figure 2.2)²⁴ – in addition to an already-legislated tax cut of \$3,780 on average.²⁵

By comparison, the middle 20 per cent of tax-filers would receive an additional tax cut of \$740 on average (most of which is delivered in Stage 2),²⁶ on top of their already-legislated cut of \$540. And the bottom 20 per cent, who pay no tax, receive nothing under the plan (Figure 2.2).

As with most tax cuts, the more tax you pay, the larger your tax cut. The average tax cut for the top 1 per cent of tax-filers is \$11,640 each year from 2024-25 – Appendix B shows the distributional breakdown by percentile.

2.3 The plan does not protect most taxpayers from bracket creep

The Finance Minister claims the plan will protect taxpayers from the ‘silent thief’ of bracket creep.²⁷ Over time, bracket creep increases average tax rates²⁸ across the income distribution as wages grow. Even if wage growth doesn’t push a taxpayer into a new tax bracket, most

24. Of the \$3,170 additional tax cut, \$2,630 is delivered in the unlegislated Stage 3 cuts and \$540 is delivered in the unlegislated components of Stages 1 and 2.

25. See Appendix A for figures on the full tax plan.

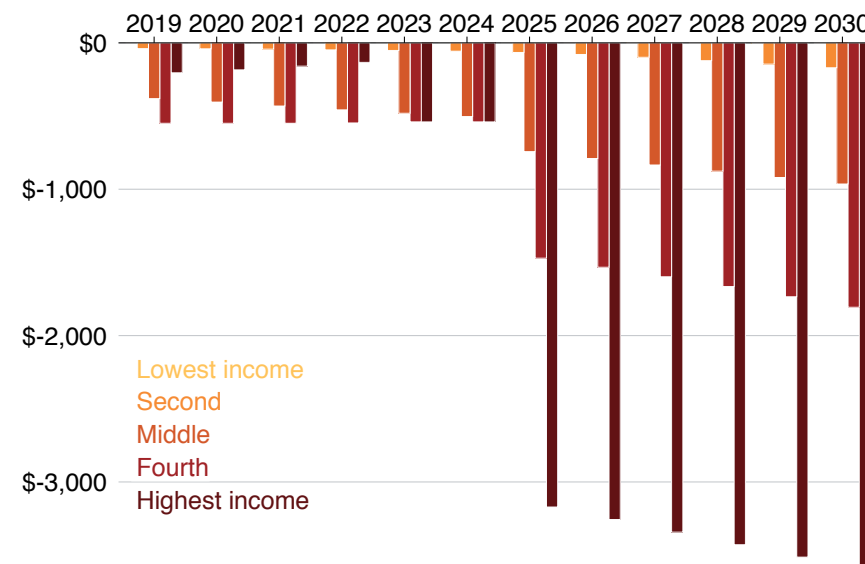
26. Of the \$740 additional tax cut, \$240 is delivered in the unlegislated Stage 3 cuts and \$500 is delivered in the unlegislated components of Stages 1 and 2.

27. Coorey and McIlroy (2019); see also Frydenberg (2019).

28. The average tax rate is the total amount of tax divided by total taxable income. For example, if an individual has a taxable income of \$100,000 and pays taxes of \$25,000, their average tax rate is 25 per cent.

Figure 2.2: The top 20 per cent will get an extra \$3k+ on average, from 2024-25

Average tax cut by quintile, unlegislated 2019 package



Notes: Financial year ending. Chart shows the difference between average tax liabilities by quintile in each financial year under 2017-18 policy and the policy proposed in the 2019-20 Budget. Figures are on an accrual basis.

Sources: Grattan analysis based on Commonwealth Budget Papers 2019-20 and ATO Taxation Statistics 2016-17.

taxpayers will still earn a bigger share of their income in their highest bracket, so end up paying more tax.

The Government's plan prevents some of this bracket creep by lowering future marginal tax rates. By 2030, all taxpayers will be better off than if there were no changes to tax rates over the coming decade (Figure 2.3).

Low- and middle-income earners will be partly compensated for bracket creep under the Government's proposal. Someone in the middle of the income distribution would have an average tax rate 3.7 per cent higher in 2029-30 than they do today, instead of 5.2 per cent higher under current legislation and 6.1 per cent higher with no plan at all.

But high-income earners will actually be *over*-compensated for bracket creep (Figure 2.4). Under the Government's plan, the top 15 per cent of income earners will have an average tax rate 1 per cent *lower* than they do today, instead of 1 per cent higher under current legislation and 3.5 per cent higher with no plan at all.

This is why the proposed changes make the income tax system less progressive overall (Chapter 3).

Box 2: How much goes to people in the top tax bracket?

The Government has been reluctant to detail the benefits of the planned tax cuts for people in the top tax bracket (that is, earning more than \$180,000).^a

The full tax cuts for people earning more than \$180,000 will cost the budget \$83 billion over the next decade.^b This represents 28 per cent of the total tax package and 22 per cent of the unlegislated changes.^c

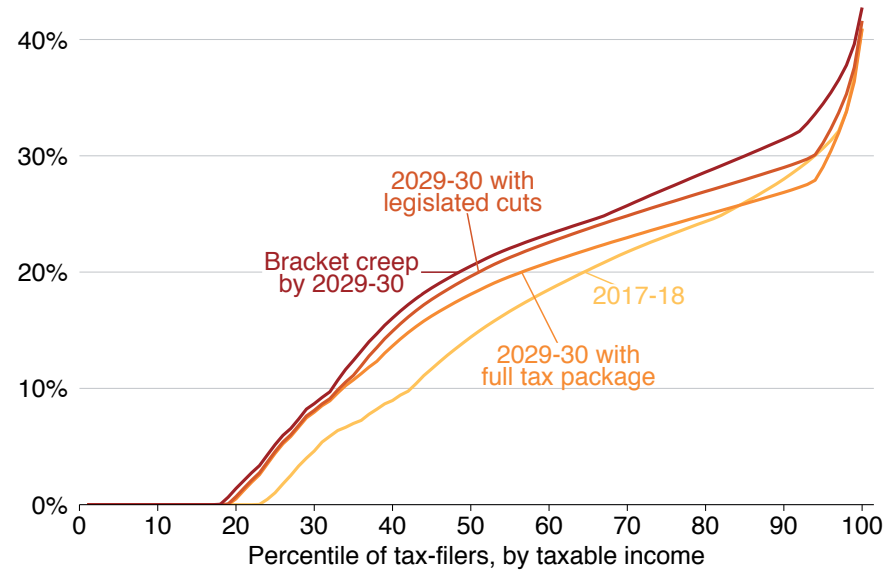
Just considering the unlegislated Stage 3 cuts, benefits to people in the top tax bracket represent 31 per cent of the total cost of the package.^d

Of course, comparing the proportion of tax paid by people in the top tax bracket today and in future can be misleading. Because of bracket creep, more people will move into the top tax bracket over time. Even if the top tax bracket were paying the same share of tax in future, high-income earners may be paying a lower share *per person*. That's why this paper looks at the proportion of tax paid by (say) the top 20 per cent of income-earners.

- a. Radio National (2019); and Bagshaw (2019).
- b. This figure uses the latest data available. See Appendix C for further information on our model and data sources.
- c. \$31 billion.
- d. \$26 billion. After adjusting for the legislated change in the top tax threshold to \$200,000 in 2024-25, the tax cuts for people in the top tax bracket represent 22 per cent of the total tax package (\$67 billion), 17 per cent of the unlegislated changes (\$24 billion) and 24 per cent of the unlegislated Stage 3 tax cuts (\$21 billion).

Figure 2.3: The plan does not address the full effects of bracket creep except for the top 15 per cent

Average tax rate by taxable income percentile

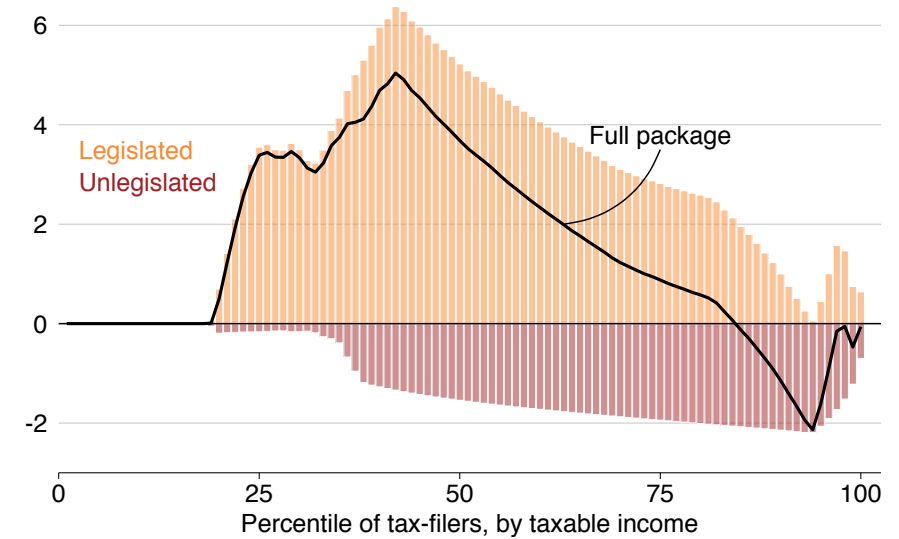


Notes: Average tax rate refers to personal income tax liability as a percentage of taxable income. Figures are on an accrual basis.

Sources: Grattan analysis based on Commonwealth Budget Papers 2019-20 and ATO Taxation Statistics 2016-17.

Figure 2.4: Most people will still pay more tax in 2030

Change in average tax rate between 2017-18 and 2029-30, percentage points



Notes: Average tax rate refers to personal income tax liability as a percentage of taxable income. Figures are on an accrual basis.

Sources: Grattan analysis based on Commonwealth Budget Papers 2019-20 and ATO Taxation Statistics 2016-17.

3 The plan will make Australia's income tax system less progressive

In his Budget speech announcing the 2019 additions to the personal income tax plan, the Treasurer said that 'our tax system will remain highly progressive'.²⁹ He is right that the system will remain progressive. But it will be less progressive, particularly if Stage 3 of the plan is implemented. Tax as a proportion of income will rise for low- and middle-income earners but fall for high-income earners.

3.1 What does it mean for a tax system to be 'progressive'?

A progressive tax system is one that requires high-income earners to pay a larger share of their incomes in tax than people on lower incomes.³⁰

But there are degrees of progressivity. The progressivity of the tax system relates to how the average tax rate – tax as a percentage of income – changes as income rises. The tax system is less progressive if the average tax rate for high-income earners is closer to the rate for low-income earners.

3.2 Why is a progressive personal income tax important?

There are three main reasons policy makers may wish to maintain the progressivity of the income tax system.

First, it offsets the regressivity of other taxes, to ensure that the tax system is progressive overall. Australia raises revenue from a range of taxes, including some such as the GST which are regressive in their

impact (low-income earners, on average, pay a larger share of their incomes in GST than high-income earners).³¹

Most tax policy experts take the view that the regressivity of the GST should not be a concern in and of itself – what matters is the progressivity of the tax and transfer system overall.³² If personal income tax becomes less progressive, as it will under the Government's tax plan (see Section 3.4), then the tax system as a whole will become less progressive, because income tax will do less to offset the regressive impact of other taxes such as the GST.

Second, a progressive income tax reduces inequality. Private income – the income that Australians make from working or owning assets – is very unequally distributed. Personal income tax, welfare payments, and government transfers in-kind reduce inequality substantially.³³ If the personal income tax system becomes less progressive, inequality in Australia will rise, assuming government payments and spending remain unchanged.

Finally, tax progressivity helps to stabilise the economy through the ups and downs of economic cycles. The more progressive the tax system, the more responsive tax revenues are to changes in economic

29. Frydenberg (2019).

30. As opposed to a 'proportional' tax system, which takes the same percentage of everyone's income (also known as a flat tax), or a 'regressive' tax system, where people on low incomes pay a higher share of their income in tax than people on high incomes. See Cowgill (2019b).

31. ABS (2018b).

32. This is the view expressed in all major reviews of the Australian tax system, such as the Re:think tax discussion paper of 2015 (Commonwealth of Australia (2015, p. 136)) and the Henry Tax Review of 2008-09 (Henry et al. (2009, p. xix)).

33. The so-called Gini coefficient is the most widely accepted measure of inequality (the higher the number, the more unequal the society). The Gini coefficient of private income in Australia is 0.442, but after cash payments this is reduced to 0.361, after personal income tax it is reduced further to 0.316, and after government transfers in-kind the coefficient drops to 0.241 (although indirect taxes push it back up to 0.249) (Grattan analysis of ABS (2018b); see also PC (2018, pp. 24–25)).

conditions. When the economy is growing strongly, the revenue collected by a progressive tax will rise rapidly; when the economy slows, revenue will fall fast.

Of course, there are trade-offs. A more progressive system reduces the rewards for skill and effort, and may lead to lower economic growth because it blunts the incentives to work more.

3.3 The Government's plan will reduce the share of tax paid by the top end

The Treasurer has justified his claim that progressivity will be maintained – and even strengthened – with reference to the share of tax that will be paid by high-income earners if the tax cuts are passed.³⁴ It is true that high-income earners will continue to pay a disproportionately large share of total income taxes. But we estimate that high-income earners' share of total tax will fall relative to 2017-18, the last financial year before the plan commenced (Table 3.1).

If the full tax package is enacted, the share of total tax paid by the top 20 per cent of income-earners will fall from 68 per cent in 2017-18 to 66 per cent in 2024-25 and 65 per cent by the end of the decade. Similarly, we estimate that the shares of personal income tax paid by the top 10, 5 or 1 per cent will fall, relative to where they were in 2017-18.

34. 'Under our plan it is very clear the progressive nature of our tax system is not only maintained, it is strengthened. When it is fully rolled out our tax cuts, you will see the top 5 per cent of taxpayers, which equates to the top rate of marginal tax you're referring to, end up paying more of the overall tax burden' (Frydenberg cited in Lewis (2019)). 'Following these changes, our tax system will remain highly progressive. With the top five per cent of taxpayers paying one third of all income tax collected. And someone earning \$200,000 paying 10 times as much tax as someone on \$45,000.' (Frydenberg (2019)).

Table 3.1: Share of personal income tax paid by different income groups

	2017-18	2024-25	2029-30
Bottom 20%	0%	0%	0%
Middle 60%	32%	34%	35%
Top 20%	68%	66%	65%
Top 10%	50%	48%	47%
Top 5%	37%	36%	35%
Top 1%	18%	17%	16%

Notes: Figures are on an accrual basis. Budget numbers show the share of tax rising slightly for the top 1 per cent and top 5 per cent in 2024-25. See Appendix C for more information on our model.

Sources: Grattan analysis based on Commonwealth Budget Papers 2019-20 and ATO Taxation Statistics 2016-17.

By contrast, the share of tax paid by the middle 60 per cent of tax-filers will rise from 32 per cent in 2017-18 to 34 per cent in 2024-25 and 35 per cent by the end of the decade.

The Government's projections also show that it expects the share of tax paid by the top 20 per cent of taxpayers to be lower in 2024-25 under the plan than it was in 2017-18.³⁵

But to measure the overall progressivity of the tax system, and the effect that the Government's plan would have on it, we need a measure that takes into account progressivity across the income distribution, not just the share paid by specific groups.

35. Commonwealth of Australia (2019b, p. 9). Budget numbers show the share of tax falling for the top 20 per cent and 10 per cent of taxpayers, but rising slightly for the top 5 per cent and 1 per cent in 2024-25. See Appendix C on the differences between our models.

3.4 The tax plan will make the system less progressive

The Reynolds-Smolensky index is one of the most commonly-cited measures of overall tax progressivity.³⁶ It measures the difference in income inequality before and after taxes are paid.

Income inequality is measured using the Gini coefficient, which ranges from 0 (if everyone has the same income) to 1 (if all income is concentrated in one person's hands). If the Gini coefficient of pre-tax income is 0.48, and the Gini of post-tax income is 0.42, the tax has reduced inequality by 0.06 Gini points. This value – 0.06 – is the Reynolds-Smolensky index. A larger value for the Reynolds-Smolensky index indicates that a tax does more to reduce income inequality and is therefore more progressive.

Using the microdata released by the Australian Taxation Office,³⁷ we can calculate the Reynolds-Smolensky index for the recent past in Australia (Figure 3.1). The data shows that the personal income tax system became more progressive in the early part of this decade, but the degree of progressivity has been falling since 2015 because bracket creep disproportionately hurts low- and middle-income earners.

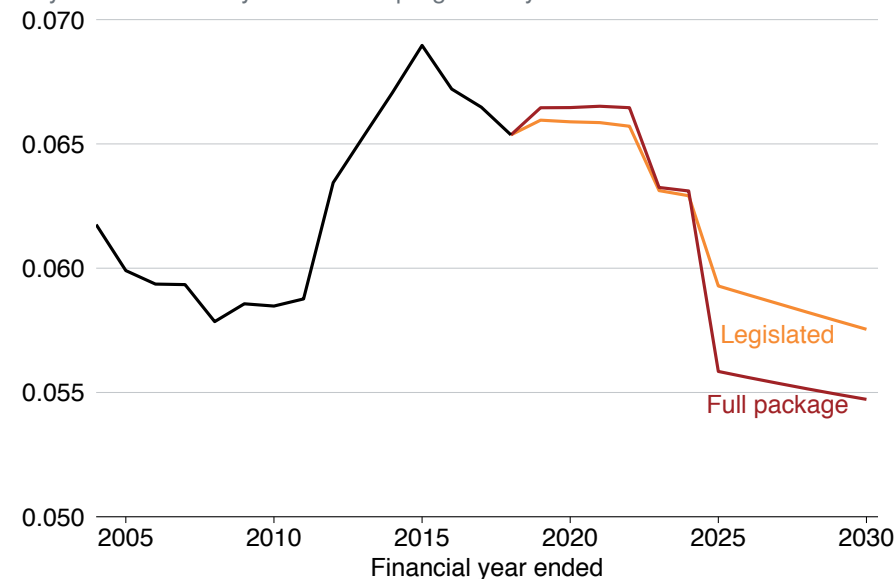
Stage 1 of the Government's tax plan will make the income tax system slightly more progressive, because the increase in the 'lamington' is targeted at middle-income earners. Stage 2 will then make the system less progressive. But by far the biggest effect comes with Stage 3.

If the full tax package is passed, the Reynolds-Smolensky index shows the personal income tax system will be less progressive in 2024-25 than it has been for any year for which we have data (dating back to 2003-04). It will become even less progressive over the remainder of the coming decade.

36. Reynolds and Smolensky (1977).

37. ATO (2019).

Figure 3.1: The tax package will make the tax system less progressive
Reynolds-Smolensky index of tax progressivity



Notes: The Reynolds-Smolensky index measures the difference between pre-tax and post-tax Gini coefficients. Figures are on an accrual basis.

Sources: Grattan analysis based on Commonwealth Budget Papers 2019-20 and ATO Taxation Statistics 2016-17.

Another widely-cited measure of tax progressivity, the Suits index,³⁸ tells a similar story. As with the Reynolds-Smolensky index, a higher value for the Suits index indicates a more progressive tax. The Suits index can range from -1, which would indicate the poorest person in the society pays all the tax, to a value of 1 if the richest person pays all the tax. A Suits index of 0 would indicate that every person pays the same share of their income in tax.

We estimate that the Suits index will rise a little in the short-term under Stage 1 of the Government's package – from 0.25 in 2017-18 to 0.27 in 2018-19.³⁹ It will then start to fall. If Stage 3 is enacted in 2024-25, the Suits index will fall to the lowest level for which we have data, and will continue to decline from there, reaching a value of 0.205 in 2029-30.

3.5 The income tax system will be less progressive than it's been at any time since the 1950s

The Reynolds-Smolensky and Suits indices show that Stage 3 of the tax plan will make the personal income tax system less progressive than it's been since at least 2003-04. This is the earliest date detailed microdata from the ATO is readily available to calculate these indices. Using a simpler measure, which does not require detailed microdata to calculate, we estimate that the Government's plan will result in the personal income tax being less progressive than it's been at any time since the 1950s.⁴⁰

In 2017-18, someone with a taxable income equivalent to 2.5 times average full-time earnings (about \$210,000) would have paid 34.2 per cent of their income in tax. We project that this 'average tax rate' for

someone on 2.5 times average full-time earnings will fall to 32.4 per cent in 2024-25 if the tax plan is enacted, before rising slowly to 34.7 per cent at the end of the decade.

The tax paid by low-income earners, as a proportion of their incomes, will rise much more rapidly. Someone with a taxable income equal to half of average full-time earnings (about \$42,000) would have paid 13.5 per cent of their income in tax in 2017-18. We estimate that this will rise to 15.6 per cent in 2024-25 and 18.4 per cent by the end of the decade if the full tax plan is enacted (Figure 3.2).

With the tax rate paid by high-income earners set to fall, and that paid by low-income earners set to rise, the gap between these tax rates will get smaller. This is a commonly-used measure of structural tax progressivity.⁴¹

In 2017-18, people with incomes equivalent to 2.5 times average full-time earnings paid 20.8 percentage points more of their income in tax than people on half average full-time earnings. We project that this figure will fall to 16.8 percentage points in 2024-25, the smallest gap since 1959-60 (see Figure 3.3). The gap will get even smaller from there, as bracket creep raises the tax rate paid by lower-income earners more rapidly than it does high-income earners.⁴²

38. Suits (1977).

39. Our estimate of the historical Suits index accords with that published in Tran and Zakariyya (2019).

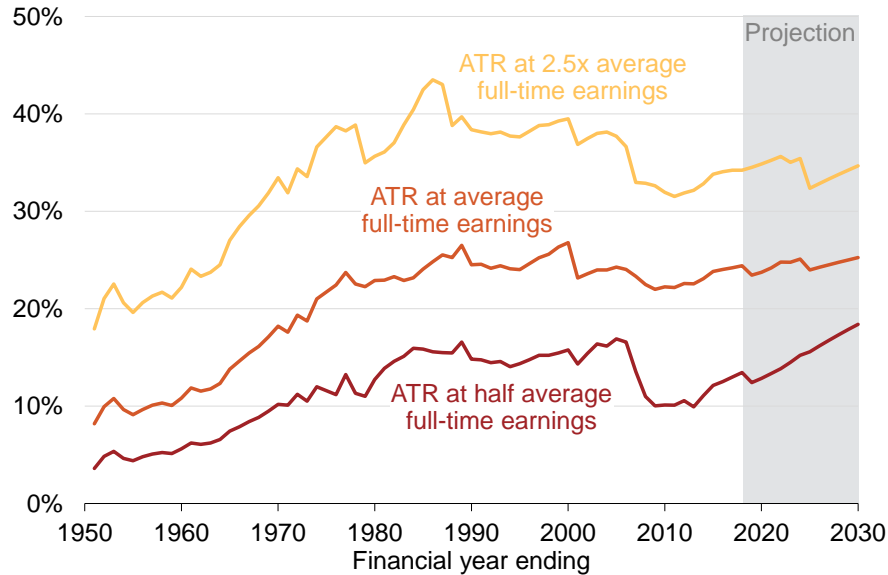
40. Note that this finding refers only to the structural progressivity of personal income tax, not to the tax system as a whole, nor the consolidated tax-and-transfer system.

41. The difference in average tax rates (ATRs), divided by the difference in incomes, is the 'average tax progression indicator' introduced in Musgrave and Thin (1948). Work by the OECD (Paturot et al. (2013)) calculates a version of this indicator for a range of OECD countries including Australia, at multiples of average earnings as per our approach. We omit the denominator in the ATR progression indicator for ease of description, which does not affect our conclusions.

42. Our results remain broadly unchanged if different measures of structural income tax progressivity are used, such as the 'liability progression indicator' and the 'residual income progression indicator' set out in *ibid*. Using other points in the distribution, rather than 0.5 and 2.5 times average earnings, also yields broadly similar conclusions.

Figure 3.2: If the full tax plan is enacted, low-income earners will pay a higher tax rate than they ever have before

Average tax rate (tax as a percentage of income) at multiples of average full-time earnings

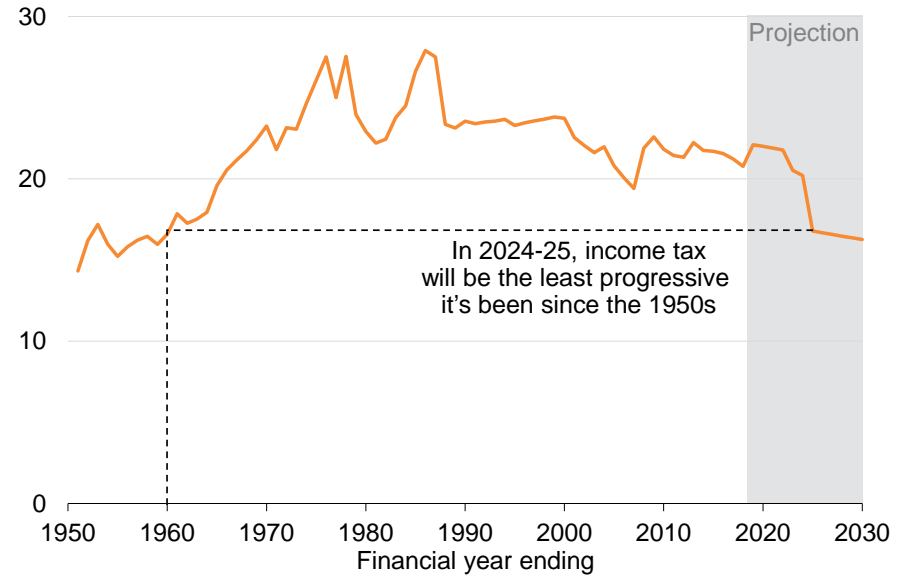


Notes: Tax liabilities calculated based on annualised adult average full-time weekly earnings. Includes levies, offsets (such as LITO and LMITO) and general rebates. Does not include Medicare Levy Surcharge. Assumes no deductions and no dependents. Projections assume FTAWWE growth in line with the Wage Price Index forecasts in the 2019-20 Budget. 1974-75 figure is omitted as it is an outlier, with significantly higher ATRs for each group; linear interpolation is used for that year.

Sources: Grattan calculations based on historical tax scales (obtained from the ATO) and average weekly earnings figures from ABS 6302.0 and RBA Occasional Paper No.8.

Figure 3.3: When Stage 3 is enacted, income tax will be less progressive than it's been since the 1950s

Difference between average tax rate at 2.5 times and 0.5 times average full-time earnings (percentage points)



Notes: Tax liabilities calculated based on annualised adult average full-time weekly earnings. Includes levies, offsets (such as LITO and LMITO) and general rebates. Does not include Medicare Levy Surcharge. Assumes no deductions and no dependents. Projections assume FTAWWE growth in line with the Wage Price Index forecasts in the 2019-20 Budget. 1974-75 figure is omitted as it is an outlier, with a large increase in apparent progressivity; linear interpolation is used for that year.

Sources: Grattan calculations based on historical tax scales (obtained from the ATO) and average weekly earnings figures from ABS 6302.0 and RBA Occasional Paper No.8.

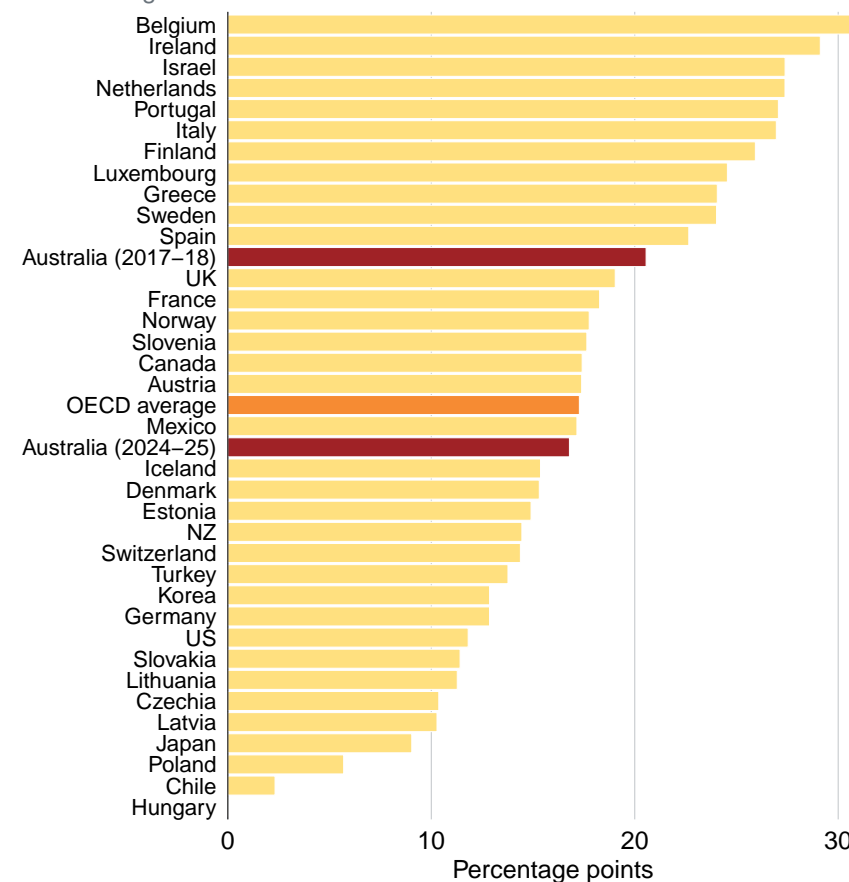
3.6 Australia's income tax system will be less progressive than the OECD average

If the Government's full tax plan is passed, Australia will go from having a relatively progressive income tax system to one slightly below average.

Currently, Australians with income 2.5 times average full-time earnings pay 20.8 per cent more of their income in income tax than people on half average earnings. If the full tax plan is passed, we project this measure of tax progressivity will fall to 16.8 percentage points – just below the current OECD average of 17.3 percentage points (Figure 3.4).⁴³

Figure 3.4: Australia's income tax system will be less progressive than the OECD average if the full package is passed

Difference between average tax rate at 2.5 times and 0.5 times average full-time earnings



Notes: The average tax rate is income tax as a percentage of gross earnings. This measure does not take into account other taxes – such as consumption taxes – nor the size of cash transfers to taxpayers by government. Australia (2024-25) is a Grattan projection.

Source: OECD Taxing Wages database.

43. This measure does not take into account other taxes – such as consumption taxes – nor the size of cash transfers to taxpayers by government. It includes personal income taxes levied by sub-national governments (such as states and provinces), where applicable.

4 Stage 3 will provide some economic benefit but could set back meaningful tax reform

The Government claims the tax package will deliver lower, fairer and simpler taxes.⁴⁴ It also contends the plan is a ‘huge reform’ because it removes an entire tax bracket.⁴⁵

Income tax cuts sharpen incentives to work and invest. But the changes proposed don’t give the most bang for buck in boosting these incentives. Nor do they meaningfully simplify the system. The changes fall short of reforms undertaken by previous governments that improved the tax mix and the efficiency of the system. There is the risk that the proposed changes will ‘crowd out’ the chance to make significant reforms to the system for another decade.

4.1 Tax cuts, not tax reform

Tax reform is about reducing the economic cost of collecting taxes. Improving the tax mix to reduce reliance on inefficient taxes and collect more through efficient taxes is one way to reduce the overall drag of taxes on economic growth. Similarly, broadening the base of a particular tax while reducing its rate will also improve efficiency.

Tax reform in Australia has generally occurred via ‘packages’ of tax changes: governments have boosted revenues by introducing more efficient taxes, closing loopholes and eliminating concessions while reducing less-efficient income and company taxes (Box 3).

It is difficult to class the current package as a tax reform by this benchmark. The Government has cherry-picked the politically easy part of reform – cutting income taxes – while ignoring less popular changes that would shore-up the tax base over time.

44. Morrison (2018).

45. McIlroy (2018); and Taurian (2019).

Box 3: The Howard and Hawke tax reform packages

In 2000, the Howard government abolished a complex regime of wholesale sales taxes and inefficient state taxes and replaced them with a 10 per cent Goods and Services Tax (GST). Company and personal income taxes were cut, and compensating welfare benefits introduced, to ensure most people would not be worse off.^a While the GST was the centrepiece, the suite of accompanying measures justified the Howard government’s claim to reform (‘Not a new tax, a new tax system’).^b

In the mid-1980s, the Hawke government broadened the tax base by introducing new taxes on fringe benefits, capital gains, resource rents and foreign income, streamlining wholesale sales taxes, and tightening concessions for agriculture, forestry and film production. On the other side, the package cut income taxes, and restructured welfare benefits to give pensioners and other beneficiaries more incentive to earn extra income.^c

a. Tran-Nam (2019); and Reinhardt and Steel (2006).

b. Costello (1998).

c. NAA (2019).

4.2 The tax plan will improve incentives to work but is not well targeted

The Government argues that the tax package will improve incentives to work and boost reward for effort.⁴⁶ This is true: tax cuts sharpen incentives to work and invest that would otherwise be eroded over time through bracket creep. Income taxes create an economic drag,⁴⁷ so all else being equal, reducing them yields an economic dividend.

But there are other more targeted interventions that could deliver more 'bang for buck' in terms of workforce participation. The group most responsive to effective tax rates in work decisions are second-earners (mainly women) working part-time.⁴⁸ Many people in this group still face substantial disincentives to taking on more hours,⁴⁹ and cuts that reduce tax rates for (mainly full-time) high-income earners are not well targeted to help.⁵⁰

And while the tax cuts give back bracket creep across the income distribution, only high-income earners see their reward for effort maintained under the package. Average tax rates for middle-income earners continue to rise (Section 2.3).

4.3 The tax plan does not simplify the tax system

The other major claimed benefit of the tax plan is that it simplifies the tax system. Simplicity *is* a virtue for tax systems. The simpler the

46. Commonwealth of Australia (2019b).

47. Treasury estimates that taxes on labour have a 'medium' marginal excess burden – they create more drag than some taxes such as land tax or a broad-based consumption tax but less than company tax or stamp duties. Commonwealth of Australia (2015, pp. 24–25).

48. Henry et al. (2009); and Wood et al. (2019a).

49. Daley et al. (2019a).

50. Empirical studies in Australia have generally found that lone parents are the most responsive to changes in effective tax rates, while married men are the least responsive: See Henry et al. 2009, Part 2, Volume 1, Table A1-2.

system, the lower the compliance costs for employers, taxpayers and government agencies. Simple systems also minimise the opportunity for tax avoidance, tax minimisation and mistakes.

But there is nothing in the plan that meaningfully simplifies the system. Tax offsets – which feature in the Stage 1 and Stage 2 changes – increase complexity.⁵¹

Stage 3 removes the 37c tax bracket, reducing the number of income tax rates from five to four. This may make tax rate tables 'neater', but it does not change the amount of documentation required of taxpayers or processing required of the tax office.⁵²

Nor does it make tax avoidance or minimisation materially less likely. Some have suggested that eliminating a tax bracket will reduce the opportunity for taxpayers to manipulate their income so that it bunches around thresholds.⁵³ But bunching is a *symptom* of minimisation. Without actions to address the causes – tax splitting through family trusts for example – minimisation will continue, and bunching will simply be pushed to another part of the income distribution.

In any case, none of these 'simplicity' arguments apply to the unlegislated component of Stage 3 – reducing the marginal rate of the mega-bracket from 32.5c to 30c.

4.4 Stage 3 could set back the chance for more meaningful reform

There is no shortage of ideas for improving the tax system in Australia. The Henry Tax Review provides a broad blueprint for change, almost

51. The Henry Tax Review recommended removing structural tax offsets to simplify the tax system: Henry et al. (Ibid., Part 2, volume 1, pp. 29-30).

52. Hamilton (2019).

53. Bagshaw (2018).

none of which has been taken up.⁵⁴ Grattan Institute's Commonwealth Orange Book also identifies a number of tax reform priorities.⁵⁵

Historical tax reforms – including the ones documented in Box 3 – have come at a net cost to the budget, at least in the short term.⁵⁶ 'Buying' reform in this way helps make the changes more palatable to the public and eases the transition to a new tax system.

By locking-in large income tax cuts so far in advance, the Government's package will effectively eliminate the opportunity for this and future governments to buy meaningful tax reform for at least the next decade.

54. Some key opportunities for reform – such as broadening the base or increasing the rate of the GST – were kept off the table by the review's terms of reference.

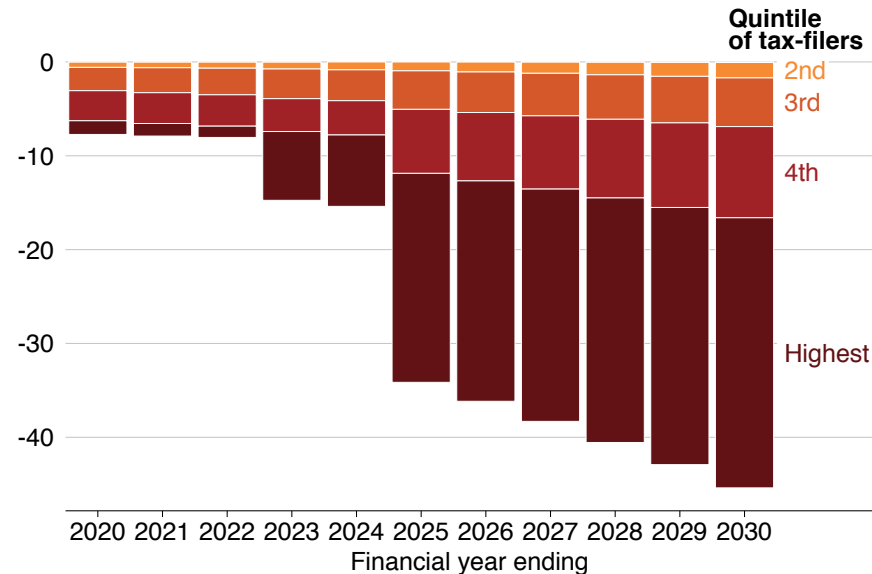
55. Daley et al. (2019b).

56. Daley and Wood (2015, p. 14). The Hawke tax cuts in 1987 also came at considerable net cost to the budget (NAA (2019)).

Appendix A: The distributional impacts of the full tax plan

Figure A.1: Most of the benefits of the full package go to high-income earners

Budgetary impact of the full income tax package (\$ billion)

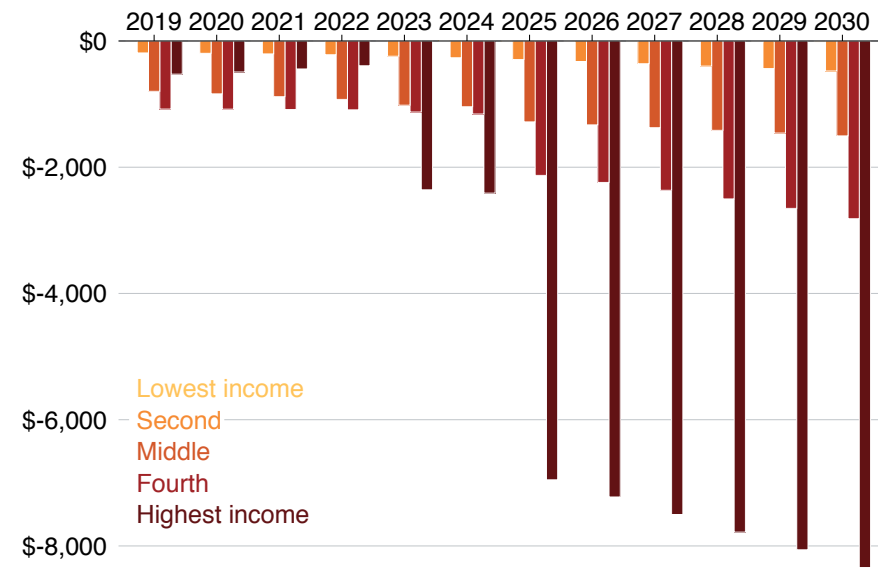


Notes: Bottom quintile of taxable incomes not shown, because they do not pay personal income tax. Figures are on an accrual basis.

Sources: Grattan analysis based on Commonwealth Budget Papers (Commonwealth of Australia (2018) and Commonwealth of Australia (2019a)) and ATO Taxation Statistics 2016-17.

Figure A.2: The top 20 per cent will get an extra \$7k+ on average, from 2024-25

Average tax cut by quintile, under the full income tax package



Notes: Financial year ending. Chart shows the difference between average tax liabilities by quintile in each financial year under 2017-18 policy and the policies proposed in the 2018-19 and 2019-20 Budgets. Figures are on an accrual basis.

Sources: Grattan analysis based on Commonwealth Budget Papers (Commonwealth of Australia (2018) and Commonwealth of Australia (2019a)) and ATO Taxation Statistics 2016-17.

Appendix B: Tax cuts across the income distribution

Income percentile	Average income in 2017-18 (\$)	Average income in 2029-30 (\$)	Average tax cut in 2029-30 (\$)	Change in average tax rate by 2029-30 (vs. 2017-18)	Total cost of tax cuts (2018-19 to 2029-30) (\$ billions)
1	—	—	0	0.0%	0.0
2	22	49	0	0.0%	0.0
3	334	518	0	0.0%	0.0
4	907	1,340	0	0.0%	0.0
5	1,886	2,653	0	0.0%	0.0
6	3,088	4,156	0	0.0%	0.0
7	4,353	5,805	0	0.0%	0.0
8	5,654	7,445	0	0.0%	0.0
9	6,989	9,046	0	0.0%	0.0
10	8,252	10,596	0	0.0%	0.0
11	9,486	12,018	0	0.0%	0.0
12	10,650	13,313	0	0.0%	0.0
13	11,723	14,553	0	0.0%	0.0
14	12,754	15,742	0	0.0%	0.0
15	13,741	16,898	0	0.0%	0.0
16	14,650	17,987	0	0.0%	0.0
17	15,542	19,150	0	0.0%	0.0
18	16,418	20,313	7	0.0%	0.0
19	17,258	21,459	137	0.0%	0.0
20	18,063	22,648	202	0.5%	0.1
21	18,858	23,853	200	1.2%	0.2
22	19,590	25,061	205	1.9%	0.3
23	20,357	26,267	206	2.6%	0.3
24	21,146	27,476	212	3.0%	0.4
25	21,927	28,668	215	3.4%	0.4

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Tax cuts across the income distribution – continued from previous page

Income percentile	Average income in 2017-18 (\$)	Average income in 2029-30 (\$)	Average tax cut in 2029-30 (\$)	Change in average tax rate by 2029-30 (vs. 2017-18)	Total cost of tax cuts (2018-19 to 2029-30) (\$ billions)
26	22,689	29,834	217	3.4%	0.4
27	23,474	31,006	213	3.3%	0.4
28	24,300	32,199	223	3.3%	0.4
29	25,145	33,412	252	3.5%	0.4
30	26,011	34,612	254	3.3%	0.4
31	26,902	35,864	254	3.1%	0.4
32	27,790	37,134	287	3.0%	0.5
33	28,695	38,436	421	3.2%	0.5
34	29,625	39,774	555	3.6%	0.6
35	30,533	41,097	687	3.7%	0.7
36	31,403	42,458	823	4.0%	0.8
37	32,286	43,808	957	4.1%	0.9
38	33,192	45,161	1,072	4.1%	1.1
39	34,109	46,505	1,113	4.4%	1.2
40	35,016	47,811	1,146	4.7%	1.3
41	35,925	49,160	1,180	4.8%	1.5
42	36,835	50,500	1,214	5.0%	1.6
43	37,737	51,850	1,248	4.9%	1.7
44	38,639	53,240	1,283	4.7%	1.8
45	39,531	54,571	1,316	4.5%	1.9
46	40,435	55,879	1,349	4.4%	2.0
47	41,341	57,192	1,382	4.2%	2.1
48	42,257	58,518	1,415	4.0%	2.2
49	43,189	59,862	1,449	3.9%	2.2
50	44,116	61,185	1,482	3.7%	2.3
51	45,078	62,520	1,516	3.5%	2.4
52	46,047	63,926	1,551	3.4%	2.4

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Tax cuts across the income distribution – continued from previous page

Income percentile	Average income in 2017-18 (\$)	Average income in 2029-30 (\$)	Average tax cut in 2029-30 (\$)	Change in average tax rate by 2029-30 (vs. 2017-18)	Total cost of tax cuts (2018-19 to 2029-30) (\$ billions)
53	46,993	65,303	1,586	3.3%	2.5
54	47,947	66,659	1,620	3.1%	2.5
55	48,960	68,074	1,656	3.0%	2.5
56	49,954	69,501	1,691	2.8%	2.6
57	50,965	70,953	1,728	2.7%	2.6
58	51,988	72,428	1,765	2.6%	2.6
59	53,047	73,895	1,802	2.5%	2.7
60	54,112	75,430	1,840	2.3%	2.7
61	55,208	76,988	1,879	2.2%	2.7
62	56,320	78,580	1,919	2.1%	2.8
63	57,474	80,194	1,959	2.0%	2.8
64	58,672	81,930	2,003	1.9%	2.8
65	59,869	83,710	2,047	1.8%	2.9
66	61,109	85,531	2,093	1.7%	2.9
67	62,387	87,371	2,159	1.5%	3.0
68	63,708	89,315	2,291	1.4%	3.0
69	65,062	91,251	2,427	1.3%	3.1
70	66,458	93,246	2,567	1.2%	3.2
71	67,928	95,404	2,718	1.2%	3.3
72	69,473	97,587	2,870	1.1%	3.4
73	71,003	99,965	3,037	1.0%	3.5
74	72,581	102,318	3,202	0.9%	3.7
75	74,213	104,744	3,372	0.9%	3.8
76	75,933	107,315	3,551	0.8%	4.0
77	77,746	110,041	3,742	0.7%	4.2
78	79,596	112,965	3,947	0.7%	4.4
79	81,513	115,961	4,156	0.6%	4.7

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Tax cuts across the income distribution – continued from previous page

Income percentile	Average income in 2017-18 (\$)	Average income in 2029-30 (\$)	Average tax cut in 2029-30 (\$)	Change in average tax rate by 2029-30 (vs. 2017-18)	Total cost of tax cuts (2018-19 to 2029-30) (\$ billions)
80	83,448	119,057	4,373	0.6%	4.9
81	85,506	122,227	4,595	0.5%	5.1
82	87,702	125,675	4,836	0.4%	5.4
83	90,084	129,324	5,092	0.2%	5.6
84	92,551	133,217	5,365	0.1%	5.9
85	95,183	137,386	5,656	-0.1%	6.1
86	97,998	141,901	5,973	-0.3%	6.4
87	101,113	146,674	6,307	-0.5%	6.7
88	104,514	151,919	6,674	-0.7%	7.0
89	108,262	157,566	7,069	-0.9%	7.3
90	112,583	163,660	7,496	-1.1%	7.6
91	117,659	170,704	7,988	-1.4%	8.0
92	123,368	178,975	8,620	-1.7%	8.5
93	130,001	188,610	9,931	-1.9%	9.3
94	138,288	199,979	11,406	-2.1%	10.4
95	148,425	213,889	11,639	-1.6%	11.6
96	161,265	231,691	11,639	-0.9%	12.4
97	178,393	255,904	11,639	-0.2%	12.5
98	204,197	291,528	11,639	-0.1%	12.5
99	267,968	366,496	11,639	-0.5%	12.5
100	597,260	805,151	11,640	-0.1%	12.5

Appendix C: About the grattax model

The analysis in this paper is underpinned by ‘grattax’, a static microsimulation model of the Australian personal income tax system used to estimate the impact of tax policy changes.⁵⁷

Because ‘grattax’ is a *static* model, it doesn’t incorporate the effect that policy changes might have on people’s behaviour. If a tax cut caused people to work more, for example, this effect will not be reflected in the estimates of a static model.⁵⁸

‘Grattax’ is a *microsimulation* model because it is based on detailed (‘micro’) data that contains a range of information about de-identified individual tax-filers. The *simulation* part refers to the way the model can be used to simulate the effects of a change, such as a change in tax policy. Static microsimulation models are also used by the Treasury and a range of academic researchers.⁵⁹

The ‘grattax’ model is based on the detailed sample files of Australian tax-filers that are released annually by the Australian Taxation Office.⁶⁰ By contrast, most other Australian tax models use ABS survey data as their base.⁶¹ The ATO sample files contain information about a 2 per cent sample of tax-filers for each year from 2011-12 to 2016-17 and a 1 per cent sample between 2003-04 and 2010-11.

57. Parsonage et al. 2019. The model is written in the R statistical programming language and is fully open-source.

58. The absence of behavioural change is unlikely to matter in the short run, but it is less plausible that there will be no behavioural response in the long-run.

59. See, for example, the Treasury’s CAPITA model (Stevenson et al. 2017), ANU’s PolicyMod (Phillips 2017), and NATSEM’s STINMOD (Lambert et al. 1994).

60. ATO (2019).

61. NATSEM’s STINMOD, ANU’s PolicyMod, and Treasury’s CAPITA are all based on the ABS Survey of Income and Housing.

Using the ATO sample files has many advantages – many more people are included in the data,⁶² the data is extracted from actual tax returns rather than survey responses, the data is released more frequently,⁶³ and a rich range of information about individuals is included.

There are also some disadvantages – the ATO files don’t contain any information about people who don’t file tax returns and only minimal information about the other members of tax-filers’ households. This means the ATO files are of limited use in estimating entitlements to transfer payments (which Treasury needs to be able to estimate), but that was not our purpose here.

C.1 Our methodology and assumptions

Our analysis begins by projecting what the distribution of tax-filers by taxable income will look like in future years. Our projections are based on the most recent ATO sample file (2016-17).

We use the forecasts and projections for employment and wages growth in Budget 2019-20.⁶⁴ For years beyond the forward estimates, we use the projected growth rates from the final year of the forwards. Our projections account for growth in the population (the weight allocated to each tax-filer in the sample increases) but not for changes in demographic structure such as increasing average age.

We assume that growth in salaries and wages will follow a quadratic (‘U’) shape, with higher growth at the bottom and top of the distribution

62. The latest sample file (2016-17) contains information about 277,202 people, compared to 33,913 in the latest ABS Survey of Income and Housing (2015-16).

63. The ATO releases sample files annually; the Survey of Income and Housing is conducted every two years and released with a longer lag.

64. Commonwealth of Australia (2019a).

than in the middle. This assumption is based on the historical ATO sample files. We use these files to estimate the shape of the quadratic curve. Different assumptions on the shape of the wage growth curve can have big effects, particularly on the projected incomes (and therefore tax liabilities) of people in the tails of the income distribution.⁶⁵

Once we have projected what the population will look like in each future year of interest, we then estimate the tax liabilities of each tax-filer in the sample in each future year under alternative policy scenarios. For example, we estimate the amount of tax that each person would pay under 2017-18 policy and under the unlegislated package set out in Budget 2019-20. The difference between the tax liabilities of individuals in these two scenarios is the size of the tax cut they will receive if the full package is passed.

We group individuals to generate summary statistics, such as the average tax cut for the top 10 per cent of tax-filers, or the change in the average tax rate by quintile. We also use the estimated tax liabilities of individuals in the sample to generate estimates of the impact on budget revenues of different policies.

The estimates of individuals' tax liabilities generated by the model include most major features of the Australian personal income tax system, such as the Medicare Levy, LITO, LMITO, SAPTO, and SBTO. The estimates do not include several smaller offsets such as the PHI tax offset, dependent offset, zone offset, and franking credits, due to limitations of the ATO sample files.

C.2 Discrepancies with other estimates

The estimates in this paper are broadly consistent with Treasury's, but there are some differences. For example, we estimate that the

65. It is unclear whether the Treasury inflates wages by different rates at different points in the distribution, and if so, what shape of curve is used.

unlegislated Stage 3 tax cuts will cost about \$85 billion, whereas Treasury estimates they will cost \$95 billion.⁶⁶

Our estimate of the annual cost of the tax cuts is close to the Government's estimate until about the middle of the next decade – the difference grows over time. There is likely some difference in projection assumptions, such as the rate of average wage growth beyond the forward estimates and the shape of the wage growth curve across the distribution. Minor differences in assumptions can cause larger differences in projections over a long period of time, such as a decade, and these differences can be particularly apparent in measures such as the share of tax paid by the top 1 per cent of tax-filers.

Our distributional estimates refer to the distribution of taxable income among tax-filers (unless otherwise noted). Distributional estimates published with the 2019-20 Budget include only those who pay at least some tax⁶⁷ (the bottom 20 per cent of tax-filers pay no tax). Other distributional analyses at the household level also include people who don't file a tax return.⁶⁸

Some figures in this report differ slightly from those previously published by Grattan Institute.⁶⁹ These differences are largely due to the incorporation of new data. The analysis in this paper is based on the 2016-17 ATO sample file; our previous analysis was based on the 2015-16 file. The shape of the curve we use to project wage growth at different points in the income distribution has also changed slightly.⁷⁰

66. Commonwealth of Australia (2019a).

67. Commonwealth of Australia (2019b).

68. Phillips et al. (2019).

69. Wood et al. (2019a); and Wood et al. (2019b).

70. Previously, 'grattax' used a non-parametric method (LOESS regression) to estimate the shape of the wage projection curve. We now impose a quadratic form, estimated using linear regression. This had minimal effect on our numbers.

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