

Get regular exercise

The case to reindex the fuel excise

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3**Summary**

Treasury anticipates that the reindexation of the fuel excise will collect \$2.2 billion over the forward estimates. From 2001 when the excise was deindexed from inflation by the Howard Government to today, the budget has lost more than \$46 billion in tax revenue. If the excise is not reindexed by 2025, more than \$160 billion will be lost.

To put this figure into context, the full suite of Gonski education reform recommendations were estimated to cost the budget \$5 billion per year. For the year ending June 2014, the cost to the budget in foregone revenue from the frozen indexation of the fuel excise was \$6.3 billion, a figure that increases in value every year.

By not indexing the fuel excise to inflation, petrol is cheaper today than it would otherwise be. This, by extension, means that driving is cheaper - people drive more and invest less in fuel-efficient vehicles.

Since the excise was de-indexed, the falling cost of driving has resulted in 22.6 billion more kilometres of driving. If the excise is not re-indexed by 2025, more than 54 billion additional kilometres will have been driven, resulting in an additional 16.1 million tonnes of carbon dioxide and impacts on urban air quality and human health.

The fuel excise is regressive - the poor households spend a greater proportion of their income on fuel (3.1 per cent) than wealthy households do (1.7 per cent). Although regressive, the vast bulk of the excise is paid by higher income earners. If the index freeze is maintained until 2025, it will save the highest income earners \$48 billion but save only \$15 billion for the lowest income earners. The index freeze reduces government revenue which could easily be diverted to offset its regressive nature.

Some opposition to the change is based on its link to road funding. However, the change will account for only three per cent of proposed infrastructure funding and road projects are likely to proceed with or without the change. The excise has a minor impact on road funding, but is a significant contributor to overall government revenue.

The case to reindex the fuel excise

How much does the fuel excise raise?

The fuel excise represents a significant source of revenue for the Commonwealth. In 2014-15, the fuel excise on petrol and diesel is forecast to raise \$15.2 billion, representing 3.9 per cent of revenue.¹ As a share of government revenue, the excise's significance is declining every year. In 2004-05, the excise raised \$13.7 billion, 5.8 per cent of government receipts.² Over the last decade, the fuel excise's share of government receipts has fallen by one third.

This decline in value is occurring despite Australia consuming more fuel, driving more kilometres, and having more wealth to spend than ten years ago. Fuel excise revenue has risen by an annual rate of around 1 per cent over the last ten years, while gross household income has increased by around 8 per cent a year in nominal terms over the same period.³

¹ Department of Treasury, 2014

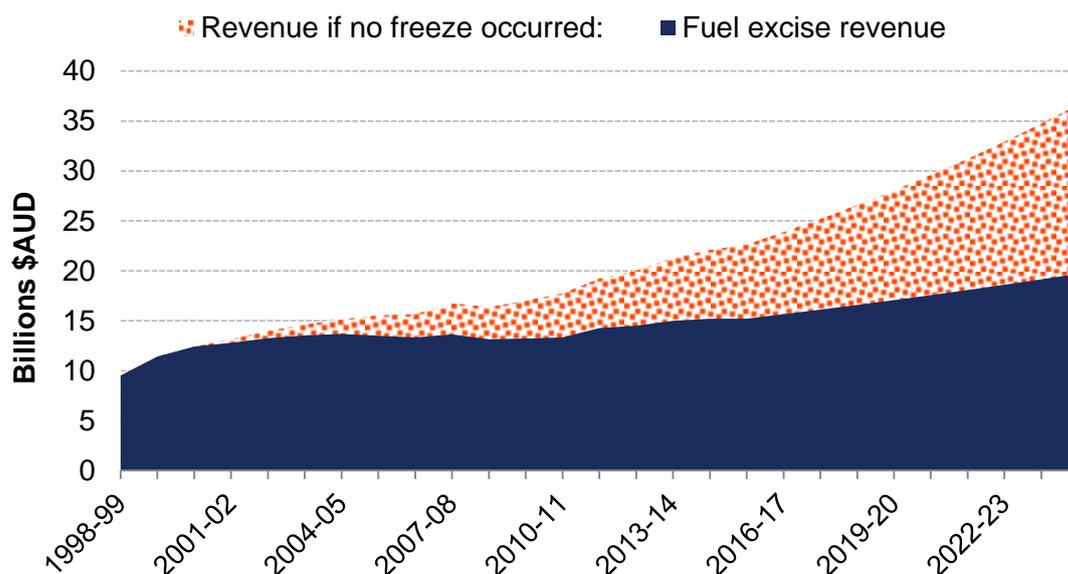
² Department of Treasury, 2014

³ Australian Bureau of Statistics, 2015

Since the link between the excise rate and inflation was severed in 2001, the price of liquid fuels has fallen in real terms. Instead of 38 cents per litre, a consistently indexed excise would today be worth 55 cents. Since 2001, the fuel excise has raised \$192.4 billion in revenue.⁴ If indexation had been maintained, it would have raised \$238.7 billion.⁵ This represents a cumulative loss to the budget of more than \$46 billion.

The difference between revenue raised under both indexed and unindexed excise scenarios in each year is shown in Figure 1 below:

Figure 1: Value of foregone diesel and petrol excise revenue, annual



Source: Department of Treasury, Final Budget Outcome (various years); Australian Bureau of Statistics, 2015. Projections beyond the forward estimates are based on an inflation rate of 2.5% and the average growth rate of the excise from 1998-99 to 2014-15.

Figure 1 shows that losses from de-indexation increase over time due to both increased kilometres travelled and inflation-driven price increases. Projections beyond the forward estimates are based on an inflation rate of 2.5 per cent, as is used in budget papers and most official projections, and the average growth rate of the excise from 1998-99 to 2014-15. The total difference between the deindexed excise and the indexed excise over this period is equal to around \$160 billion in nominal terms.

How many more kilometres have been driven?

Petrol today is 17 cents per litre cheaper than it would have otherwise been.⁶ This encourages people to drive more and invest less in fuel-efficient vehicles.

The Department of Infrastructure and Regional Development (DIRD) publishes statistics on the kilometres driven by Australian motorists each year. Australians currently drive around 160 billion kilometres per year.⁷⁸

⁴ Department of Treasury, 2014 and various years; Department of Treasury, 2014

⁵ This calculation is based on inflation as measured by the Consumer Price Index and published by the Australian Bureau of Statistics. The excise rate has been adjusted to account for changes in inflation in line with these estimates.

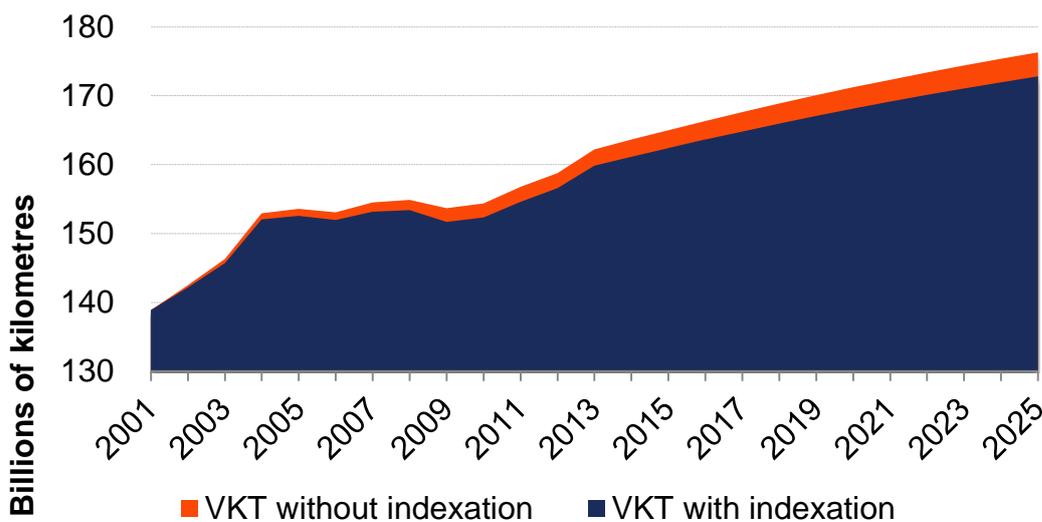
⁶ See fn 5 above.

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In 2012 DIRD published analysis on how a range of variables affect total kilometres driven, such as population, income, unemployment levels, and petrol prices. This regression analysis provides an estimate of the effect of fuel price on vehicle kilometres driven. Based on DIRD’s analysis, a 10 per cent increase in fuel price equates to a 1.67 per cent decrease in vehicle kilometres travelled.⁹

Using this estimate of relationship between fuel price and driving, we can estimate the extent to which a change in fuel price leads to a change in vehicle kilometres travelled. The effect of this difference is shown in Figure 2 below:

Figure 2: Vehicle kilometres travelled (VKT), with and without fuel excise indexation



Source: Author’s calculations, based on elasticities derived from Bureau of Infrastructure, Transport and Regional Economics, 2012. See appendix for more details on calculations.

Figure 2 shows that the indexation freeze has resulted in Australian drivers driving an extra 2.6 billion kilometres in 2015, and a cumulative total of 22.6 billion since the price was de-indexed in 2001.

If the excise freeze persists until 2025, we will drive a total of 54 billion extra kilometres, with an extra 3.5 billion vehicle kilometres in 2025 alone.

Environmental impacts

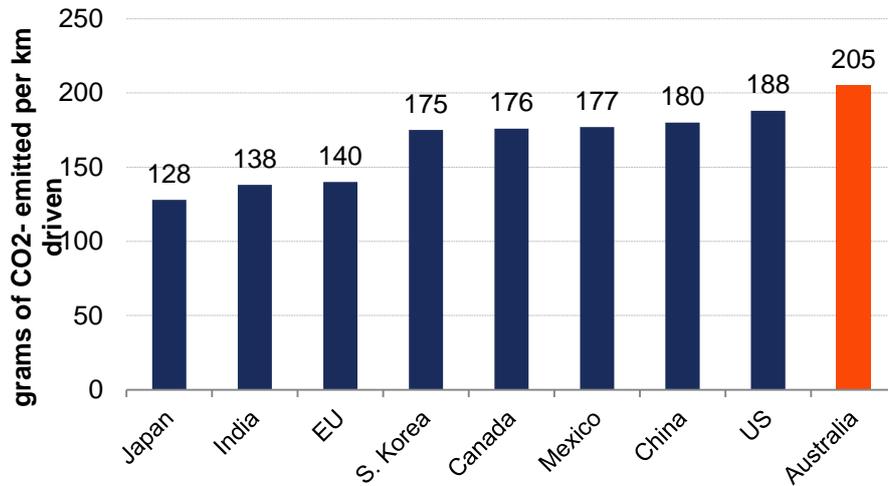
Not only does cheaper fuel mean that Australians drive more, but it provides us with little incentive to invest in more fuel-efficient vehicles. Australia already has one of the least efficient passenger vehicle fleets in the developed world, as shown below:

⁷ Department of Infrastructure and Regional Development, 2012

⁸ Australian Bureau of Statistics, 2013

⁹ Bureau of Infrastructure, Transport and Regional Economics, 2012. See appendix for more detail.

Figure 3: Passenger vehicle emissions intensity, selected countries, 2010



Source: Climate Change Authority, 2014

Because most vehicles emit carbon pollution through the combustion of fossil fuels, by 2025 the induced increase in driving will have resulted in an additional 16.1 million tonnes of carbon dioxide, based on vehicle use trends as illustrated in Figure 2 and the average emissions intensity of Australia’s passenger vehicle fleet shown in Figure 3.

These conclusions are consistent with the Productivity Commission’s findings in 2011 that fuel taxes serve as a deterrent to driving, and as such lower Australia’s carbon emissions. In its review of more than 1000 carbon reduction schemes around the world, it noted the similar impacts on carbon emissions between a fuel tax and a carbon tax:

...in the absence of fuel taxes, emissions from road transport would be significantly higher than they are today.

...The results suggest that fuel taxes may have reduced emissions from road transport by around 8 to 23 per cent in Australia.¹⁰

Regressive taxation

A regressive tax affects lower income earners proportionately more than higher income earners. The fuel excise is regressive, like most taxes on general consumption goods, such as the GST as low-income households spend a larger share of their disposable income on fuel than high-income households do, even though they spend less in absolute terms. This is shown in Table 1 below:

Table 1: Weekly household expenditure on petrol, by household income quintile

	Lowest income	Second	Third	Fourth	Highest income
Average weekly household expenditure on petrol (\$)	16.36	27.60	38.55	47.00	53.87
Average weekly household disposable income (\$)	522	909	1276	1756	3189
Petrol as a share of income (%)	3.1	3.0	3.0	2.7	1.7

Source: Australian Bureau of Statistics, 2011

¹⁰ Productivity Commission, 2011

Table 1 shows that the poorest 20 per cent of households spend \$16 per week on fuel, and have disposable income of around \$500. The wealthiest 20 per cent, in contrast, spend \$54 on petrol, but as they also have disposable income of almost \$3,200 per week, more than six times greater than the lowest income households. The highest earners spend only 1.7 per cent of their income on fuel, whereas the lowest income households spend 3.1 per cent.

While the fuel tax excise is regressive, as shown in Table 1, Table 2 shows that the bulk of revenue is raised from high income earners. If the index freeze is maintained until 2025, it will save the highest earners \$48 billion but save only \$15 billion for the lowest earners.

Table 2: Effects of fuel excise indexation freeze, by household income quintile

	Lowest income households	Second	Third	Fourth	Highest income households
Money saved from excise freeze, 2001-2025, \$billions	\$14.7	\$24.7	\$34.5	\$42.1	\$48.3

Source: Author's calculations

The Australian tax system is designed to be progressive, to promote equity and fairness. It is important, however, to distinguish between the progressivity of the tax system as a whole and the incentive effects of a particular tax.

Any tax that works against the progressive nature of the system must have strong justification based on the incentive effects it has. For example, excise on tobacco is regressive but is broadly supported for its impacts on human health and government revenue. Excise on alcohol and a carbon tax are other examples of taxes that are regressive, but that have support from most economists as they provide incentive for behaviour that has a strong social benefit – less alcohol consumption and fewer carbon emissions.

While the impacts of fuel consumption on health are not as direct as those of tobacco consumption, fuel consumption and driving have many undesirable side effects – road congestion, air pollution and carbon emissions to name just three. Reindexing the fuel excise provides some incentive to reduce driving and these undesirable impacts.

Regressive taxes like the carbon tax are generally implemented with compensation to offset the regressive effects of the tax. Given that the bulk of fuel excise revenue is collected from higher income earners, designing a compensation measure to ameliorate the effect on lower income earners should be possible through other parts of the tax and transfer system.

Road funding

Opposition to re-indexation based on the link to roads funding parallels widespread confusion over the role of the fuel excise. The primary role of the fuel excise is to raise general government revenue. It is not dedicated to road funding. This is made clear by Treasury:

The excise that we collect on petrol is, in effect, a general revenue measure. It vastly exceeds the amount of money that the Commonwealth wants to fund on roads.¹¹

While the current proposal to reindex the excise has been linked to road-dominated infrastructure funding by the Abbott Government, the revenue that will be raised over the

¹¹ Quoted in Bureau of Transport and Communications Economics, 'Taxes and Charges in Australian Transport: A Transmodal Overview', Working Paper 34, October 1997, p. 16.

next five years - \$2.2 billion – represents only three per cent of the funding for new infrastructure and will have little effect on what road projects do and do not go ahead.¹²

Conclusion

The Howard Government's decision to freeze the indexation of the fuel excise in 2001 was a costly one, but maintaining the freeze every year is just as costly. It is depriving the government of a valuable source of revenue, and without an offsetting decrease in service provision or an offsetting increase in public debt, the government is forced to raise taxes elsewhere to compensate for the ever-increasing loss of revenue.

Opposition to the change based on the allocation of new revenue to road funding is misguided. The change will account for only three per cent of proposed infrastructure funding and road projects are likely to proceed with or without the change. The excise has a minor impact on road funding, but is a significant contributor to overall government revenue.

By making fuel relatively cheaper, the excise freeze reduces the incentive for drivers to change to public transport or cycling, or invest in more efficient vehicles. This means there are more cars on the road, driving more total kilometres, and consuming more fuel than if the excise was still indexed to inflation. The increased fuel use arising from artificially low fuel prices will put 16.1 million tonnes of carbon into the atmosphere.

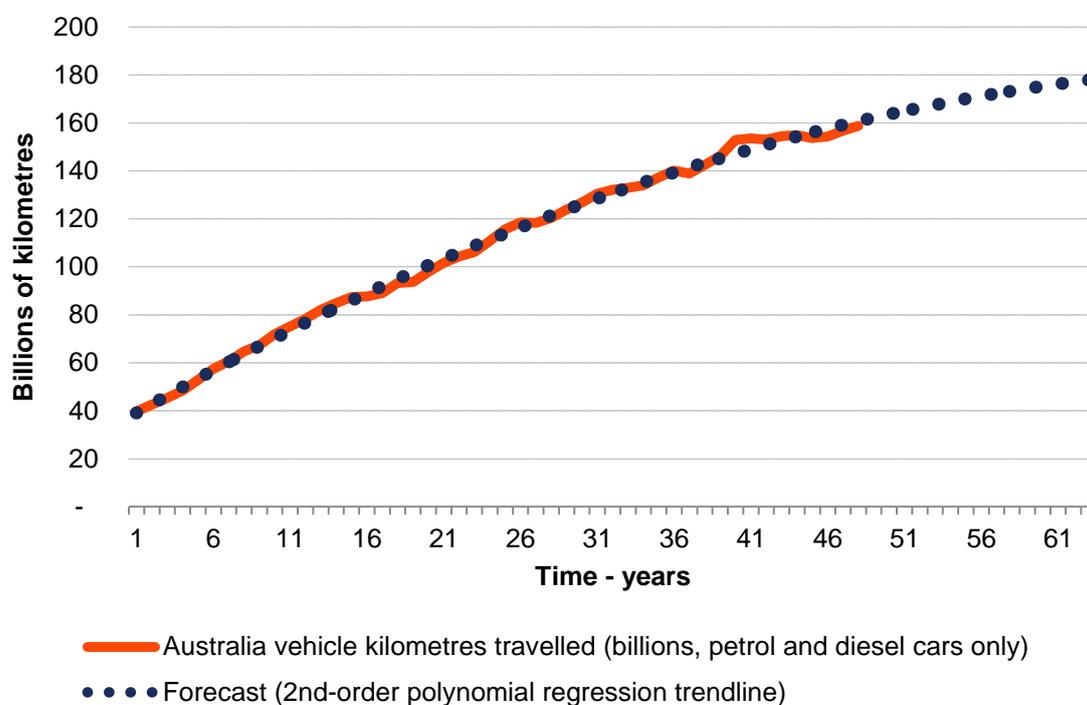
The ever-increasing loss to the budget from the decision to freeze the excise means there is less money available to fund the programs voters wish to see funded. Every year, the amount of foregone revenue increases, and by 2025 the cumulative loss to the budget will exceed \$160 billion. This year alone, the budget is more than \$7 billion worse off than it would be had the Howard Government maintained fuel excise indexation. The time has come to reverse this costly decision.

¹² (Hockey & Morrison, 2014) (Dossor, 2014)

Appendix

Figures for Australia’s road use, both by city, state, and as a total, are taken from the Bureau of Infrastructure and Regional Development.¹³ Based on these historical trends, we produced different forecasts for each capital city and state, owing to the different urban/regional divides and population centre dependency on roads. We then derived a national trend using a polynomial regression equation and forecast results out from 2011 to 2025. Because most cities and states have experienced a slight decelerating increase in vehicle kilometres travelled, a simple linear regression could risk overstating future vehicle usage. As such, a polynomial second-order line of best fit was preferred, as the trend features a negative leading coefficient, creating a gradual curve that slows the rate of growth, reflecting a decreasing dependency on private vehicle travel. The independent variable is an annual time series, represented as integers. The results of the no-excise indexation forecast model are illustrated below:

Figure 4: Petrol and diesel-fuelled passenger vehicle kilometres travelled, under no excise indexation policy



Source: Department of Infrastructure and Regional Development, 2012

The elasticity of the response to a change in fuel price in kilometres travelled is based on multivariate regression analysis performed by the Bureau of Infrastructure and Regional Development to calculate the impact of fuel prices on road traffic, holding other variables constant.¹⁴

Using these regression estimates, we calculate the extent to which a change in fuel price provokes a change in demand for vehicle kilometres travelled. We find a 10 per cent increase in fuel to equate to a 1.67 per cent decrease in vehicle kilometres travelled, indicating low levels of price sensitivity. This result is then used to calculate scenarios of

¹³ Department of Infrastructure and Regional Development, 2012

¹⁴ Bureau of Infrastructure, Transport and Regional Economics, 2012

vehicle kilometre travelled under different prices, resulting from a higher fuel excise, and is complemented by third-party analysis of fuel efficiency elasticities for new motor vehicle purchases in response to fuel prices.

As fuel becomes more expensive, consumers will be more inclined to switch to other forms of transport, and the rate of adjustment will depend on the rate of price inflation. As the CSIRO notes in its modelling of the effects of a carbon price on fuel efficiency of road transport:

The consumer response to rise in oil prices has been more evident in adoption of higher fuel efficiency vehicles rather than any major changes to kilometres travelled.¹⁵

Estimates of average annual rates of carbon emissions per kilometre travelled by Australia's passenger fleet are from the Climate Change Authority.¹⁶ The grams emitted per kilometre travelled decrease annually as the natural attrition rate sees older vehicles replaced with newer, more fuel efficient vehicles. The result is a marginally more fuel-efficient passenger vehicle fleet with every marginal increase in fuel price, which reduces the emissions of the fleet overall, but by influencing only new car purchasing decisions, its effect is lagged and limited, magnifying only over time.

The estimate of average carbon-equivalent emissions per kilometre travelled by Australia's passenger fleet is multiplied by the projected number of kilometres travelled, which decelerates over time. The result gives an estimate for carbon emissions from Australia's passenger road vehicle fleet for any given year.

Estimates for the effect of fuel price on the fuel efficiency of new passenger vehicles purchased are derived from a study by Australian National University academics Paul Burke and Shuhei Nishitateno, from the Crawford School of Economics and Government.¹⁷ The researchers found a 0.2 per cent increase in fuel efficiency for new vehicles for every 1 per cent increase in fuel prices. Fuel prices were forecast with and without an indexed fuel excise, and compared with the natural replacement rate of vehicles in Australia's passenger fleet, which figures from the Australian Bureau of Statistics indicate is around 7 per cent per year.

Average fuel efficiency is taken from the Climate Change Authority's forecasts through till 2030, then modelled with adjusted fuel prices. The result sees consumers purchasing vehicles at a consistent rate, but increasingly conscious of running costs. This result is consistent with Treasury and CSIRO modelling for the effect of the carbon price on transport emissions.¹⁸

The result of this behavioural change on consumer's purchasing decisions, as well as the marginally reduced degree of kilometres driven, combines to lower Australia's annual carbon emissions from petrol and diesel-fuelled passenger vehicles. The net impact is illustrated below:

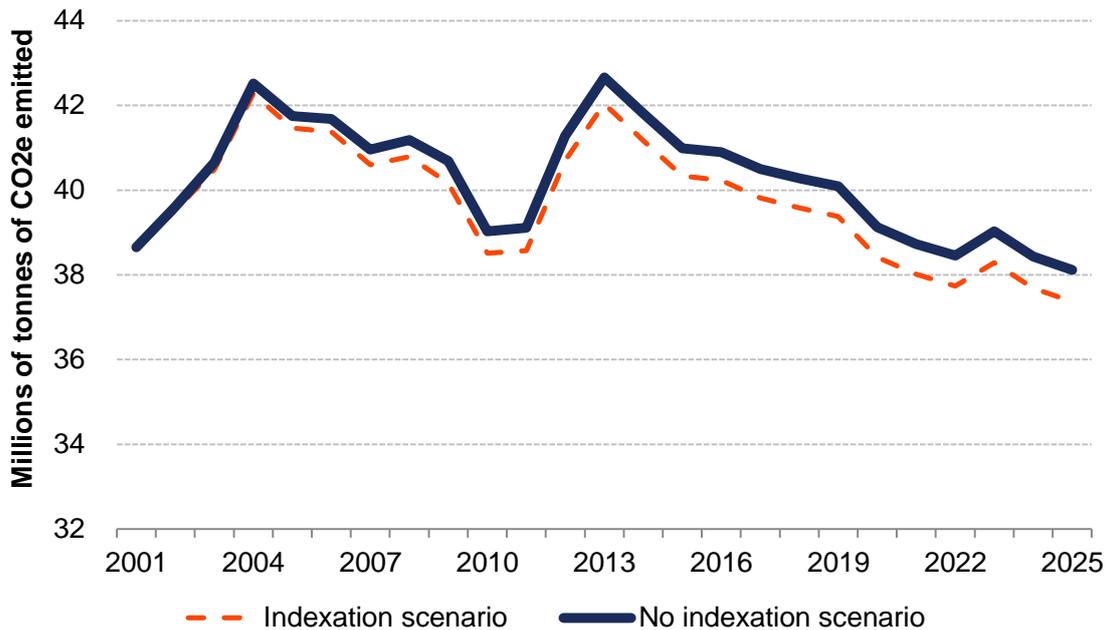
¹⁵ Commonwealth Scientific and Industrial Research Organisation, 2013

¹⁶ Climate Change Authority, 2014

¹⁷ Burke & Nishitateno, 2013

¹⁸ Climate Change Authority, 2014

Figure 5: Passenger fleet emissions, with and without fuel excise indexations



Source: Author's calculations, based on Climate Change Authority, 2014; Burke & Nishitateno, 2013; Australian Bureau of Statistics, 2015; Australian Bureau of Statistics, 2014; Australian Bureau of Statistics, 2013; Bureau of Infrastructure, Transport and Regional Economics, 2012

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