GRATTAN Institute

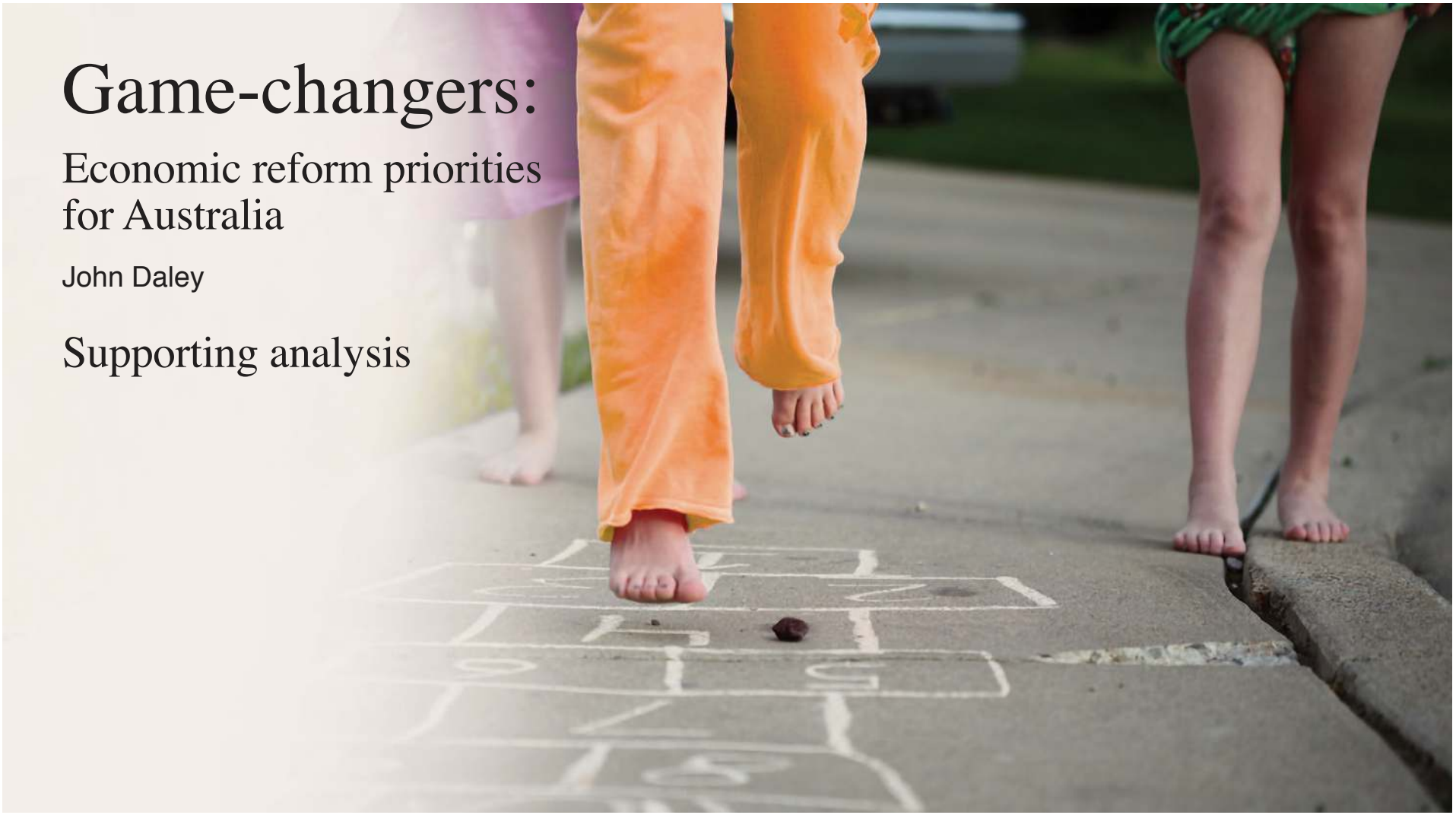
June 2012

Game-changers:

Economic reform priorities for Australia

John Daley

Supporting analysis



Grattan Institute Report No. 2012-5, June 2012

This *Supporting Analysis* publication accompanies a report, *Game-changers: Economic reform priorities for Australia*. The report can be downloaded from the Grattan Institute's website.

This report was written by John Daley, Chief Executive Officer, Grattan Institute. Cassie McGannon and Leah Ginnivan provided extensive research assistance and made substantial contributions to the report. Jim Savage, Ben Weidmann, Andrew Kemp, Kate Grutzner and Helen Morrow also made significant contributions. We have also drawn on internal papers prepared by Katherine Molyneux, Ben Brown and Christian Behrenbruch.

We would like to thank numerous people from the public policy community, the private sector, and the members of Grattan Institute's Public Policy Committee for their helpful comments as this work was developed. Many of its ideas have been drawn from their suggestions, and it has benefited enormously from their counsel.

The opinions in this report are those of the authors and do not necessarily represent the views of Grattan Institute's founding members, affiliates, individual board members or reference group members. Any remaining errors or omissions are the responsibility of the authors.

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This report may be cited as:
Daley, J., McGannon, C., and Ginnivan, L. 2012, *Game-changers: Economic reform priorities for Australia - Supporting analysis.* Grattan Institute, Melbourne.

ISBN: 978-1-925015-24-9

Introduction

This publication accompanies the main report, *Game-changers: Economic reform priorities for Australia.* The Supporting Analysis of this publication comprises two sections:

Section 1: Analysis of economic reform priorities for Australia (Pages 5 – 55)

Detailed material on each of the 25 issues considered in the main report, providing analysis that supports the placement of each issue on the matrix in *Chapter 2 – Economic Reform Priorities for Australia* of that report, also reproduced on the next page.

First, we outline the economic opportunity of each reform, then assess it against two criteria:

1. The **size of the opportunity** presented — measured in terms of its economic impact, expressed as the additional Gross Domestic Product in the year 2022, expressed in 2010 real dollars. These are estimates only, arrived at by methods that do not substitute for detailed economic modeling. However, they are likely to give fair estimates of the likely magnitude of the economic and non-economic returns, which provides a good basis for ranking potential reforms.
2. The **level of confidence** that identified policy remedies can achieve change. Confidence will only be high if concrete policy changes have been identified, there is good evidence they will be effective, and reasonable evidence of the size of the economic benefit. In making this qualitative assessment, we have used five categories:
    - considerable expert consensus on detailed solutions
    - considerable expert consensus on the direction of reform, but detailed solutions are not proven
    - considerable expert consensus on the direction of reform, but solutions are poorly characterised
    - little consensus on the direction of reform, or whether there are any gains to be made from reform
    - Inadequate evidence base to define problem or determine direction of reform.

For each issue, we have also considered what we don't know that might well change our conclusions.

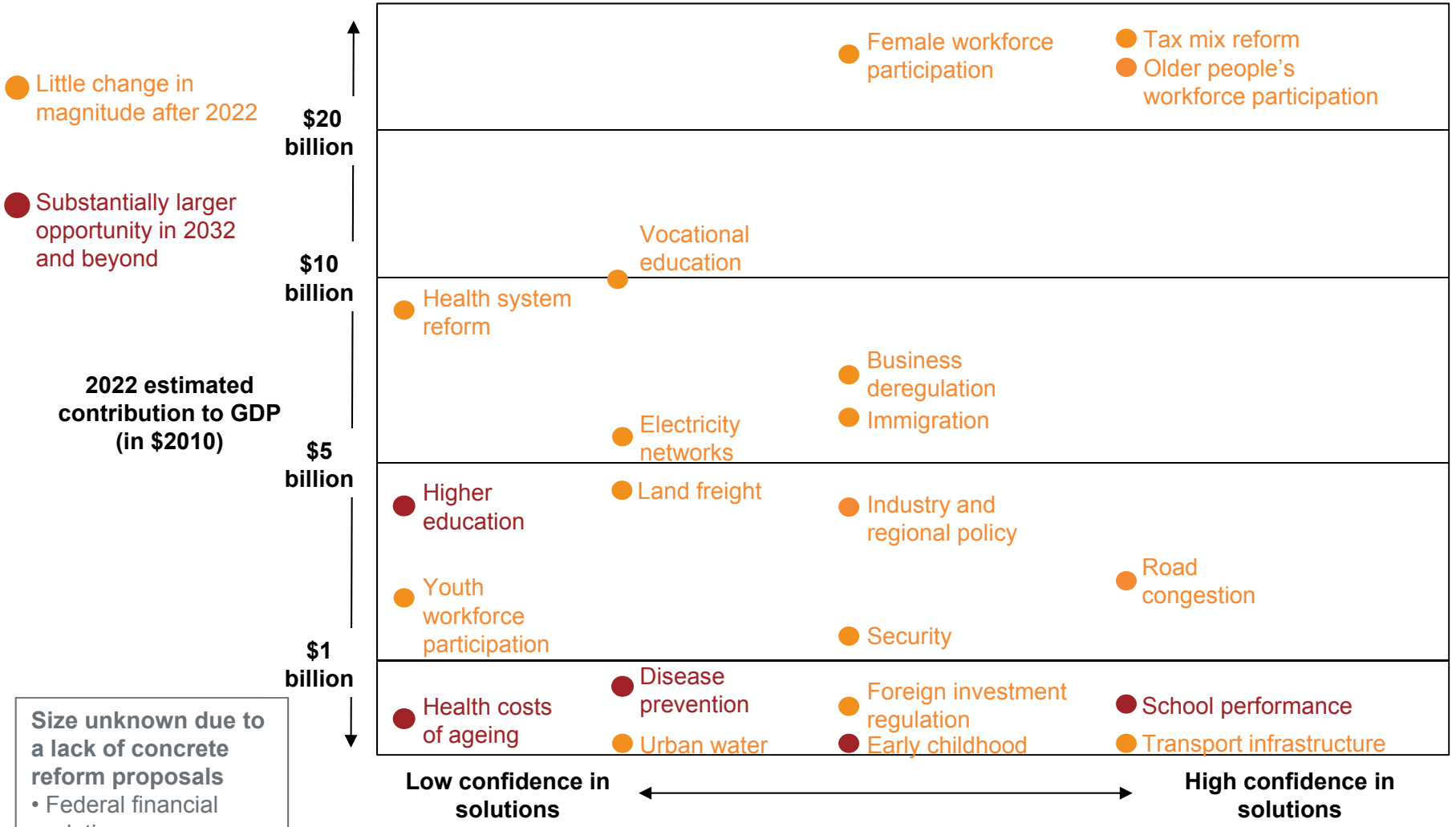
Further information about the methodology can be found in *Appendix A* of the main report.

Section 2: Supporting analysis — Female workforce participation (Pages 56 – 58)

This section contains supplementary charts for *Chapter 4 – Female Workforce Participation* of the main report. It includes a number of charts showing the effective marginal tax rates for second income earners at a range of income levels.

References (Pages 59 – 70)

Reform priorities for 2022



Size unknown due to a lack of concrete reform proposals

- Federal financial relations
- Oligopoly regulation
- Industrial relations
- Innovation

Section 1: Analysis of economic reform priorities for Australia

Industry and regional policy

Context and opportunity

- Many would like government intervention to promote more diversity in Australia's exports.
  - Australia's economy is rapidly changing shape, as resources flow into services and mining and out of manufacturing.[1]
- There is little evidence of government interventions that successfully create growth industries.
  - Internationally there is little evidence of successful intervention.[2]
  - Regional support in Australia has generally failed to promote economic growth.[2]
  - A few export industries other than mining are growing but there is little evidence that government intervention is driving this. [3,4]
- There may be opportunities to *reduce* existing inefficient industry support, and thus increase growth.
  - For example, steel industry assistance under carbon price compensation measures will cost $36,000 per year per worker.[5]

Confidence in the policy solution

- There are potential savings from reducing assistance that on the evidence does not work.
- Some research and development (R&D) assistance may be an effective means to deal with knowledge spillovers, although there is little rigorous evaluation of this spending.
- There is less agreement on what else can be done.
  - Some argue any government involvement is 'picking winners'.
  - Others back strategic support for industries that are temporarily uncompetitive because of the high Australian dollar (e.g. agriculture, tourism or education).
  - An alternative is winding back support, and reinvesting the money in retraining and relocation to support transitions.

Assessment: Direction known; solutions not proven

Size of opportunity

- Australian governments spend almost $16 billion a year on industry and regional support, with little evidence of impact.
  - Assistance to industry from the Commonwealth government is well over $9 billion per year (net, 2010-11).[6]
  - The states and territories provide another $4 billion.[7]
  - Regional support takes up a further $2 billion a year.[2]
- Eliminating all Commonwealth industry support except for R&D and support for small businesses would free up $3.7 billion to be directed to more productive uses. Delivered as income tax cuts, this could contribute up to $4 billion to 2022 GDP (assuming no appreciable effects on long-run economic output arising from the cuts).

Potential contribution to GDP in 2022: $4 billion

What don't we know?

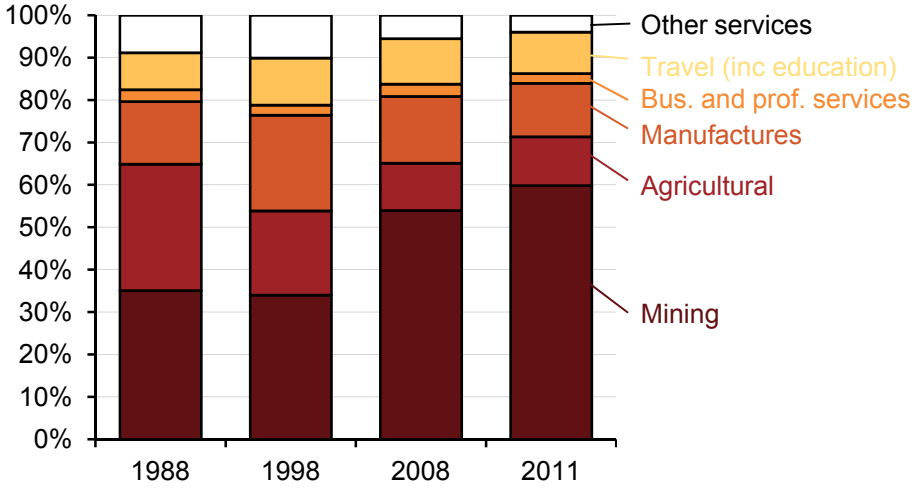
- Very few industry support programs are evaluated,[7] which makes determining effective policy solutions difficult.
- Rigorous evaluation of all existing programs is needed to show whether existing assistance is effective, so that ineffective programs can be closed. This is particularly important given the strong vested interests in the status quo which make reasoned debate in this area challenging.
- Better evidence on what could successfully grow new export industries would help to identify whether there are new policies that might provide value for money.

1. Lowe (2012) 2. Daley and Lancy (2011) 3. ABS (2012c); 4. Manyika *et al.* (2010); Munro and Katz (2010); Box (2009) 4.Wood and Edis (2011) 5. Productivity Commission (2012b) 6. Productivity Commission (2011e)

Industry and regional policy

Australian exports are increasingly dominated by mining

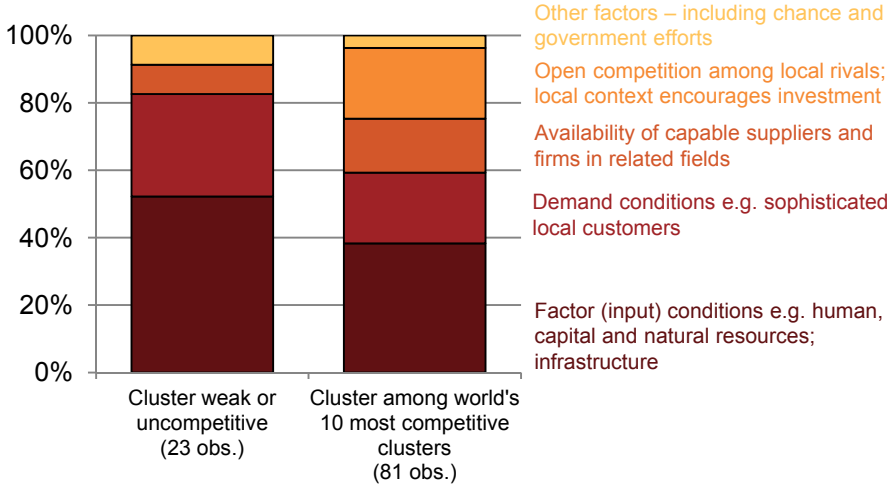
Australian exports by industry share



ABS (2012c) Table 11a, Table 12a

Government efforts to create new industries have a mixed record

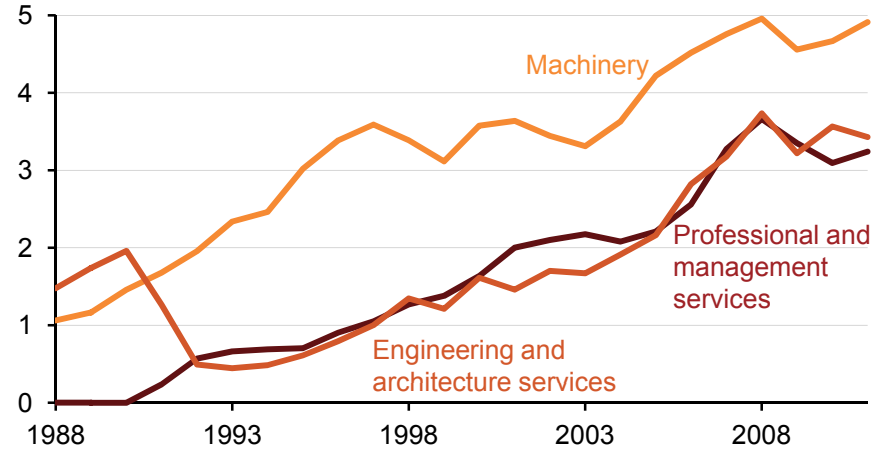
Factors explaining performance of clusters



Van der Linde (2003)

There are some emerging export industries

Machinery and professional services exports, $ billions / year



ABS (2012b) Table 11a, Table 12a.

Governments spend substantial amounts on industry assistance

Commonwealth Government industry assistance, 2010-11

Category	Net support ($b)	Major focus
Tariffs	0.8	Major beneficiaries: food and beverage manufacturing, metal products, motor vehicles
Research and development	2.4	R&D tax concessions, as well as CSIRO, CRCs and rural R&D corporations
Industry-specific assistance	1.5	Major beneficiaries: automotive, textile, clothing and footwear; film, offshore banking
Sectoral assistance	0.7	Mostly drought relief
Small business	3.6	Mostly tax concessions
Other	0.8	Includes export and investment assistance
Total	9.8	

Productivity Commission (2012b)

Innovation policy

Context and opportunity

- Innovation is the dominant driver of labour productivity growth and thus long-run economic growth. Calls for greater innovation ultimately amount to calls for higher productivity.
- Australian innovation is largely based on applying already existing innovations to business practices, using ideas that are mostly sourced from industry, not universities.
  - Australia rates low on a number of "innovation" indices, which mostly measure invention.
  - Invention of "new to world" ideas is a relatively small subset of innovation.
- There are calls for Australian governments to increase innovation by spending to encourage R&D, and industry linkages with university R&D.
  - Most existing "innovation policy" in Australia focuses on "invention" and research & development.[1]
- It is unclear whether further spending on "invention" would substantially increase productivity: the efficacy of many existing programs are not measured and international assessment suggests limited effectiveness. [2]

Confidence in the policy solution

- There may be relatively little that government can do to enhance the majority of productivity-enhancing innovation, apart from promoting competition as a spur to innovation, promoting sound economic frameworks such as efficient regulation and macro-stability, and promoting high quality education.
- Given the relative unimportance of 'new to world' innovations for the Australian economy, it is unclear that government interventions to promote invention would make a big difference to Australian economic growth.

Assessment: Inadequate evidence to define worthwhile reform

Size of opportunity

- More innovation could substantially increase GDP growth every year.
  - Innovation drives long term productivity, responsible for 42% of multi-factor productivity growth (decade to 2005-06).[3]
  - An extra 0.25%/yr GDP growth would increase average annual GDP growth by $14 billion to 2050.[4]
- However, there is not a clear link between policy proposals and increasing innovation/productivity.
- There is insufficient evidence to determine the size of the opportunity.

Potential contribution to GDP in 2022: Unknown

What don't we know?

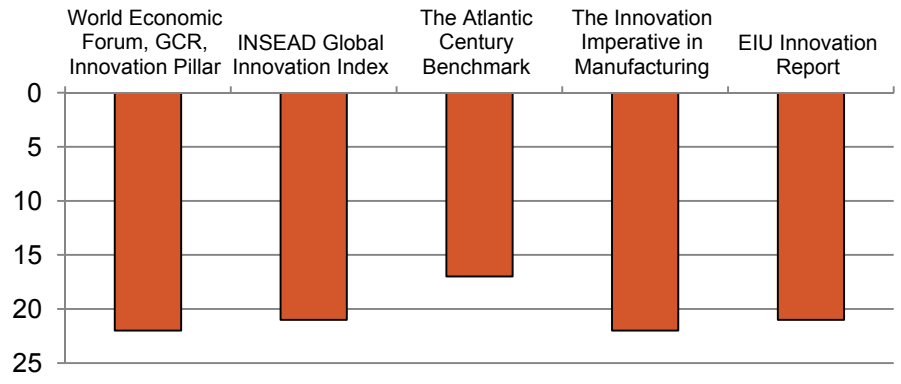
- There is little evaluation of the effectiveness of current spending to increase innovation.
- More work is required to establish:
  - Whether government policies can successfully promote innovation more broadly.
  - If policies could promote 'new to world' invention in a cost-effective way.
  - If so, would this form of invention would be material to Australian economic growth?

1. Department of Innovation, Industry ,Science, and Research (2009). 2. Productivity Commission (2012b) 3. Grattan analysis (unpublished). 4. Treasury (2010).

Innovation policy

Australia does poorly on rankings that primarily measure invention innovation

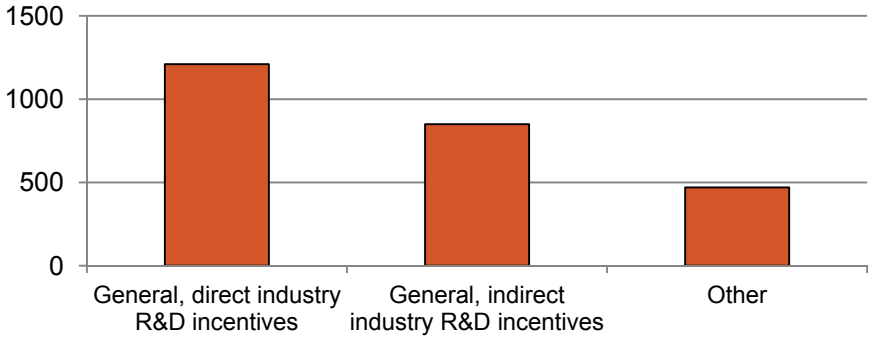
Australia's rank on global innovation rankings



Schwab (2011); Dutta (2011); Atkinson & Andes (2009); Andrew, DeRocco & Taylor (2009); Economist Intelligence Unit (2007)

Australian governments support 'innovation' mainly through research and development funding

Commonwealth government innovation program expenditure, 2011-2012, $M

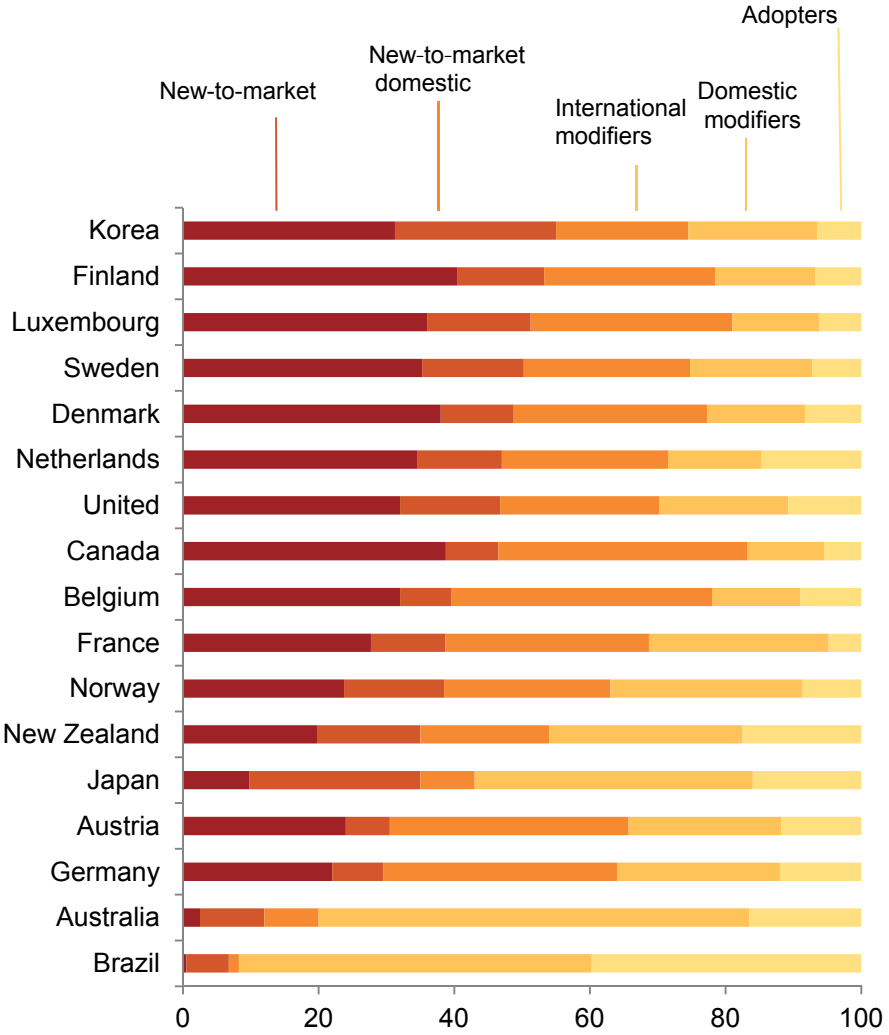


Note: Framework adapted from Denniss *et al.* (2009); in some cases, some 'other' funding may be spent on research and development.

Department of Innovation, Industry, Science and Research (2011)

Australian companies innovate mainly by *applying* technology

Comparison of innovation modes across 17 OECD countries



Department of Innovation, Industry, Science and Research (2011)

Immigration policy

Context and opportunity

- Higher rates of migration – particularly skilled migration – are generally associated with higher rates of innovation and economic growth.[1]
  - In the USA, the contribution to the patent stock brought about by a 1.3% increase immigrant college graduates in the 1990s was estimated to have increased US GDP per capita by 1.4 - 2.4%.[2]
  - Migrants in Australia tend to be more educated than Australian-born people, and tend to have a higher participation rate.[3]
  - People with science and engineering qualifications (which make a large contribution to innovation) are more likely to migrate as these skills are easily transferable across countries, cultures and languages.[2]
- Economic growth might be promoted either through higher skilled immigration intake, or better targeting.

Confidence in the policy solution

- Australia's increased focus on skilled migration over the last 15 years has reduced the scope for obvious reform, with Australia already seen as a global leader.[5]
- Australia will need to respond to the intensifying competition among countries for skilled migrants. Although not well defined, possible options include:
  - Policies to reduce impediments to integration, e.g. language barriers, unfamiliarity with institutions.[2]
  - Continued focus on international students: 62% of foreign students who received a science or engineering doctorate from a US university in 1995 were still in the US in 2005; 75% paid taxes on U.S. earnings for at least one year between 1995 and 2005.[6]
  - Refinements in foreign student policy, but with Australia close to world best practice, the direction of further reforms is unclear.[7]

Assessment: Direction known; solutions not proven

Size of opportunity

- A 50% increase in skilled immigration could contribute $6 billion to GDP in 2022 for existing residents, based on Productivity Commission estimates of the per-capita increase in GDP.[3]
- Higher skilled immigration will increase GDP both by increasing the population, and by increasing productivity. However, the population increase does not increase the prosperity of existing residents. Consequently we only consider the GDP increase for non-immigrants so as to make the change comparable with other reforms. Thus, the shift is the change in GDP per capita, multiplied by the number of existing residents.[4]
- Policies to increase migration must also take into account significant short-term costs in additional infrastructure and integration.

Potential contribution to GDP in 2022: $6 billion

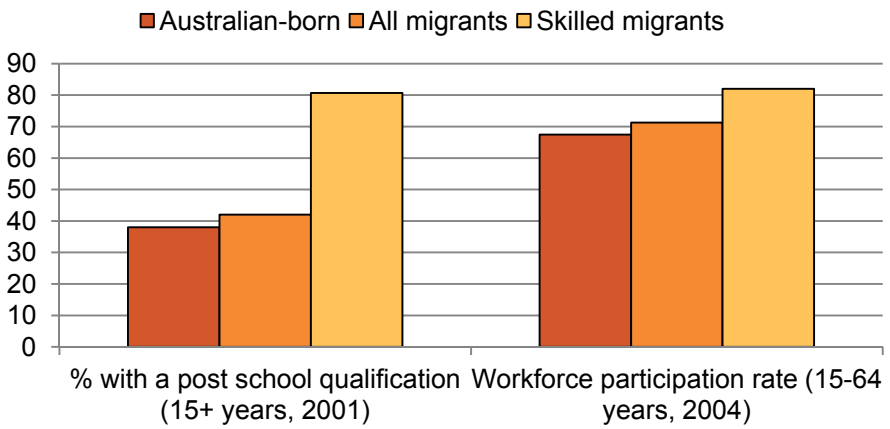
What don't we know?

- There is little research on the relationship between immigration and innovation in the Australian context.
- It is unclear how much more scope is there for attracting skilled migrants beyond the effects of recent reforms.
- There is no systematic scoping of refinements to foreign student policy to increase migration of those with desired skills.
- Australia's skilled migration visa system has gone through a number of changes in recent years. The effects of these are still working their way through the system and may provide further information on effectiveness of different types of reform.

1. For a review of the literature, see Smith (2011-2012). 2. Hunt and Gauthier-Loiselle (2008) 3. Productivity Commission (2006a) 4. Grattan Institute modelling based on Hunt and Gauthier-Loiselle (2008). 5. Hawthorne (2008) 6. Finn (2007). 7. Hawthorne (2010)

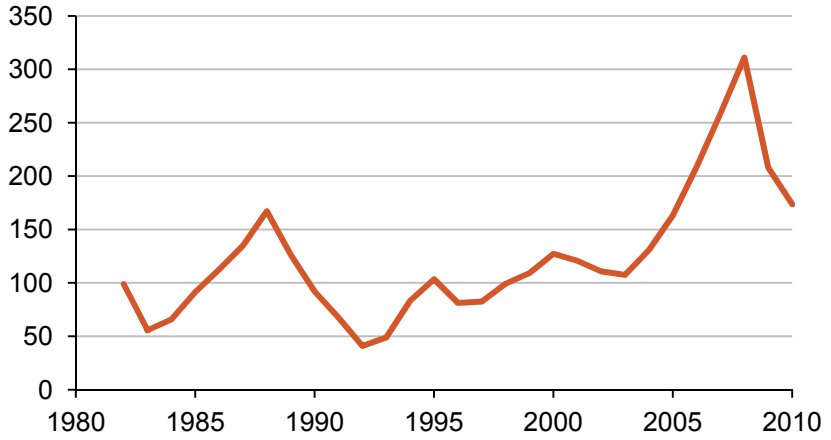
Immigration policy

Skilled migrants contribute more than average to the economy
Education background and workforce participation rate, % of population



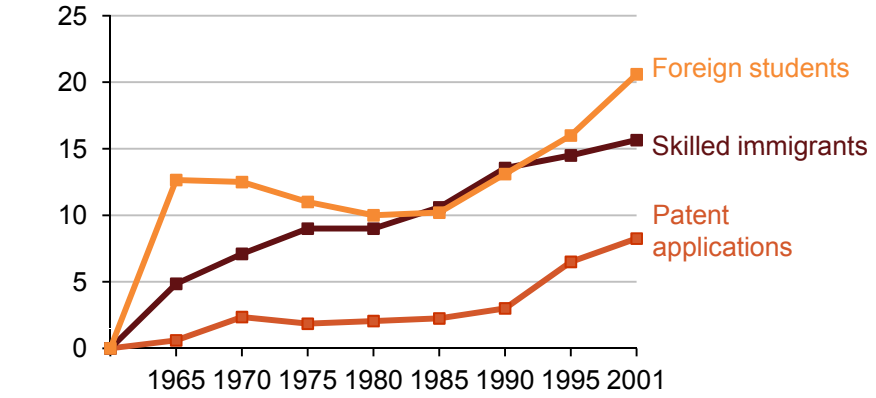
Productivity Commission (2006a)

Australian migration rates have fallen from their peak in 2008
Net overseas migration, '000 persons



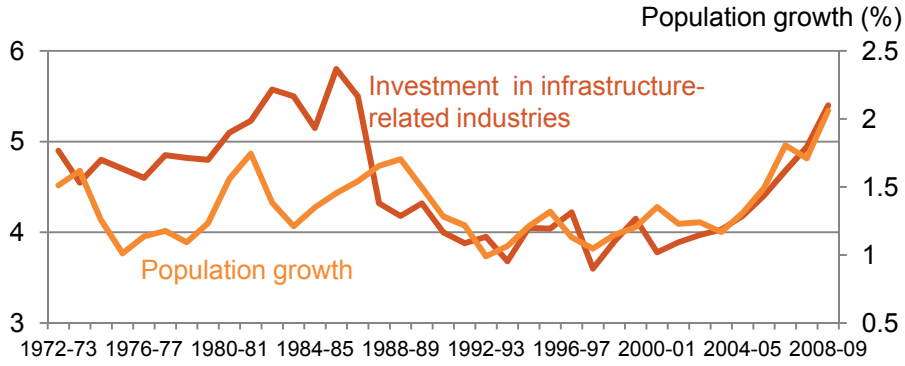
Department of Immigration and Citizenship (2011)

High levels of immigration are associated with more innovation in the long run
Growth in skilled immigrants and foreign graduate students as % of labuor force, and patent applications, USA.



Chellaraj *et al.* (2004)

Migrants impose additional infrastructure costs that must be taken into account
Change in investment in infrastructure related-industries (% of GDP)



Note: Excludes inventory investment. Infrastructure-related industries are electricity, gas, water & waste services, transport, postal & warehousing and information media & telecomms
Treasury (2010b)

Industrial relations reform

Context and opportunity

- Industrial relations (IR) affects all Australians either directly or indirectly
- There may be scope to alter industrial relations provisions that limit productivity
  - Employers point to outcomes that appear to reduce productivity such as negotiations that delay business change and greenfields operations, restrict rostering and hiring contractors, and restrict unfair dismissal.[1]
- However, there are competing values at stake: there is a need for bargaining provisions that are flexible, fair and easy to understand
- Vested interests have different positions on the best outcome and methodology

Confidence in the policy solution

- There is no policy consensus on which IR reforms appropriately balance employer interests, employee interests and Australian economic growth.
  - Competing value systems put different emphasis on productivity, employer flexibility, fairness, and rights at work.
- The evidence is unclear about the potential size of the productivity impact of IR reform:
  - Industrial disputes, wage changes and productivity growth are not clearly linked to IR regimes.[2]
  - The effects of other microeconomic reforms, education, technology change and infrastructure usually swamp the impact of industrial relations on labour productivity. International studies also provide contradictory results.[3]
  - Evidence from employers is typically anecdotal, not indicating the size of the problem.

Assessment: Inadequate evidence to define worthwhile reform

Size of opportunity

- Any potential reform that boosts productivity would obviously have material impact on GDP.
- However, the limited evidence base makes it very difficult to model reforms, and so the size of opportunity is unclear.

Potential contribution to GDP in 2022: Unknown

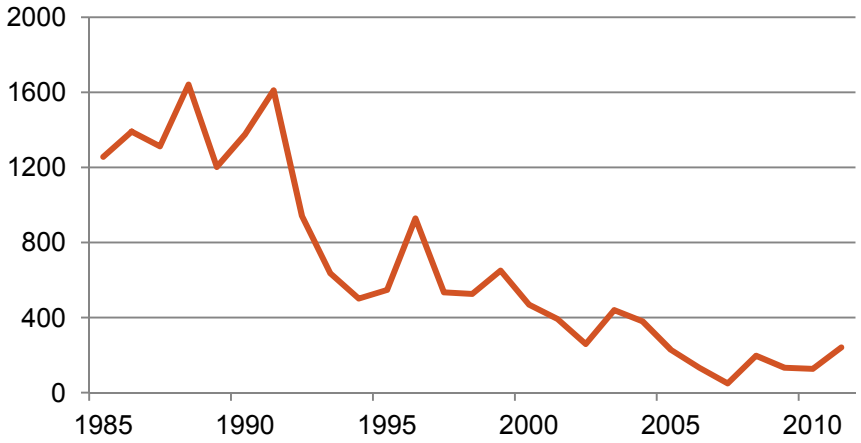
What don't we know?

- Do centralised systems of employment relations and arbitration produce better outcomes?
- Which reforms to IR would substantially increase productivity?
- How much economic growth as a result of IR reform can be expected
  - How widespread are IR-driven productivity barriers?
  - How much would IR reform result in increased productivity (as distinct from changing the share of revenue to labour, and the institutional power of unions)?
- How should additional economic growth be balanced against the other objectives of the IR system?

1. Business Council of Australia (2012) 2. Grattan analysis of ABS (2011b); ABS (2012b) 3. See Borland (2012); Farmakis-Gamboni and Prentice (2011); Hancock, *et al.* (2007); Storm and Naastepad (2009); Sloan (2010); Wooden (2002); Perry (2007)

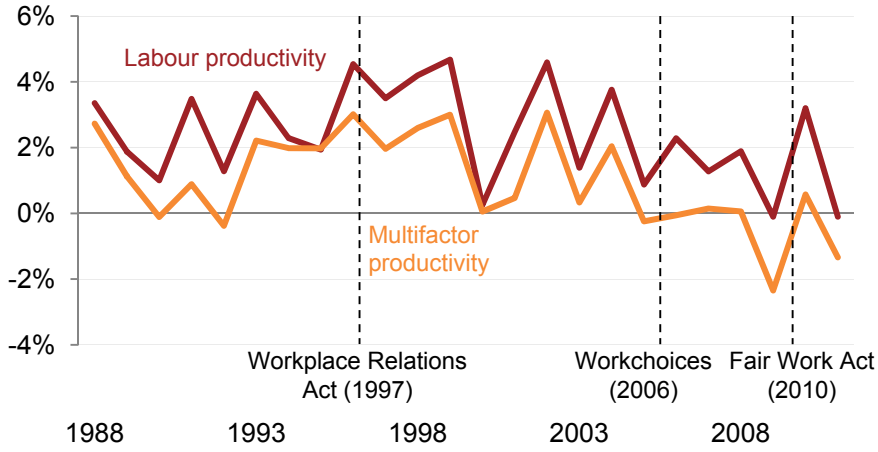
Industrial relations reform

Industrial disputes are low, but turning up slightly
Days lost to industrial action, '000 per year



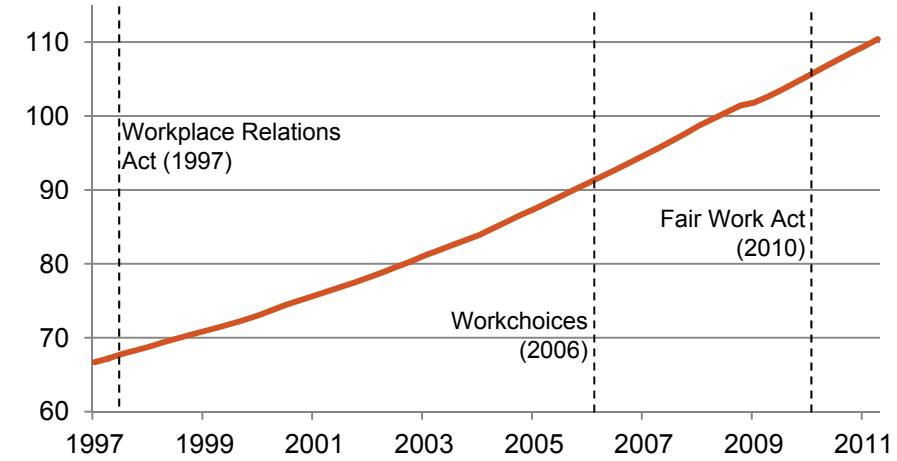
ABS (2011b)

There is no clear link between labour productivity growth and IR laws
Productivity growth, % change year on year



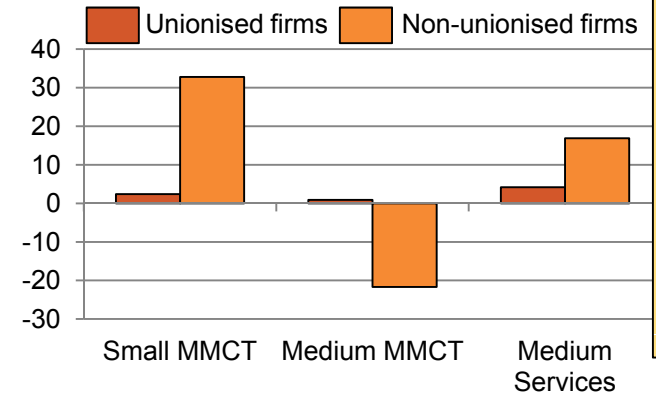
ABS (2012b); O'Neill (2012)

Rates of pay are not obviously linked with changes in IR laws
Index of total hourly rates of pay (real), excluding bonuses



ABS (2011c); O'Neill (2012)

At a firm level there is no obvious link between IR reform and productivity changes
Acceleration in productivity growth after the Workplace Relations Act by type of firm (%)



Higher productivity acceleration would be expected in unionised firms as they would benefit more from the deregulation of the Workplace Relations Act

Note: MMCT is Mining, Manufacturing, Construction and Transport firms
Farmakis-Gamboni and Prentice (2011)

Oligopoly regulation

Context and opportunity

- More competitive industries tend to be more innovative and productive.[1]
- The Australian economy has a large number of oligopoly industries.
  - 49 sectors of Australian industry are dominated by oligopolies—defined here as two or three companies controlling 80 per cent or more of the market.[2]
  - This definition does not include banks, which many consider oligopolistic. Similarly, the construction industry may be oligopolistic on a state (rather than national) basis.
- Regulations to reduce mergers that create oligopolies may have limited effectiveness
  - Many sectors in Australia may be too small to sustain a third competitor at minimum efficient scale.
- Regulations might increase the competitiveness of oligopolies, although the nature of intervention is not well defined.

Confidence in the policy solution

- There is no policy consensus on what governments could do to reduce the number of oligopolies or increase their rivalry.
  - Some oligopolies compete more than others at certain times — for instance the supermarket price wars have increased competition. However it is unclear what governments can do to encourage more competition amongst duopolies.
  - Existing policy focuses on facilitating entrance of new competitors, but this has not prevented oligopolies dominating many sectors.
- The Australian Competition and Consumer Commission has some regulatory power over oligopoly conduct, such as price regulation and ensuring access, but these do not materially increase new entrants or rivalry, and therefore productivity.

Assessment: Inadequate evidence to define worthwhile reform

Size of opportunity

- Oligopolised industry sectors generate revenue of more than $482 billion a year. This represents 19% of total industry revenue.[3]
- Improvements in competition are likely to result in very significant benefits for consumers and GDP, but how large is unclear and depends on the nature of undefined reforms.
  - The National Competition Policy (NCP) reforms since the early 1990s are estimated to have generated at least a 2.5% permanent increase to Australia's GDP — or around $20 billion.[4]

Potential contribution to GDP in 2022: Unknown

What don't we know?

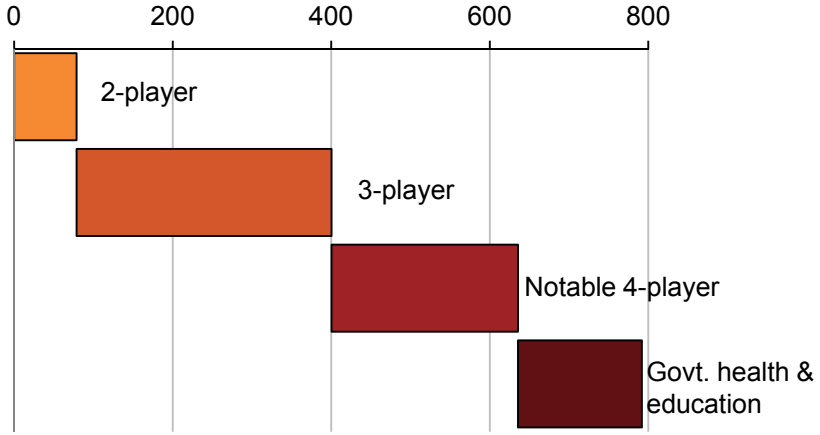
- There is little research on the impact of oligopolies in Australia.
- There is little work on which government interventions could lead to greater competitiveness within oligopolised sectors.
- There are few proposals on how Australian governments could practically reduce oligopoly formation when Australia is a relatively small and remote market.

1. Soames and Brunker (2011) 2. IBISWorld Industry Reports (2011) 3. Grattan analysis from IBISWorld Industry Reports (2011) 4. Productivity Commission (2005a)

Oligopoly regulation

Australia's economy has many oligopolised sectors

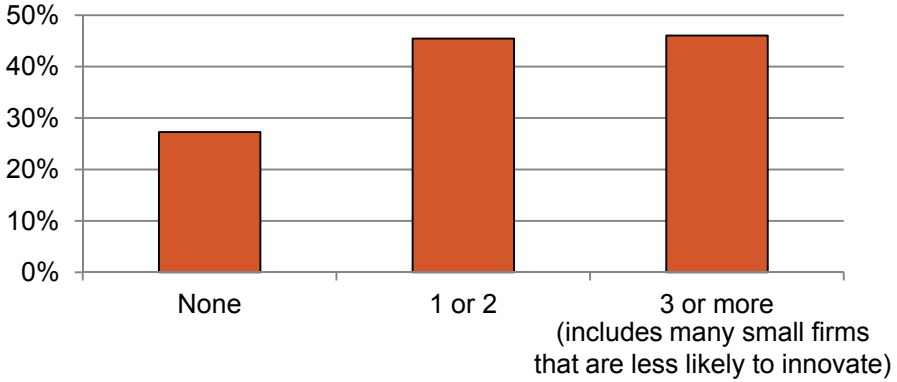
Oligopoly industry revenues, $ million



Note: market considered an oligopoly if players control 80% of the market
Grattan analysis based on IBISworld Industry Reports.

Firms that face less competition are less likely to innovate:

Percentage of category that are innovators on ABS survey



Number of competitors

Grattan analysis based on Soames et al (2011)

There is a long list of oligopolised sectors in Australia

Substantial international competition	Mining	• Brown coal, iron ore, bauxite, silver, lead, zinc, manganese, uranium, diamond & gemstone mining • Mineral sand and salt mining, gravel and sand quarrying
	Mineral processing	• Alumina production • Nickel & other basic non-ferrous metal manufacturing • Petroleum refining and wholesaling
	Manufacturing	• Motor vehicle manufacturing
Limited international competition	Mining services	• Mining services and mining marine • Industrial gas, explosives
Substantial domestic advantage	Construction & packaging materials	• Concrete, glass, clay brick, iron & steel, nut, bolt, screw & rivet • Retail pipelines, concrete pipes and box culverts
	Manufacturing	• Container manufacturing
	Transport	• Cargo handling
	Telecomms	• Telecommunications: wired, mobile, satellite, relay • Television free to air, pay television, pay television, lotteries
	Food processing	• Beer, soft drink, tobacco manufacturing • Milk product processing and manufacturing • Sugar, chocolate, confectionary and biscuit manufacturing
	Consumer services	• Recorded music • Casinos, horse and sports betting • Pathology services • Domestic airlines • Department stores
	Prominent 4-player markets	• Banks • Petrol retailing • Supermarkets

Note: market considered an oligopoly if players control 80% of the market
Grattan analysis based on IBISworld Industry Reports.

Business deregulation

Context and opportunity

- Reducing, removing or redesigning business regulations across State and Commonwealth jurisdictions, with the aim of creating a 'Seamless National Economy', could substantially reduce costs.
  - COAG has agreed to a reform agenda to reduce duplication and streamline processes.[1]
  - Business is increasingly concerned at the overlap and duplication in environmental regulation.[2]
- Regulation at either the State or Commonwealth level may also impose unnecessary costs.[3]
  - The Productivity Commission estimated the total compliance costs of regulations to be approximately 4 per cent of GDP (note that not all of this is 'excess' regulation).[4]
  - COAG also agreed to the development of a National Productivity Compact: Regulatory and Competition Reform for a more Competitive Australia containing a high-level statement on principles for effective regulation and reform.[1]

Confidence in the policy solution

- Whether the economic costs of regulation outweigh its social benefits must be determined on a case by case basis, so comprehensive analysis is not feasible.
- Various taskforces, intergovernmental bodies, and business groups have identified opportunities. Some have been taken up, but many have not, because of the trade-off between economic and social costs.
- The most valuable reforms have probably already been done as part of the significant deregulation across the economy through the 1990s.
- The returns to deregulation may be overestimated.
  - Harmonisation may lead to 'lowest common denominator' outcomes (e.g. Occupational Health and Safety regulation concerns).
  - Proposals may over-emphasise the value of harmonisation because they are driven by large cross-border businesses, and the impact on business overall may be much smaller.

Assessment: Direction known; solutions not proven

Size of opportunity

- There are two separate regulatory reform opportunities:
  - The Productivity Commission estimated in 2007 that up to $8 billion p.a. could be saved via the potential impact of the National Reform Agenda's Seamless National Economy reform.[5] In 2012, they found that the 17 reforms already enacted could save up to $4 billion p.a[4] suggesting that there is still up to $4 billion p.a. available
  - The Taskforce on Reducing Regulatory Burdens on Business found that the unnecessary compliance costs of regulation could be up to $3 billion p.a. ($2006).[3]
- If half of each of these gains could be achieved (assuming some overlap), it could contribute $7 billion to GDP in 2022.
- The wide variety of regulatory areas for harmonisation raises opposition from a wide variety of vested interests, so practically achievable gains may be limited.

Potential contribution to GDP in 2022: $7 billion

What don't we know?

- The achievement of COAG objectives requires substantial cooperation amongst the states and territories – it is unclear how this can be achieved to a greater degree than current practice.
  - state opposition to federal reform should be expected if it further reduces state government autonomy and widens the already extensive vertical fiscal imbalance.
- Further work is required to demonstrate the returns to deregulation after taking into account implementation costs, particularly for small businesses not operating cross-border.
- Case by case analysis is required of major areas of regulation such as building and the environment to quantify the costs of these regulations and whether a better balance of interests is possible.

1. Council of Australian Governments (2012) 2. COAG Business Advisory Forum (2012) 3. Taskforce on Reducing Regulatory Burdens on Business (2006) 4. Productivity Commission (2012a) 5. Productivity Commission (2007)

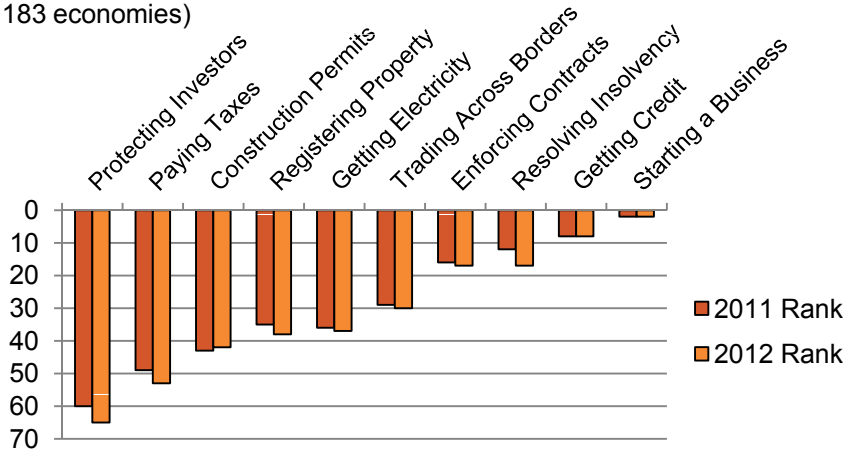
Business deregulation

Regulations impose substantial costs on business
Estimates of business compliance costs for Australia

Study	Reference year	Regulation covered	% GDP
Small Business Deregulation Taskforce (1996)	1996	All regulation	1.6
Lattimore *et al.* (1998)	1994-95	All regulation	2.3
SCC (2005)	2003	All regulation	1.4
Victorian Government (2006)	2006	All regulation	3.6
OECD (2001)	1998	Taxation, employment & environment	3.4
Oliver and Bartley (2005)	1990s	Taxation	2.0
Warburton and Hendy (2006)	Not stated	Taxation	up to 2.5

Productivity Commission (2011a)

Ease of doing business is low in some areas, and falling in most
Australia's ranking on the World Bank 'Ease of Doing Business' rankings (of 183 economies)



World Bank (2012)

State governments are harmonising some regulatory areas
COAG Reform Council's summary of progress implementing reforms

Reform Priority Area	Fully or largely complete	Substantial progress	Implementation issues or risks
Consumer law	✓		
Product safety	✓		
Mortgage brokers	✓		
Margin lending	✓		
Non-deposit taking institutions	✓		
Personal properties securities			✓
Trustee corporations	✓		
Standard business reporting	✓		
Payroll tax	✓		
Occupational Health & Safety			✓
Rail Safety	✓		
Health Workforce	✓		
Trade measurement	✓		
Food regulation		✓	
Wine labelling	✓		
Development Assessment		✓	
National Construction Code		✓	

Productivity Commission (2011), COAG Reform Council (2012)

Foreign investment regulation

Context and opportunity

- Reducing restrictions on foreign investment might promote increased productive investment
- Australia has a foreign direct investment (FDI) regulatory regime that is formally quite restrictive :
  - In 2012 the OECD FDI Relative Restrictiveness Index rates Australia as the seventh most restrictive of the OECD economies (improving from third in 2006).[1]
- In practice, the regime may be less restrictive than it appears.
  - The vast majority of investments (in value and number) are permitted,[2] which is not captured by the OECD ranking.[3]
  - Australia's FDI inflows (as a percentage of GDP) are much higher than the OECD average.[4]
  - Australia gets more Chinese capital investment (in absolute dollar terms) than anywhere else in the world.[5]
- Australia's regime for mining is less restrictive than both our overall regime, and the OECD average for mining.[1]

Confidence in the policy solution

- There is little evidence that relaxing Australia's FDI regulations would lead to a significant difference in outcomes.
  - Although measures of regulatory restrictiveness can help to account for variations in countries' success in attracting FDI,[3] the correlation between the restrictiveness of the regime, and total foreign direct investment is weak (the R^2 for the correlation is just 0.15, which manifestly demonstrates a lot of dispersion).[1]
  - Estimates of foregone value, based on the delay in investment, generally assume that foreign investment approval is not sought in parallel, which overstates the benefits of easing regulations.[6]

Assessment: Direction known; solutions not proven

Size of opportunity

- There is no compelling evidence that Australia's foreign investment regulation regime is preventing significant investment in practice.
- Increases in economic growth from regulatory changes are likely to be small.
  - Permitting more foreign ownership would only increase investment if projects are viable for foreigners but not for Australians. This is only likely if there is a shortage of investable capital in Australia (which is unlikely in an open economy) or if foreign owners have lower costs of capital
  - Foreign ownership would only increase productivity if it creates synergies with the overseas business, such as by encouraging local deployment of the knowledge and IP of a multinational business

Potential contribution to GDP in 2022: Nil

What don't we know?

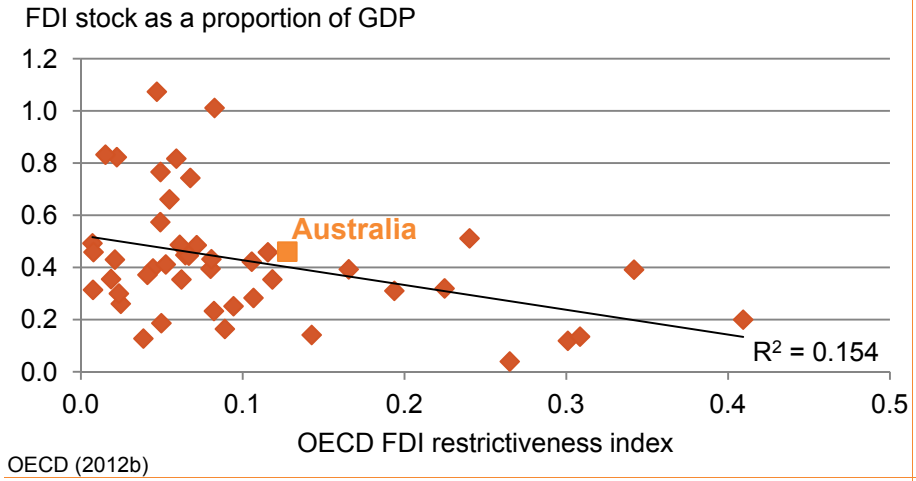
- More analysis is needed to determine whether Australia's FDI regulatory regime is in fact substantially more restrictive than other countries as this depends on how open-ended regulations are applied, rather than the letter of the law.
- Further evidence is required to show whether substantial investment is lost due to foreign investment restrictions.
  - It is not always clear if companies are seeking parallel investment approval in multiple countries.
  - It is not possible to tell the reasons that applications are withdrawn; it may be due to a perception that the application will be refused, but any number of factors may influence investment decisions.
- Careful analysis is needed to show whether there will be substantial productivity opportunities if more foreign owners were able to bring synergies in business management.

1. OECD (2012b). 2. Foreign Investment Review Board (2011) 3. Kalinova *et. al*. (2010). 4. OECD (2012a). 5. Grattan Institute analysis of Scissors (2012). 6. For example, ITS Global (2008)

Foreign investment regulation

Australia has a relatively restrictive foreign investment regime, but there is a weak relationship between regimes and outcomes

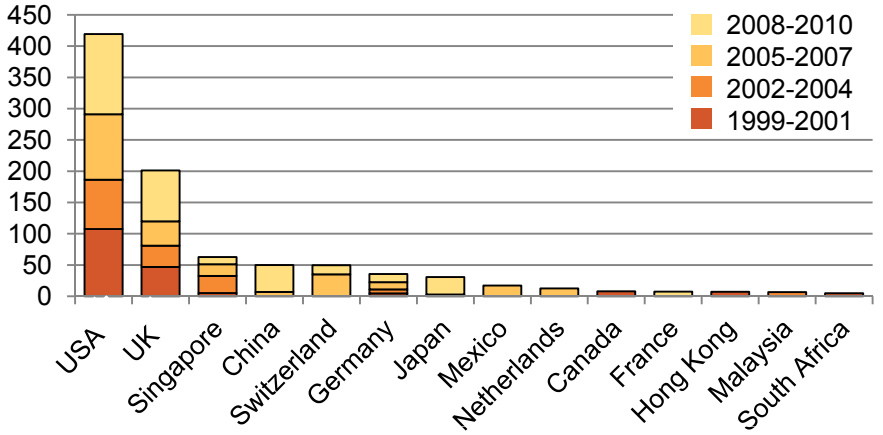
FDI restriction and investment



OECD (2012b)

US and UK dominate foreign investment in Australia

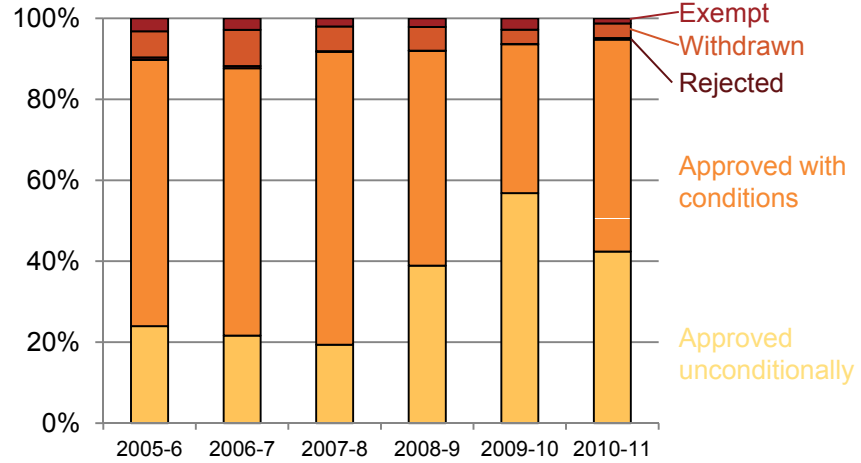
Investment flows into Australia ($ billion)



Foreign Investment Review Board (2000-2011)

In practice, few applications are refused

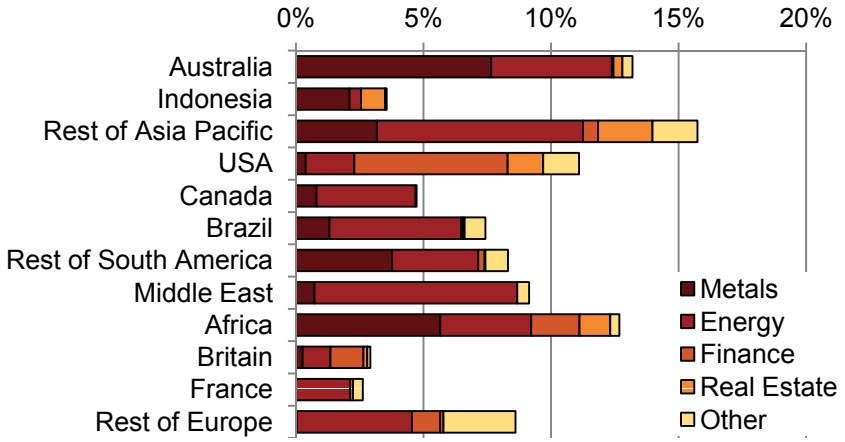
% applications



Note: Figures include corporate reorganisations (80 in 2010-11). The 2008-09 to 2010-11 figures were impacted by changes in residential real estate screening process.
Foreign Investment Review Board (2011)

China has invested more in Australia than any other country:

Chinese outward investment 2006-11, % of total



Grattan analysis based on Scissors (2012)

Older people's workforce participation

Context and opportunity

- Australia has significantly lower labour-force participation rates among older workers than other culturally-similar countries.[1]
- Increasing the pension age and access to superannuation age to 70 would substantially increase participation rates and economic growth
  - Currently, a large proportion of people retire at 65 simply because they can access the pension at that time.[2]
  - Australia's relatively low participation is driven primarily by policies that allow people to use their superannuation before pension age.[3]
  - Other drivers such as employer attitudes have relatively less impact.[4]
- Increasing the pension age and superannuation age would be fair.
  - The male pension age was set at 65 in 1909, when men expected to live to 55 at birth, and to 76 at age 65, compared to 84 today.[5]
  - Currently a third of superannuation balances are drawn before pension age, doing little to reduce government pension liabilities.[6]
  - Australia's demographic profile and the current superannuation and pension schemes will lead to large intergenerational inequities.

Confidence in the policy solution

- There is good evidence from HILDA and cross-OECD studies that the eligibility ages for age pension and access to superannuation are key influences on retirement age.[3]
- There is a high degree of agreement of the need to increase age pension and superannuation ages among policy experts.[6,7]
- Measures to encourage businesses to employ older workers, such as the Commonwealth Government's recently announced Jobs Bonus and related initiatives, are likely to have a relatively limited effect on older age participation. However, there may be scope for government to help older workers in maintaining or updating skills which contribute to their employability.

Assessment: Solutions known

Size of opportunity

- The impact of reform depends on two assumptions:
  - We assume that additional older workers are about 90% as productive as the average.
  - We assume that additional older workers work part time in the same proportion as the total workforce.
- Increasing pension age and superannuation age to 70 would increase 2022 GDP by about $25 billion (in 2010 dollars).
  - This estimate is consistent with the apparent effect of pension and superannuation age in HILDA, and cross-OECD analysis.[3]
  - The estimate is consistent with increasing older worker labour-force participation rate to be similar to New Zealand.
  - This estimate accords with a one-year increase in pension and preservation delaying retirement by one year for half of the 55% of people who retire after preservation age and before pension age.

Potential contribution to GDP in 2022: $25 billion

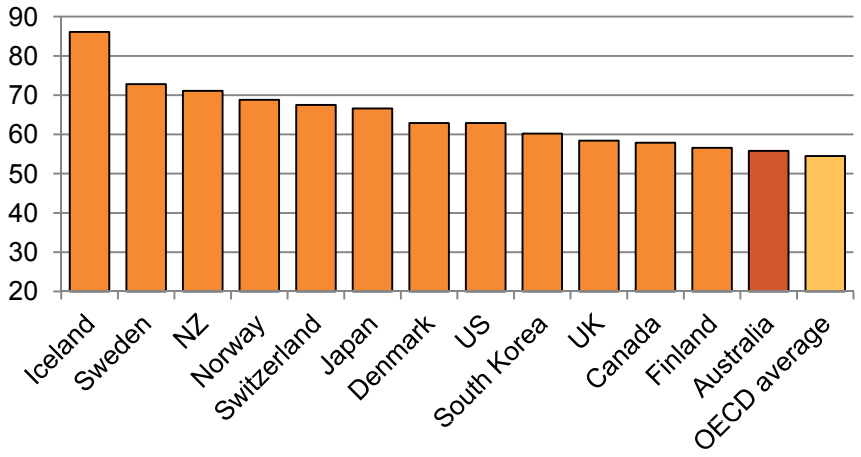
What don't we know?

- There is little data on whether the additional older workers encouraged to retire later will have high or low productivity relative to the rest of the workforce.
- There is a possibility that an increase in the preservation age may simply induce people to continue to retire well before the pension age, and borrow more against future (superannuation) income, with no change to workforce participation. Although this is unlikely to be the dominant response, this could only be established through further survey work on attitudes and behaviour for early retirement.
- There is limited data on the impact of later retirement on wellbeing: retirees tend to have higher life satisfaction than those who are working, although this data may be distorted by age and is highly variable between individuals.[8]
- There is limited data on participation specifically for the 65-69 age group.

1. Abhayaratna and Lattimore (2006) 2. ABS (2011d) 3. Headey *et al* (2010); 4. Taylor (2012) 5. ABS (1988); ABS (2008) 6. Treasury (2010a) 7. See Treasury (2010b); Treasury (2009); OECD (2012c) 8. Barrett and Kecmanovic (2011); see Beatton and Fritjers (2009).

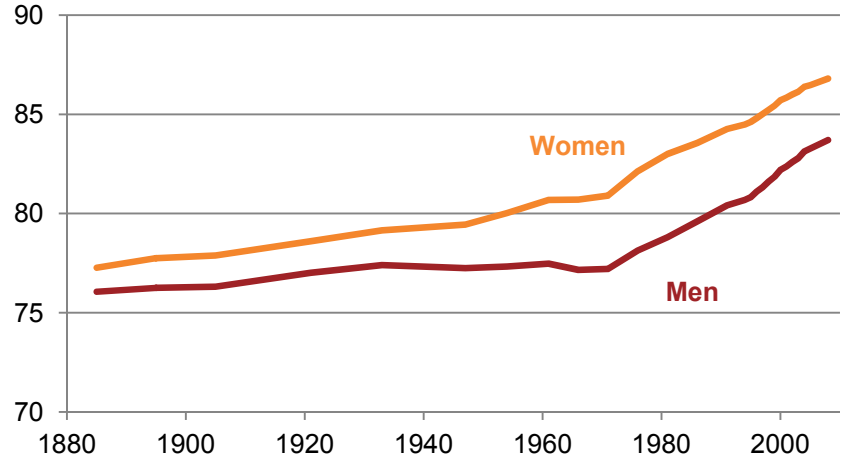
Older people's workforce participation

Australia could do better on older people's workforce participation
Labour force participation rates for people aged 54-65 (%)



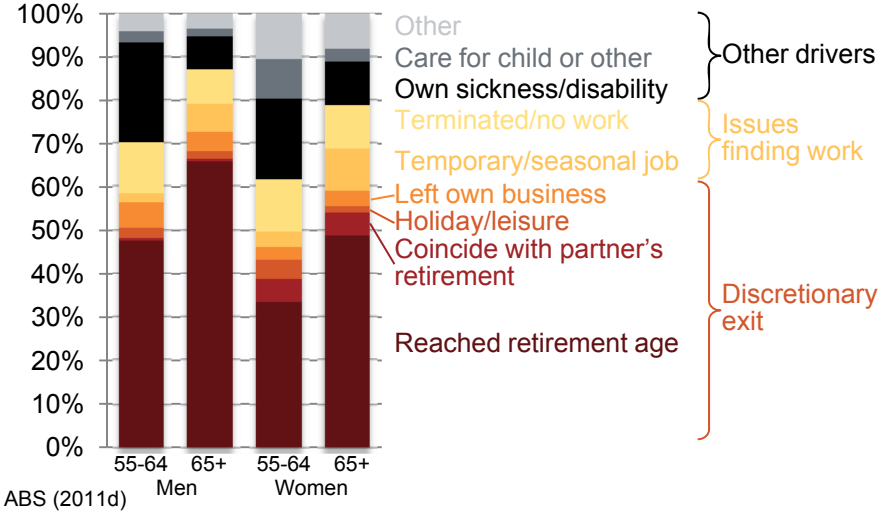
Abhayaratna and Lattimore (2006)

Life expectancy at pension age has increased rapidly since 1970
Life expectancy at 65 years of age (years)



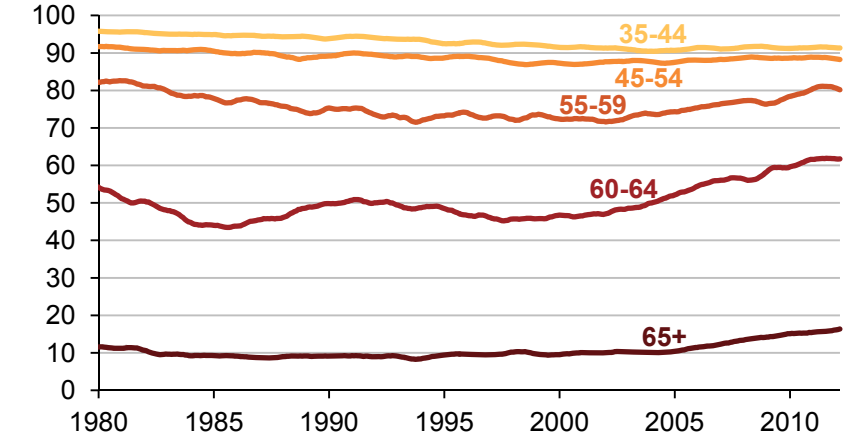
ABS (2008)Table 7.6; Grattan analysis

Most older workers choose to retire rather than being forced out
Reason for retirement, men and women 55+



ABS (2011d)

Older worker participation is already rising
Male workforce participation by age-group (%)



ABS (2012d)

Female workforce participation

Context and opportunity

- There is room to increase female workforce participation in Australia
  - Australia's rates of female workforce participation remain lower than in many broadly comparable countries (such as Canada), despite increases over the last three decades.
  - Only 67 per cent of women aged 15-64 are currently in paid work, compared with 78 per cent of men. While 55 per cent of employed women work full time, 85 per cent of employed men work full time.[1]
- Changing tax, welfare and childcare benefits to increase the incentives for mothers to work might substantially increase participation
  - Many women may genuinely not want to work — and derive more value or well-being from home-making or raising children.
  - However, many women choose not to work because the take-home pay is too low relative to the value of not being in paid employment.[2]
  - Effective marginal tax, welfare and childcare rates for many mothers of young children in Australia are exceptionally high — in cases, above 100 per cent.[3]

Confidence in the policy solution

- There is significant evidence that take-home rates of pay after childcare costs, tax, and foregone welfare benefits are the primary driver of variations in the female workforce participation rate.[5]
- There is good evidence that take-home rates of pay are very low for many Australian mothers, particularly those on lower incomes.
- However, identifying how to increase rates of take home pay by changing tax, welfare and childcare benefits in ways that are not overly regressive and at acceptable fiscal cost, is a considerable task, and require more analysis.
- Demand-side issues, such as employer reluctance to hire, retain, and appropriately reward female staff, appear to be less significant factors in female participation.

Assessment: Direction known; solutions not proven

Size of opportunity

- As Canada has a similar demographic, institutional and ethnic/cultural profile, we take its female labour force participation rates as a 'target' for Australia.[4]
- If current full-time and part-time trends continue, and if women working full time produce 0.8 of whole-economy GDP per hour, and part-time female workers produce 0.75 of whole-economy GDP per hour, GDP would increase by about $25 billion.
  - This assumes that Australia will not have substantially more women than Canada who choose to stay out of the workforce regardless of the financial incentives (due to social norms, family commitments, and/or personal preferences).

Potential contribution to GDP in 2022: $25 billion

What don't we know?

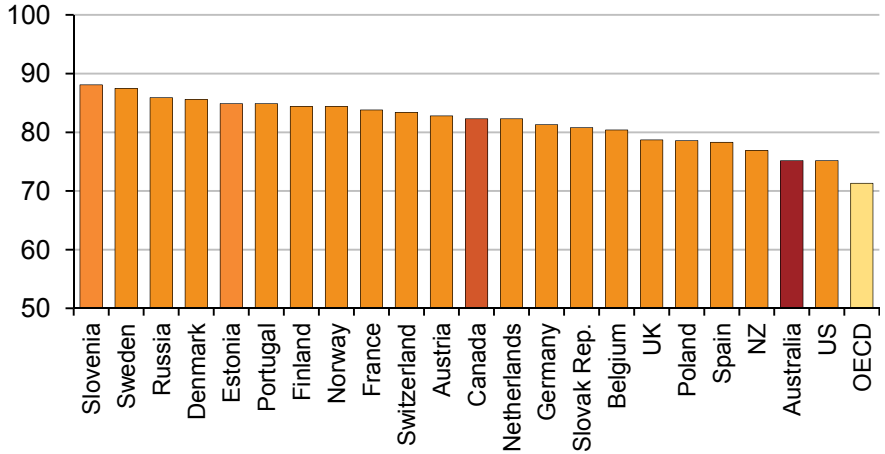
- Although increasing rates of take home pay would have a substantial impact on female participation, we cannot forecast precisely the impact of policy shift in an Australian context.
- There is no rigorous study in Australia of the value of unpaid work by women, and how this might compare to the economic and social value of paid work. Many will remain unconvinced that the incentives to work should be increased until this issue is resolved.
- More research would be valuable to determine the impact of workforce participation when children are small on subsequent participation.
- Further work is urgently required to determine an acceptable mix of tax, welfare and childcare benefit changes that would substantially increase incentives to work at acceptable budgetary cost.
- It is possible that the length of the school holidays is a substantial barrier to participation. Further work is required to establish if this is so, and why holiday programs are not filling this need.

1. ABS (2012d) 2. Breusch and Gray (2009); 3. NATSEM modelling for Grattan Institute; 4. Statistics Canada; 5. See, for example, Chevalier and Viitanen (2002) ; Tsounta (2006); Schwarz (2012)

Female workforce participation

Female workforce participation in Australia is lower than many other countries

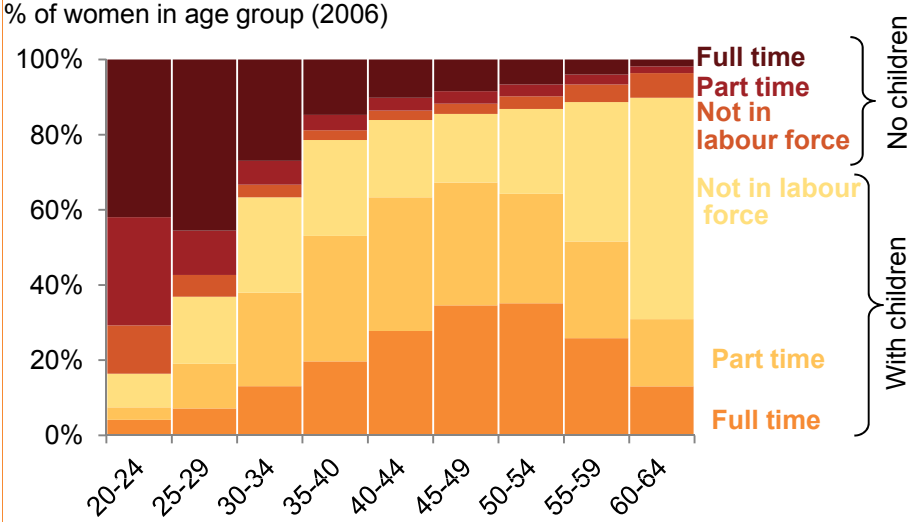
Participation rates for selected OECD countries, 2010



OECD (2010b).

Most mothers work either part time or not at all

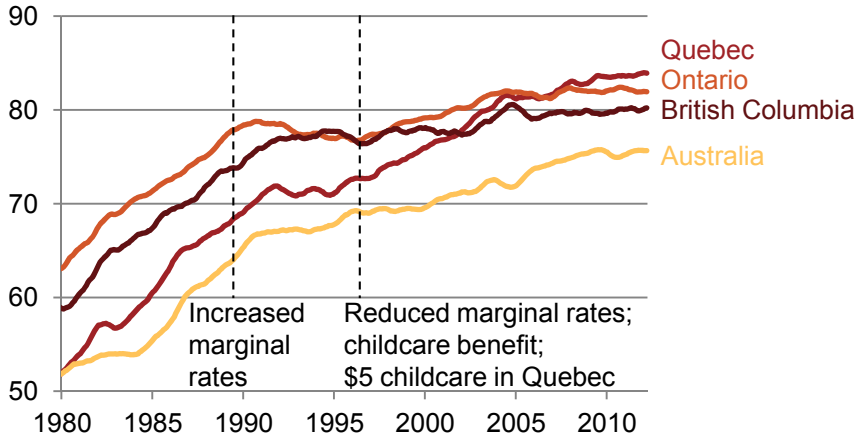
% of women in age group (2006)



ABS Census of Population and Housing (2006)

Canada drove rapid increases in female participation through tax and welfare reform and childcare

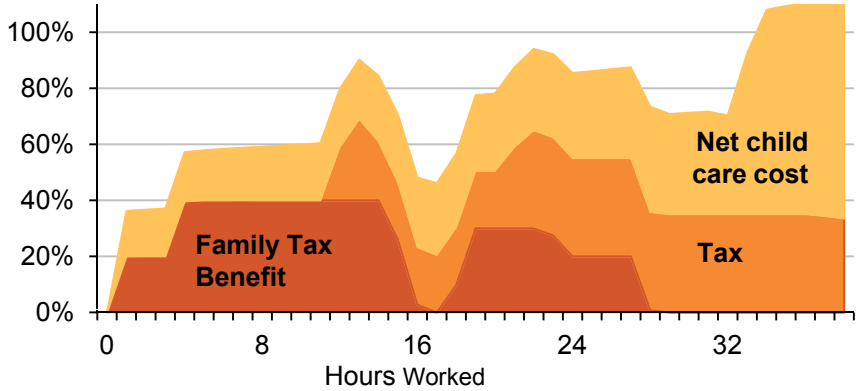
Female participation rates in selected provinces (%)



Statistics Canada (2012) and ABS (2012d)

Australian women in couple families with children take home little of their pay after tax, welfare withdrawal and child care

Effective marginal tax rate for a second income earner, earning $70,000 if full time, with a partner earning $70,000 full time and two children, aged 2 and 4



NATSEM modelling for Grattan Institute

Youth workforce participation

Context and opportunity

- Australian youth workforce participation is lower than other age groups.
- Youth participation is particularly vulnerable to economic downturns
  - A reduction in GDP growth rate affects youth employment more than twice as much as prime age employment.[1]
  - Many teenagers work in retail and hospitality, which depend more on discretionary consumer spending (and are therefore more vulnerable to economic volatility).
- There are suggestions that governments could use the economic downturn to increase youth educational participation.[2]
  - Greater investment in VET programs (see p.44) may help.[1,3]
  - Governments are already moving in this direction, such as the National Youth Participation Requirement, to attend school to Year 10, and then at least 25 hours per week in education, employment or training to age 17.
  - The Participation Requirement might be extended to 17-19 year olds.
- However Australia has amongst the highest youth participation rates in the OECD,[1] suggesting limited room for improvement.

Confidence in the policy solution

- There is little confidence in reform to significantly improve youth participation
  - There are few concrete reform proposals
  - Australia's position at the top of the OECD ladder reduces confidence that substantial effective reforms can be identified.
  - High youth participation relative to other age groups also suggests there is little to gain from reform

Assessment: Direction unclear

Size of opportunity

- With few concrete reform proposals, substantial increases in youth participation, and thus economic growth, are unlikely.
- In any case, any plausible increase in participation would have limited effect on economic growth
  - Increasing 20-24 year old participation by 9 per cent (to match the average for 25-34 year olds) and 15-19 year old participation by 5 per cent (recognising that many of these people are in secondary education), would boost GDP by around $2 billion in 2022.
  - This takes into account the fact that younger workers are less productive than older workers as they have less experience.
- Increasing workforce participation of long-term unemployed, indigenous and uneducated young people is important to social goals but not to economic growth.

Potential contribution to GDP in 2022: $2 billion

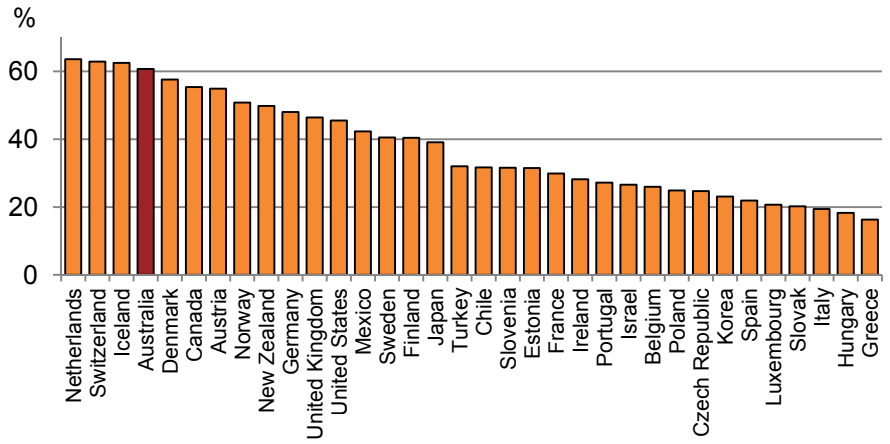
What don't we know?

- It is unclear what governments, as opposed to the private sector, can do.
- The impact of changes such as the National Youth Participation Requirement have not been fully felt and may not be for some time.
- To what extent is youth unemployment a symptom of broader socio-cultural factors?

1. OECD (2009b) 2. See OECD (2007); Abhayaratna and Lattimore (2006) 3. OECD (2009c)

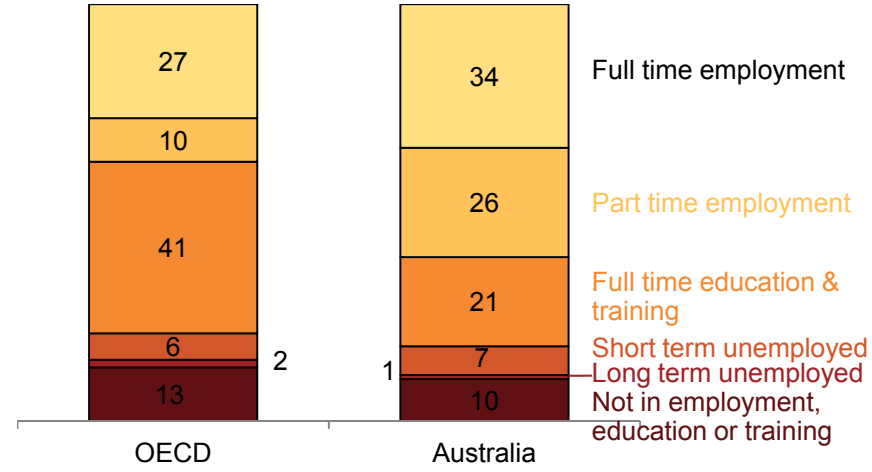
Youth workforce participation

Australia's youth participation rate is already high
Employment rate, 15-24 year-olds OECD countries, 2011



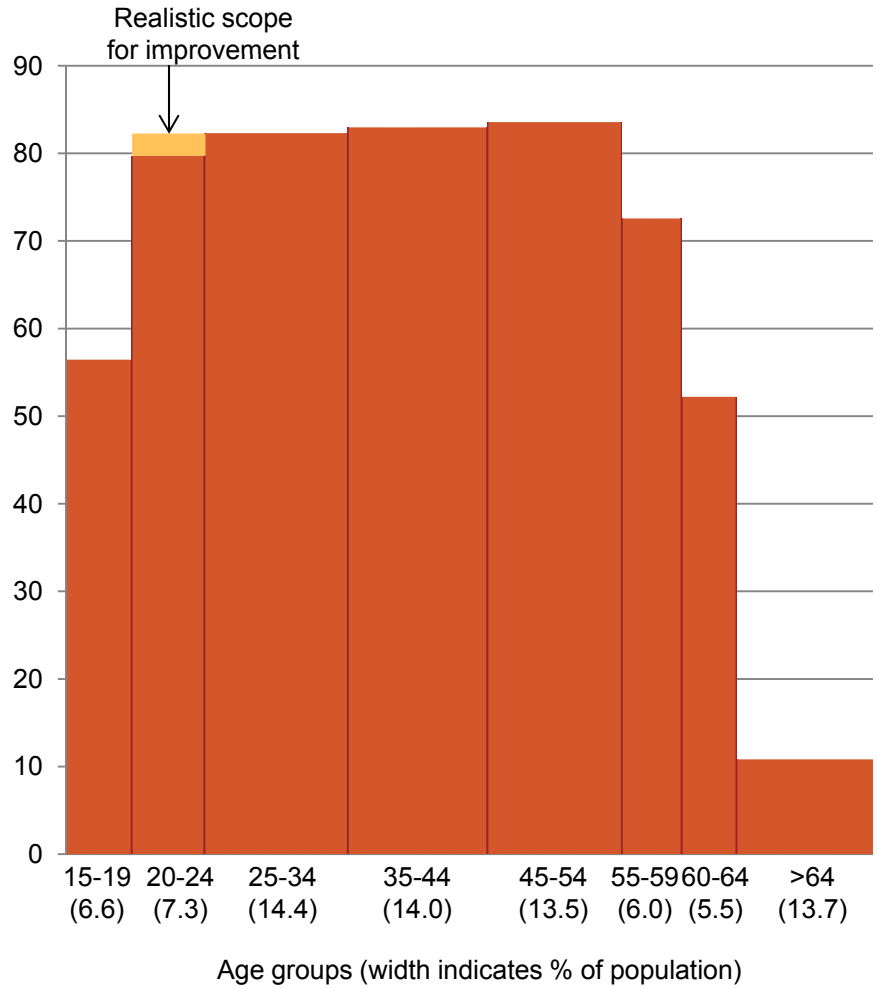
OECD (2009b)

Participation levels are relatively high for both part- and full-time work
Employment rate, 16-24 year-olds in OECD countries, 2010



OECD (2007)

Even large increases in youth workforce participation would not substantially increase labour supply
Participation rate by age cohort (2011)



ABS (2012d)

Tax mix reform

Context and opportunity

- Some taxes are more inefficient because they distort economic decisions more, or they are more expensive to collect.
  - Personal and corporate income taxes, stamp duty taxes, payroll taxes, and insurance taxes are relatively inefficient because they tax activities with an opportunity cost (such as work) or that can be done elsewhere, where taxes are lower (such as corporate operations)[1,2]
  - Resource rent taxes, land taxes, 'sin' taxes, and sales taxes, are relatively more efficient because they tax things that people or companies cannot avoid using (such as land or resources) or that are pleasurable (such as consumption). [2,3]
- The Australian tax mix could become substantially more efficient:
  - Corporate and income taxes could reduce if GST increases.
  - State stamp duties and insurance taxes could reduce if land taxes (particularly property rates) increase
- Reforming the tax mix does not require change to government budgetary positions, or the balance between Commonwealth and State revenues.

Confidence in the policy solution

- The relative efficiency of various Australian taxes are well documented.[2]
- The extent of the economic benefits depends on how much of the additional revenue is given back in welfare, which depends on the level of "over-compensation" for low income earners
  - Relatively little compensation is required to ensure that low income earners are *on average* no worse off
  - Substantial compensation is required to ensure there are *absolutely* no losers amongst those on low incomes.
- Estimates of benefits cannot rely on standard statistics, but depend on empirically informed theoretical models of the economy.

Assessment: Solutions known

Size of opportunity

- Estimates of economic growth from tax reform vary; the Henry Review assessed the impact of its reforms at $25-$40 billion over the long term.[4]
- Broadening the GST to cover 40% of consumption currently excluded (particularly education, health and food) would increase revenue by $31 billion. These receipts could increase welfare ($3 billion), decrease corporate income tax rates to 23 per cent, and increase the tax-free threshold to around $26,000.
- State governments could efficiently eliminate stamp duties by increasing property rates (Current "land taxes" are inefficient due to exclusions).
- We estimate that these reforms would increase GDP by about $25 billion by 2022 (in 2010 dollars).
- The largest economic gains are in changing the federal tax mix (because the Commonwealth collects much more tax); there are relatively modest gains from improving State government tax mix.

Potential contribution to GDP in 2022: $25 billion

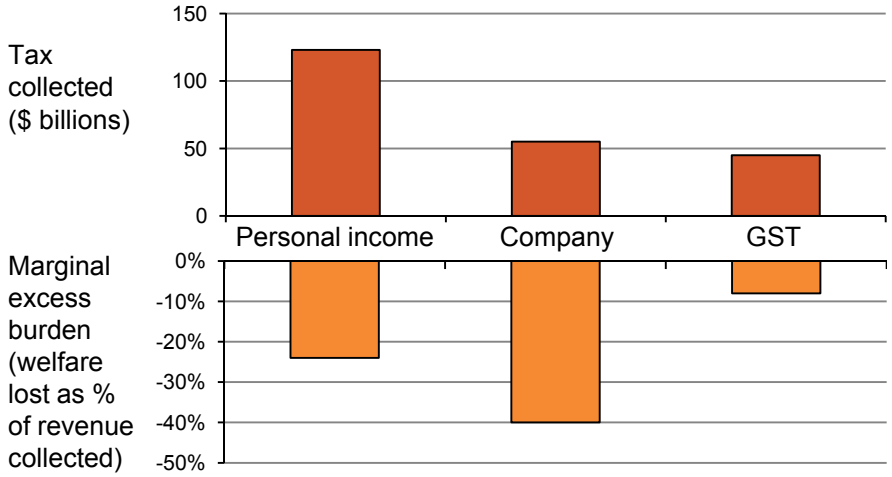
What don't we know?

- There may be further substantial economic gains from changes to negative gearing, and increasing the rate of GST to pay for further reductions in income, corporate, and miscellaneous taxes. [5] We have not examined these thoroughly.
- Detailed analysis is required to understand how many people on low incomes will be adversely affected by the proposed policy changes
- Work is required to identify transaction costs and welfare traps created by the policy changes, and to quantify their costs

1. Gentry (2007); Mercante and Dandie (2007) 2. Treasury (2010a); KPMG Econtech (2010); Eslake (2011) 3. Arnold (2008) 4. Treasury (2010a) 5. Eslake (2011)

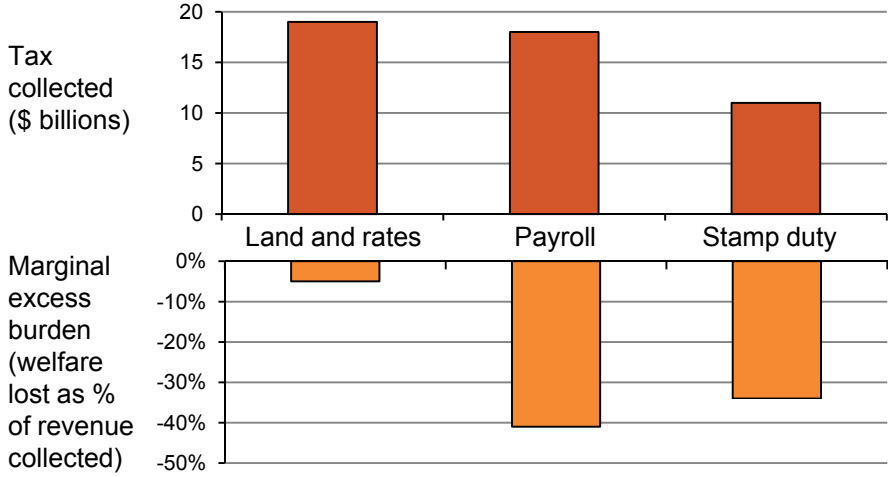
Tax mix reform

GST is a more efficient tax than personal income and company tax
Federal tax revenue and marginal excess burden



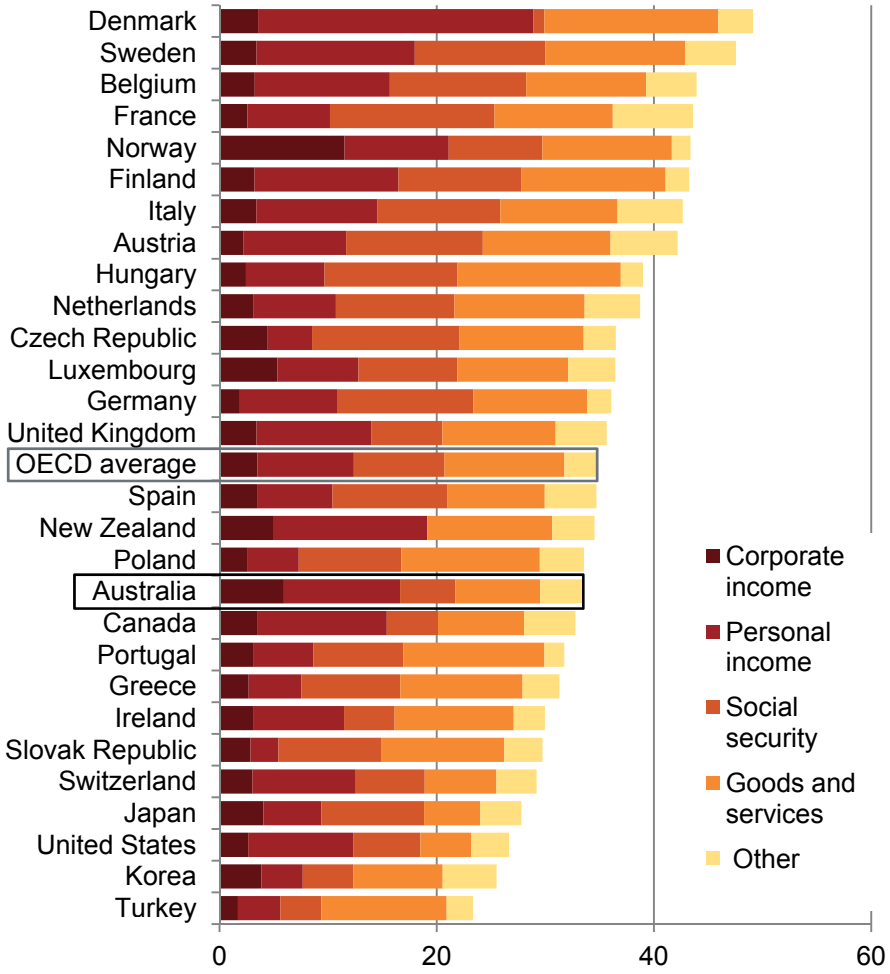
Treasury (2010a); KPMG Econtech (2010)

Stamp duty and payroll taxes have a high marginal excess burden
State tax revenue and marginal excess burden



Treasury (2010a); KPMG Econtech (2010)

Total Australian tax is close to the OECD average, but is more reliant on corporate and personal income tax
Tax revenues by source for OECD countries, % of GDP



Note: Includes compulsory superannuation payments as 'social security' payments for comparability.
OECD (2012d)

Federal financial relations reform

Context and opportunity

- Many argue that a better division of responsibility between Commonwealth and States would improve political outcomes (because accountability is clearer) and efficiency (by reducing overlaps, and clarifying administrative responsibility).
  - However, views diverge on whether it is better to centralise, decentralise, or retain the current arrangements.
- Similarly, many argue that the States should receive a greater proportion of government taxes so they raise as much as they spend.
  - The Australian "vertical fiscal imbalance" is larger than in comparable federations.[1]
  - Constitutional restrictions on some taxes, and inter-State competition,[2] has led States to levy relatively inefficient taxes.[1]
  - While some believe that the mismatch between revenue and spending hinders accountability, others argue that centralised taxation allows equalisation of government resources between states, and economies of scale in tax collection.[2]

Confidence in the policy solution

- There are widely diverging views on what changes, if any, should be made to federal financial arrangements.
  - Minimalist approaches suggest minor adjustments to roles and responsibilities for service delivery; at the other extreme are those who propose the abolition of the states and territories.
  - These differences lead to diametrically opposed estimates of the benefits of reform.[4]
- The evidence on "optimal" federal financial relations is scanty
  - Observed differences between federations cannot easily be explained by either the differing economic circumstances of countries, nor standard fiscal federalism theory. The dominant causes of federal arrangements seem to be political history.[5]
  - Any changes in financial arrangements must be balanced against the political objectives of decentralisation through federation.[6]

Assessment: Inadequate evidence to define worthwhile reform

Size of opportunity

- Reflecting the opposing points of view on the desirable direction of reform, there are widely varying estimates of the potential benefits of reform:
  - Some argue that decentralisation could increase GDP by $58 billion annually.[1]
  - Others argue that reducing overlap and duplication via centralisation would increase GDP by $9 billion in government spending.[3]
  - Meaningful modelling would also need to take the private costs and benefits of reform into account.
- Without clear policy remedies, it is not possible to estimate the economic impact.

Potential contribution to GDP in 2022: Unknown

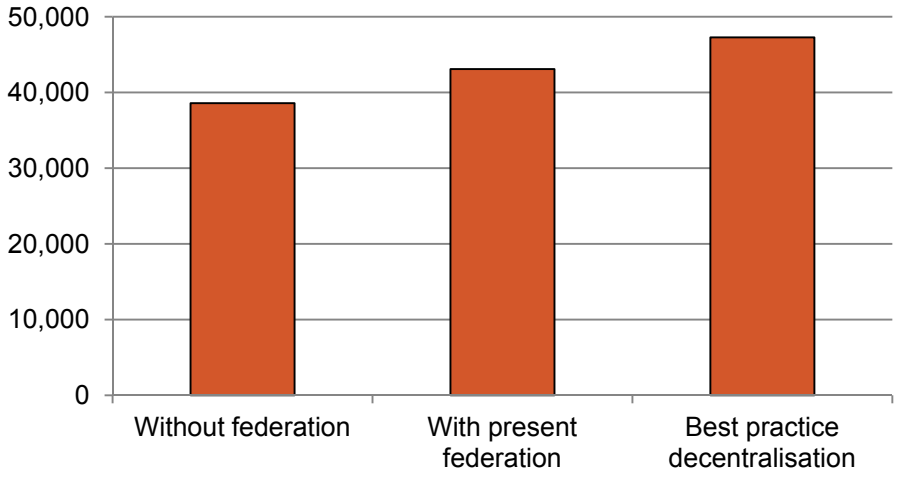
What don't we know?

- There is little independently researched evidence on whether either increased centralisation or decentralisation would lead to meaningful economic gains.
- Federal financial arrangements from 1 January 2009 were intended to reduce the conditionality of many transfers. The impact of these is only just emerging, and needs to be documented.

1.Twomey and Withers (2007) 2. Treasury (2010a) 3. Access Economics (2006); Council of Australian Governments (2011) 4. Compare Twomey and Withers (2007) and Access Economics (2006) 5. Bird and Smart (2009) 6. Dawson (1993) at paras 30-32

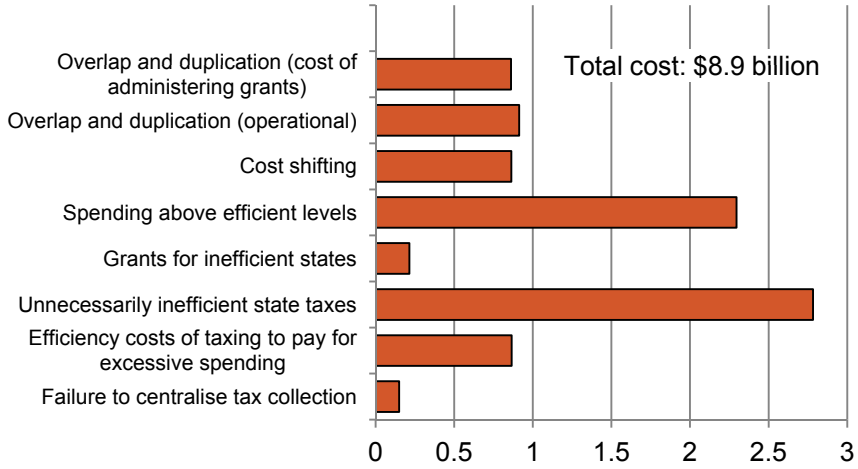
Federal financial relations reform

On one analysis, devolving power would increase economic growth
GDP per capita in Australia under alternative constitutional systems, $



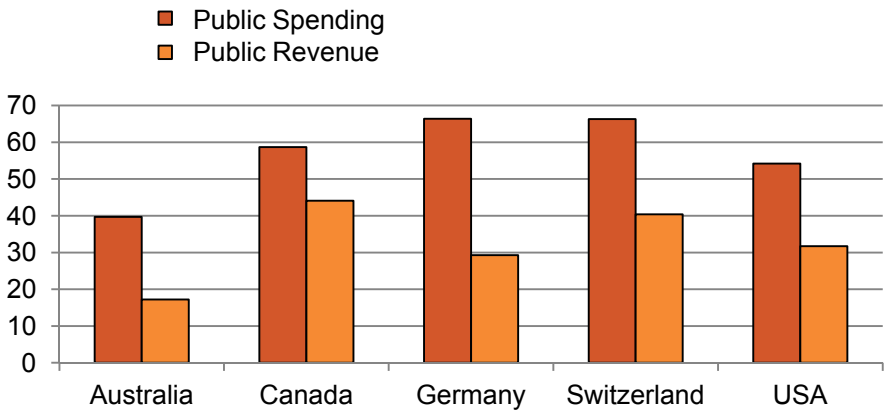
Twomey and Withers (2007)

Other analysis suggests wasteful duplication from decentralisation
Estimated costs of 'flawed federalism', $ billions 2006



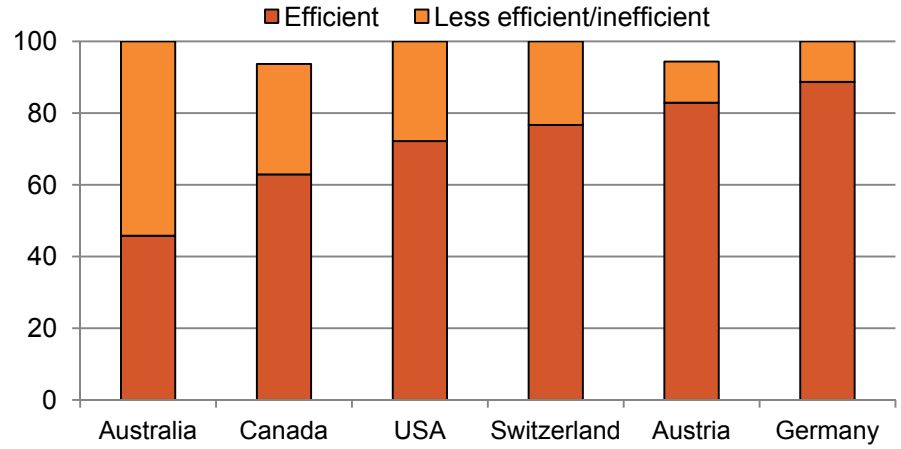
Access Economics (2006)

Australia has a greater mismatch between spending and revenue than other federations
State and local share of spending and revenue (%)



Twomey and Withers (2007)

Australian states' taxes are relatively inefficient
Proportion of state revenues from efficient taxes, 2004



Note: Components do not add to 100% for some countries as some taxes cannot be classified.
Twomey and Withers (2007)

Road congestion

Context and opportunity

- The costs of road congestion are substantial:
  - Congestion imposes substantial economic cost in "lost" travel time.[1]
  - Congestion also has social costs, impairing time spent with family, health outcomes, social connection, and well-being.[2]
- Congestion is evolving in unpredicted ways
  - Total road traffic is *not* increasing in Sydney and Melbourne.[3]
  - Traffic volumes *are* increasing on freeways, and traffic speed is slowing in the inner city in Sydney and Melbourne.[3]
  - Traffic volumes are much lower than expected for Brisbane tollroads.[3]
- Commuting patterns are mostly about suburban travel
  - 15% of employment is in the CBD, growing steadily in line with total city population, but most jobs are further out.[4]
  - Most people are working relatively close to where they live.[5,13]
- Time of day road pricing is the key to reducing congestion.
  - Congestion pricing substantially reduced congestion overseas.[6,14]
  - The effect of new roads on congestion is contested;[13] both road and rail infrastructure have marginal economic payoff on current models.[7]

Size of opportunity

- Total economic cost of congestion in 2022 may be $10 to $20 billion.
  - Economic costs of congestion were estimated at $10 billion in 2007.[8]
  - Health costs of congestion were estimated at $3 billion in 2005.[9]
  - Projected increase to $20 billion by 2020[8] may be over-estimate given actual traffic volumes.[3]
- Congestion pricing could reduce congestion by about 20%, based on experience overseas, such as in Stockholm.[6,10]
- Congestion pricing could increase economic growth by about $2 billion, assuming:
  - 2007 cost of avoidable congestion, and the GDP deflator to 2022
  - no growth in road traffic,
  - reduction in congestion of 30% due to congestion pricing based on overseas experience.[6]

Potential contribution to GDP in 2022: $2 billion

Confidence in the policy solution

- Many policy specialists support a variable road pricing scheme that charges more at rush hour and other congested times.[6,14]
  - Congestion pricing could substitute for current fuel excise revenue
  - Technology solutions are becoming cheaper.
- Good design of the scheme would be essential and must consider administrative costs, complementary investments (e.g. public transport), equity concerns,[15] and the right prices.
  - On the Sydney Harbour Bridge prices only vary between $2.50 and $4.00, and this reduced peak traffic growth by no more than 5%.[12]

Assessment: Solutions known

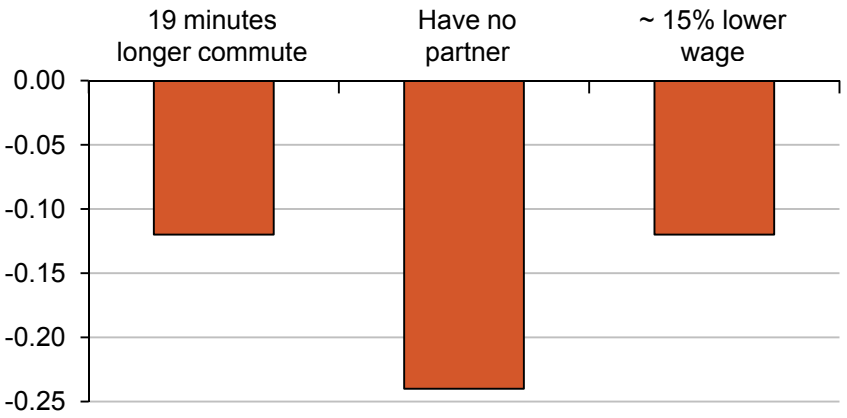
What don't we know?

- Impact of congestion pricing depends on local reaction: this remains untested in Australia.
- Future benefits of congestion pricing depend on traffic growth, which depends on 'unknowns' such as energy and petrol prices, public transport investment, public transport patronage, and reforms to other taxes such as fringe benefits tax.
- New technology will allow for more nuanced road pricing, but it is unclear how quickly it will develop, and whether future technology will allay privacy concerns.

1. BITRE (2007). 2.Flood and Barbato (2005); Stutzer and Frey (2008) 3. Loader (2012b) 4. Davies (2011) 5. Davies (2010) 6. Albalate and Bel (2009) 7. This document, p.32-33 8. BITRE (2007) 9. BITRE(2007) 10. Centre for International Economics (2010) 11. Treasury (2010a), Meyrick (2011) 12. Grattan Institute analysis of NSW Transport Roads & Traffic Authority data 13. BITRE (2011c) 14. Austroads (2011) 15. see Taylor (2010)

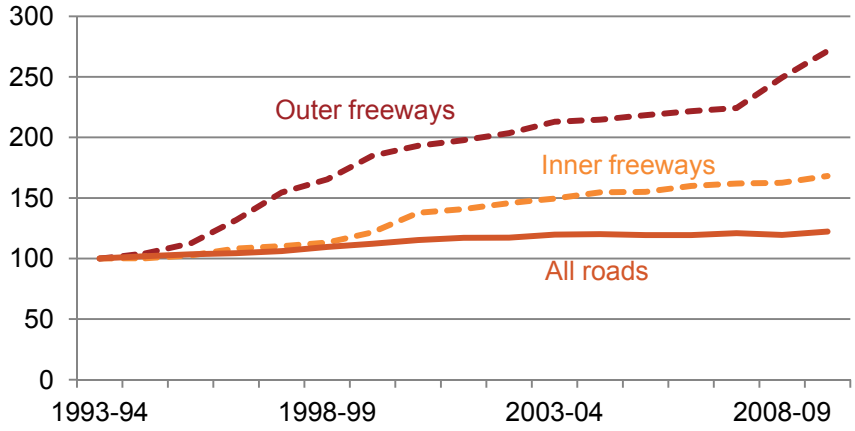
Road congestion

Congestion has a substantial impact on well-being
Impact on overall well-being (10 point scale)



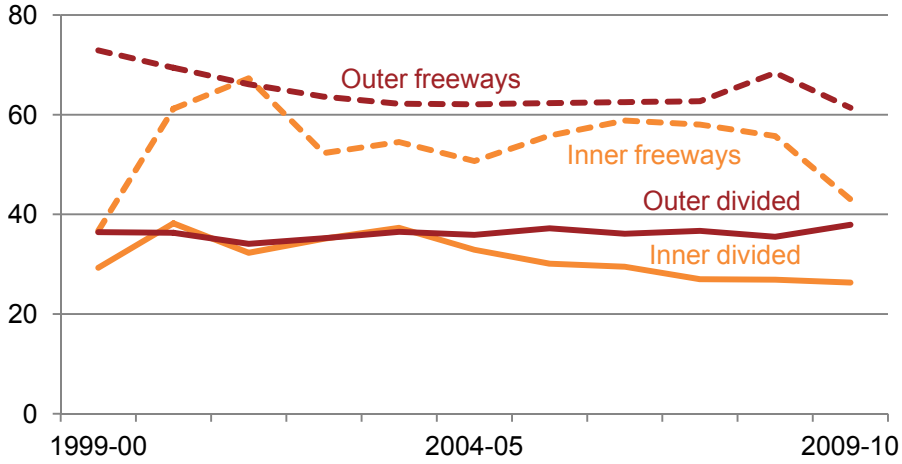
Stutzer and Frey (2008)

Traffic volumes on freeways are continuing to increase, but are steady on other roads
Change in Melbourne traffic volumes, growth in travel index (1993-94=100)



Loader (2012b), based on VicRoads Traffic Systems Performance Monitoring Bulletins

Road travel speeds may be reducing, particularly in the inner city
Average travel speeds by selected road type, Melbourne AM peak, km/h



Loader (2012b), based on VicRoads Traffic Systems Performance Monitoring Bulletins

Timed tolls for freeways could substantially reduce congestion
Impact of congestion charging in selected cities that have implemented road pricing

City	Year	Reduced congestion (%)	Reduced accidents (%)
London	2003-2007	30	2 to 5
Singapore	1975 - 1998	40	n/a
Stockholm	2006	19	5 to 10

Abalate and Bell (2009)

Land transport infrastructure

Context and opportunity

- Many have decried the state of Australia's infrastructure:
  - Engineers Australia has estimated a $700 billion shortfall. It rated much of the nation's infrastructure as needing major changes to be fit for current and future purposes.[1]
  - The World Economic Forum rated Australia as 24th of 142 countries for its infrastructure, although this ranking was largely driven by the self-assessment of surveyed Australian executives.[2]
  - The OECD concluded that "Australia has an important infrastructure deficit." [3]
- Government spending on transport infrastructure increased rapidly over the last decade to historically high levels.[4]
  - Given the mining boom, private sector spending on infrastructure has increased even further.

Confidence in the policy solution

- Extensive international analysis of economy-wide impacts of infrastructure suggests provides confidence that the *average* benefits of infrastructure are modest.[6]
  - It is axiomatic that even if infrastructure is productive on average, it is only economically productive if it is "the right infrastructure, in the right place at the time and accessible at sensible prices".[8]
- Infrastructure Australia assessments provides good data on the cost-benefit and readiness of individual projects.
- Cost benefit assumptions may need to be revisited
  - Cost benefit outcomes are very sensitive to assumptions about discount rates and agglomeration benefits; both are disputed, raising difficult economic and ethical issues.[9]

Assessment: Solutions known

Size of opportunity

- There do not appear to be a substantial number of unfunded projects with positive cost benefit above the current spending levels
  - International analysis from 1989 suggested very high economic returns to infrastructure,[5] but more recent analysis suggests that the benefits are smaller, so a 10% increase in the stock of infrastructure increases GDP by only 1%.[6]
  - Project by project assessment by Infrastructure Australia between 2009 and 2012 suggests that only about $10 billion of new positive cost benefit projects will be sufficiently prepared to proceed each year, with an average net present value benefit of $5 billion – and almost all of the positive cost benefit projects in the last three years have been funded.[7]

Potential contribution to GDP in 2022: Nil

What don't we know?

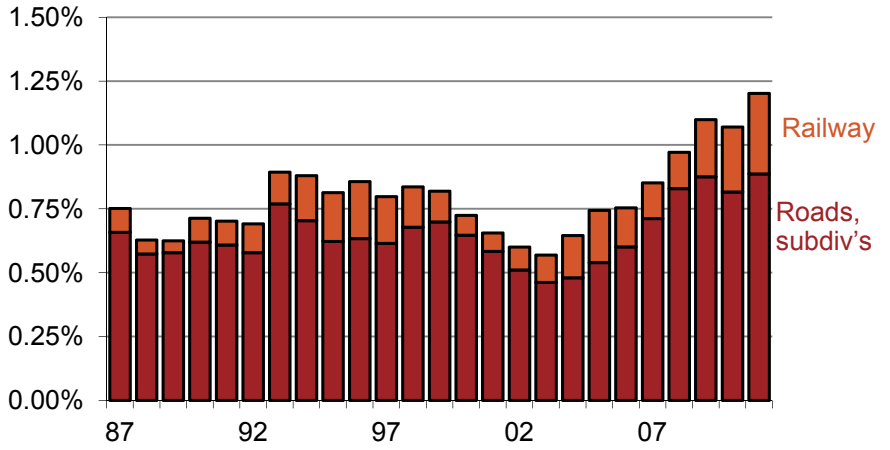
- There are a number of projects on Infrastructure Australia's short list that need further technical analysis so we can better understand their feasibility. Once these studies are completed, it is possible that there may be some scope for further productive investment. They include:
  - The $5.9 billion Managed Motorways project, which depends on a pilot program now underway.
  - The $1.4 billion Melbourne Metro 1 project, which depends on the outcome of design and pre-construction work.
- The wider economic benefits of infrastructure, such as increased agglomeration economies and greater labour supply, are inherently difficult to quantify.[9]

1.Engineers Australia (2010) 2. Schwab (2011) 3. OECD (2010d) 4. ABS (2012a) 5. Aschauer (1989) 6. Calderon, *et al.* (2011). See also Henckel, *et al.* (2010) , Shanks and Barnes (2008) 7.Grattan Institute analysis of Infrastructure Australia (2009); Infrastructure Australia (2010), Infrastructure Australia (2011a) and project websites. 8. Eslake (2010). 9. Harrison (2010); Stern (2007); see Hensher, *et al.* (2012), Chatman and Noland (2011), BITRE (2011c)

Land transport infrastructure

Spending on land transport infrastructure has increased

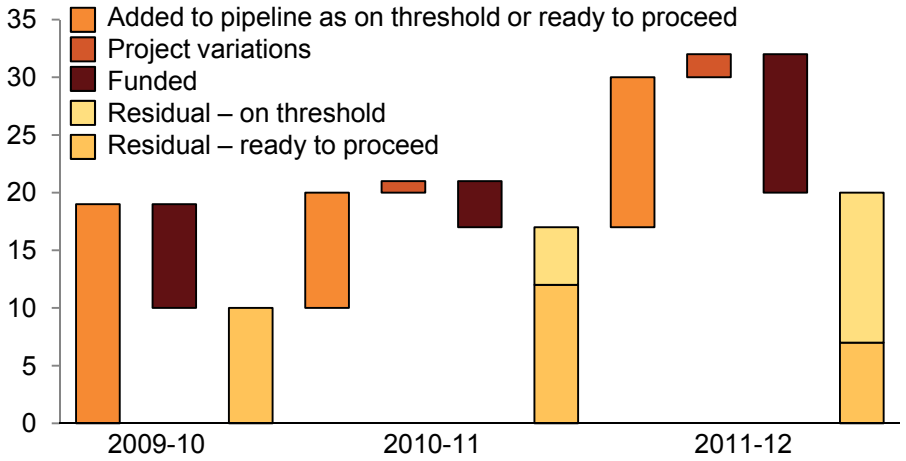
Engineering construction work for public sector (% of GDP, calendar year)



ABS (2012a)

Most projects that are ready to proceed are being funded

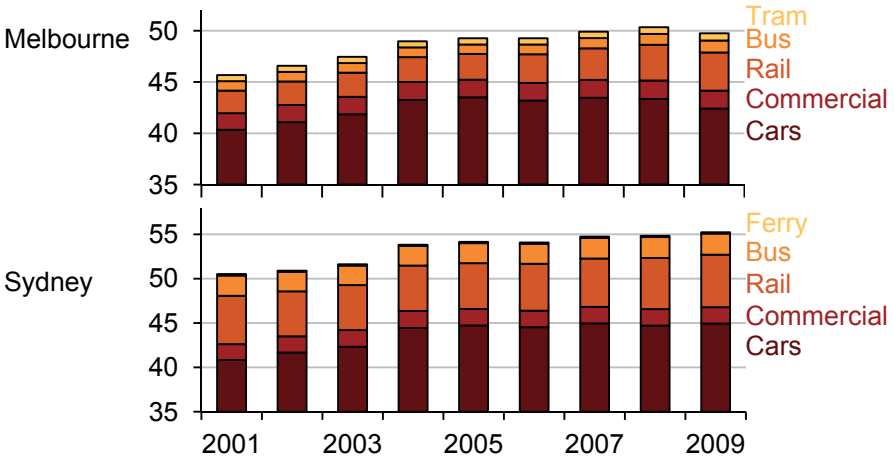
Value of projects in Infrastructure Australia's project pipeline ($ billion)



Note: only includes projects on threshold or ready to proceed, and with published costing Infrastructure Australia annual reports to COAG; Grattan Institute analysis.

Public transport is, and car travel is not, increasing in big cities

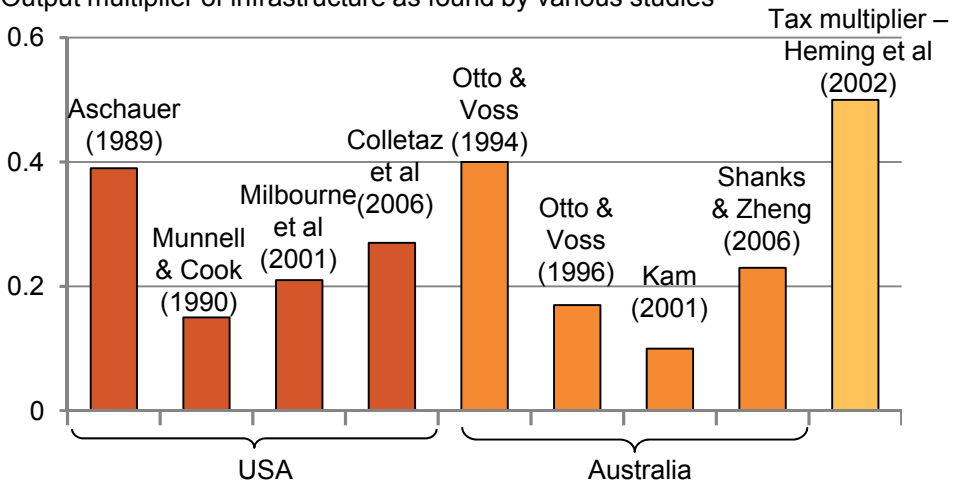
Passenger kilometres travelled (billions per year)



BITRE (2011a)

Infrastructure has a reasonable but not overwhelming payoff

Output multiplier of infrastructure as found by various studies



Shanks and Barnes (2008)

Land freight

Context and opportunity

- Freight volumes doubled between 1983-2003 and are forecast to double again by 2020.[1]
- There are opportunities to increase the share of freight carried by rail.[2,5]
  - However, only small minority of road freight might realistically switch to rail due to nature of loads and destinations.[3,5]
- Using larger trucks, which has driven efficiency gains over the last decades, will provide limited gains in future.[4]
- If trucks were permitted on more roads, this would create efficiencies, but it would require a mechanism to connect funding to use.[5,6,8]
- Pricing road freight by location and load is itself unlikely to substantially change mode share as externalities are relatively small,[7,4] but pricing would be an essential part of a mechanism to connect funding to use.[5,9]
- A national freight network plan is seen as important,[6,8] but it may only lead to limited efficiencies: separate roads are not viable, and benefits may not outweigh costs for many proposed upgrades.[6]
- Other efficiency opportunities have been outlined, although they are likely to be smaller.[2,10]

Size of opportunity

- A global estimate suggested pricing and other reforms could improve road productivity by 5%, increasing GDP by 0.25%.[5]
  - This would increase GDP in 2022 by approximately $5 billion.
  - This estimate does not include the potentially substantial costs of road charging.[5]
- However, analysis of individual reforms suggests a smaller opportunity.
  - Improving mode share is worth under $1 billion per year,[2] although gains based on realistic shift in mode share might be under $400m.
  - Larger trucks might improve heavy vehicle efficiency by 8% in 2030,[4] worth $1.5 billion per year.
  - Efficiencies due to connecting road pricing to road funding have not been publicly estimated.[5,6]
  - Efficiencies due to a national freight network plan have not been publicly estimated.[6,8]

Potential contribution to GDP in 2022: $5 billion

Confidence in the policy solution

- Rail operators believe there could be substantial switching from rail to road,[2] although BITRE and Productivity Commission analysis suggests the opportunities are limited.[3,5]
  - On any view the value of the opportunity appears relatively small.
  - Differences depend on forecast growth and analysis of load types.
- Mechanisms for more efficient pricing for road freight by location and load are well documented.[5,6,8,9]
  - Mechanisms to link pricing to funding are poorly characterised.[6]
  - Analysis of the benefits relies on very high level estimates and does not include analysis of costs.[5]
- Mechanisms for a national freight network plan are well documented,[6,8] but there is little analysis of the resulting practical benefits or their size.

Assessment: Direction known; solutions poorly characterised

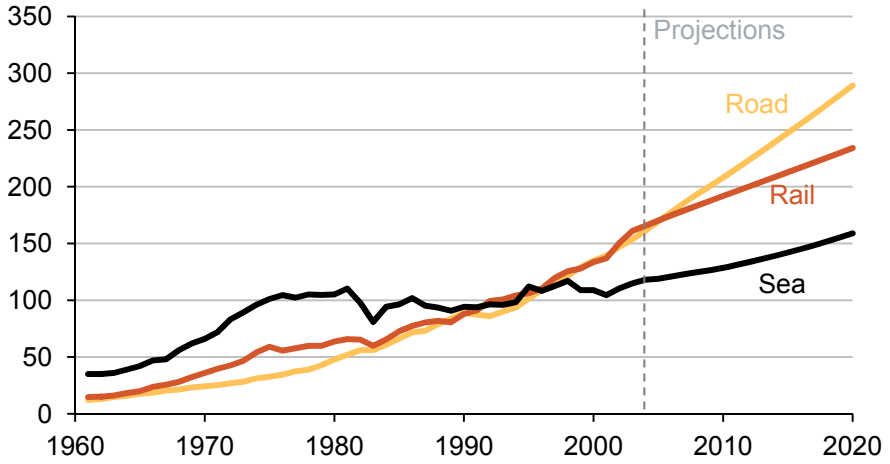
What don't we know?

- More transparent analysis of current freight by load and destination would clarify scope of mode share opportunity.
- Substantial work is required to design mechanisms that would efficiently link road investment to freight usage charges.
- Analysis is required to identify the practical benefits of a national freight network plan.
- Clear priorities for new national freight infrastructure have not been established, although processes have been initiated by Infrastructure Australia[6] and the National Transport Commission.[10]
- The costs and benefits of other efficiency opportunities are yet to be identified.

1. BITRE (2006) 2. Booz & Co (2009) 3. BITRE (2009) 4. BITRE (2011b) 5. Productivity Commission (2006b) 6. Infrastructure Australia (2011b) 7. McAuley (2010) 8. National Transport Commission (2008) 9. Treasury (2010a) 10. Hearsch (2008)

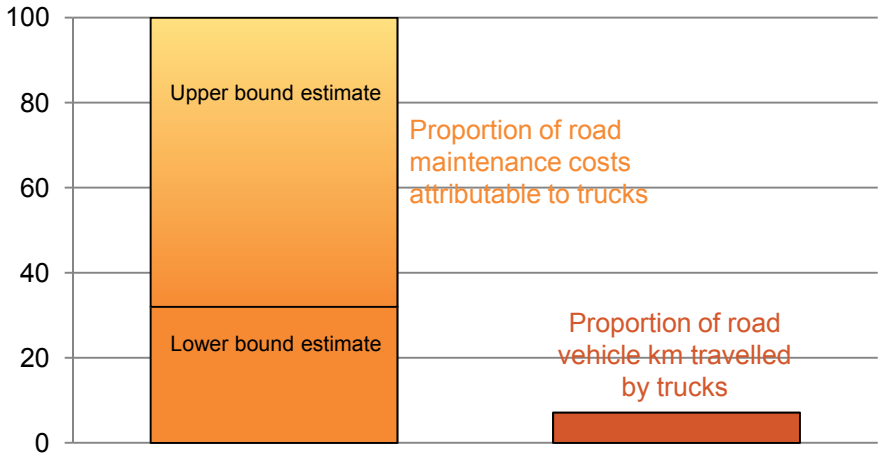
Land freight

Freight volumes are increasing rapidly
Domestic freight (billion tonne-kilometres)



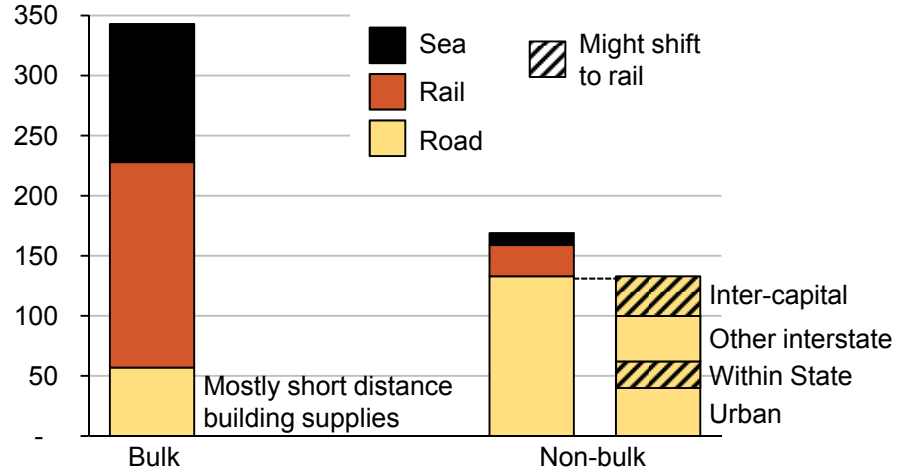
BITRE (2006)

Truck use of roads drives maintenance costs
Truck proportion of road damage and kilometres travelled



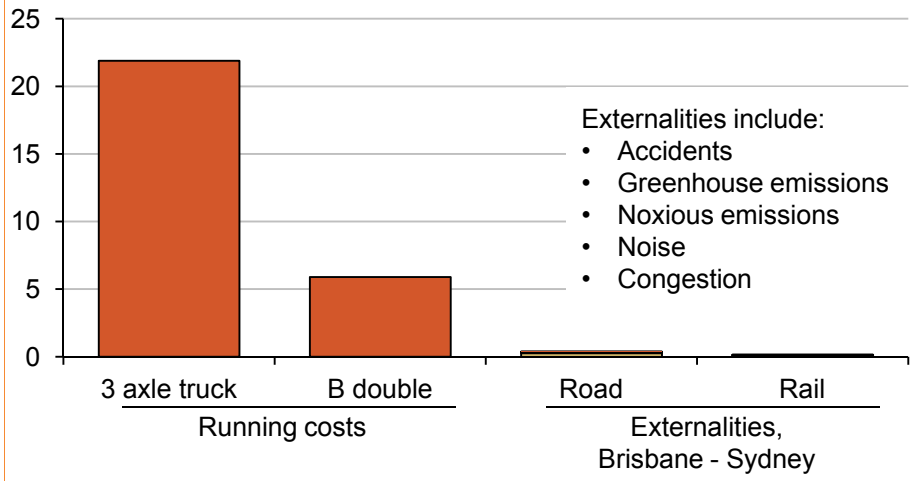
ABS (2010c), Productivity Commission (2006b)

Only a small minority of freight might switch to rail
Domestic freight, 2007-08 (billion tonne-kilometres)



BITRE (2011a), BITRE (2009), BITRE (2006), Grattan Institute analysis

Other externalities are generally not material for trucks
Australian interstate freight costs (cents per tonne-kilometre)



McAuley (2010), BITRE (2011)

Urban water management

Context and opportunity

- There may be opportunities to improve the efficiency of investment decisions in urban water supply
  - Past investments have been expensive, increasing the real cost to households from 2008 to 2012 by 8 per cent in Sydney and 13 per cent in Melbourne.[1]
  - Barriers to third party provision of water supply or recycling services deny consumers low-cost supply options.[2,4]
  - Unfinished urban water reform "constrains the sector's efficiency, transparency and performance", and water utilities, regulators, and governments have unclear roles and responsibilities.[1,3,4,5]
- However, better investment decisions will have little impact before 2022.
  - As a result of recent desalination plant construction, major capital cities have substantially more water than they need.
- Demand management has not been cost effective.[1,3] Water restrictions have cost over $1 billion a year in lost net value of consumption and additional costs of administration.[4]

Confidence in the policy solution

- It is clear that further capital investment is unlikely in the next decade, as with desalination construction and rainfalls over the last two years, current supply exceeds demand.
- Beyond improving capital expenditure, there are suggestions to improve pricing, regulation and governance.[2,3,4,5]
- However, suggestions to substantially reform urban water institutions into more market-driven models have not been fully characterised.

Assessment: Direction known; solutions poorly characterised

Size of opportunity

- Most productivity improvements for water come from the ratio of sales to capital. As there have been very large recent investments in capital infrastructure, and there is substantial excess capacity, there is little scope for policy-induced productivity improvements over the next decade.
- Given the small size of the urban water market relative to the whole economy, other reforms are unlikely to have a large financial impact.

Potential contribution to GDP in 2022: Nil

What don't we know?

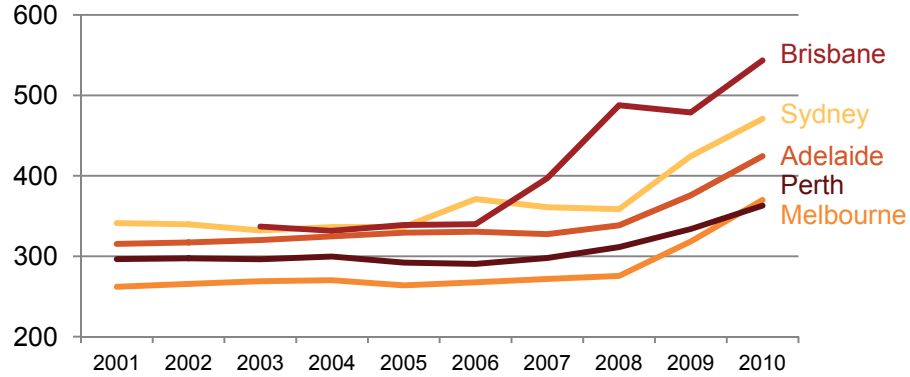
- Substantial work is required to define potential market structures for water, and demonstrate how these will improve on current arrangements
- Substantial work is required on how to manage a transition from a historic 'carrot' approach (e.g. technology subsidies) to increased pricing based on use.

1. National Water Commission (2011a) 2. Victorian Competition & Efficiency Commission (2011) 3. Olmstead and Stavins (2009) 4. National Water Commission (2011b) 5. Productivity Commission (2011a)

Urban water management

Water prices have increased rapidly

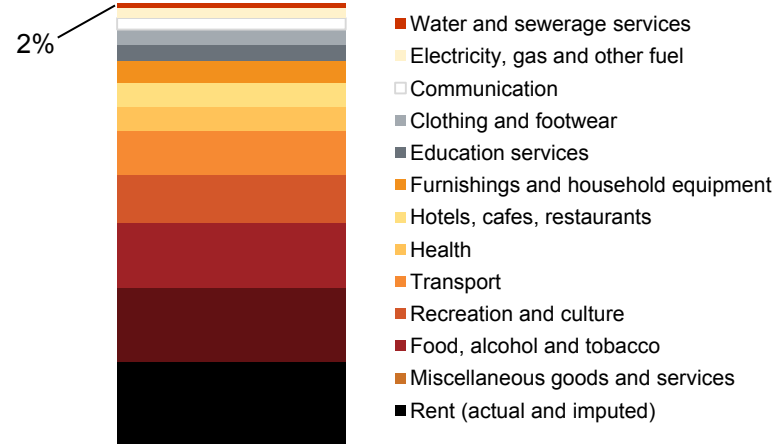
Capital city residential water prices at 211k litres/year consumption ($/year, 2010 $, financial year ending)



Grattan Institute analysis, based on Water Services Association of Australia (2008); National Water Commission & Water Services Association of Australia (2009); pers. comms from Brisbane City Council Water & Sewerage Service, SA Office of the Treasurer, NSW IPART, WA Water Corporation, Vic Essential Services Commission (2010); ABS (2012f)

Total annual spending on urban water is material but not a big proportion of the economy

Household final consumption expenditure, % of total, 2009-10



ABS (2012e)

There are limited opportunities to save on capex before 2022, as most capitals have recently increased capacity substantially

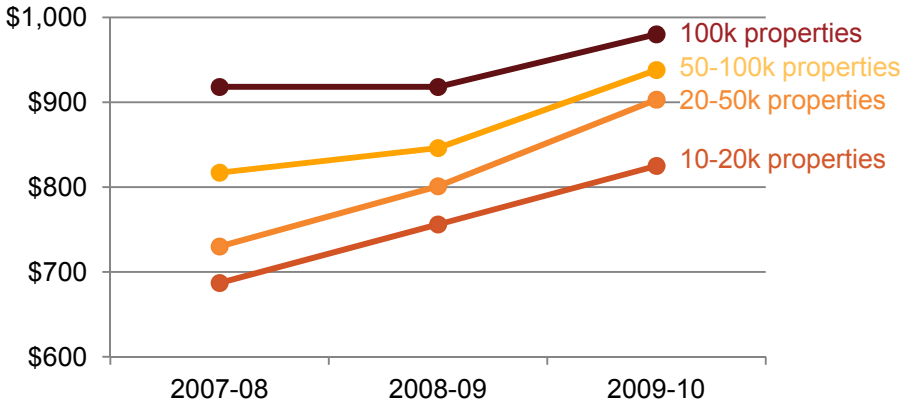
Recent construction of large desalination plants

Location	Initial investment ($ million)	Capacity (GL/year)	Capacity as a % supplied in 2009-10	Completion
Perth	387	45	18	2006
SE Qld	1,200	49	25	2009
Sydney	1,890	90	18	2010
Melbourne	3,500	150	43	2012
Adelaide	1,830	100	80	2012
Perth	1,400	100	40	2012

Note: Costs incurred in different years so not directly comparable.
Productivity Commission (2011a)

There may be more efficiencies of scale available

Residential water price at 211 kL annual consumption, by utility's number of connected properties ($/year)



Water Services Association of Australia (2011)

Electricity networks

Context and opportunity

- Investment in Australian electricity networks is costing $42 billion over five years,[1] and has risen dramatically since 2006.
  - Network costs make up around 40 per cent of electricity prices.[2]
  - 80 per cent of cost increase has been in distribution networks.
- Better demand management could substantially reduce costs.
  - Some network assets are significantly underutilised: a quarter of Victoria's network capacity was used for only 10 days in 2008-09.[3]
- Structural reforms might reduce costs.
  - Network businesses have incentives to over-invest as they are monopolies receiving relatively high returns for low risk investment.
  - Governments are conflicted because they both regulate network investment and receive profit distributions from network companies.[2]
  - In Victoria, where networks have been privatised, costs are significantly lower, and are expected to remain so. [1]
- Costs might be reduced through regulatory reforms such as timed consumer pricing, lower reliability standards, a lower regulated return on capital, and a broader range of alternatives to build.

Size of opportunity

- Expenditure on electricity networks over the current 5-year cycle is projected at $7 billion for transmission networks and $35 billion for distribution networks.[1]
- Reducing network investment by one-third, with no change in output, could contribute $6 billion to GDP in 2022.
  - We assume the capital is redirected elsewhere, and use a perpetual inventory model with a depreciation rate of 5% to calculate the increase in productive capital, multiplied by the long-run output-capital ratio.
- Privatisation of Queensland and NSW networks might reduce costs by at least a quarter, which would save $5.4 billion between 2010-2015 (this overlaps with reforms to improve network investment efficiency).

Potential contribution to GDP in 2022: $6 billion

Confidence in the policy solution

- Structural reforms have a model in Victoria, but this may need to be adapted for the regulatory structure of other States
- There is no consensus on a model that would align incentives to reduce peak load with incentives to invest in the network.
- Some reforms to reduce peak demand have been identified; others require further characterisation.
  - Time of use pricing is likely to reduce peak demand, although its impact in Australia remains to be seen.[5]
  - The trade offs inherent in lower reliability standards and alternatives to network build need to be investigated. With lower reliability standards than current requirements, NSW residential consumers are estimated to save $3 to $18 a year in 2028-29.[6]
  - A lower regulated return would be contentious as it is currently set by a detailed regulatory process

Assessment: Direction known; solutions poorly characterised

What don't we know?

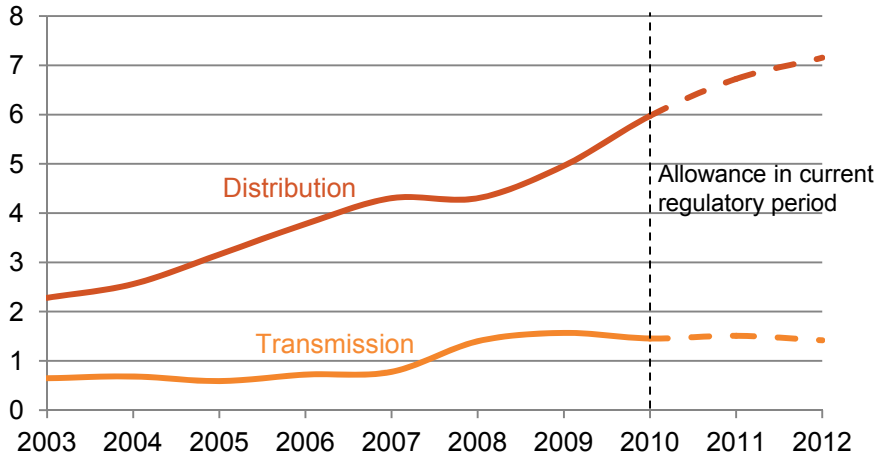
- Structures have not been defined to align incentives for reducing peak load with the incentives to invest in the network
- Mechanisms have not yet been defined to ensure collective action across jurisdictions and sectors for efficient transmission network investment.
- Further investigation is required to ensure that mechanisms are appropriate for defining regulated rates of return, and reliability standards.

1. Australian Energy Regulator (2011) 2. Garnaut (2011) 3. Department of Resources (2011) 4. Prime Minister's Task Group on Energy Efficiency (2010) 5. Simshauser *et al.* (2010) 6. AEMC (2012)

Electricity networks

Network costs are increasing rapidly

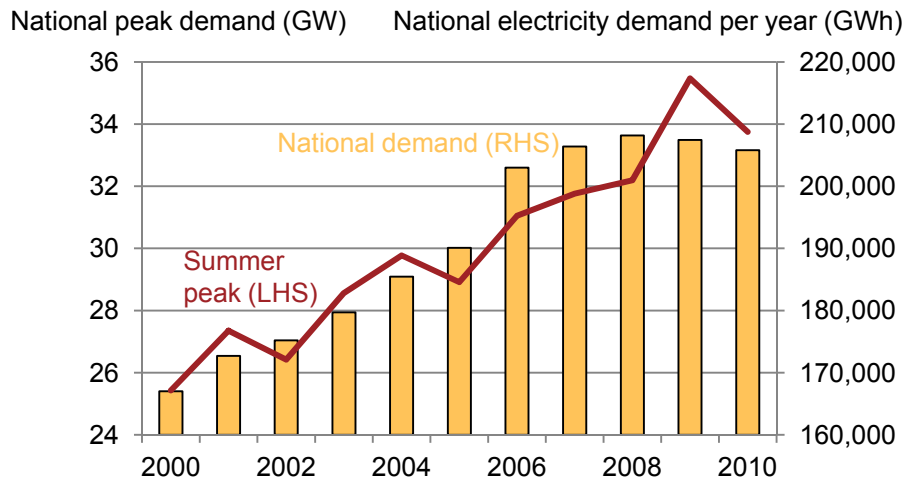
Total electricity network investment, $ billion per financial year (2010 dollars)



Australian Energy Regulator (2011)

Increasing costs are driven by peak demand; total demand is decreasing

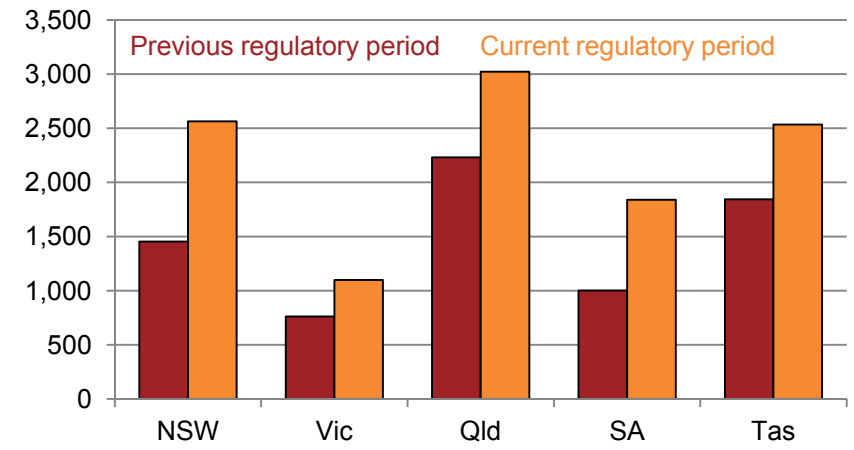
Electricity demand, financial year ending



Garnaut (2011)

The increases per capita are greatest in NSW and South Australia

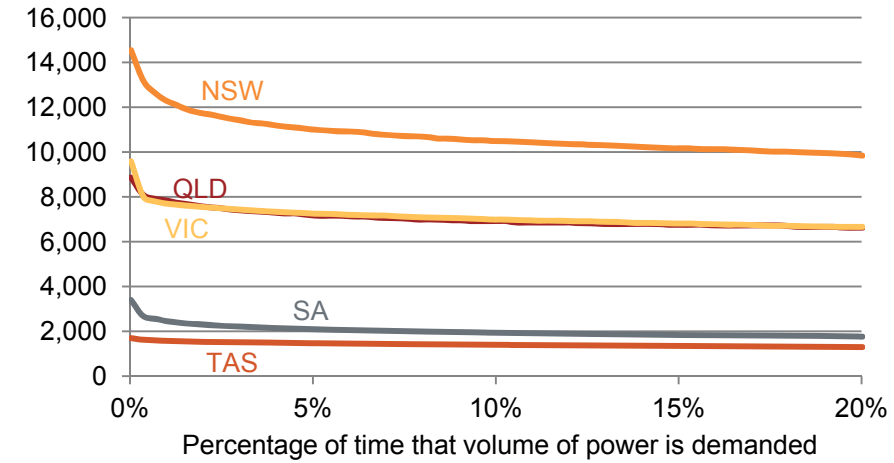
Total electricity network investment per capita (2010 dollars)



Grattan Institute analysis based on Australian Energy Regulator (2011) and ABS (2011a)

Most capacity is only used for a small proportion of the year

Demand (MW)



Australian Energy Market Operator (2011)

Early childhood development for children in need

Context and opportunity

- Readiness for school matters: it predicts long-term academic and occupational success.[1]
- Over 85% of Australian children are in non-parental care or education program in the year before school.[2] Most meet developmental milestones and are well-prepared when they enter primary school.[2]
- But some children get a worse start in life.
  - Indigenous, remote, and low-SES community children are much more likely to be 'developmentally vulnerable'.[2]
  - Disadvantaged children are less likely to receive early childhood education, and more likely to struggle with the transition to school.[3]
- Access for disadvantaged children to high quality early childhood education might be improved through:
  - Government assistance that is simpler and better targeted;[4]
  - Incentive schemes, training programs and timely access to good housing for qualified early childhood workers in rural areas;[4]
  - Requiring all indigenous-focused early childhood services to meet National Quality Standards.[5]

Size of opportunity

- The net benefit of intensive early childhood intervention depends on how tightly it is targeted towards highly disadvantaged children.
  - Intensive early childhood education for highly disadvantaged children has had a cost benefit of between 4:1 and 17:1.[6]
  - The benefit-cost ratio for children from non-disadvantaged backgrounds has not been reliably determined, but will be significantly lower.
- However, any productivity gain from improved early childhood education will not be realised within the next decade as children under five in 2012 will not be in the labour force by 2022.

Potential contribution to GDP in 2022: Nil

Confidence in the policy solution

- There is considerable evidence that early childhood programs for disadvantaged children yield high returns relative to program costs later in life. Gains include lower crime rates, health costs, and inequality; higher tax collection and lower welfare spending, skill acquisition and social integration, inclusion and cohesion.[7]
- There is relatively little evidence about whether intensive early childhood education has a big impact on subsequent outcomes for children from non-disadvantaged backgrounds.
- It is unclear whether it is possible as a matter of political reality to deliver intensive early childhood programs that are tightly targeted to children from disadvantaged backgrounds.
- It is unclear what incentives would be sufficient to attract appropriately qualified early childhood workers to rural and remote areas.

Assessment: Direction known; solutions not proven

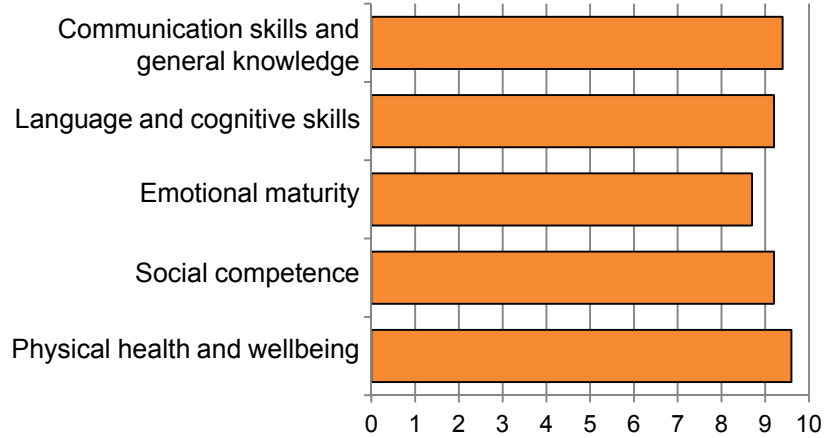
What don't we know?

- Unlike the US, Canada, the UK and parts of Europe, Australia lacks well-developed outcome data on the effects of early education. The data from the Australian Government funded Longitudinal Study of Australian Children is beginning to illustrate the connection between disadvantage and the outcomes for children.[8]
  - Data gaps are particularly acute for indigenous children.
- It is too early to assess the impact of recent initiatives to improve quality of care, such as increases in staff qualification requirements.
  - What will be the impact on staff attrition from the industry, and to what extent does this improve quality?
  - How much will it increase cost of services, and how will this affect the participation of lower-income families?

1. ABS (2009a) 2. Centre for Community Child Health and Telethon Institute for Child Health Research (2009) 3.Rosier and McDonald (2011) 4. Treasury (2010a) 5. Productivity Commission (2011b) 6. Barnett and Ackerman (2006) 7. See, for example, Heckman (2012) 8. Elliott (2006)

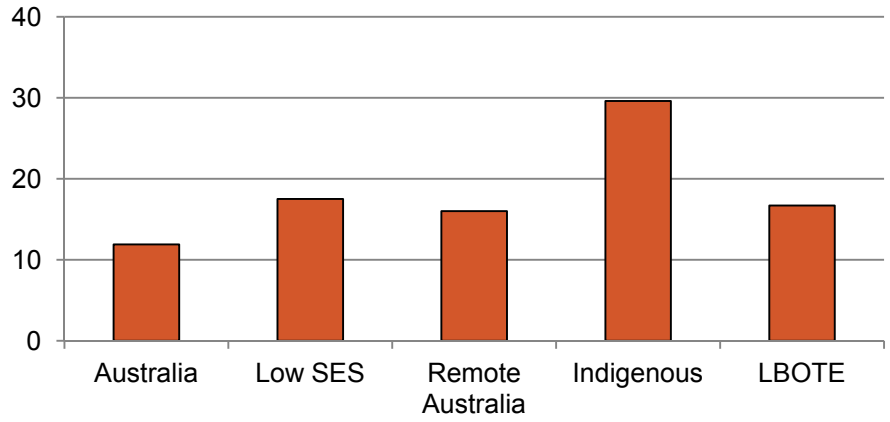
Early childhood development for children in need

Most Australian children are meeting developmental milestones
Average score (out of 10) for all Australian children on Australian Early Development Index domains



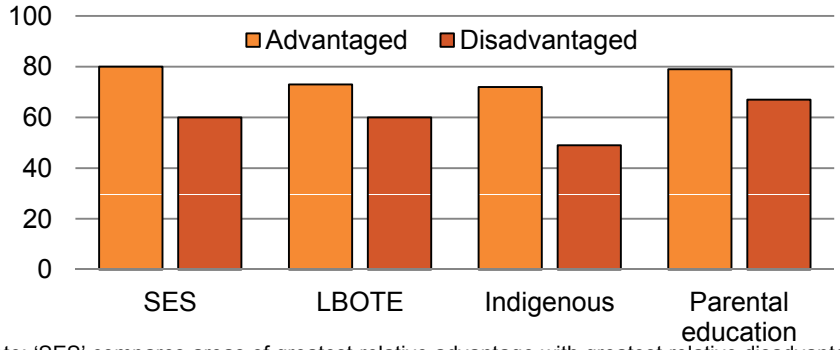
Centre for Community Child Health and Telethon Institute for Child Health Research (2009)

Some groups of children are not doing as well as the mainstream
Percentage of children developmentally vulnerable on two or more Australian Early Development Index domains



Centre for Community Child Health and Telethon Institute for Child Health Research (2009)

Disadvantaged children are less likely to attend pre-school
Pre-school attendance rates for Australian children aged 3-5, 2008



Note: 'SES' compares areas of greatest relative advantage with greatest relative disadvantage. 'LBOTE' compares English as the main language spoken at home, with English not the main language. 'Indigenous 'compares all Australian children with Indigenous children. 'Parental education ' compares mothers with a Bachelor degree or above with mothers who did not complete Year 12.
ABS (2009a)

Intensive early intervention with disadvantaged children can have huge payoffs in the long-run
Outcomes for intensive intervention programs in the US with severely disadvantaged children

	Perry Preschool	Carolina Abecedarian	Chicago Child-Parent Centres
Increased long-term IQ	No	Yes	Not measured
Increased long-term achievement	Yes	Yes	Yes
High school graduation	65% v 45%	67% vs 51%	50% vs 39%
Arrested by 21	15% vs 25%	45% vs 41%	17% vs 25%
Benefit-cost ratio	17.07	3.78	7.14

Barnett and Ackerman (2006)

School system performance

Context and opportunity

- The quality of school education is the dominant driver of economic productivity in the long run; it contributes to many other social outcomes.
- Australian school education is not keeping up.
  - Between 2000 and 2009, the gap increased between Australian students and those in top-performing systems.[2] This is despite a real increase of 44% in education expenditure between 2000 and 2009.[3]
  - Between 1964 and 2003, numeracy test results fell as real per-child spending in Australian school education increased by 258%.[4]
  - Australia has more inequality in student performance.[2]
- Outside the family environment, teacher quality is the most important determinant of student performance.[5]
- Teacher appraisal and feedback in Australia is the least effective in all but two of the 23 countries participating in the TALIS program.[5]
- Better teacher appraisal and feedback systems could improve teacher effectiveness by 20-30%, lifting Australian students to best in the world.[6]

Confidence in the policy solution

- A variety of studies agree that education quality has a big impact on GDP in the long run, although they vary in their estimates of just how big a difference it can make.[1]
- There is good evidence that teacher quality makes the biggest difference to student performance, outside of the family environment.[5]
- There is growing evidence that teacher training, feedback, appraisal and management are very substantial levers for improving teacher performance.[3]
- There is less evidence about how to implement sustained improvements to teacher training, feedback, appraisal and management in a system such as Australia's.[3]

Assessment: Solutions known

Size of opportunity

- Conservatively, increasing international test scores by one standard deviation can lift long-run GDP growth by 1%.[1]
- A 10% increase in teacher effectiveness would improve test scores by 19 PISA points, roughly equivalent to half a year of schooling.[1] This would increase the long run GDP growth rate by approximately 0.2% each year, adding $90 billion to Australia's GDP by 2050.[1]
- However, improved school education will only have marginal effects on economic growth by 2022 of around $0.3 billion
  - Few students who benefit from reforms will be in the labour force in 2022.

Potential contribution to GDP in 2022: Under $1 billion

What don't we know?

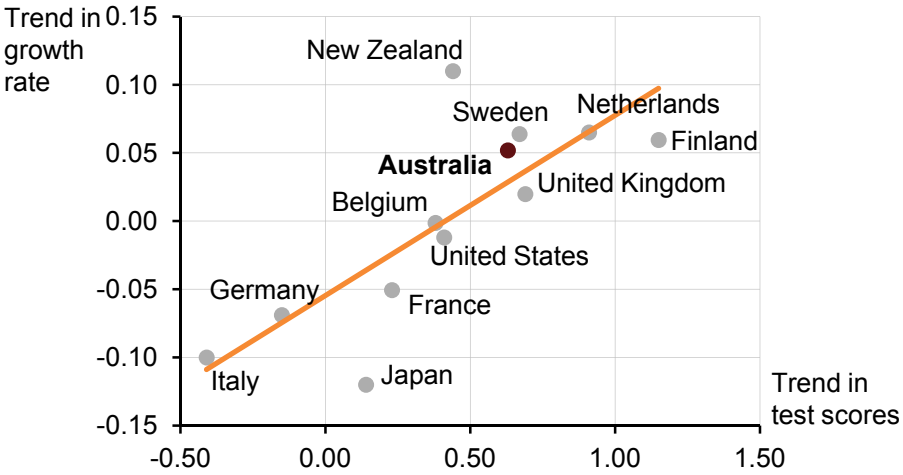
- There is not a comprehensive measure of educational performance that goes beyond test scores (whether from PISA or NAPLAN) to include the multiple outcomes –– not just academic results –– that schools are expected to achieve.
  - Similarly, comprehensive measures of teacher effectiveness have not yet been developed, although work in this area is progressing.
- Genuine improvements to teacher performance management and feedback systems will be challenging to implement given the scale and magnitude of reform. Australia may be able to learn lessons from other countries as to how to achieve this.
- It is unclear whether school autonomy is a necessary condition for improving outcomes.

1. Jensen (2010) 2. OECD (2010e) 3. Jensen *et al.* (2012) 4.Leigh and Ryan (2010) 5. OECD (2009b) 6. Jensen and Reichl (2011)

School system performance

Improving student performance increases GDP

Trend in student test scores vs trend in economic growth rate, long-term

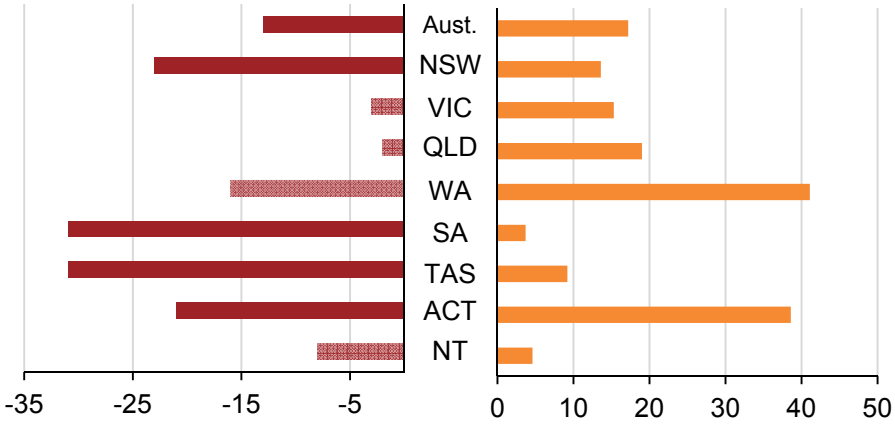


Jensen (2010)

Despite increasing expenditure, Australian PISA scores are declining

Decline in PISA scores (2000-2009)

Real expenditure increase per FTE student (2000-2009), per cent

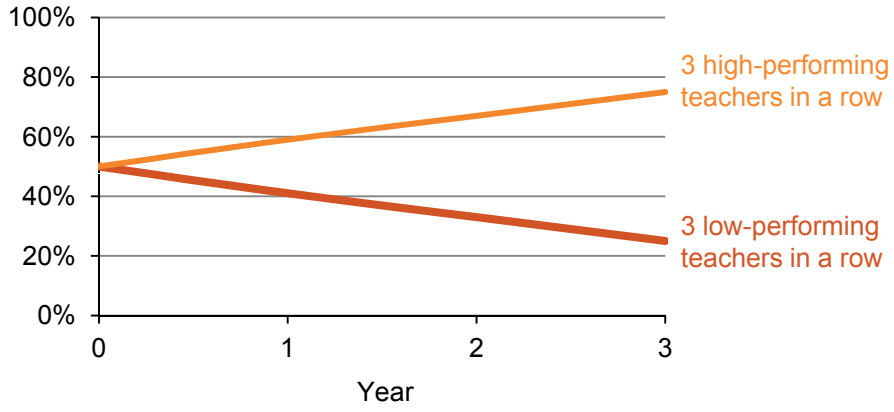


Note: Pale bars signify changes in PISA scores that are not statistically significant

Jensen et al (2011)

High quality teaching has a large impact on student outcomes

Student's position in the grade, percentile points



Sanders and Rivers (1996); Jordan et al (1997)

Australian schools are well behind the best in the world on test scores

Months of school education that Australian students lag behind their counterparts in leading Asian countries (based on 2009 PISA scores)

Country	Reading	Maths	Science
Shanghai	13	25	15
Hong Kong	6	12	7
Singapore	3	14	5
Korea	7	9	3

< 1 year behind | 1-2 years behind | >2 years behind

Jensen et al.(2012)

Vocational education and training system performance

Context and opportunity

- Governments spend around $5.5 billion on vocational education and training (VET) per year.[1]
- Fewer people are obtaining VET qualifications than is optimal.
  - Projected VET qualifications do not meet projected demand for people with skills, particularly higher level qualifications.[2]
  - Recent growth in student numbers has not translated into graduates with higher level qualifications, and completion rates are low.[3]
- There are concerns about course and teacher quality.[4,5]
- VET outcomes would be better if the system were more demand-driven.
  - Resource allocation would be more efficient with provider competition
  - Participation would rise by allocating places in response to demand.
- Progress towards a demand-driven system is slow, and raises new issues.
  - Victoria introduced a demand-driven system in 2009,[6] but demand created budget pressures, and there are quality concerns.
  - COAG agreed to a national training entitlement to introduce market competition,[7] but many implementation details have not been agreed.

Confidence in the policy solution

- Achieving COAG's targets for VET is ambitious, and will require significant policy changes that have not been clearly articulated.[8]
  - A more market-driven system nationally is likely to increase participation, as training providers compete to attract students.
  - However, it's not clear that COAG's current proposal will be sufficient to close skill shortage gaps, or that governments will be in a position to fund demand.
- It is uncertain whether reforms can maintain quality with rapid growth.
  - Projected economic benefits assume quality is maintained.
  - Possible reforms to improve training quality include more flexible industrial relations, better performance information, and teacher standards.[4,9]

Assessment: Direction known; solutions poorly characterised

Size of opportunity

- New policy change to realistically increase VET participation might add $10 billion to GDP in 2022
  - COAG has an ambitious target, estimated to increase GDP by 1.95 percent, to halve the proportion of Australians aged 20 to 64 without qualifications at a Certificate III level from 2009 to 2020.[3] This implies 1,500,000 people qualified above 2001-2009 trends.
  - Recent policy changes (in Victoria, South Australia and via the Productivity Places Program) are already projected to result in 62,500 higher level VET qualifications per year – an extra 625,000 qualified people in 2022 above 2001-2009 trends.[3]
  - New policy changes such as demand driven reforms in other States might double participation from 2014 (a further 62,500 higher level VET qualifications per year) – an extra 375,000 qualified people in 2022 above current policy settings.

Potential contribution to GDP in 2022: $10 billion

What don't we know?

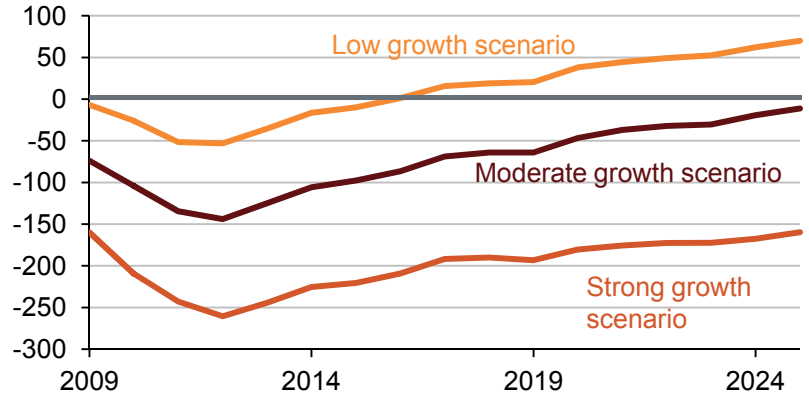
- It is unclear how to improve the reputation of VET so that the additional students see it as a quality alternative to higher education.
- As the Victorian experience illustrates, the optimal settings of a demand-driven system need to be determined to prevent budget blowouts, greater qualification gaps, or quality issues.
- Data about VET is lacking.
  - Policy choices would be improved with better data about private training providers, student progress across multiple providers, and the value of partial completions of VET qualifications that may have value for some students and employers.
  - Student choices would be improved with better administrative, financial and performance data.

1. Productivity Commission (2011d) 2. Skills Australia (2010) 3. Productivity Commission (2012a) 4. Wheelahan and Moodie (2011) 5. Productivity Commission (2011c) 6. Victorian Government (2008) 7. COAG (2012) 8. COAG Reform Council (2011) 9. Garrett and Campbell (2010).

Vocational education and training system performance

On current trends, Australia's qualification profile is unlikely to meet future labour market demand

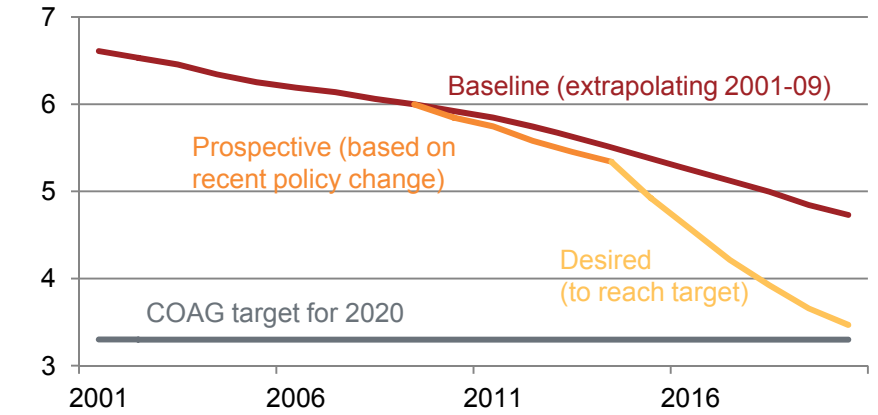
Projected annual supply of qualified students less projected annual labour market demand ('000 qualifications per year)



Access Economics (2009)

Significant additional effort above current policy settings will be needed to reach COAG targets

Number of 20-64 year olds without a Certificate III or above, 2001-2020 (million persons)



Productivity Commission (2012a)

Employers have concerns about the quality of VET

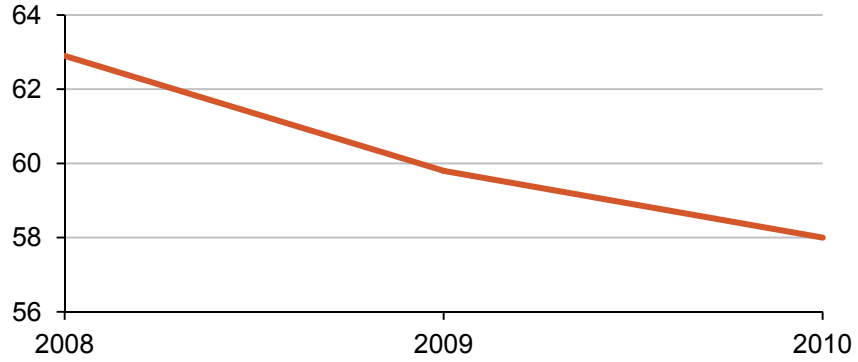
Proportion of employers dissatisfied with the VET system (%)

	Employer situation		
Employer concern	**Have jobs requiring vocational quals**	**Have at least one apprentice or trainee**	**Have staff undertake other nationally recognised training**
Not enough practical skills taught	31.6	29.7	34.3
Don't teach relevant skills/ mismatch between skills	41.6	40.1	39.2
Qualification/ training too general	21.6	19.6	28.2
Training is poor quality	26.5	32.1	39.4

Productivity Commission (2011c)

The proportion of VET graduates reporting improved employment outcomes is declining

Proportion of VET graduates reporting improved employment status (%)



COAG Reform Council (2011)

Higher education system performance

Context and opportunity

- The primary policy levers in higher education are: teaching more students, changing what they learn, improving teaching effectiveness, and increasing system efficiency.
- Teaching more students is likely to offer only limited returns outside a small number of occupations with graduate shortages.
  - Additional students will have much lower school results than the existing student population, and less certain long-term prospects.
- Changing what students learn might make students more 'employment ready' — 41 per cent of surveyed employers reported difficulty sourcing appropriate graduates[1] — but it is unclear whether universities could teach the desired skills.
- Improving teaching effectiveness is plausible: university teachers get little peer feedback on their teaching, and by analogy with school education this could substantially improve effectiveness.
- Although there are already incentives for efficiency, 'research-light' teaching and internet delivery could reduce costs.

Size of opportunity

- Potential efficiency gains are substantial but bounded: 2010-11 public expenditure on the higher education sector was $10.9 billion, so an upper bound efficiency improvement of 20 per cent yields savings of approximately $2.2 billion.[2]
- Improved teaching effectiveness could be important: if the impacts are similar to better school teaching, then reforms in 2013 could increase each university student's learning by 10 per cent, leading to a boost in GDP of $200m in 2022, and $21 billion in 2052.[3]
- We model this as a reduction in state subsidies by 20 per cent with no effects on output, with savings delivered as income tax cuts. We also consider the effects of improving teaching quality by 10 per cent, assuming full pass-through to worker productivity. These are optimistic assumptions.

Potential contribution to GDP in 2022: $4 billion

Confidence in the policy solution

- There is little evidence to suggest teaching more students would produce large productivity gains (vocational or other training may suit these students better).
- In the new demand-driven system students are migrating to courses related to occupations with skills shortages (although there are also increases in applications to science where there are not clear skills shortages).[4]
- There is limited evidence correlating the teaching of general skills with long-run employment outcomes.
- There is limited cross-university data on quality of outcomes, and so no published work assessing the relative value of various curricula and teaching methods.
- Broader social outcomes also need to be considered before committing to higher education reform.

Assessment: Direction unclear

What don't we know?

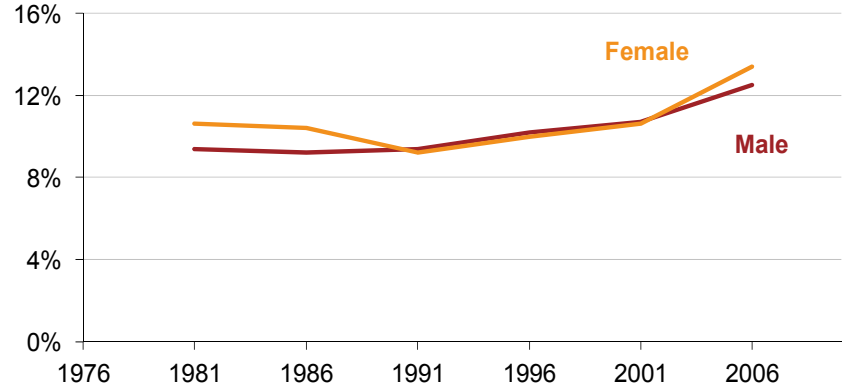
- We need more reliable data on the economic uplift from participation of lower-performing students.
- We lack evidence correlating the teaching of particular skills with long-run employment outcomes, or the economic value of this.
- We lack cross-university data on quality of outcomes.
- The effect of research activity on teaching outcomes has not been studied in detail in Australia.[5]
- The positive externalities of tertiary education, such as technological change and growth, are extremely difficult to quantify.[6]

1. Department of Education, Employment and Workplace Relations (2011). 2.Grattan Institute estimates based on Norton (2012). 3. Grattan Institute estimates based on Jensen and Reichl (2011). 4. See Department of Industry, Innovation, Science, Research, and Tertiary Education (2012), Table 8. 5. Norton (2012). 6. Norton (forthcoming)

Higher education system performance

Higher education delivers economic returns to participants

Post-tax returns on costs of higher education to graduates from bachelor degree relative to year 12 only



Note: Employees only; rate of return from bachelor degrees for all persons is higher due to labour force participation differences.

Norton (2012)

There are persistent skills shortages in some fields requiring a degree

Selected skills shortages by occupation, 2001-10

Occupation	'01	'02	'03	'04	'05	'06	'07	'08	'09	'10
Child care centre manager	●	●	●	●	●	●	●	●	●	●
Civil engineer			●	×	×	×	×	×	●	●
Dental specialist*			●	●	●	●	●	●	●	
Dentist			●	×	×	×	×	●	●	
Electrical engineer					●	●	●	●	●	●
Midwife*	●	●	●	●	●	●	●	●	●	●
Mining engineer**					×	×	×	×	●	●
Physiotherapist	●	●	●	●	●	●	●	●	●	●
Registered nurse	●	×	×	×	×	×	×	×	×	●
Secondary teacher - maths	●	●	●	●	●	●	●	●	●	●

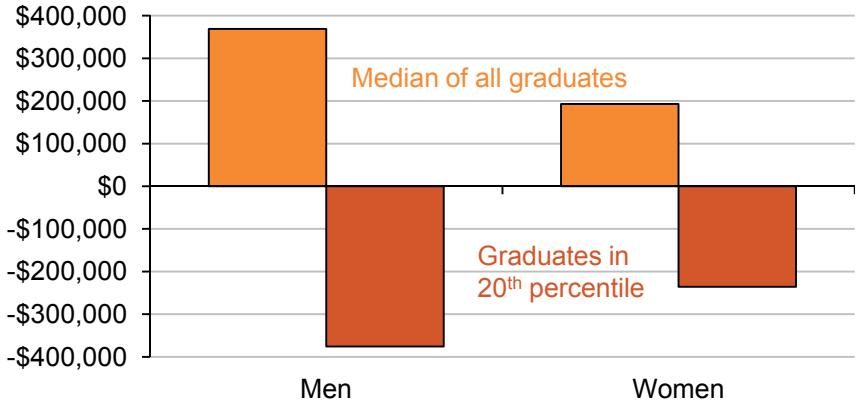
● Industry reported shortages in general × More than 95% of graduates in the discipline were being employed

Note: *No graduate employment data were available; **excludes petroleum.

DEEWR (2011)

Marginal students are unlikely to benefit as much from higher education

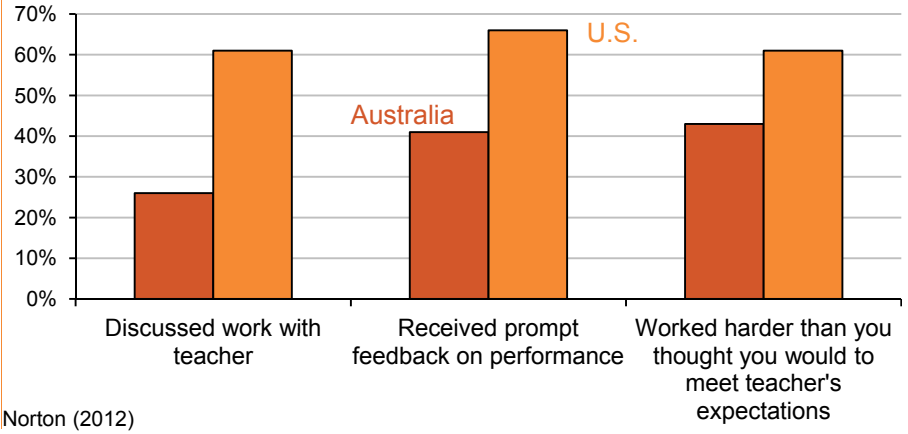
Net present value of degree for bachelor degree holders employed full-time (2006)



Daly, *et al.* (2011) 22-3

Australian higher education students and staff are less engaged with each other than their US counterparts

AUSSE/NSSE student survey results, percentage of students responding 'often' or 'very often' (2010)



Norton (2012)

Disease prevention

Context and opportunity

- The burden of preventable disease is significant
  - Modifiable behaviours cause 32% of Australia's disease burden.[1]
  - Estimates of the cost of preventable disease vary widely; the Preventative Health Taskforce found health system costs of about $6 billion per year, plus lost productivity of $13 billion.[1]
- Obesity and alcohol consumption are worse in Australia than overseas.
  - Australia has very high rates of overweight and obesity compared to other developed countries,[2] and prevalence is increasing.[1]
  - Australians consume more alcohol than most countries, and 20% of Australians drink at levels that cause short-term harm.[1,9]
- Preventable disease makes up a significant part of the gap between Indigenous and non-Indigenous Australian populations.[1]
- "***Priority interventions***" (high impact, reasonable cost) include increased taxes on alcohol, tobacco, and unhealthy food, limiting salt levels in food, broad use of drugs for high blood pressure, and gastric banding.[3]
- However, the biggest improvements depend on many individuals choosing to change their behaviour, a very difficult result for policy.

Size of opportunity

- Government policy can avoid some, but not all preventable disease.
  - For example, "in the order of 40–50 per cent of the social costs of alcohol abuse are avoidable" in the long-run.[4]
  - "Priority interventions", if sustained, would reduce the current costs of attempting prevention by $450 million per year, and reduce future health care costs by around $600 million per year.
  - "Priority interventions" would also increase life expectancy and reduce disability by around 50,000 Disability Adjusted Life Years per year. This would be worth $3 billion in 2022 using the accepted valuation of a DALY at GDP/capita,[3] although much of this benefit would not result in direct increases in GDP.
- Widespread behaviour changes would have a much bigger impact, but cannot be estimated as policy interventions to achieve this have not been identified or reliably demonstrated.

Potential contribution to GDP in 2022: Under $1 billion

Confidence in the policy solution

- There is sufficient evidence (i.e. based on randomised controlled trials) for most of the "priority interventions" that make the most difference, and evidence that almost all the others are likely to be effective.[3]
- Wider programs that might avert a much greater proportion of Australia's preventable disease will require significantly greater interventions, that have not yet been defined. There is good evidence to support an approach based on early intervention and behavioural change, particularly as part of a program of multiple interventions,[5] but the specific policy actions are less clearly defined;[6] this is partly due to the nature of the problem.
  - For example, obesity is the product of 'a complex multifaceted system of determinants where no single influence dominates.'[7]

Assessment: Direction known; solutions poorly characterised

What don't we know?

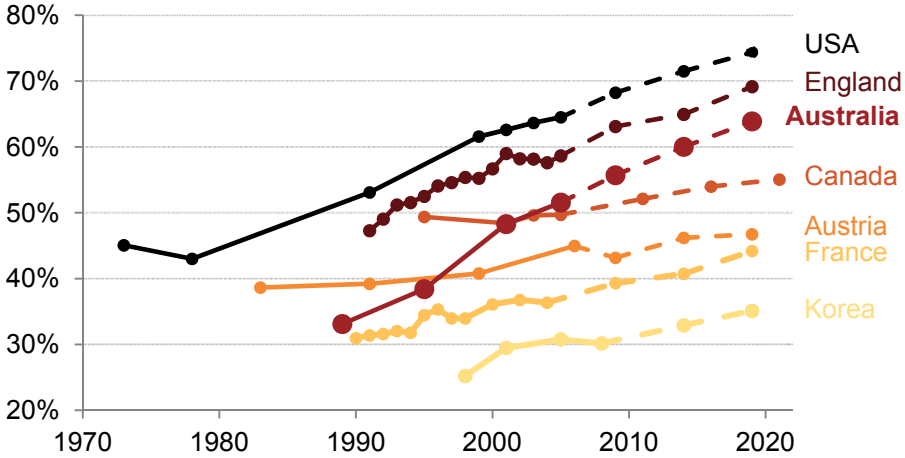
- The evidence for some "priority interventions" could be improved.
  - These include GP interventions and mass campaigns to promote exercise, nutritional campaigns, advertising bans on alcohol, and taxes on unhealthy food.[3,5]
  - We do not have good alcohol demand elasticity data for Australia.[8]
- There may be other policy interventions with large impact to reduce preventable disease, particularly to reduce obesity, but these have not yet been identified, much less proven.
- Policies to change behaviour depend on individuals believing that their behaviour needs to change. Though 80% of Australians agree Australia "has a national drinking problem" they generally do not support policies that would affect their own alcohol use, rather than that of others.[9] It's unclear how to drive the cultural and attitudinal change necessary to get public acceptance of such reforms.

1. National Preventative Health Taskforce (2009a) 2. OECD (2010c) 3. Vos *et. al.* (2010) 4. Collins and Lapsley (2008) 5. Algazy *et. al.* (2010) 6. Victorian Department of Human Services (2006) 7. UK Government Office for Science (2007) 8. Collins and Lapsley (2008) 9. Tobin *et. al.* (2011)

Disease prevention

Obesity in worse in Australia than many comparable countries, and rising quickly

Proportion of population overweight in selected OECD countries (%)



OECD (2010c)

Alcohol abuse is also costly in Australia

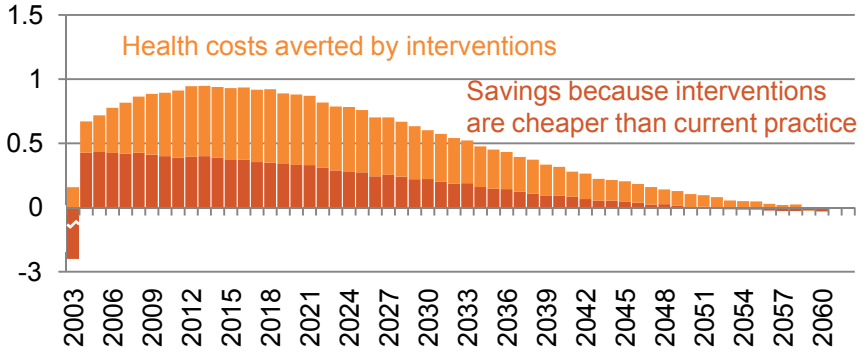
Tangible costs of alcohol abuse (2004-05)

Factor	Cost ($ billion)
Labour – paid and unpaid (net)	3.5
Road accidents	2.2
Healthcare (net)	1.9
Crime	1.4

Collins and Lapsley (2008)

Even cost-effective interventions to prevent disease yield modest economic benefits

Savings available from implementation of priority interventions for public health for 2003 population ($ billion)

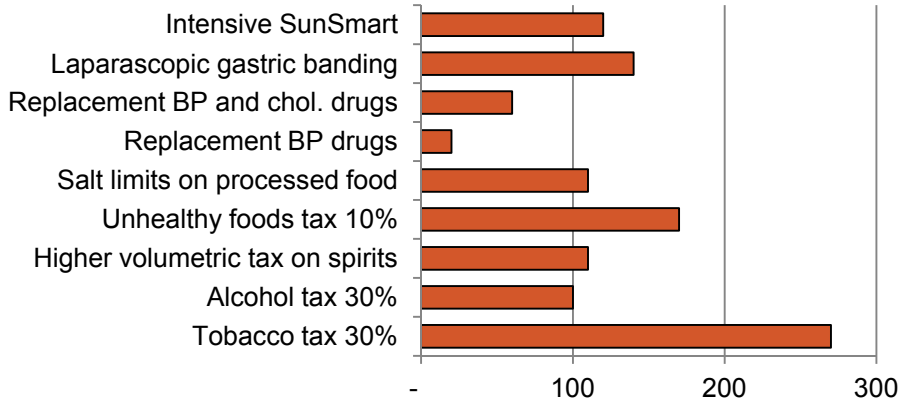


Note: Compares current practice with 'dominant' and 'very cost effective' packages as defined by Vos et al.

Grattan Institute analysis based on Vos et al (2010)

Interventions would have a substantial impact on well-being

Number of disability-adjusted life years (DALYs) that priority interventions for preventative health could save for 2003 population ('000)



Note: BP = blood pressure. Chol. = cholesterol. Figures are lifetime, discounted.

Vos *et. al.* (2010)

Health system reform

Context and opportunity

- Health care expenditure is 9% of GDP, and this share is growing.[1] An increasing proportion of this is public spending.[2]
- Australia's health care system delivers good value for money by international standards.
  - Australia is second in the OECD (behind Switzerland) for health care efficiency (life expectancy for expenditure)[3] and spends around the OECD average as a percentage of GDP.[4]
  - If spending were held steady but system efficiency improved to the world's best, Australia would add less than a year to life expectancy.[3]
- Recent health system reforms focused on the roles and responsibilities of different levels of government, rather than improving efficiency.
  - More consistent assignment of responsibility across government levels and agencies might improve efficiency,[3] but gains are likely to be limited.
- Other major areas for future reform have been identified such as reducing specialist costs, optimising management of chronic diseases, reducing costs of technology, and reducing the costs of end of life care.

Confidence in the policy solution

- There is little consensus amongst health policy experts as to the best path forward for Australia.
  - No type of health-care system is obviously more efficient than others – so "big bang reforms are not warranted".[3]
  - A modern health service such as Australia's is inherently complex, involving a large number of individuals, institutions and systems interacting in different ways to deliver outcomes.[7] This suggests there are limits to improving efficiency by reducing complexity.
- There may be some efficiency gains in smaller reforms such as better use of electronic health records,[1,5] and resolving workforce demarcation issues.[6]
- Policy interventions to reduce the major areas of increasing costs have not been articulated, much less detailed or tested.

Assessment: Direction unclear

Size of opportunity

- The OECD estimates that improving the efficiency of the Australian health system to match the best in the world would provide savings equivalent to 0.5 per cent of GDP.[3]
- This equates to approximately an extra $9 billion available in 2022 to direct to more productive uses.
- Benefits of other reforms may be large given the size of the health budget, but reforms have not been well-defined, and so cannot be meaningfully estimated.

Potential contribution to GDP in 2022: $9 billion

What don't we know?

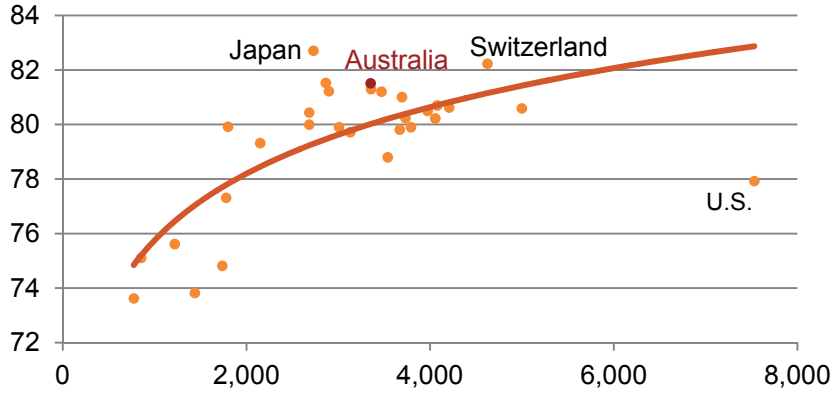
- Given Australia's relatively high performance on an international scale, it is difficult to know where there is scope for significant reform.
- Given areas of large and increasing costs, further research is needed to articulate and test potentially worthwhile reforms such as:
  - Pricing to control specialist charges, and optimise GP management of chronic diseases
  - Migrating services from hospitals to primary care,
  - Reducing the costs of investigations and pharmaceuticals
  - Improving end of life care decisions.
- Implementing change in a system as large as health care is challenging, requiring change to the behaviour of a very large number of people; further work is required to identify how to do this.

1. Business Council of Australia (2011) 2. OECD (2011) 3. OECD (2010a) 4. OECD/WHO (2011) 5. Hillestad et.al 6. Menadue (2006) 7. Gawande (2009)

Health system reform

Australia is achieving good value for money from its health care system, compared to the OECD average

Life expectancy at birth (years) vs total expenditure on health per capita (US $ PPP), OECD countries, 2008 or latest year available



OECD (2010a)

"Medicine has become the art of managing extreme complexity"

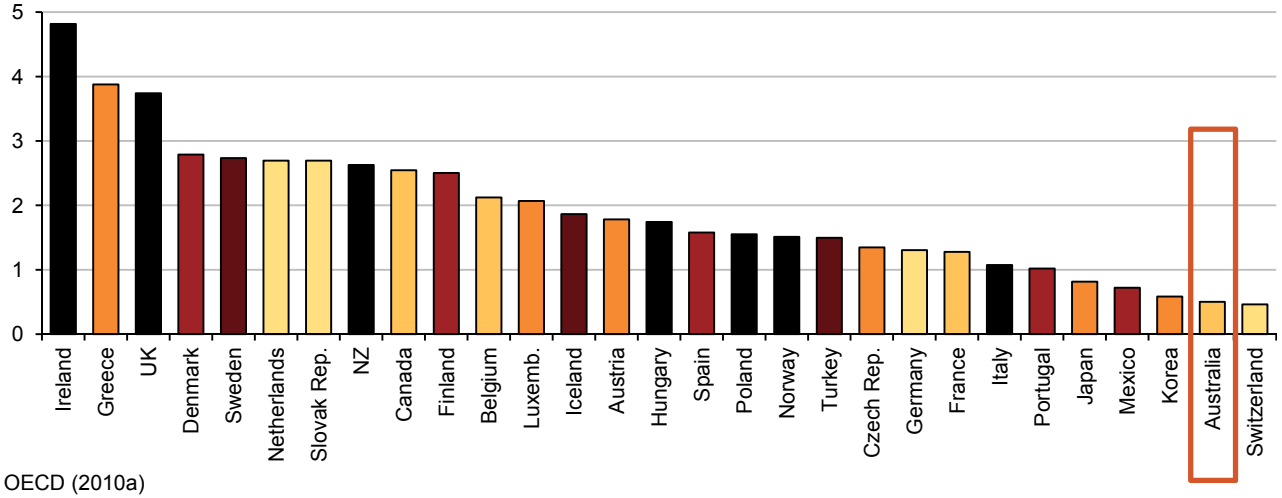
Indicative treatment pathway for a drowning child

Health care professional	Time elapsed	Role in treatment sequence	Patient status
Emergency response	8 mins	Instruct patient's parents in cardiopulmonary resuscitation.	No brain function
Rescue personnel		Continue CPR.	
Helicopter crew	1.5 hrs	Airlift patient to hospital.	
Surgical team		Attach heart-lung bypass machine.	
Perfusionist	6 hrs	Activate pump. Adjust oxygen, temp., flow.	Heart beating
Surgical team		Attempt to shift from bypass machine to mechanical ventilator. Attach ECMO unit.	
Intensive care unit team	12 - 72 hrs	Suction water from lungs . Switch from ECMO to mechanical ventilator. Insert probe in brain. Adjust pressure through medications.	Lungs function Brain swelling
Outpatient team	2 wks -5 yrs	Extensive outpatient therapy.	Recovery

Based on Gawande (2009)

There is no clear relationship between health system type and efficiency

Potential savings from efficiencies in health care spending, by system type (% of 2017 GDP)



OECD (2010a)

Reliant on market mechanisms	Mostly public provision and public insurance
• Private insurance for basic coverage	• No gate-keeping • Ample user choice of providers
• Public insurance for basic coverage • Private insurance beyond basic coverage • Some gate-keeping	• Gate-keeping • Limited user choice of providers • Soft budget constraint
• Public insurance for basic coverage • Little private insurance beyond basic coverage • No gate-keeping	• Gate-keeping • Ample user choice of providers • Strict budget constraint

Ageing population health care reform

Context and opportunity

- An ageing population will increase public health costs.
  - Health spending on over 65s is four times the amount of spending per person under 65.
  - End of life medical costs are often six to seven times higher than in non-terminal years.[1,2]
- The costs of an ageing population will grow between 2010 and 2050:
  - Health spending on over 65s is projected to grow from 4% to 7% of GDP (with half attributable to the ageing population, costing an extra $88 billion a year).[3]
  - Spending on aged care is projected to grow from 0.8% to 1.8% of GDP (costing an extra $48 billion a year).[3]
- Community expectations for medical treatment for the very old have increased, leading to higher end of life medical costs.
- The obvious areas for controlling cost increases are better disease prevention (particularly reducing obesity and increasing exercise), increasing hospice and community level care, and reducing end of life costs. However, policy interventions to achieve this are not well-defined.

Confidence in the policy solution

- Australia ranks well globally in the provision of aged care at a low cost.[4] This may indicate that many of the 'low-hanging' reforms have already been adopted.
- Concrete policy reforms that would substantially better prevent disease, optimise care, and reduce end of life costs have not been clearly articulated.

Assessment: Direction unclear

Size of opportunity

- If projected increased in health costs could be reduced by 20 per cent, it could add $17 billion a year to the budget bottom line by 2049-50.[3]
  - Reducing end of life costs through changing expectations of appropriate end of life care is a source of potential savings, but is difficult to quantify.
- However, medium-term savings are considerably smaller, less than $1 billion
  - The full impacts of the demographic shift won't be felt for a few more decades. The 2010 Intergenerational report estimates a $19 billion increase in health spending in 2021-2 compared to 2011-12, only 5% of health spending.
  - An optimistic case would be to reduce by 20% the marginal costs of health provision due to an ageing population in 2022

Potential contribution to GDP in 2022: Under $1 billion

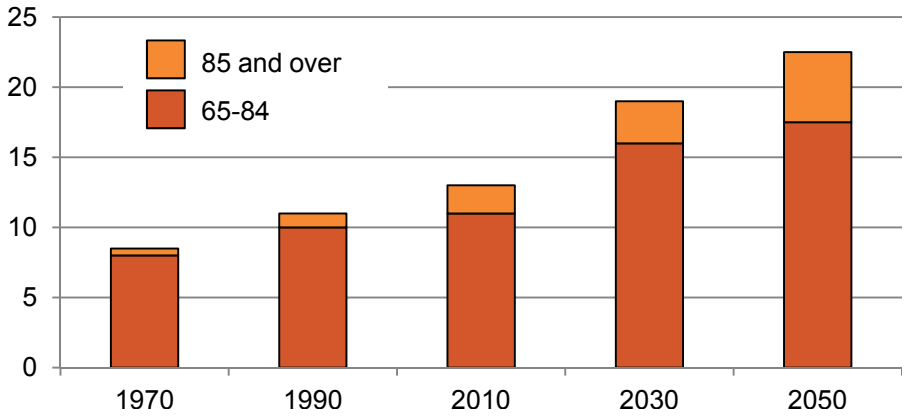
What don't we know?

- There is a lack of concrete proposals to decrease hospital and end-of-life costs.
- Further improvements require widespread behavioural change (exercise, reduced smoking and alcohol, better diets), and it is unclear how governments can have a major impact in these areas.

1. Banks (2008) 2. Productivity Commission (2005) 3. Treasury (2010b) 4. Economist Intelligence Unit (2010).

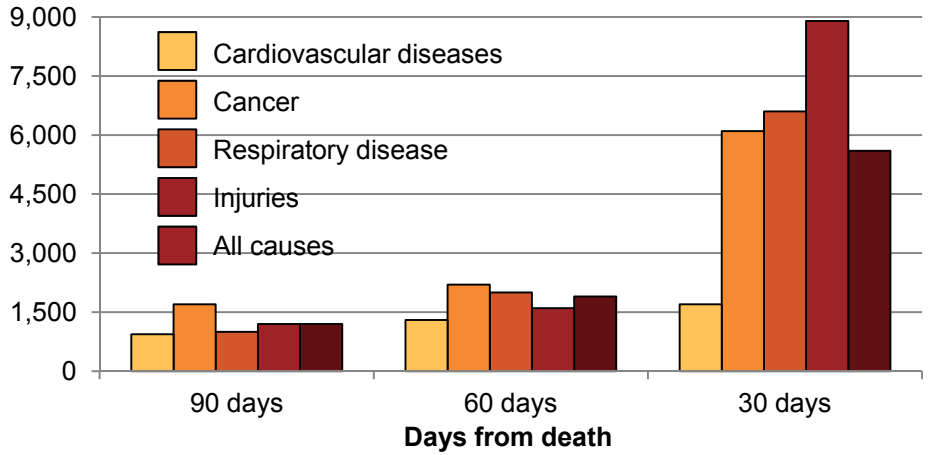
Ageing population health care reform

An increasing proportion of the population is older
Proportion of the Australian population aged 65+ (%)



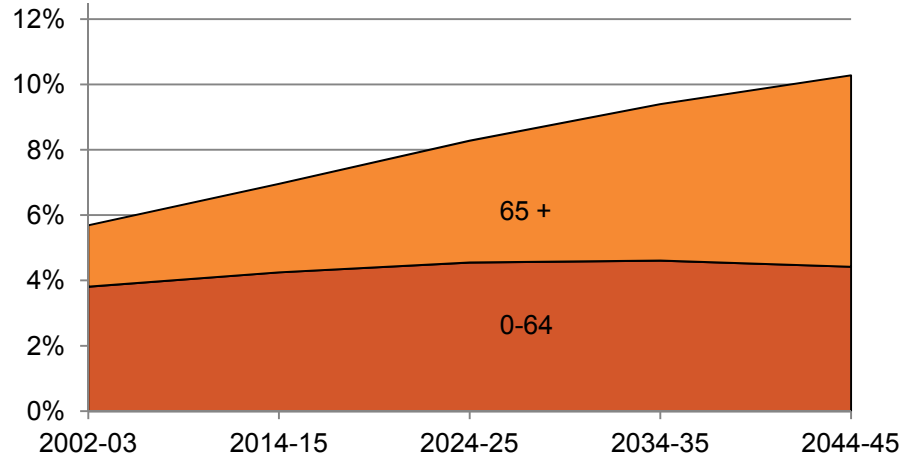
Treasury (2010b)

Health costs are much higher at end of life
Spending per person for patients over 65 (2002-3), $



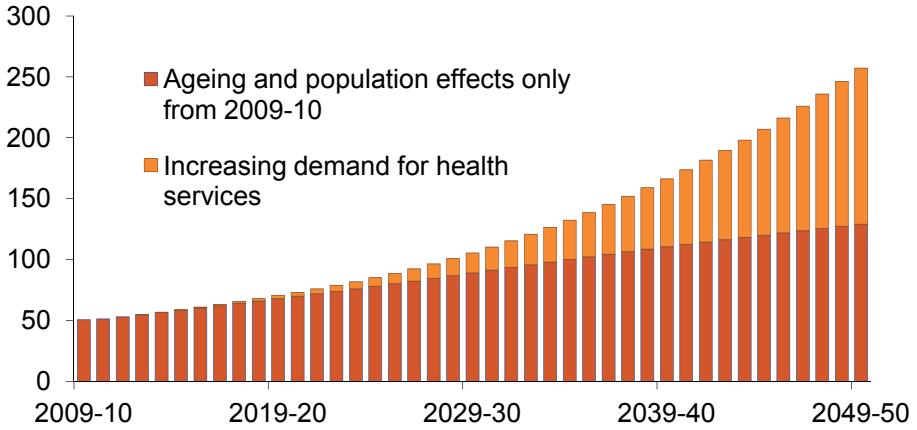
Kardamanidis, et al (2007)

Most of the health budget will be spent on older people
Government spending on health as a proportion of GDP (%)



Productivity Commission (2005)

Forecast increases in health costs are largely driven by increasing expectations of health services from 2032 onwards
Australian government health expenditure ($ billion, 2009-10 $)



Treasury (2010b)

Security spending

Context and opportunity

- Spending on security is substantial.
  - In the last 10 years, Australia has doubled its defence and security spending, which is now about $33.7 billion annually.[1]
  - Public expenditure on domestic elements of national security (not including defence) between 2002-03 and 2011-12 was about $1 billion per year. [2]
- It is unlikely that this spending is cost-effective.
  - Governments have not determined a way to effectively assess the success or otherwise of such investment.[3]
  - For current expenditure to be cost-effective, the likelihood of a 9/11-scale terrorist attack (inflicting $200 billion in losses) would need to be 1.2%; for attack losses of $100 million, there would have to be more than 25 attacks per year.[4]
  - This does not factor in the significant costs to private corporations and individuals (e.g. loss in productivity, time wasted complying with security legislation, delays in travel).

Confidence in the policy solution

- Government holds the levers for change -— the vast majority of this spending is either by government, or private sector spending that is mandated by government (such as airport security spending).
- Given the inherent challenges of risk assessment, there will always be uncertainty about appropriate investment, but governments need to be rational about costs and benefits.[6]

Assessment: Direction known; solutions not proven

Size of opportunity

- A reduction in non-defence security spending (currently approximately $1 billion p.a.) of 20 per cent, and reducing the time spent at airports by 15 minutes per passenger, could boost GDP by approximately $1 billion in 2022.
- This assumes:
  - There is no cost in terms of security outcomes from the change.
  - Time saved is costed at a GDP per hour of $76 in 2022 (2010 dollars) at 56 million air passengers per year (current number of passengers grown at current growth rate).[5]

Potential contribution to GDP in 2022: $1 billion

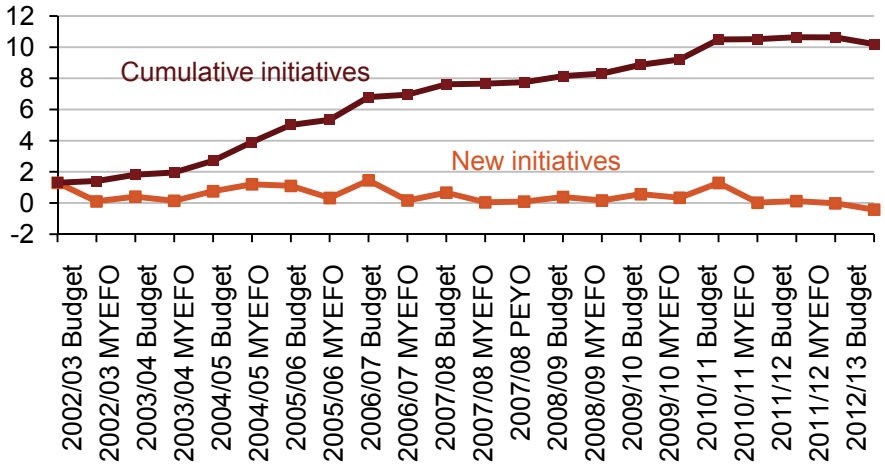
What don't we know?

- It is challenging to use economic cost calculations to justify cuts in this area, as the primary cost of a terrorist attack is measured in loss of human life rather than economic capital. However, governments regularly make such tradeoffs (e.g. health system spending) and the solution is one of communications strategy as much as methodology.
- Reducing the excessive security budget would likely require significant reframing of the national discussion on security -— it is unclear how that might be achieved.

1. Thomson (2011) 2. Yates (2012) 3. Ungerer et. al. (2009) 4. Mueller and Stewart (2011) 5. BITRE (2012) 6. Mueller and Stewart (2011)

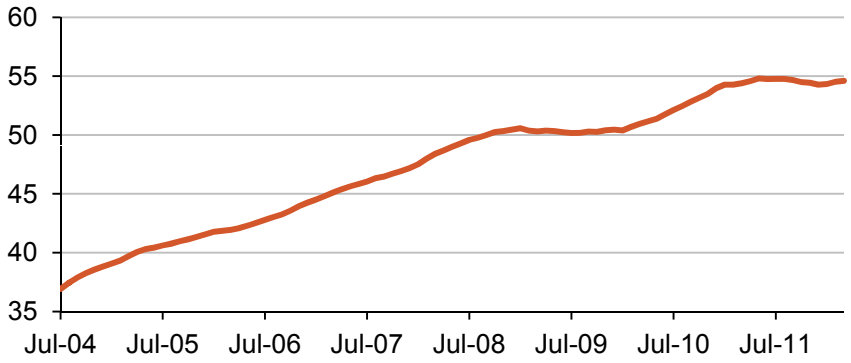
Security spending

Commonwealth spends $1 billion on national security annually
Commonwealth national security spending, $billion



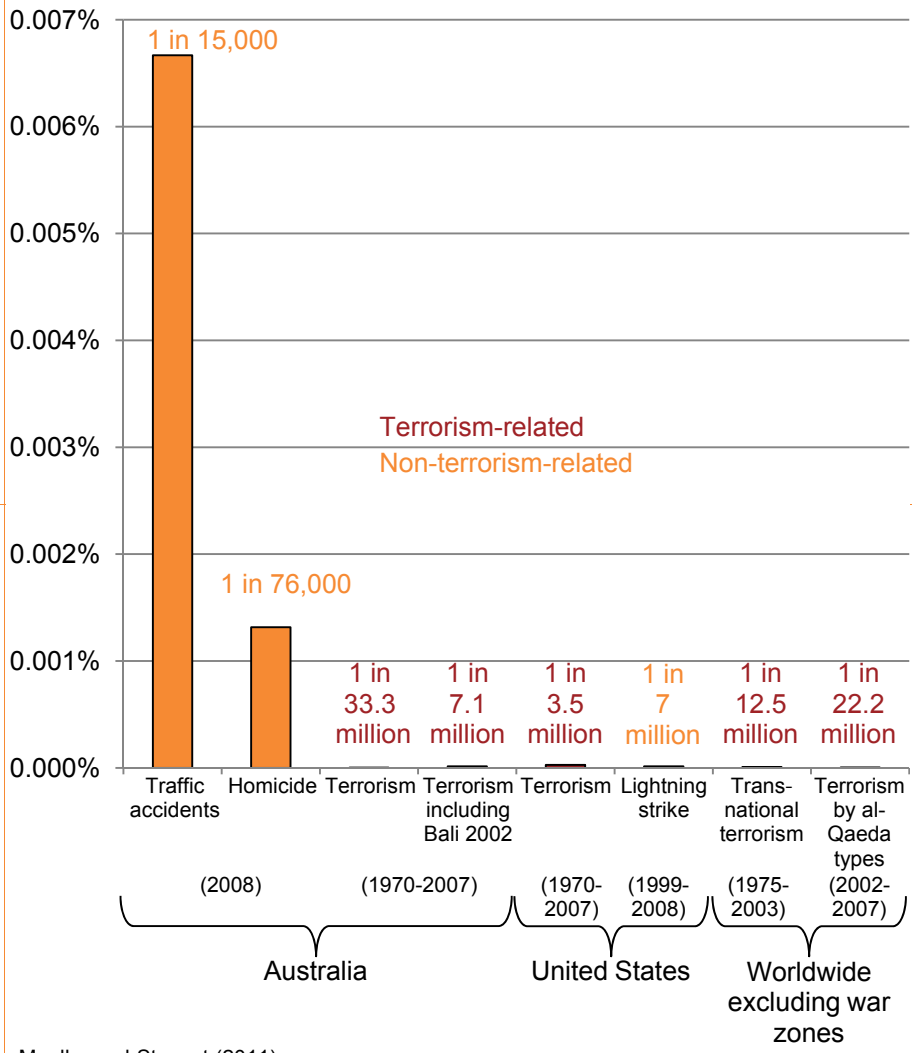
Yates (2012)

Air passenger traffic is increasing, but the costs of lost time are not game changing
Domestic air passenger movements (millions) (moving annual totals)



BITRE (2012)

The risk of dying in a terrorist attack on Australian soil is extremely low
Annual fatality risks from selected causes



Mueller and Stewart (2011)

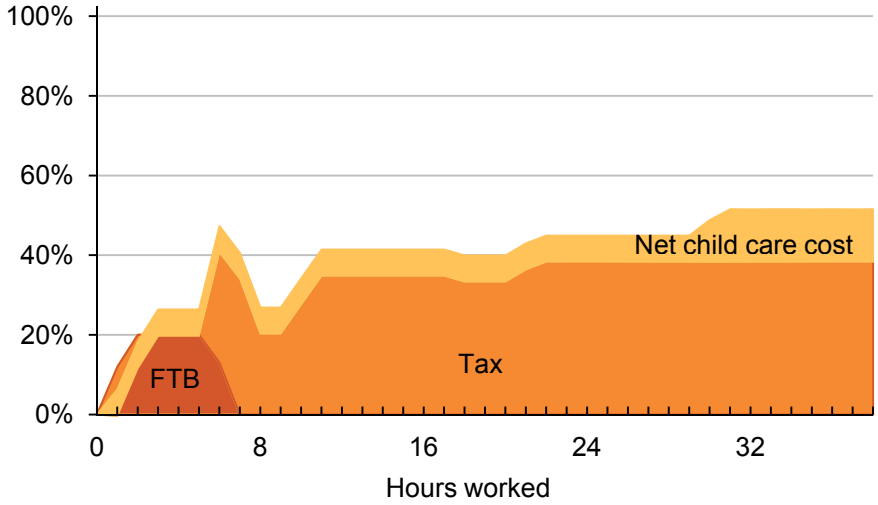
Section 2: Supporting analysis - female workforce participation

The following charts support the analysis of female workforce participation in Chapter 4 of the Main Report. Each of these charts shows the effective marginal tax rate (including tax, welfare, and child care costs) for second income earners with children. Grattan Institute commissioned NATSEM to produce the data underlying these charts for eight different scenarios.

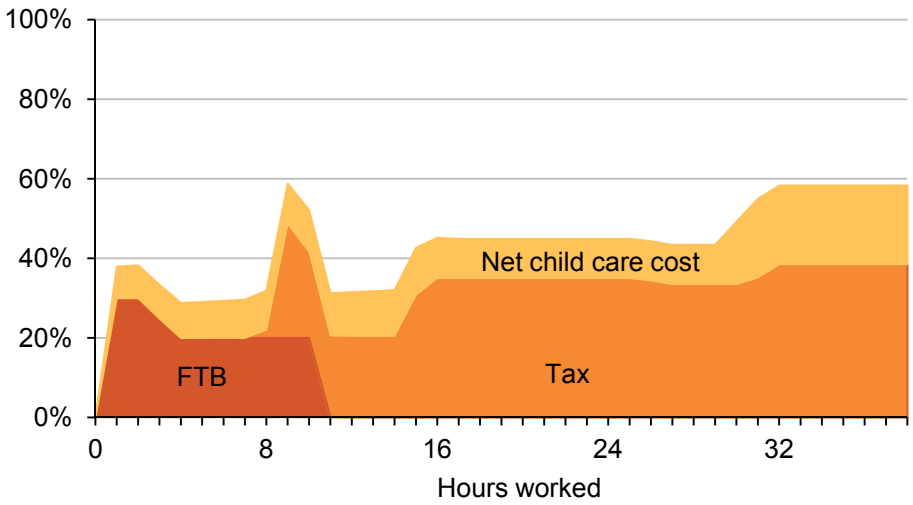
We have assumed that partners have the same earning capacity, and that one partner works full time while the second partner can choose not to work, or to work any amount of hours up to a maximum of 38 hours per week. Other assumptions include child care costs of $8 an hour, and child care is modelled for 125% of time worked to allow for pick up and drop off time usually required by parents.

Effective Marginal Tax Rates (EMTR) of second income earners

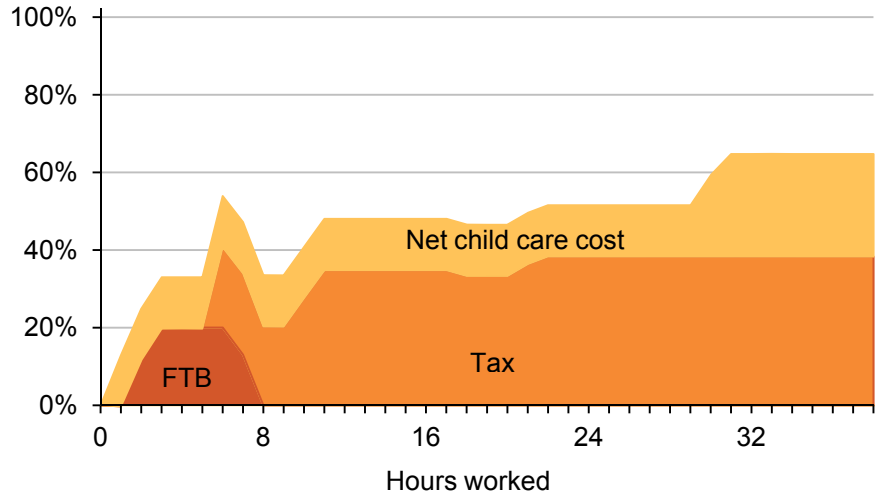
1st earner $150k; 2nd earner $150k if full time; 1 child aged 2
Effective Marginal Tax Rate



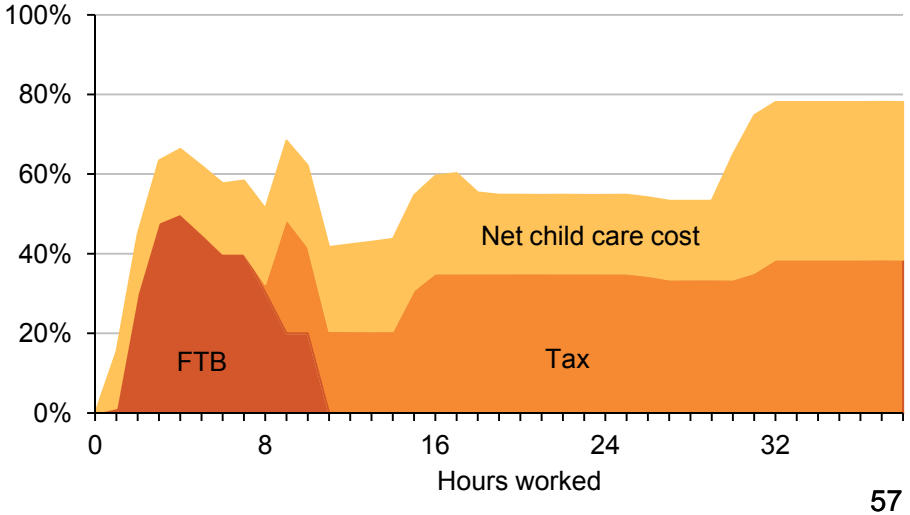
1st earner $100k; 2nd earner $100k if full time; 1 child aged 2
Effective Marginal Tax Rate



1st earner $150k; 2nd earner $150k if full time; 2 children aged 2 and 4
Effective Marginal Tax Rate

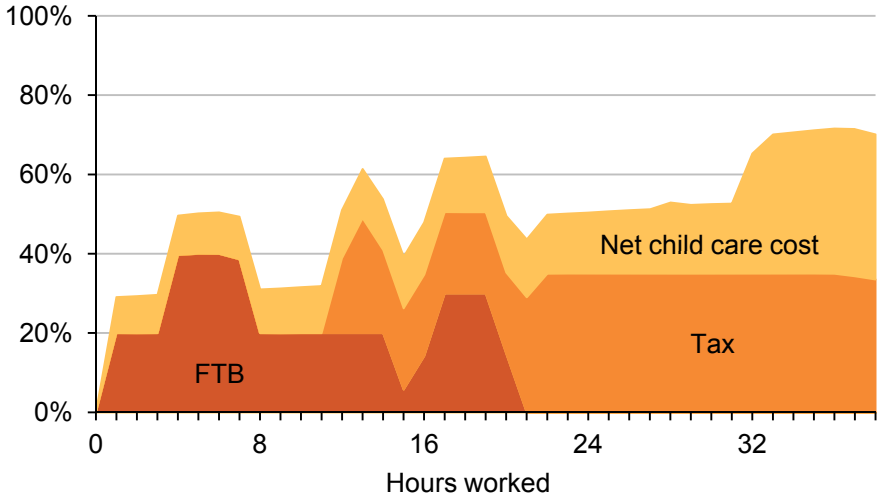


1st earner $100k; 2nd earner $100k if full time; 2 children aged 2 and 4
Effective Marginal Tax Rate

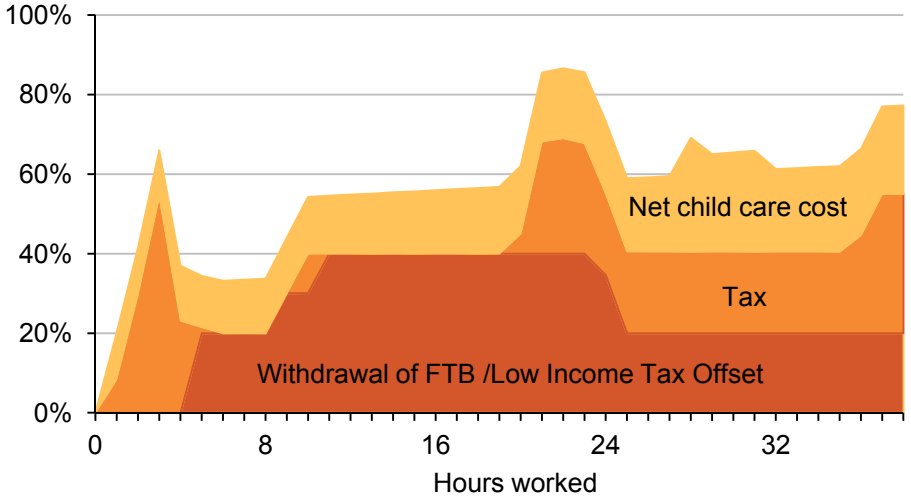


Effective Marginal Tax Rates (EMTR) of second income earners

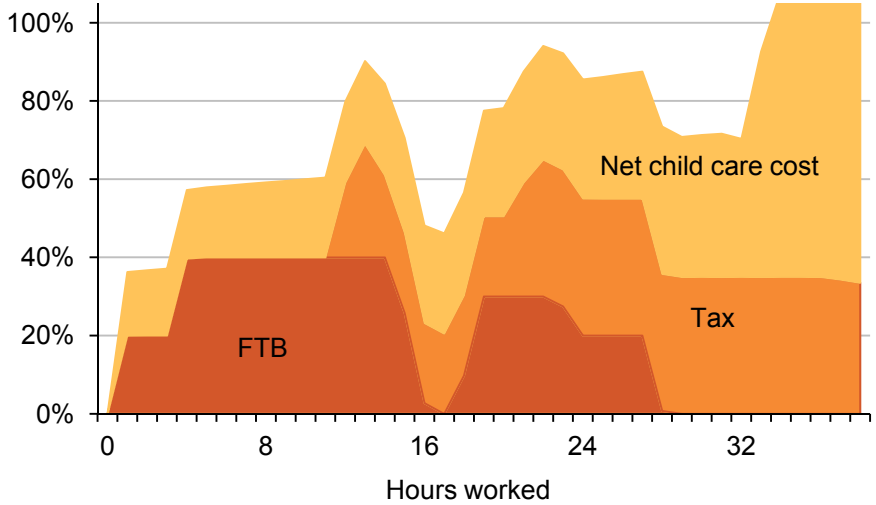
1st earner $70k; 2nd earner $70k if full time; 1 child aged 2
Effective Marginal Tax Rate



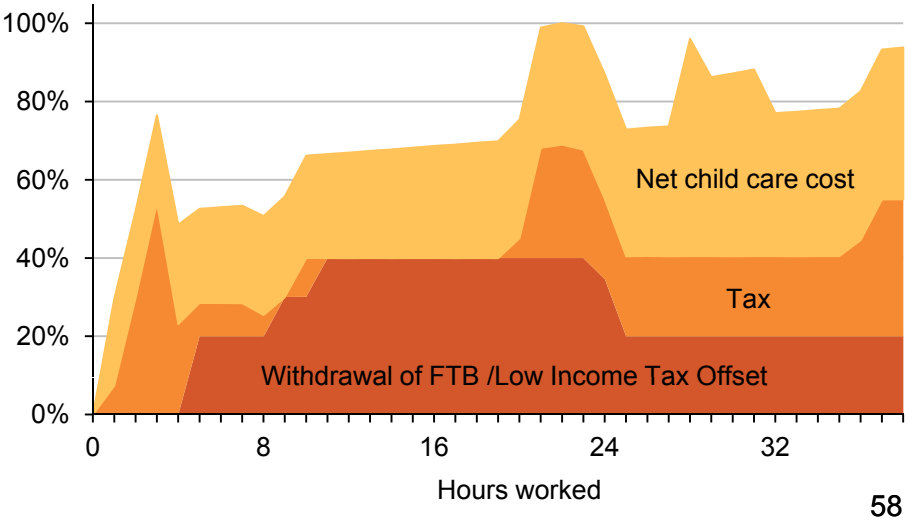
1st earner $40k; 2nd earner $40k if full time; 1 child aged 2
Effective Marginal Tax Rate



1st earner $70k; 2nd earner $70k if full time; 2 children aged 2 and 4
Effective Marginal Tax Rate



1st earner $40k; 2nd earner $40k if full time; 2 children aged 2 and 4
Effective Marginal Tax Rate



Note: this page was updated on 5 December 2012 to correct an error in the previously published modelling.

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