Taxation of Offshore Dividends

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Introduction

ANZ commissioned this report to review the impact of current dividend taxation rules for offshore investment by Australian Multi-National Companies (MNCs). It estimates the economic impacts of the 2003 Board of Taxation proposal for a 20 per cent tax rebate for dividends paid from foreign sources by Australian MNCs. The report finds that such a rebate would be an important reform with returns comparable to the highest available from tax reform. It is estimated to generate net welfare gains to consumers of $1 billion per year over and above budget costs of $1.7 billion.

The existing Australian income tax system taxes dividends paid from foreign-sourced income (FSI) more heavily than dividends from local-sourced income (LSI), because franking credits are only available for LSI. However, Fuest and Huber (2000) established that, in an open economy such as Australia, tax discrimination favouring dividends paid from LSI over dividends from FSI is "inefficient for the economy" because it adds to home country bias in savings portfolios.

Thus, the Henry Tax Review (AFTSR, 2009, p. 196) noted that the dividend imputation system leads to a tax bias in favour of investing Australian savings in domestically-focussed Australian companies that pay fully franked dividends. This is at the expense of investments that provide exposure to the international economy, leading to more inwardly-focussed, less diversified portfolios. This reduced diversification means that the portfolios of Australian households and their superannuation funds bear a higher level of risk for any given target rate of return.

In particular, Australians hold less of their savings than they otherwise would in Australian multi-national companies (MNCs) because the FSI of such companies can mean that their dividends are less than fully franked. The franking credits system could also create a tax bias against Australians investing their savings in foreign companies, because those companies pay unfranked dividends. However, there is already a tax rebate, generally of 15 per cent, for the withholding tax typically deducted by foreign governments from such dividends.

Thus, the Australian Government provides a rebate of 30 per cent for dividends from LSI (i.e. franking credits), 15 per cent for dividends from foreign companies (i.e. withholding tax credits), but nothing for dividends paid from the FSI of Australian MNCs. This report, which was commissioned by the ANZ Banking Group Limited (ANZ), models the economic impacts of introducing a tax rebate for such dividends, as proposed by the Board of Taxation (2003).

Taxation of Dividends

Dividend taxation in a small open economy

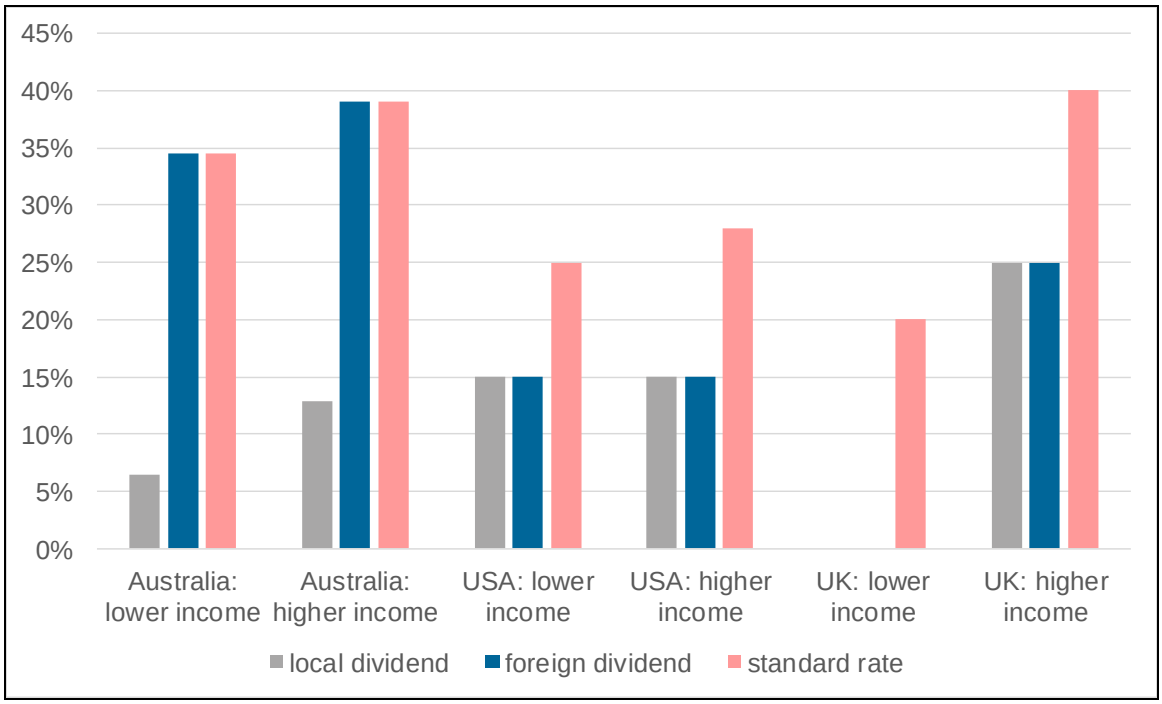
In 1987 Australia introduced a dividend imputation system. Under that system, when filing their tax returns, Australian shareholders obtain a rebate for the Australian company tax that has already been paid on their dividends. The effect of this is that Australian-sourced income that is distributed as fully franked dividends to Australian shareholders is taxed only once as personal income, rather than twice as company income and personal income.

Fuest and Huber (2000) show that dividend imputation systems discriminate against offshore investment. This is because offshore investment is subject to foreign company tax, not domestic company tax, and the imputation system only provides a rebate for domestic company tax. Fuest and Huber (2000) find that this tax bias "is inefficient for the economy as a whole". Most OECD countries now offer tax concessions for dividend income that do not distinguish between local and foreign-sourced income.

Chart A compares effective dividend tax rates in Australia with those in the USA and UK for individuals on lower and higher incomes. All three countries provide personal tax concessions for dividend income to limit the extent of double taxation, given that dividends are already taxed as part of company profits. However, only Australia restricts its concession to dividends sourced from local-sourced income.

Consequently, Australia taxes dividends paid from foreign-sourced income far more heavily than most other OECD countries. For the individual incomes considered in Chart A, the Australian marginal rate of tax on foreign-sourced dividends ranges from 34.5% to 39%. In contrast, it is 15% in the USA and ranges from 0% to 25% in the UK.

Chart A Marginal rates of personal income tax for dividend and other income in three countries



Notes:

1. The tax rates refer to personal income tax and do not include corporate tax.
2. "Local dividend" and "foreign dividend" refer to tax rates expressed as a percentage of dividend payments to shareholders. "Standard rate" refers to the tax rate on income that does not qualify for a concessional tax rate.
3. "Lower income" is AUD 50,000 per year and "higher income" is AUD 150,000 per year. These amounts are converted at current exchange rates to US dollars and UK pounds.
4. In the USA, dividend tax concessions involve tax rates for "qualified" dividends. Qualified dividends cover US companies and foreign companies incorporated in countries with which the USA has a comprehensive tax treaty.
5. In the UK dividend tax concessions involve lower tax rates for dividend income and a tax credit. These concessions are available for dividend income from UK and foreign companies.

Three pillars of optimal business taxation in a small open economy

The observation that Australia should eliminate its tax bias against foreign-sourced dividends is part of a wider open economy perspective on the optimal design of the business tax system. Under that perspective, the world capital market sets the post-corporation tax rate of return at which investment will attract funding, and small economies have virtually no influence on that rate. This leads to three pillars of business tax policy for a national government of a small open economy that sets its business tax policy independently of other countries.

1. The corporate tax rate should be internationally competitive to limit the adverse effects of corporate tax on domestic business investment. A higher corporate tax rate means pre-tax rates of return need to be higher before funding can be obtained, making fewer

investments viable. Thus, the Henry Tax Review, in its recommendation 27 (AFTSR, 2009, p. 167), advocated that the Australian company tax rate be reduced from 30% to 25% to restore its international competitiveness.

2. Corporate tax should apply to profits generated domestically, but profits of foreign subsidiaries of Australian companies should be exempt. Taxes on foreign subsidiaries are easily avoided by a company shifting its headquarters to a country that does not tax foreign subsidiaries (Devereux, 2008). Thus, Australia and most other OECD countries do not tax the profits of foreign subsidiaries (provided a subsidiary is not located in a tax haven) because those profits have already been taxed by the host country.
3. Personal income tax should be applied uniformly across different types of asset income to avoid home country and other portfolio savings biases. Australia is unusual in taxing foreign-sourced dividends far more heavily than local-sourced dividends and the reform analysed in this report is designed to reduce that tax bias. The Henry Tax Review (AFTSR, 2009) proposed achieving uniformity by replacing existing concessions for taxing asset income with a uniform 40 per cent discount.

In a small open economy such as Australia, these three pillars are independent of each other and hence do not conflict. Unimpeded access to large world capital markets means that both domestic and offshore investment can be readily funded at the prevailing world post-corporation tax rate of return. Thus, domestic and offshore investment opportunities don't compete with each other for funding. As Devereux (2008) puts it, "the link between them (outbound and domestic investment) is broken". Similarly, unimpeded access to large world capital markets also means that funding of investment opportunities, both domestic and offshore, does not rely on domestic savings. Thus, domestic investment, offshore investment and domestic savings are not linked and so can be targeted separately by tax policy. The three pillars can each assigned their appropriate policy target without any interdependence.

- The pre-tax hurdle rate of return for **domestic investment** can be reduced by following the first pillar of setting an internationally competitive Australian company tax rate.

- The pre-tax hurdle rate of return for **offshore investment** from Australia can be reduced by continuing to follow the second pillar of exempting foreign subsidiaries of Australian companies from Australian company tax.

- Home country bias in the **savings portfolios** of Australians can be reduced by treating FSI in line with LSI when taxing the income of individuals and superannuation funds.

Some qualifications to this small open economy view of optimal business taxation can be noted.

- Some smaller and medium businesses (SMEs) may not have access to international capital markets or intermediaries that are accessing this market on their behalf. For such SMEs, treating FSI in line with LSI when taxing dividends can also reduce home country bias in investment (Sørensen and Johnson, 2010, pp. 192-3).

- Larger corporates may take domestic shareholders' interests in franking credits into account in investment decisions. All other things being equal (including after-tax cashflows), a company may choose the investment with franking credits since this would make domestic shareholders better off while leaving foreign investors unaffected.

Board of Taxation proposal for a tax rebate

The Board of Taxation (2003), in its Report to the Treasurer on International Taxation, made two recommendations to reduce the taxation of dividends paid from the FSI of Australian MNCs. They recommended a 20% tax credit and dividend streaming. However, it gave a higher priority for the tax credit. In any case, dividend streaming would do little to address the tax bias for Australian MNCs with relatively low levels of foreign ownership or relatively high levels of FSI. Thus, this report focusses on the first recommendation, for the introduction of a tax credit for the dividends paid from the FSI of Australian MNCs.

This proposed tax credit would partly offset the contribution of dividend imputation to the home country bias in portfolios. Dividend imputation biases Australian portfolios in favour of holdings in domestically-focussed Australian companies paying franked dividends. This bias means Australians underinvest in foreign assets and hence, for a given rate of return, bear more risk than would be the case if their portfolios were better diversified. The proposed tax credit for the FSI of Australian MNCs would lessen this home country bias in portfolios and hence would reduce portfolio risk. That is, returns on superannuation and personal savings would be less volatile, benefiting Australian households.

The Board of Taxation (2003) suggested that the tax credit would also encourage offshore investment by Australian MNCs. However, as explained above, under the widely-used assumption of a small open economy, Australia offshore investment can be readily funded from world capital markets and so does not rely on a tax credit for domestic investors.

A series of recent empirical studies have examined the historical evidence on the real world effects of changes to dividend taxation in different countries. This includes studies for the UK (Bond et al., 2007), the USA (Desai et al., 2011a) and a cross-section of countries, including Australia (Mishra et al., 2013). The consistent finding is that changes to the relative tax treatment of dividends sourced from FSI and LSI have major effects on the degree of home country bias in savings portfolios, but no discernible effect on equity prices or business investment. This is in line with the open economy perspective.

Thus, Desai et al. (2011a) conclude that "the primary effects of dividend tax reforms may well be on portfolio choices … rather than on firm behaviour". Therefore, the main role of the proposed tax rebate is to offset some of the home country bias in portfolios that is attributable to the dividend imputation system. The most effective way of encouraging Australian MNCs to engage in offshore investment is to continue to follow the second pillar of exempting their foreign subsidiaries from Australian company tax.

The Independent Extended CGE model (IECM) and Dividend Tax Bias

This report simulates the economic impacts of following the Board of Taxation recommendation to introduce a tax rebate of 20 per cent for the dividends paid from the FSI of Australian MNCs. It does this using the Independent Extended Computable General Equilibrium (CGE) model, which was specially enhanced for this report. As a long-run equilibrium model, its results show the effects after the economy has fully adjusted to an assumed change in the economic environment. This is fitting for policy analysis because economic policies should be judged against their lasting effects on the economy.

While CGE models have a range of applications, this particular model of the Australian economy has a special focus on modelling tax reform. The model was first developed by Independent Economics in early 2012. Later in 2012 Independent Economics, with input from Treasury, further developed the model to simulate the economic impacts of cutting the company tax rate for the Australian Government's Business Tax Working Group (BTWG).

This modelling was published as part of the BTWG's Final Report (BTWG, 2012, Appendix B). In 2014 Treasury officers (Rimmer et al., 2014) used essentially the same version of the Independent CGE model to analyse in more detail the economic impacts of company tax.

In 2014 Independent Economics has updated the model and further developed it, including expanding the number of industries from 120 to 288. With this extension, the model is now known as the Independent Extended CGE model (IECM).

The IECM has been further enhanced for this report. This extension models the tax-sensitive choices made in allocating Australian wealth across asset classes, including assets generating dividends from foreign-sourced income. The extension uses a customised version of the Capital Asset Pricing Model (CAPM). This version was adjusted for taxes by Brennan (1970), framed in an open economy setting by Bond et al. (2007) and used to model the impacts of changes to taxation of foreign dividends by Desai et al. (2011a). For this study, this tax-adjusted, open economy version of the CAPM has been formulated with Australian wealth divided into four asset classes: housing; domestic business capital; direct equity investment abroad; and portfolio equity investment abroad. This provides a vehicle for analysing the effects of alternative policies for taxing dividends on the allocation of wealth across the four asset classes and household welfare.

The Dividend Tax Policy Scenario

The enhanced model was used to simulate the Board of Taxation recommendation for reducing the tax bias against dividends sourced from direct equity investment abroad. A *baseline scenario* was simulated to serve as a point of comparison. The baseline uses existing policy under which a 30% franking tax credit is available for the fully franked dividends paid by domestically focussed companies ("local"), a 15% withholding tax credit is available for the dividends paid by foreign companies ("portfolio offshore") and no tax credit is available for dividends paid from the FSI of Australian MNCs ("direct offshore"), as shown in Table A.

The Board of Taxation scenario introduces a 20% tax credit for the dividends paid from the FSI of Australian MNCs. This is referred to in Table A as the "20% credit for direct" scenario.

Table A Design of Policy Scenarios

Dividend tax credit rates	baseline	20% credit for direct
direct offshore	0%	20%
portfolio offshore	15%	15%
local	30%	30%

Notes:

1. The 30% credit for "local" dividend income refers to franking credits.
2. The 15% credit for "portfolio offshore" dividend income refers to withholding tax credits.
3. The simulated 20% credit for "direct offshore" refers to the Board of Taxation proposal for a 20% credit for dividends from the FSI of Australian MNCs.

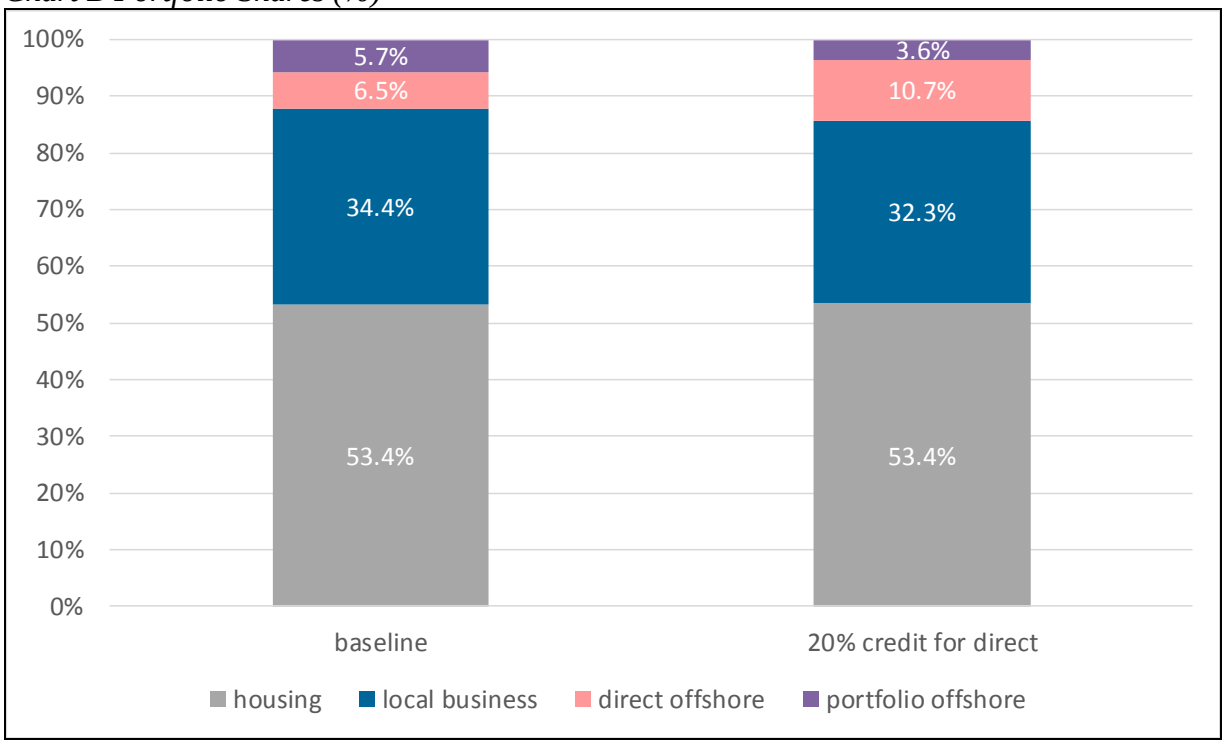
Reducing the Tax Bias

The results from the "20% credit for direct" scenario are summarised in Charts B to D. These results refer to long-run outcomes, after the economy has fully adjusted to the proposed policy change. The results are expressed as deviations from the baseline scenario. Hence, they show the economic impacts of introducing the proposed 20% tax credit.

Chart B shows how the proposed tax credit shifts Australian savings into offshore investment via Australian MNCs. Direct offshore investment rises from 6.5% of Australian wealth to 10.7%. Part of this increase is at the expense of holdings in domestic businesses, which fall from 34.4% to 32.3% of wealth. The other part is at the expense of portfolio offshore investment, which falls from 5.7% of Australian wealth to 3.6%.

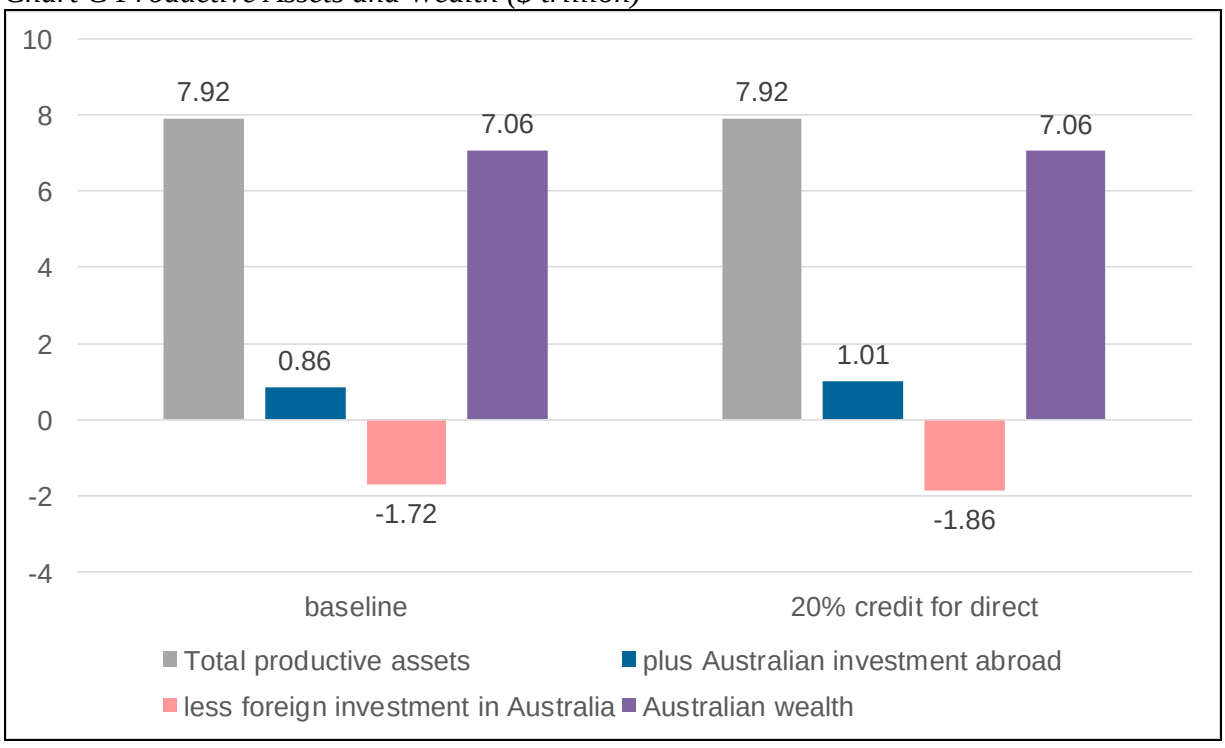
Chart C shows this portfolio re-allocation makes the Australian economy more open to international investment. Both Australian investment abroad and foreign investment in Australia are $0.15 trillion higher, while Australian wealth and the capital stock are unaffected. As Australia has unimpeded access to world capital markets under the modelling assumption of a small open economy, as more Australian-sourced funds are invested in offshore assets, the shortfall in funding domestic assets is fully met by more internationally-sourced funds.

Chart B Portfolio Shares (%)



Source: Independent Extended CGE model

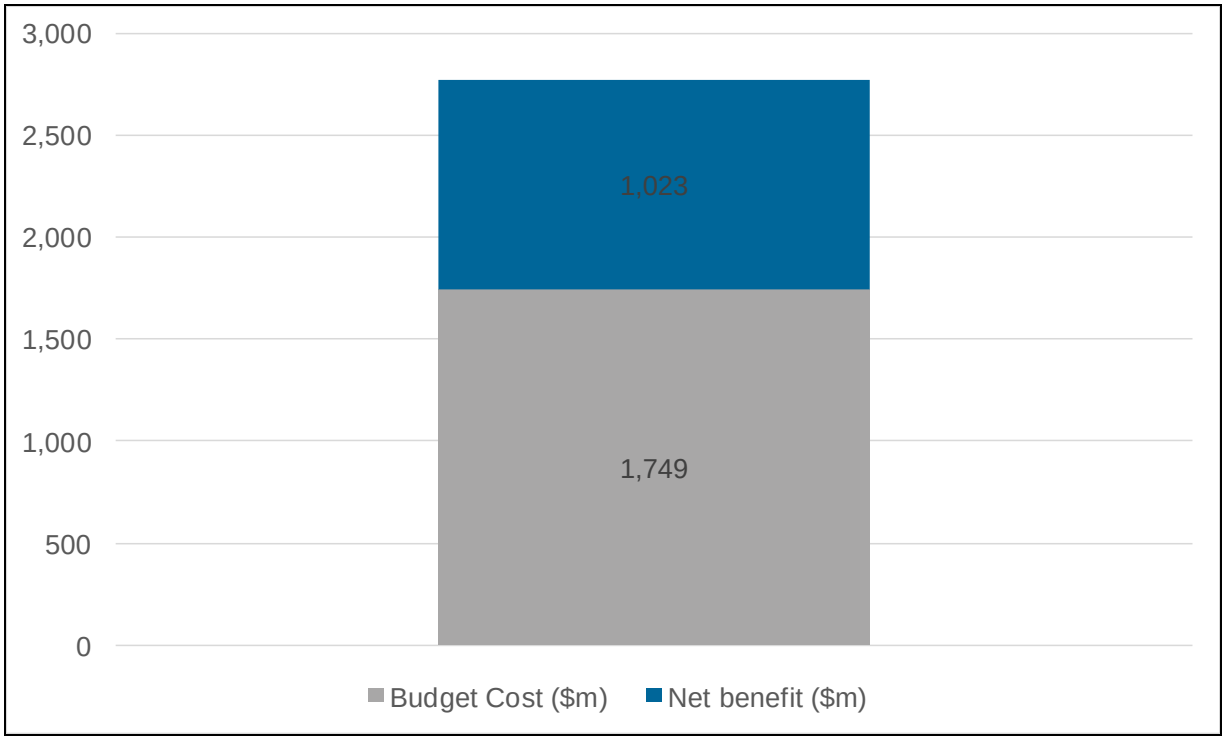
Chart C Productive Assets and Wealth ($ trillion)



Source: Independent Extended CGE model

These changes in savings patterns raise living standards by reducing tax-driven home country bias in the composition of Australian portfolios. This reflects the value to consumers of portfolios that have less volatile returns because they are better diversified. Thus, Chart D shows that the proposed new 20% rebate has an estimated **net** benefit or welfare gain to Australian consumers of $1,023 million in 2013/14 terms. This gain is sustained each year.

Chart D Annual Gross Benefit, Budget Cost and Net Benefit of 20% Tax Credit ($ million)



Source: Independent Extended CGE model

The proposed tax credit reduces tax-driven biases in portfolios by partially closing gaps between tax rebates for dividends from different sources. A new 20% rebate for direct offshore investment leads to a smaller gap with the withholding tax rebate of 15% for portfolio offshore investment, while partly closing the gap with the 30% franking credit for local investment.

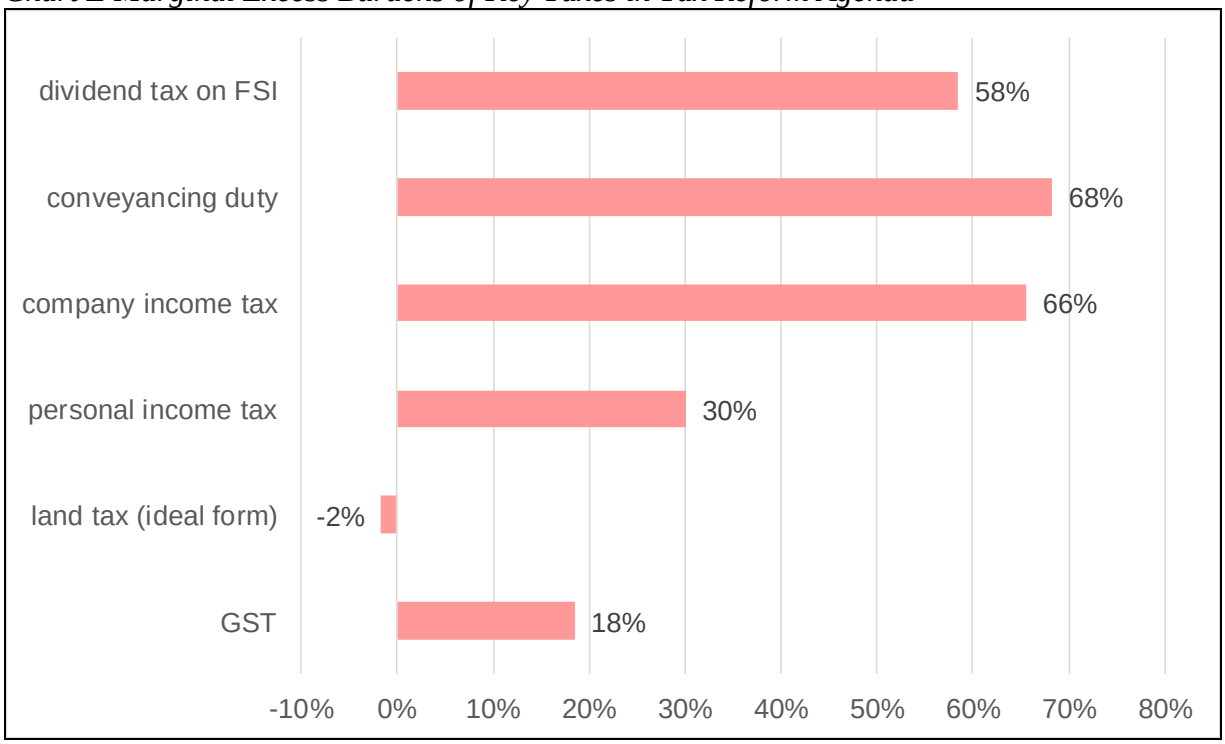
The annual budget cost is estimated at $1,749 million in Chart D. By comparison, the benefit to consumers is $2,772 million in gross terms, or $1,023 million in net terms after they have funded the tax rebate through a notional "lump sum" tax increase. Thus, the net benefit or welfare gain from introducing the rebate, expressed relative to the budget cost, is 58%.

Looked at the other way around, this means that the existing non-concessional tax on dividends paid from FSI has a high marginal excess burden (MEB) of 58 cents in the dollar. This is a

high MEB in the context of tax reform. It means households would benefit from the Government relieving this costly tax burden by introducing the rebate, and funding this by increasing one of the more efficient taxes that have much lower MEBs.

A new tax credit of 20% for dividends paid by Australian MNCs from their offshore direct investments is an important tax reform. The Henry Tax review put funding the abolition of conveyancing duty and a reduction in the company tax rate from 30% to 25% at the top of the tax reform agenda in view of their high MEBs, estimated in Chart E at 68 and 66 cents[1] respectively in the last dollar of revenue. This report shows that the existing non-concessional tax on dividends paid from FSI has a similarly high MEB of 58 cents in the dollar, placing tax relief in this area also at the top of the tax reform agenda. Shifting reliance from these inefficient taxes with high MEBs to more efficient taxes with low MEBs offers substantial welfare gains to consumers.

Chart E Marginal Excess Burdens of Key Taxes in Tax Reform Agenda



Source: Independent Extended CGE model

[1] The estimate here of a MEB of 66% for company tax is slightly higher than the "main scenario" estimate of 56% in Rimmer et al. (2014). The modelling here is more developed, distinguishing between foreign investment in Australia and Australian investment abroad, rather than modelling international investment in net terms. These recent estimates are both higher than the earlier estimate of 40% in KPMG Econtech (2010). The more recent estimates take account of a wider range of factors, most notably profit shifting by MNCs, which adds to the inefficiency of company tax.

1 Introduction

ANZ commissioned this report to review the impact of current dividend taxation rules for offshore investment by Australian Multi-National Companies (MNCs). It estimates the economic impacts of the 2003 Board of Taxation proposal for a 20 per cent tax rebate for dividends paid from foreign sources by Australian MNCs. The report finds that such a rebate would be an important reform with returns comparable to the highest available from tax reform. It is estimated to generate net welfare gains to consumers of $1 billion per year over and above budget costs of $1.7 billion.

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Thus, the Henry Tax Review (AFTSR, 2009, p. 196) noted that the dividend imputation system leads to a tax bias in favour of investing Australian savings in domestically-focussed Australian companies that pay fully franked dividends. This is at the expense of investments that provide exposure to the international economy, leading to more inwardly-focussed, less diversified portfolios. This reduced diversification means that the portfolios of Australian households and their superannuation funds bear a higher level of risk for any given target rate of return.

In particular, Australians hold less of their savings than they otherwise would in Australian multi-national companies (MNCs) because the FSI of such companies can mean that their dividends are less than fully franked. The franking credits system could also create a tax bias against Australians investing their savings in foreign companies, because those companies pay unfranked dividends. However, there is already a tax rebate, generally of 15 per cent, for the withholding tax typically deducted by foreign governments from such dividends.

Thus, the Australian Government provides a rebate of 30 per cent for dividends from LSI (i.e. franking credits), 15 per cent for dividends from foreign companies (i.e. withholding tax

credits), but nothing for dividends paid from the FSI of Australian MNCs. This report, which was commissioned by the ANZ Banking Group Limited (ANZ), models the economic impacts of introducing a tax rebate for such dividends, as proposed by the Board of Taxation (2003).

The spread of Free Trade Agreements (FTAs) can deliver benefits to Australia through increased opportunities not only for international trade, but also for investment. It would be paradoxical if the benefits on the investment side are reduced by continuing with an inward-looking taxation policy for dividend income.

This report is arranged as follows. Section two reviews the economic principles, proposals and international practices for taxing dividend income. Section three provides an overview of the modelling approach used to assess the likely economic impacts of the proposed dividend tax rebate. Section four set out the policy proposal in more detail. The modelling results are presented in section five.

Two Appendices are included to provide more detailed information. Appendix A provides further information on the Independent Extended CGE model, while Appendix B provides estimates of the economic impacts at a finer level of detail.

While all care, skill and consideration has been used in the preparation of this report, the findings refer to the terms of reference of ANZ and are designed to be used only for the specific purpose set out below. If you believe that your terms of reference are different from those set out below, or you wish to use this report or information contained within it for another purpose, please contact us.

The specific purpose of this report is to provide ANZ with estimates of the economic impacts of the Board of Taxation proposal for a 20 per cent tax rebate for dividends paid from the foreign-sourced income of Australian MNCs.

The findings in this report are subject to unavoidable statistical variation. While all care has been taken to ensure that the statistical variation is kept to a minimum, care should be taken whenever using this information. This report only takes into account information available to Independent Economics up to the date of this report and so its findings may be affected by new information. The information in this report does not represent advice, whether express or

inferred, as to the performance of any investment. Should you require clarification of any material, please contact us.

2 Taxation of Dividends

This section begins by discussing the economic principles involved in applying personal income tax to dividends in a small open economy, and compares these with the approaches used in Australia, the USA and the UK. It then considers the broader question of the appropriate approach to business taxation in a small open economy like Australia. Finally, it discusses the proposals of the Board of Taxation (2003) for reforming taxation of dividends.

2.1 Dividend Taxation in a Small Open Economy

In 1987 Australia introduced a dividend imputation system. Under that system, a company receives franking credits for its Australian company tax and can utilise these in paying franked dividends to its shareholders. When filing their tax returns, Australian shareholders obtain a rebate for these franking credits, while being taxed on their dividend income, grossed up to include the franking credits. The overall effect of dividend imputation is that the Australian-sourced income that is distributed as fully franked dividends to Australian shareholders is taxed only once as personal income, rather than twice as company income and personal income.

The aim of the dividend imputation system was to integrate the Australian systems for personal and corporate tax. However, Fuest and Huber (2000) point out in a small open economy such systems discriminate against offshore investment.

> *One of the difficulties in the design of corporate-personal tax integration schemes is the treatment of international investment. In most cases, double taxation relief is only available for domestic shareholders of domestic firms. This implies that foreign investment of domestic citizens is discriminated relative to domestic investment because domestic taxpayers receive no credit for corporate taxes paid abroad.*

Fuest and Huber (2000) find that this tax bias "is inefficient for the economy as a whole". More generally, they show that, in an open economy, uniform personal income tax on all types of asset income, including from bonds, domestic shares and foreign shares, is optimal (if the utility function of households exhibits constant relative risk aversion).

Other countries, including the UK, France and Germany, have moved away from dividend imputation schemes, leaving Australia and New Zealand as the only two OECD countries with

such schemes (AFTSR, 2009, p.191). Instead, most OECD countries offer tax concessions for dividend income that do not discriminate between local and foreign-sourced dividends.

Chart 2.1 compares effective dividend tax rates in Australia with those in the USA and UK for individuals on lower and higher incomes. The effective marginal rate of personal tax on dividend income is calculated as follows, where "td" is the income tax rate applied to dividend income and "tc" is the tax credit for dividend income.

(td-tc)/(1-tc)

All three countries provide personal tax concessions for dividend income to limit the extent of double taxation, given that dividends are already taxed as part of company profits. The USA provides its concession for dividend income through lower income tax rates, "td", compared to other forms of income, Australia through a tax credit, "tc", and the UK through a combination of both.

This can be illustrated by taking the case of a lower income earner in each country, with a taxable annual income that is the equivalent of AUD 50,000. Suppose they receive dividend income from a local company.

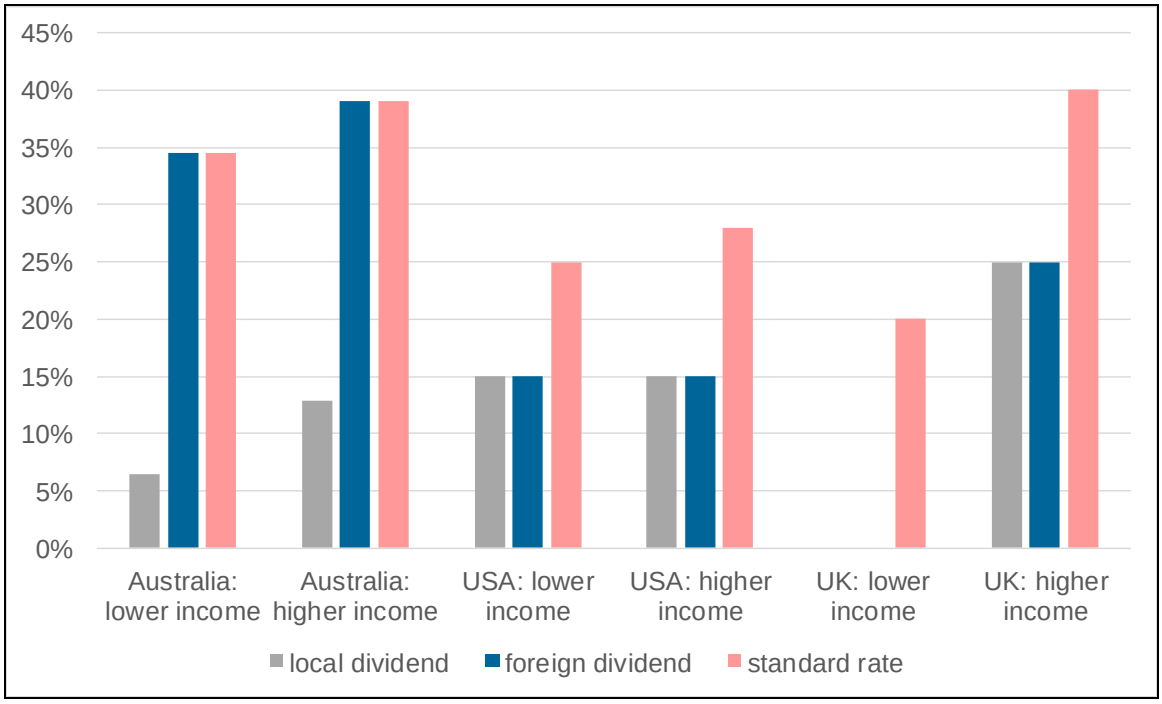
In Australia, the lower income earner faces a standard marginal rate of personal income tax of 34.5% (including the Medicare levy). Dividend income is taxed at the same rate as other income. However, if the dividend is fully franked, they receive a tax credit of 30%. Using this information in the above formula, the effective marginal rate of personal tax on their local dividend income is 6.4%.

(0.345-0.30)/(1-0.30) = 6.4%

In the USA, they face a standard marginal tax rate of Federal personal income tax of 25%. However, their qualified dividends are tax at the concessional rate of 15%, and there is no dividend tax credit. The effective rate of personal tax on their local dividend income is 15%.

(0.15-0.00)/(1-0.00) = 15%

Chart 2.1 Marginal rates of personal income tax for dividend and other income in three countries



Notes:

1. The tax rates refer to personal income tax (including the Medicare levy) and do not include corporate tax.
2. "Local dividend" and "foreign dividend" refer to tax rates expressed as a percentage of dividend payments to shareholders. "Standard rate" refers to the tax rate on income that does not qualify for a concessional tax rate.
3. "Lower income" is AUD 50,000 per year and "higher income" is AUD 150,000 per year. These amounts are converted at current exchange rates to US dollars and UK pounds.
4. In the USA, dividend tax concessions are delivered through lower income tax rates for "qualified" dividends, which were introduced in 2003. Qualified dividends cover both US companies and foreign companies that are incorporated in countries with which the USA has a comprehensive tax treaty. Those countries are: Australia, Austria, Bangladesh, Barbados, Belgium, Bulgaria, Canada, China (but not with Hong Kong), Cyprus, the Czech Republic, Denmark, Egypt, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, Jamaica, Japan, Kazakhstan, Latvia, Lithuania, Luxembourg, Malta, Mexico, Morocco, the Netherlands, New Zealand, Norway, Pakistan, the Philippines, Poland, Portugal, Romania, Russia, the Slovak Republic, Slovenia, South Africa, South Korea, Spain, Sri Lanka, Sweden, Switzerland, Thailand, Trinidad and Tobago, Tunisia, Turkey, Ukraine, the United Kingdom and Venezuela. According to Desai et al. (2011a), comprehensive treaty countries accounted for 82 per cent of US offshore portfolio equity holdings as of 2001.
5. In the UK, dividend tax concessions are delivered by a combination of lower tax rates for dividend income and a 10% tax credit. These tax concessions are available for dividend income from both UK and foreign companies.

In the UK, the lower income earner faces a standard marginal tax rate of 20%. However, their dividend income is taxed at the lower rate of 10%. In addition, it attracts a tax credit of 10%. The effective rate of tax on their local dividend income is zero.

$$(0.10-0.10)/(1-0.10) = 0\%$$

Similarly, in each country, the higher income earner also faces a lower effective tax on their dividend income than on other income. So Australia is broadly in line with the USA and the UK when it comes to taxing local dividend income.

Where Australia differs markedly is in restricting its dividend tax concession to dividends sourced from local income. In Australia, the lower income earner receives no tax concession for dividends paid from foreign-sourced income, and so faces their standard marginal rate of 34.5% on such income. This compares to the rates of 15% in the USA and zero in the UK. It also compares to the rate of 6.4% for dividends paid from local-sourced income, leaving an Australian gap of 28.1% points between dividend tax rates for foreign and local sourced income.

The large Australian gap between dividend tax rates for foreign and local sourced income is also seen at other income levels. For example, consider a higher income earner, with a taxable annual income that is the equivalent of AUD 150,000. In Australia, they pay 12.9% on local dividends but 39% on foreign dividends, a gap of 26.1% points.

These large gaps in Australia give rise to "home country bias" against foreign-sourced income. This tax bias against Australian investment in the international economy leads to more inwardly-focussed, less diversified portfolios. This exposes households and their superannuation funds to unnecessarily high volatility in their asset incomes, leaving them worse off.

More generally, Australia taxes dividends paid from foreign-sourced income far more heavily than most other OECD countries. For example, for the individual incomes considered in Chart 2.1, the Australian marginal rate of tax on foreign-sourced dividends ranges from 34.5% to 39%. In contrast, it is 15% in the USA and ranges from 0% to 25% in the UK.

At the same time, there is an important distinction in the way the Australian personal income tax system treats dividends paid from the two types of foreign-sourced income.

The first type is the dividends paid by foreign-based companies. Such dividends are unfranked. However, there is a tax rebate, generally of 15 per cent, for the withholding tax typically deducted by foreign governments from these dividends. From the perspective of the Australian shareholder, this does not appear to be a tax concession. This is because it merely refunds the tax that has been deducted by a foreign government, and still leaves the Australian shareholder fully subject to Australian income tax at standard, non-concessional rates. This is in contrast to franking credits, which lower their tax liability.

However, from a tax policy perspective, withholding tax credits are similar in nature to franking tax credits because both involve a cost to Australian Government revenue. The only difference is the ultimate beneficiary, which is the Australian shareholder in the case of the franking credits system and the foreign government in the case of the withholding tax system[2]. Hence, from a tax policy perspective there is a franking tax credit of 30 per cent for dividends paid from local-sourced income, and a withholding tax credit of 15 per cent for dividends paid by foreign-based companies.

The other type of dividend is that paid from the foreign-sourced income of Australian MNCs. In this case the Australian Government does not provide any tax credit. Foreign subsidiaries of Australian MNCs pay company tax in the host country, and franking credits are not available for company tax paid to foreign governments.

[2] Under the withholding tax system, the foreign government deducts withholding tax from the dividend paid to the Australian shareholder, and the Australian Government then refunds that amount to the shareholder. This has the same overall effect as a direct payment from the Australian Government to the foreign government. Thus, the foreign government is the ultimate beneficiary. In effect, the withholding system allows the foreign government to share in Australian income tax collections from dividends paid by foreign companies to Australian shareholders.

Thus, the Australian Government provides a rebate of 30 per cent for dividends from LSI (i.e. franking credits), 15 per cent for dividends from foreign companies (i.e. withholding tax credits), but nothing for dividends paid from the FSI of Australian MNCs. This report models the economic impacts of introducing a tax rebate for such dividends, as proposed by the Board of Taxation (2003). However, before describing that proposal, its puts it in context by first discussing the principles of optimal business taxation.

2.2 Three pillars of optimal business taxation in a small open economy

The observation that Australia should eliminate its tax bias against foreign-sourced dividends is part of a wider open economy perspective on the optimal design of the business tax system. The business tax system aims to raise a substantial amount of revenue while minimising the following potential harmful economic side effects:

1) discouraging domestic business investment;
2) discouraging offshore business investment; and
3) introducing portfolio savings biases that lead to less diversified portfolios.

From an open economy perspective, the key economic insight needed to limit these harmful side effects is the following.

> *Given perfect capital mobility for portfolio investment, and abstracting from risk, then the post-corporation tax rate of return required by companies must be equalised across all companies, no matter where they are located. (Devereux, 2008, p. 12)*

As a small open economy accessing a large world capital market, Australia has no significant influence on the world's required post-corporation tax rate of return. But it can design its tax system in a way that takes into account the economic role of that world market.

With the world capital market setting the post-corporation tax rate of return at which investment will attract funding, the corporate tax rate is the key lever available to open economies to influence investment. The higher the rate of corporate tax, the higher the pre-tax rate of return that will be needed from an investment for it to achieve the post-tax rate of return required on the world capital market. Thus, a higher corporate tax rate makes fewer investment

projects viable. Mainly for this reason, the Henry Tax Review, in its recommendation 27 (AFTSR, 2009, p. 167), advocated that the Australian company tax rate be reduced from 30% to 25% to restore its international competitiveness. Thus, the first pillar of business tax policy in an open economy is that the corporate tax rate should be internationally competitive to limit the adverse effects of business tax on domestic business investment.

Many countries operate source-based systems of corporate tax, which focus on taxing profits generated domestically. Thus, they do not attempt to tax resident corporations on their offshore profits, provided those profits have already been taxed offshore in a country that is not a tax haven. In this situation, there is no rationale for Australia to attempt to tax the worldwide income of Australian-headquartered companies. That tax can simply be avoided by a company shifting its headquarters to a country that operates a source-based system of corporate tax, and Australia would lose the economic activity associated with the headquarters being located in Australia. More formally, Devereux (2008) finds that for a small open economy in a world where some countries operate source-based corporate tax systems, "the optimal tax rate on outbound direct investment is zero". Thus, the second pillar of business tax policy in an open economy is that the income of foreign subsidiaries that are not located in tax havens should be exempt from domestic company tax. This both avoids discouraging international businesses from headquartering domestically, and encourages offshore investment.

While Australian companies are technically taxed on their worldwide income, there is an exemption for Australian-owned subsidiaries that are incorporated overseas. This means that "the existing company income tax is essentially a source-based tax" (AFTSR, p. 164), consistent with the second pillar of business tax policy in an open economy.

As Devereux (2008, p. 23) points out, "a source-based international tax system would require a multinational company to allocate its profit between the taxing jurisdictions in which it operates. However, attempting to define where profit is generated is often very difficult, and in some cases impossible". Further, source-based company tax provides an incentive for MNCs to favour allocating profits to countries with lower rates of corporate tax rather than countries with higher rates of corporate tax. The Henry Tax Review notes a number of channels through which such profit shifting may occur (although it does not sufficiently acknowledge the genuine difficulties in allocating profits, which are set out in detail by Devereux (2008)).

> *In the absence of anti-abuse provisions, this can be done by shifting debt and the associated deductible interest payments and other expenses including management and intellectual property costs from foreign affiliates to Australian members of the multinational group (thin capitalisation) and by manipulating transfer prices and royalties for intra-group transactions. (AFTSR, p. 154)*

Australia uses anti-avoidance provisions to limit profit shifting to lower taxed jurisdictions. In addition, implementing the Henry Tax Review recommendation to reduce the company tax rate to an internationally competitive rate of 25% would help reduce the incentive for profit shifting.

The third pillar of business tax policy in an open economy has already been discussed. It is that personal income tax should be applied uniformly across different types of asset income to avoid portfolio savings biases. Australia is unusual in taxing foreign-sourced dividends far more heavily than local-sourced dividends and the key reform analysed in this report is to reduce that tax bias. This would help offset the contribution from the dividend imputation system to home country bias in portfolios.

The Henry Tax Review considered this issue more broadly. It recommended moving to a uniform system in which most types of asset income were discounted by 40 per cent before personal income tax was applied (recommendations 14, 16 and 37). Applying the same discount to different forms of asset income would largely eliminate portfolio savings bias. Reasons for applying a discount to asset income include limiting the disincentives to save, recognising that real rather than nominal returns should be taxed, and recognising that dividends are already subject to company tax. Without a dividend tax concession, company tax acts as a disincentive to incorporate businesses.

In a small open economy such as Australia, the three pillars are independent of each other and hence do not conflict. Unimpeded access to large world capital markets means that both domestic and offshore investment can be readily funded at the prevailing world post-corporation tax rate of return. Thus, domestic and offshore investment opportunities don't compete with each other for funding. As Devereux (2008) puts it, "the link between them (outbound and domestic investment) is broken". Similarly, unimpeded access to large world capital markets also means that funding of investment opportunities, both domestic and offshore, does not rely on domestic savings. Thus, domestic investment, offshore investment

and domestic savings are not linked and so can be targeted separately by tax policy. The three pillars can each assigned their appropriate policy target without any interdependence.

- The pre-tax hurdle rate of return for **domestic investment** can be reduced by following the first pillar of setting an internationally competitive Australian company tax rate.

- The pre-tax hurdle rate of return for **offshore investment** from Australia can be reduced by continuing to follow the second pillar of exempting foreign subsidiaries of Australian companies from Australian company tax.

- Home country bias in the **savings portfolios** of Australians can be reduced by treating FSI in line with LSI when taxing the income of individuals and superannuation funds.

Some qualifications to this small open economy view of optimal business taxation can be noted.

- Some smaller and medium businesses (SMEs) may not have access to international capital markets or intermediaries that are accessing this market on their behalf. For such SMEs, treating FSI in line with LSI when taxing dividends can also reduce home country bias in investment (Sørensen and Johnson, 2010, pp. 192-3).

- Larger corporates may take domestic shareholders' interests in franking credits into account in investment decisions. All other things being equal (including after-tax cashflows), a company may choose the investment with franking credits since this would make domestic shareholders better off while leaving foreign investors unaffected.

2.3 Board of Taxation proposal for a tax rebate

The Board of Taxation (2003), in its Report to the Treasurer on International Taxation, made two recommendations to reduce the taxation of dividends paid from the foreign-sourced income of Australian MNCs.

> *Recommendation 2.1(1)*
>
> *(a) that domestic shareholder tax relief should be provided for unfranked dividends paid out of foreign source income derived after the commencement date; and*

(b) that the relief should be provided by way of a non-refundable tax credit of 20 per cent and without any requirement to trace foreign tax paid or incurred.

Recommendation 2.1(2)

The Board recommends that the Government … enable the streaming of foreign source income from an Australian parent company or through stapled stock arrangements from a foreign subsidiary, without adverse franking consequences (the Board does not recommend streaming between resident taxpayers).

Regarding the second recommendation, dividend streaming would allow Australian MNCs to pay dividends to their foreign shareholders out of foreign-sourced income and dividends to their Australian shareholders out of Australian sourced income. With this streaming of dividends, Australian franking credits would not be "wasted" on foreign shareholders who are not able to utilise them, allowing a higher rate of franking for dividends paid to Australian shareholders. However, dividend streaming would do little to address the tax bias for Australian MNCs with relatively low levels of foreign ownership or relatively high levels of foreign-sourced income. It was opposed by the Henry Tax Review in its recommendation 39 (AFTSR, 2009). Hence, this report focusses on the first recommendation, which is for the introduction of a tax credit.

2.4 The tax rebate and Australian MNCs

This proposed tax credit would reduce the home country bias in savings portfolios resulting from dividend imputation. Dividend imputation biases Australian portfolios in favour of holdings in domestically-focussed Australian companies paying franked dividends. This bias means Australians underinvest in foreign assets and hence, for a given rate of return, bear more risk than would be the case if their portfolios were better diversified. The proposed tax credit for the FSI of Australian MNCs would lessen this home country bias in portfolios and hence would reduce portfolio risk. That is, returns on superannuation and personal savings would be less volatile, benefiting Australian households.

The Board of Taxation (2003) suggested that the tax credit would also encourage offshore investment by Australian MNCs. However, as explained above, under the assumption of a small open economy used in the modelling and espoused by many authors, Australia offshore

investment can be readily funded from world capital markets and so may not rely on a tax credit for domestic investors.

The Board of Taxation (2003) makes the counter argument that even if outbound investment is financed at the margin by inbound portfolio investment, Australian MNCs will "think twice" before making an outbound investment if this disadvantages their domestic shareholders by leading to their dividends becoming less than fully franked (Board of Taxation, 2003, p. 63). Intuitively this counter argument appears to have merit.

Fortunately, there have been a series of recent studies that have cast light on this issue. That is, they examine whether varying the relative tax burdens on dividends paid from local and foreign-sourced income mainly affects home country bias in portfolios or mainly affects domestic or offshore business investment.

Fuest and Huber (2000) established the principle that, in an open economy such as Australia, tax discrimination between dividends paid from FSI and LSI is "inefficient for the economy". This inefficiency was because tax discrimination in favour of LSI adds to home country bias in savings portfolios. In their open economy model, there was no impact of domestic dividend taxation arrangements on domestic or offshore business investment because both types of business investment can be funded from world capital markets. A series of subsequent studies have investigated whether the theoretical proposition of Fuest and Huber (2000) stands up to the empirical evidence.

In an IMF Working Paper, Bond et al. (2007) analysed the effects in the UK of the abolition in 1997 of partial dividend imputation credits for pension funds. They found "no major impact on the market valuation of UK equity", which is consistent with no major impact on business investment. However, the home country bias in the portfolios of UK pension funds fell as would be predicted by Fuest and Huber (2000). The share of portfolios allocated to UK equities fell "from around three-quarters at the end of 1996 to around two-thirds by the end of 2001" after being "quite stable during the first half of the 1990s". Thus, the UK evidence is consistent with the proposition that in an open economy, domestic dividend taxation affects domestic portfolio allocations rather than equity prices and business investment.

Desai and Dharmapala (2011a) analysed the effects in the US of a 2003 measure to introduce a concessional dividend tax rate of 15 per cent. This concession applied to dividends from both US-based companies and foreign companies incorporated in countries with which the US has a comprehensive tax treaty. Around 18 per cent of US foreign equity investment is in countries with which the US does not have a comprehensive tax treaty, and dividends from companies incorporated in those countries continued to be taxed at standard rates. Desai and Dharmapala (2011a) found that the new tax concession had no statistically significant effect on equity prices in either the USA or treaty countries. However, US investor holdings of equities of treaty countries increased significantly. Thus, the US evidence is also consistent with the proposition that in an open economy domestic dividend taxation affects domestic portfolio allocations rather than equity prices and business investment.

Mishra and Ratti (2013) analyse the influence of dividend taxation on portfolio home bias for 49 countries, including Australia, over the period 2001-2009. "Dividend imputation is established as a statistically significant and robust impediment to cross border equity flows." They also find that tax credits for foreign dividends are "statistically significant in reducing home bias". Thus, the earlier findings for the UK and the USA that dividend taxation significantly affects home country bias in savings portfolio was confirmed for a broad range of countries.

Thus, Desai et al. (2011a) conclude that "the primary effects of dividend tax reforms may well be on portfolio choices … rather than on firm behaviour". Therefore, the main role of the proposed tax rebate is to offset some of the home country bias in portfolios that is attributable to the dividend imputation system. The most effective way of encouraging Australian MNCs to engage in offshore investment is to continue to follow the second pillar of exempting their foreign subsidiaries from Australian company tax.

3 The Independent Extended CGE model and Dividend Tax Bias

This section provides an overview of the model used to assess the likely economic impacts of the various policy options to reduce the tax bias against dividends sourced from foreign income. The next section sets out the various policy options in detail.

3.1 Model Development

This report simulates the economic impacts of the policy options using the Independent Extended Computable General Equilibrium (CGE) model of the Australian economy. While CGE models have a range of applications, this particular model has a special focus on modelling tax reform.

The Independent CGE model was first developed by Independent Economics in early 2012. Later in 2012 Independent Economics further developed the modelling of business tax, with input from Treasury, to meet Treasury's needs in providing model-based advice to the Australian Government's Business Tax Working Group (BTWG). Our modelling of the economic effects of changing the rate of company tax was published as part of the BTWG's Final Report (BTWG, 2012, Appendix B).

In 2014 Treasury officers (Rimmer et al., 2014) used essentially the same version of the Independent CGE model to analyse in detail the economic impacts of company tax.

Later in 2014 the model has been substantially enhanced by Independent Economics. It has been updated for the latest input-output tables, which involved moving from the 2007/08 tables to the 2009/10 tables. The modelling of household consumption was upgraded to better capture consumer choice between different goods and services and thus make the model better suited to analysing the economic impacts of consumer taxes, including GST. Finally, the number of industries in the model was expanded from 120 to 284. With this extension, the model is now known as the Independent Extended CGE model (IECM).

The model has been further enhanced for this report. As explained below, this enhancement models the tax-sensitive choices made in allocating Australian wealth across asset classes, including assets generating dividends from local and foreign-sourced income.

3.2 Model Enhancement: Tax-adjusted Capital Asset Pricing Model

The previous CGE model simplified its modelling of Australia's foreign assets and liabilities by recognising a single net foreign liability. This has now been broken down into three components: Australian direct equity investment abroad; Australian portfolio investment abroad; and foreign liabilities net of other foreign assets. This brings foreign-sourced dividend income from both direct investment by Australian MNCs and from portfolio investment in foreign companies into the model, alongside dividend income from local-sourced income.

The previous model also simplified the choices that Australians make in allocating their wealth across assets by taking that allocation as given. This asset allocation choice is now modelled using a customised version of the Capital Asset Pricing Model (CAPM). The version used here was adjusted for taxes by Brennan (1970), framed in an open economy setting by Bond et al. (2007) and used to model the impacts of changes to taxation of foreign dividends by Desai et al. (2011a).

For this study, this tax-adjusted, open economy version of the CAPM has been formulated with Australian wealth divided into four asset classes: housing, domestic business capital; direct equity investment abroad and portfolio equity investment abroad. There is no "riskless" asset. The allocation of wealth across the four asset classes depends on:

- the expected after-tax returns for each asset;
- the variances of returns for each asset;
- the covariances of returns between assets; and
- the amenity of each asset.

After-tax returns are modelled by allowing for personal income tax on the component of profits paid out as dividends. Dividend payout ratios as assumed to be 2/3 of company earnings for local-sourced income and 1/2 of company earnings for foreign-sourced income, based on

historical data (Shaw Stockbroking, 2013). Effective personal income tax rates on dividends are calculated using the formula presented in section 2.1.

The variances and covariances of asset returns are derived from the pre-GFC estimates in the Australian empirical study of Peat et al. (2012). Importantly, as seen in Table 3.1, the returns from the three business capital-based asset classes are strongly positively correlated, suggesting these assets are substitutable. These returns are largely uncorrelated with the returns from housing. Thus, changes to the taxation of foreign dividends are likely to have more effect on holdings of domestic business capital than on holdings of housing, and this is reflect in the modelling results presented in section 5 of this report.

Table 3.1 Correlation matrix of investment returns

	domestic business capital	housing	direct equity abroad	portfolio equity abroad
domestic business capital	1.00			
housing	-0.13	1.00		
direct equity abroad	0.64	0.06	1.00	
portfolio equity abroad	0.64	0.06	0.70	1.00

Source: Peat et al. (2012) and Independent Economics calculations.

The amenity of each asset is determined in calibrating the model to actual asset holdings at the end of the 2013-14 financial year.

This CAPM provides a vehicle for analysing the effects of alternative policies for taxing dividends on the allocation of wealth across the four asset classes. This customised CAPM model has been fully integrated with the Independent Extended CGE model and can also be simulated in standalone mode.

With these enhancements, the Independent Extended CGE model now takes into account that household welfare depends on more than the level and pattern of consumption of goods and services and the amount of leisure time. It now also depends on the amenity of different asset holdings and the overall riskiness of the Australian portfolio of assets.

3.3 Features

The IECM makes a number of general assumptions that are common in CGE models with its long-term time horizon.

Because it is a long-term model, its results refer to the ongoing effects on the economy after it has fully adjusted to economic shocks. In keeping with this, all markets are assumed to have reached equilibrium. This includes key markets such as the labour market, where the real wage for each type of labour adjusts so that demand from industries is equal to supply from households.

The behaviour of households and government is consistent with the inter-temporal budget constraints that they face so that the model outcomes are sustainable.

Further, households and firms engage in optimising behaviour. This means that households maximise their utility subject to their budget constraint while a representative firm in each industry maximises profit subject to its production technology.

The model also has a number of special features that make it uniquely suited among Australian CGE models for this and other tax reform modelling.

- *The model has a highly detailed treatment of business taxation*. It allows for key features of the current Australian system as well as tax designs that have been proposed around the world. It takes into account factors such as: the different tax treatments of debt and equity financing; the complex system of depreciation allowances and tax concessions; franking credits; and the potential for international profit shifting.

- *The model features a robust measure of whether policy changes are in the public interest*. It provides a valid measure of changes in consumer welfare based on the "equivalent variation", so policy changes can be correctly evaluated in terms of the public interest.

- *The model uses the latest ABS input-output table*. The model uses the most recent detailed data on the industry structure of the Australian economy, the input-output tables for 2009-10 released by the ABS in late 2013.

- *The model has a fine level of industry detail*. In model development work in 2014, the model was extended to distinguish 284 industries, compared to 114 industries for comparable models that rely on the standard ABS input-output tables.

- *The model incorporates refined modelling of production in each industry*. This includes nine types of produced capital, three fixed factors and eight occupations for labour.

3.4 Limitations of the modelling

The enhanced model is designed specifically to capture the economic or welfare cost of portfolio savings biases introduced by uneven tax treatments of personal income from different asset classes, including the relatively high tax burden on dividends paid from the FSI of Australian MNCs. However, the model is not designed to analyse the welfare cost of taxing asset income in general. This is because it is a long-run equilibrium model, and thus does not capture the costs from distorting the choice between present and future consumption by taxing savings. Thus, by reducing the overall tax burden on savings, the dividend tax rebate may have an additional welfare benefit that has not been taken into account. This means the estimates of welfare gains from the modelling are likely to be conservative.

Equally, as a long-run equilibrium model, its results show the effects after the economy has fully adjusted to an assumed change in the economic environment. It does not show the adjustment path. However, economic policies should be judged against their lasting effects on the economy, not just their effects in the first one or two years.

Finally, the IECM adopts the small open economy assumption of perfect international capital mobility. In reality, capital mobility is likely to be very high, but not perfect. However, previous sensitivity analysis has shown that adopting an assumption of very high rather than perfect capital mobility has limited consequences for model results. For example, it slightly dampens the gains from reducing company tax, but for other tax policy simulations the results are virtually unaffected.

Appendix A provides a more detailed overview of the model. More detailed documentation is available at www.independenteconomics.com.au

4 The Dividend Tax Policy scenarios

The enhanced model was used to simulate a baseline scenario based on existing tax policy and an alternative policy scenario in which the new dividend tax rebate proposed by the Board of Taxation (2003) is introduced.

4.1 Baseline Scenario

A *baseline scenario* is simulated first to serve as a point of comparison. The baseline uses existing policy under which a 30% franking tax credit is available for the fully franked dividends paid by domestically focussed companies ("local"), a 15% withholding tax credit is available for the dividends paid by foreign companies ("portfolio offshore") and no tax credit is available for dividends paid from the FSI of Australian MNCs ("direct offshore").

The designs of the baseline scenario and the alternative policy scenario are summarised in Table 4.1.

Table 4.1 Design of Policy Scenarios

Dividend tax credit rates	baseline	20% credit for direct
direct offshore	0%	20%
portfolio offshore	15%	15%
local	30%	30%

Notes:

1. The 30% credit for "local" dividend income refers to franking credits.
2. The 15% credit for "portfolio offshore" dividend income refers to withholding tax credits.
3. The simulated 20% credit for "direct offshore" refers to the Board of Taxation proposal for a 20% credit for dividends from the FSI of Australian MNCs.

4.2 Proposed New Tax Credit Scenario

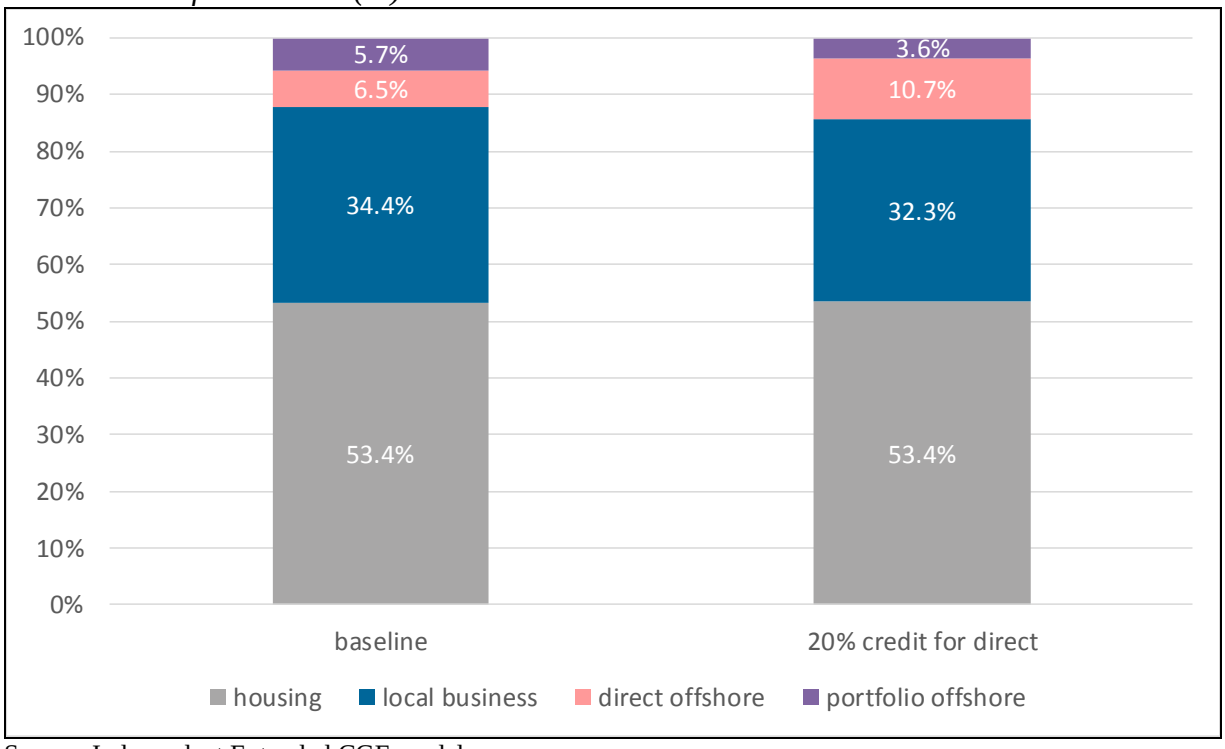
The Board of Taxation scenario introduces a 20% tax credit for the dividends paid from the FSI of Australian MNCs. This is referred to in Table 4.1 as the "20% credit for direct" scenario.

5 Modelling Results

This section presents the modelled economic impacts from introducing the proposed new tax credit. This credit or rebate of 20 per cent applies to dividends paid from the FSI of Australian The results for this "20% credit for direct" scenario are summarised in Charts 5.1 to 5.3. These results refer to long-run outcomes, after the economy has fully adjusted to the proposed policy change. The results are expressed as deviations from the baseline scenario, without the proposed tax credit. Hence, these deviations show the economic impacts of introducing the proposed tax credit.

Chart 5.1 shows how the proposed tax credit shifts Australian savings into offshore investment via Australian MNCs. Direct offshore investment rises from 6.5% of Australian wealth to 10.7%. Part of this increase is at the expense of holdings in domestic businesses, which fall from 34.4% to 32.3% of wealth. The other part is at the expense of portfolio offshore investment, which falls from 5.7% of Australian wealth to 3.6%.

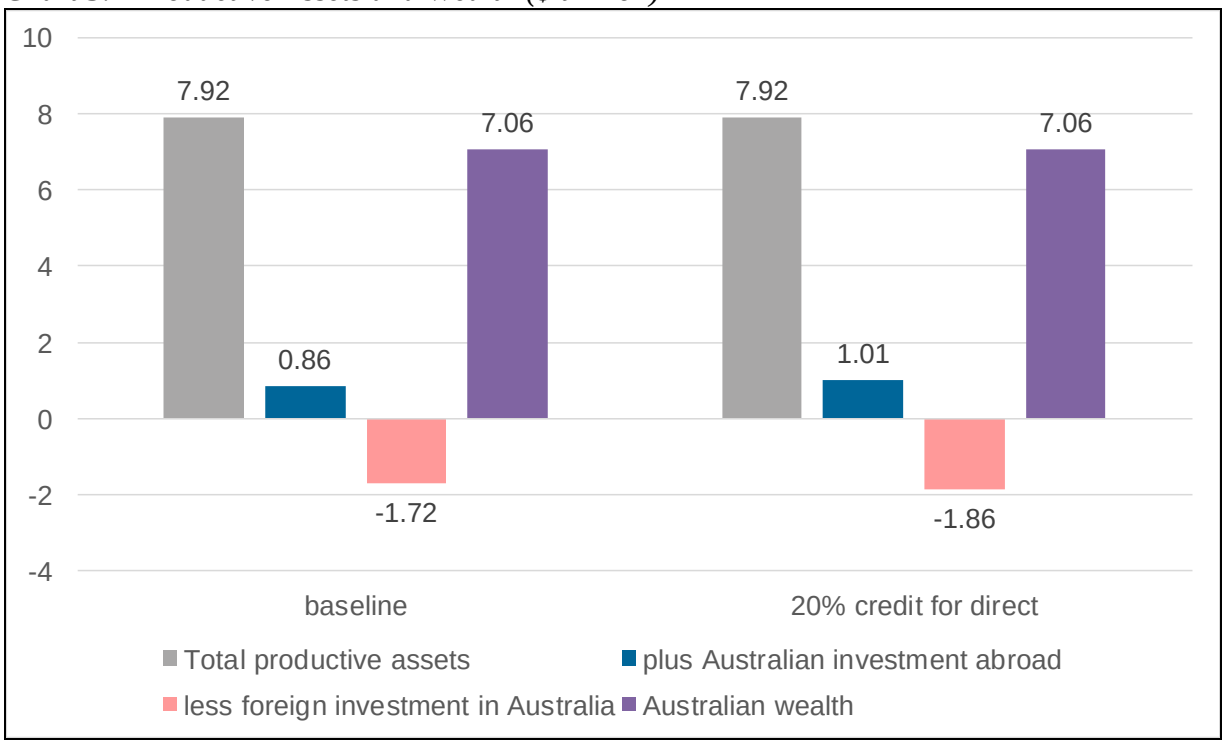
Chart 5.1 Portfolio Shares (%)



Source: Independent Extended CGE model

Chart 5.2 shows this portfolio re-allocation makes the Australian economy more open to international investment. Both Australian investment abroad and foreign investment in Australia are $0.15 trillion higher, while Australian wealth and the capital stock are unaffected. As Australia has unimpeded access to world capital markets under the modelling assumption of a small open economy, as more Australian-sourced funds are invested in offshore assets, the shortfall in funding domestic assets is fully met by more internationally-sourced funds.

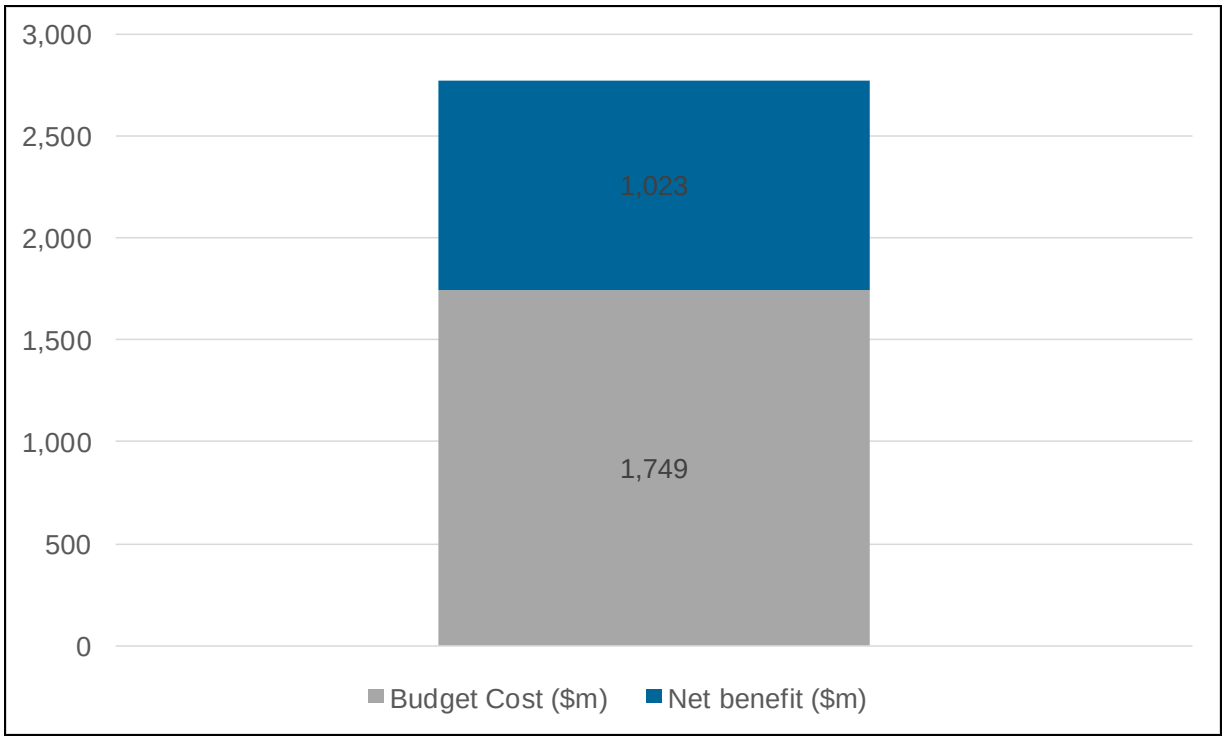
Chart 5.2 Productive Assets and Wealth ($ trillion)



Source: Independent Extended CGE model

These changes in savings patterns raise living standards by reducing tax-driven home country bias in the composition of Australian portfolios. This reflects the value to consumers of portfolios that have less volatile returns because they are better diversified. Thus, Chart 5.3 shows that the proposed new 20% rebate has an estimated **net** benefit or welfare gain to Australian consumers of $1,023 million in 2013/14 terms. This gain is sustained each year.

Chart 5.3 Annual Gross Benefit, Budget Cost and Net Benefit of 20% Tax Credit ($ million)



Source: Independent Extended CGE model

The proposed tax credit reduces tax-driven biases in portfolios by partially closing gaps between tax rebates for dividends from different sources. A new 20% rebate for direct offshore investment leads to a smaller gap with the withholding tax rebate of 15% for portfolio offshore investment, while partly closing the gap with the 30% franking credit for local investment.

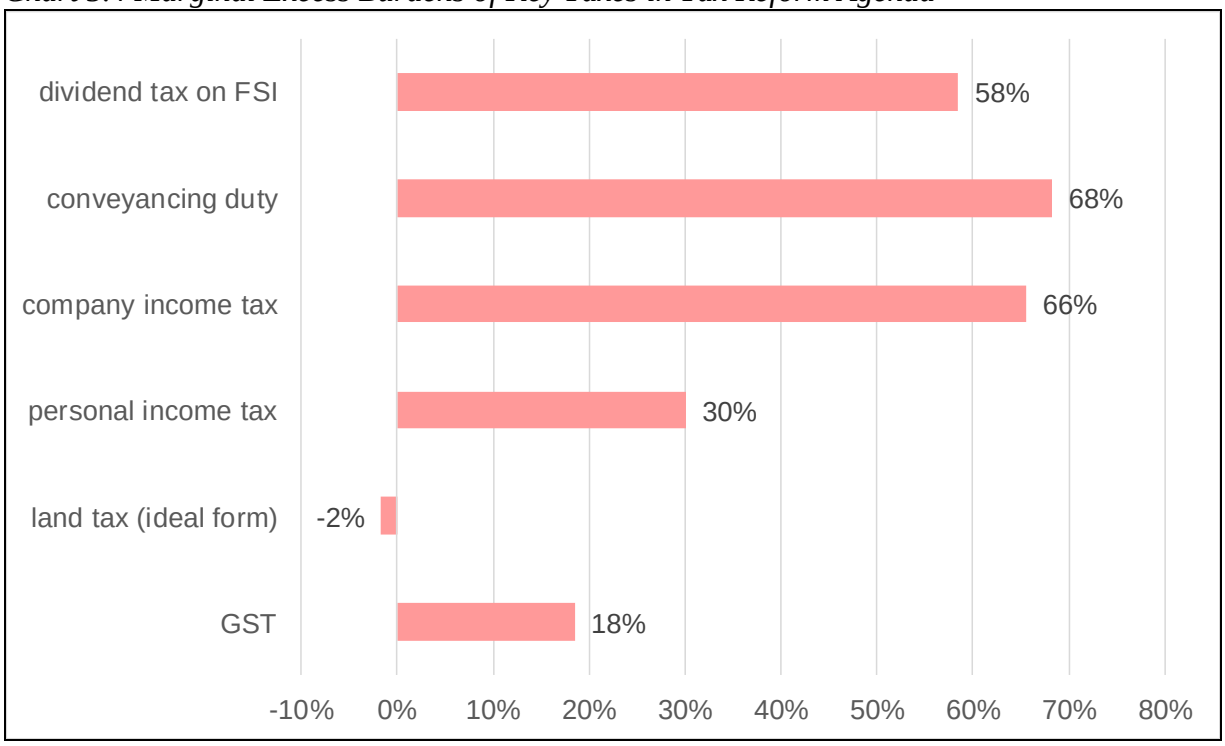
The annual budget cost is estimated at $1,749 million in Chart 5.3. By comparison, the benefit to consumers is $2,772 million in gross terms, or $1,023 million in net terms after they have funded the tax rebate through a notional "lump sum" tax increase. Thus, the net benefit or welfare gain from introducing the rebate, expressed relative to the budget cost, is 58%.

Looked at the other way around, this means that the existing non-concessional tax on dividends paid from FSI has a high marginal excess burden (MEB) of 58 cents in the dollar. This is a high MEB in the context of tax reform. It means households would benefit from the Government relieving this costly tax burden by introducing the proposed rebate, and funding this by increasing one of the more efficient taxes that have much lower MEBs.

A new tax credit of 20% for dividends paid by Australian MNCs from their offshore direct investments is an important tax reform. The Henry Tax review put funding the abolition of

conveyancing duty and a reduction in the company tax rate from 30% to 25% at the top of the tax reform agenda in view of their high MEBs, estimated in Chart 5.4 at 68 and 66 cents[3] respectively in the last dollar of revenue.

Chart 5.4 Marginal Excess Burdens of Key Taxes in Tax Reform Agenda



Source: Independent Extended CGE model

This report shows that the existing non-concessional tax on dividends paid from FSI has a similarly high MEB of 58 cents in the dollar, placing tax relief in this area also at the top of the tax reform agenda. Shifting reliance from these inefficient taxes with high MEBs to more efficient taxes with low MEBs offers substantial welfare gains to consumers.

For fuller details of the modelling results, see Appendix B.

[3] The estimate here of a MEB of 66% for company tax is slightly higher than the "main scenario" estimate of 56% in Rimmer et al. (2014). The modelling here is more developed, distinguishing between foreign investment in Australia and Australian investment abroad, rather than modelling international investment in net terms. These recent estimates are both higher than the earlier estimate of 40% in KPMG Econtech (2010). The more recent estimates take account of a wider range of factors, most notably profit shifting by MNCs, which adds to the inefficiency of company tax.

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Appendix A: The Independent Extended CGE Model

A.1 Introduction

The Independent Extended CGE Model is Independent Economics' Computable General Equilibrium (CGE) model of the Australian economy, as recently extended. Some notable features which set the Independent CGE model apart from other models of the Australian economy are as follows.

- Following model development work in 2014, the model has now been extended to distinguish 284 industries, compared to 114 industries for comparable models that rely on the standard ABS input-output tables. This finer level of detail in the extended model is obtained by using the ABS product details tables to disaggregate industry demand information and broad assumptions to disaggregate industry supply information.

- The model is designed to represent a normalised version of 2013/14 Australian economy, using the latest information available. It takes as its starting point the 2009/10 ABS Input-Output (IO) tables, which are the latest available. These are uprated in a simulation of the model that allows for general growth in prices, productivity and labour supply from 2009/10 to 2013/14, includes a long-run assumption for the terms-of-trade, and adjusts investment rates, the trade balance and the government budget position to sustainable levels.

- The model incorporates refined modelling of production in each industry. This includes nine types of produced capital, three fixed factors to capture economic rents, and eight occupations for labour. The model allows for different degrees of substitutability between these factors.

- The model provides a valid measure of changes in consumer welfare based on the equivalent variation, so that policy changes can be correctly evaluated in terms of the public interest.

- The model uses the tax-adjusted Capital Asset Pricing Model to optimally allocate wealth across asset classes. This allows it to capture the economic distortions from applying personal income tax at non-uniform effective rates across asset classes.

- The model includes refined modelling of consumer demand based on a 2-tier approach. In the top tier households allocate their spending across 19 broad categories of consumption, and in the second tier they choose their pattern of consumption within each of these categories. This 2-tier structure takes into account that there may be more scope for households to switch spending within broad categories than between broad categories.

- The model has a highly detailed treatment of business taxation, with a focus on important features of the current Australian system as well as tax designs that have been proposed around the world. It takes into account factors such as: the different tax treatments of debt and equity financing; the complex system of depreciation allowances and tax concessions; franking credits; foreign tax credits; and the potential for international profit shifting.

This Appendix provides an overview of the model. More detailed documentation is available at www.independenteconomics.com.au

A.2 General features

The Independent Extended CGE Model (IECM) makes a number of general assumptions that are consistent with its long-term time horizon. Many of these features are shared with other long-run CGE models.

Long-term model

The IECM is a long-term model, meaning that results refer to the ongoing effects on the economy after it has fully adjusted to economic shocks. In keeping with this, all markets are assumed to have reached equilibrium. This includes key markets such as the labour market, where the real wage for each type of labour adjusts so that demand from industries is equal to supply from households. In addition, the behaviour of households and government is consistent with the inter-temporal budget constraints that they face. This involves levels of household saving and foreign capital inflow that are consistent with stocks of assets and liabilities growing at the same rate as GDP.

The long-term time horizon is fitting because economic policies should be judged against their lasting effects on the economy, not just their effects in the first one or two years.

Optimising behaviour

Industries and households in the IECM optimise, while still remaining within the constraints of production technology and budgets.

- Profit maximisation: the representative business in each industry chooses how to produce (with a mix of primary factors and intermediate inputs) and how much to produce to maximise its profit subject to the prices of its inputs and outputs.

- Utility maximisation: A representative household chooses its consumption levels of each consumer good and service and leisure, and allocates its wealth between assets in a way that maximises its well-being (or utility), subject to budget and wealth constraints.

Budget and wealth constraints

In a sustainable equilibrium, governments and households must meet their budget constraints. For simplicity, we assume that the government budget is balanced in the long run. Given its expenditure requirement, the government chooses its level of taxation consistent with achieving this outcome. In the private sector, a sustainable outcome is one in which household saving is sufficient to generate growth in household assets in line with growth in real GDP. The household sector has an initial endowment of a bundle of assets that determines its wealth, which it then re-allocates between assets by maximising its expected utility in line with the Capital Asset Pricing Model (CAPM).

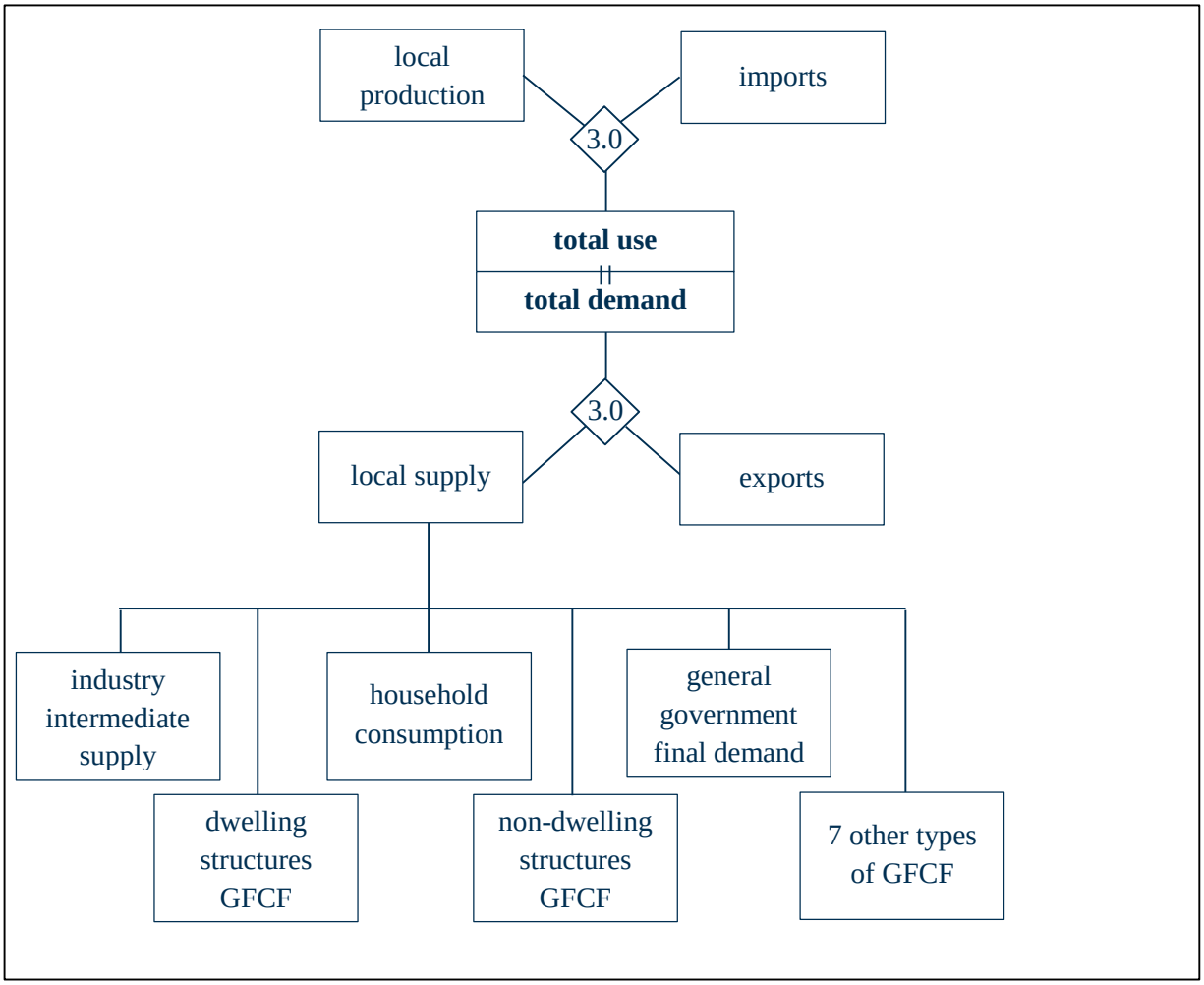
A.3 Decision makers

This section discusses the interactions between the different decision makers, or 'economic agents' in the IECM – industries, households, government and the foreign sector.

A.3.1 Trade and demand

The overall structure of each industry in the IECM is summarised in Diagram 3.1.

Diagram 3.1 Trade and demand for each product



Note: GFCF is Gross Fixed Capital Formation, or investment.

As shown in Diagram 3.1, total supply in the IECM is made up of locally produced and imported varieties of each good. Local production competes with imports, and the elasticity of substitution has been set at 3.0 in most industries.

In each industry, the representative firm chooses the amount to supply to the export market and the amount to supply to the domestic market. It does this using a constant elasticity of transformation (CET) function, with an elasticity of 3.0.

Total supply must equal total demand in a long-run equilibrium. In the IECM, local production and imports supply the 13 different categories of demand that are shown in Diagram 3.1.

A.3.2 Industry production

Local production in each of the 284 industries in the IECM is modelled in a sophisticated way that identifies a large set of inputs used by industries. It distinguishes 9 types of capital and 9 types of labour according to occupation. It also identifies land and two industry-specific fixed factors, one of which is fixed in supply in Australia (location-specific) and the other which is fixed in supply globally (or firm-specific). These primary factors are combined with intermediate inputs purchased from other industries. The structure of the production decisions is shown in Diagram 3.2.

Each industry can change the mix of inputs that it uses as relative prices change. Some types of primary factors are more substitutable with other factors, and other types of primary factors are less substitutable. To reflect this, the nesting structure of production decisions in the IECM is set up in a way that provides for a high degree of flexibility.

Diagram 3.2 below shows an overview of the production technology used by firms in each industry in the IECM. Further details for non-structure capital, labour and structure services are provided in Diagrams 3.3, 3.4 and 3.5 respectively.

Diagram 3.2 Production in each industry

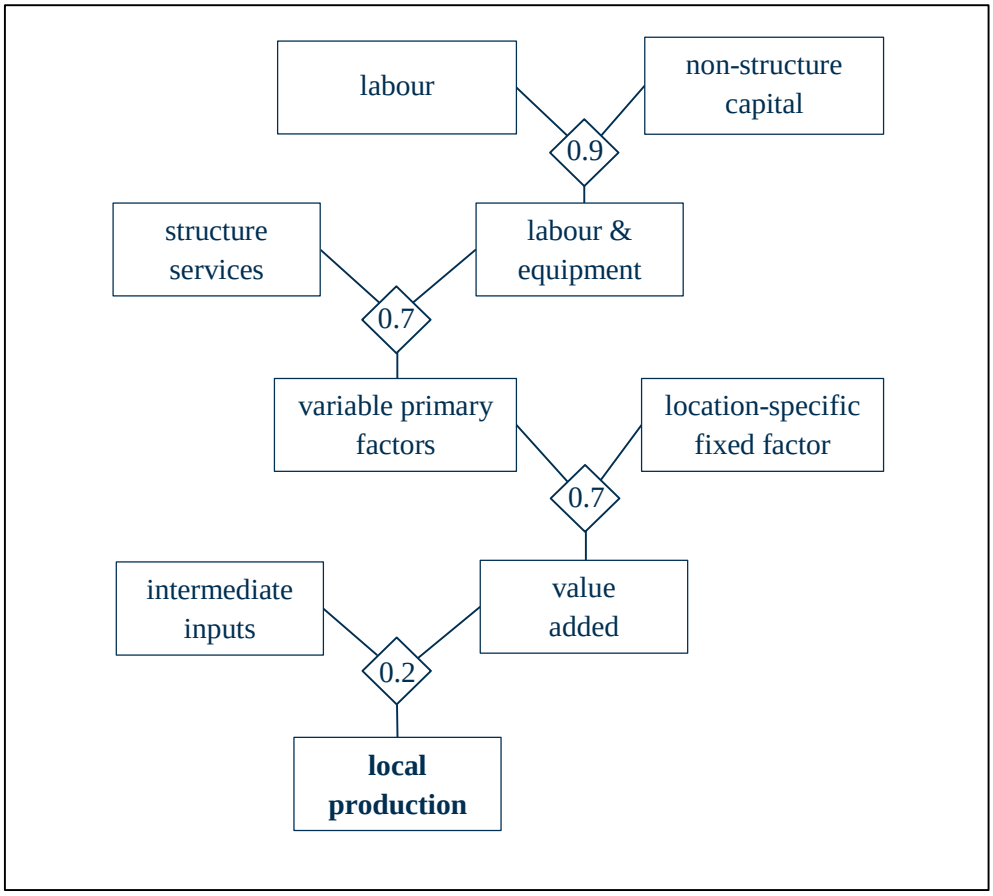
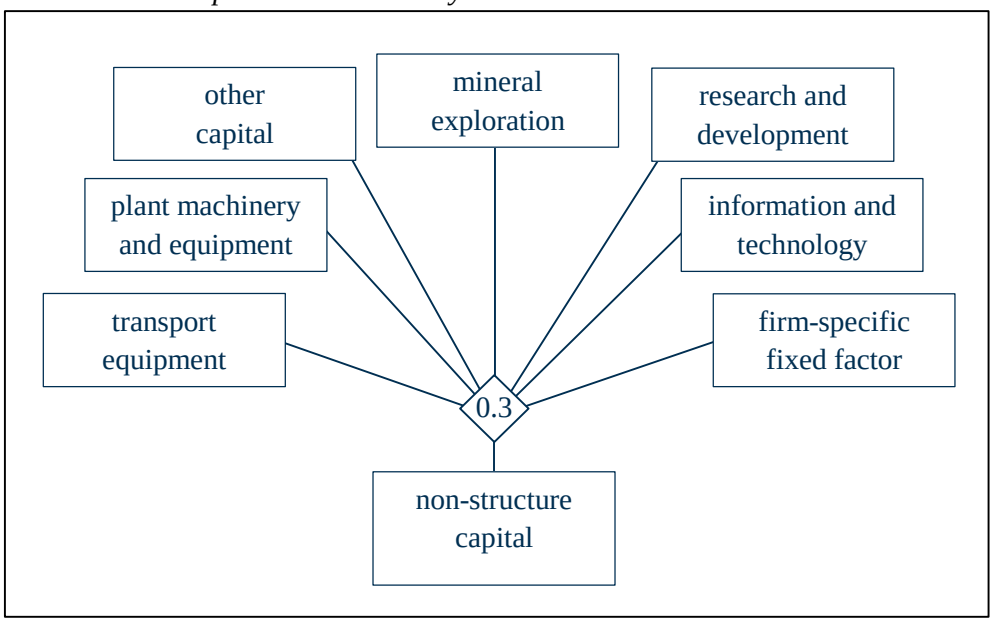


Diagram 3.3 Non-structure capital in each industry



As shown in Diagram 3.4, the modelling of industry demand for each occupation employs a 2-tier structure covering eight occupations. However, the same elasticity of substitution of 1.5 is used at both tiers. This makes it equivalent to arranging the occupations on a single tier with the one elasticity of substitution of 1.5. However, the 2-tier approach allows for greater flexibility in the future.

Diagram 3.4: Industry demand for labour

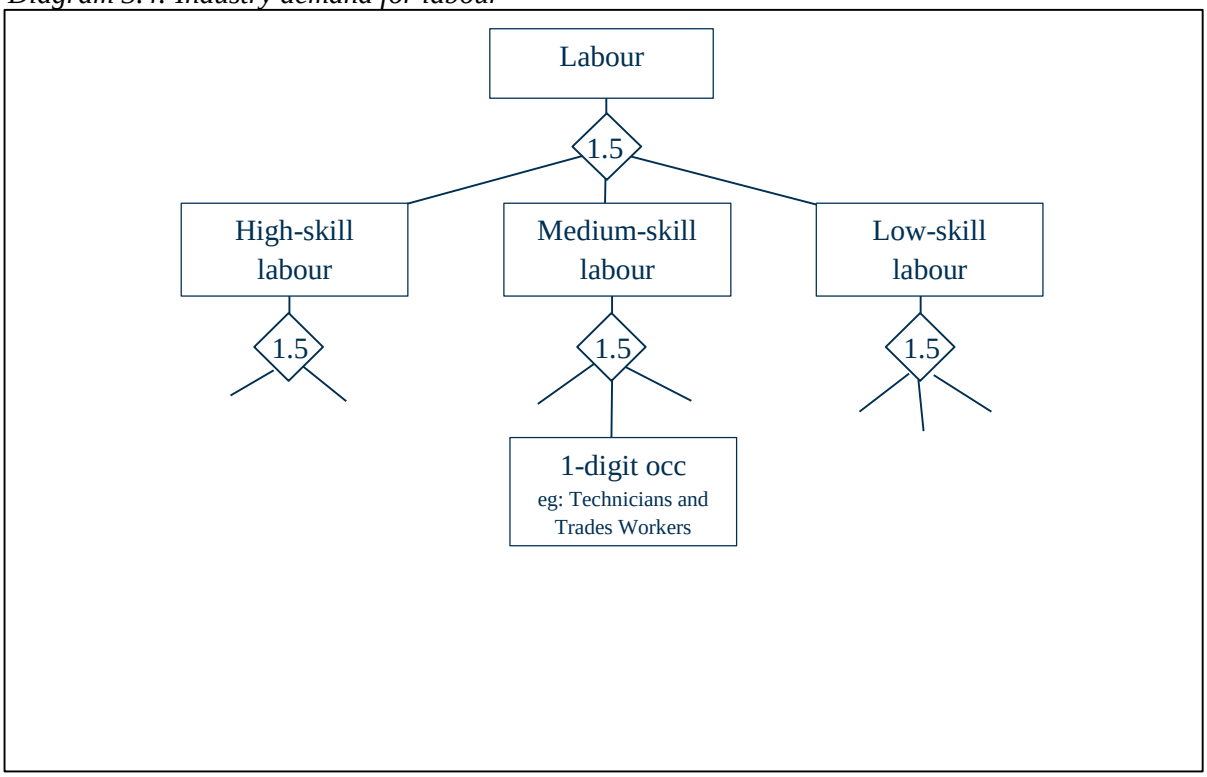
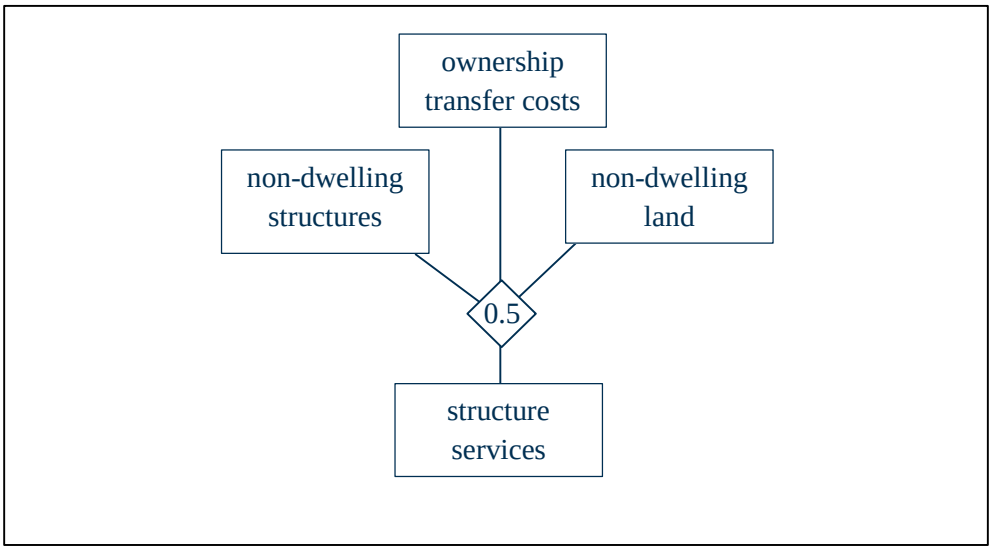


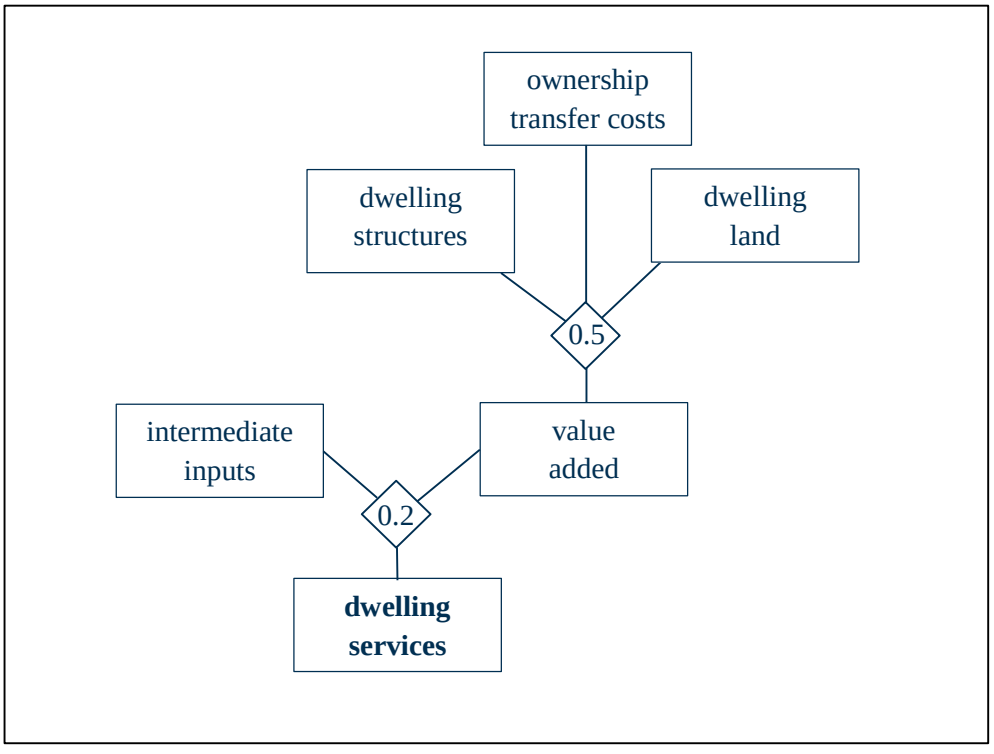
Diagram 3.5 shows that the structure services are produced using non-dwelling structures (which includes commercial buildings and engineering structures such as roads and bridges), non-dwelling land and ownership transfer costs. The need for non-dwelling structures and non-dwelling land to produce structure services is relatively obvious. Ownership transfer costs are incurred as businesses change premises as their needs changes in terms of location or building size or type.

Diagram 3.5 Structure Services in each industry (except Dwellings Services)



Dwelling services are produced in a broadly comparable way to structure services. The primary factors involved are dwelling structures, dwelling land and ownership transfer costs. This production technology for dwellings services is shown in Diagram 3.6 below. In the IECM there are two industries that produce dwelling services, namely, the owner-occupied sector and the rented sector. This is a useful distinction, partly because of differences in tax regimes.

Diagram 3.6 Production of Dwelling Services



A.3.3 Households

The model separates household decision making into two stages. In the first stage, households optimally allocate their wealth across asset classes using the Capital Asset Pricing Model (CAPM). In the second stage, households make choices between work and leisure and between different consumer goods and services. These two stages are now discussed in turn.

The tax-adjusted CAPM is used to optimally allocate wealth across asset classes. This allows the model to capture the economic distortions from applying personal income tax at non-uniform effective rates across asset classes.

The version of the CAPM used here was adjusted for taxes by Brennan (1970), framed in an open economy setting by Bond et al. (2007) and used to model the impacts of changes to taxation of foreign dividends by Desai et al. (2011a).

It has been formulated with Australian wealth divided into four asset classes: housing, domestic business capital, direct equity investment abroad and portfolio equity investment abroad. There is no "riskless" asset. Households have an initial endowment of each asset that determines the value of their wealth, W. They then allocate this wealth across the four asset classes, W(i), to maximise expected utility, V, which is given by the following.

$$V = W + \Sigma(1-t(i)).r(i).W(i) + \Sigma a(i).W(i) - \gamma.\sigma^2(W)/(2.W)$$

In the above, the expected pre-tax return from an asset is represented by r(i), the tax rate applied to that return is t(i), a(i) refers to the "amenity" of an asset, which may be positive or negative. The extent of risk aversion is captured in the parameter, γ, and the variance of the return associated with uncertain capital gains is $\sigma^2(W)$ and which depends on the chosen portfolio,. The optimal asset allocation depends on:

- the expected after-tax returns for each asset;
- the variances of returns for each asset;
- the covariances of returns between assets; and
- the amenity of each asset.

After-tax returns are modelled as follows. For the three equity-related asset classes, personal income tax on the component of profits paid out as dividends is taken into account. Dividend payout ratios are assumed to be 2/3 for local-sourced income and 1/2 for foreign-sourced income, based on historical data presented in Shaw Stockbroking (2013). Effective personal income tax rates on dividends are calculated using the formula:

$$(tp-tc)/(1-tc)$$

where "tp" is the rate of personal income tax applied to dividends and "tc" is the rate of tax credit. For dividends paid from local-sourced income the rate of tax credit is 30%, reflecting franking credits, while it is zero for dividends paid from foreign-sourced income. The remaining asset class, housing, is assumed to be free of personal income tax. This is on the basis that owner-occupied housing is free of personal income tax, while for investor housing, debt-related and other deductions mean that the net impact on personal income payment is slightly negative.

The variances and covariances of asset returns are derived from the pre-GFC estimates in the Australian empirical study of Peat et al. (2012). Importantly, as seen in Table 3.1, the returns from the three

business capital-based asset classes are strongly positively correlated, suggesting these assets are substitutable, but these returns are largely uncorrelated with the returns from housing.

Table 3.1 Correlation matrix of investment returns

	domestic business capital	housing	direct equity abroad	portfolio equity abroad
domestic business capital	1.00			
housing	-0.13	1.00		
direct equity abroad	0.64	0.06	1.00	
portfolio equity abroad	0.64	0.06	0.70	1.00

Source: Peat et al. (2012) and Independent Economics calculations.

The amenity of each asset is determined in calibrating the model to actual asset holdings at the end of the 2013-14 financial year. The risk aversion parameter was set equal to 10, giving the model's asset allocation similar sensitivity to tax changes to that seen in earlier similar studies by Desai et al. (2011b) and Devereux (2008).

Besides determining the allocation of wealth across the four broad asset classes, the CAPM has a number of other functions in the model. It determines the level of asset income, which feeds into the second stage of the household decision making process. It also determines personal income tax collections from asset income. Finally, it determines the amenity and riskiness of household portfolios, which both influence household welfare, as discussed below in section 3.4.

Turning to the second stage of the household decision making process, households in the IECM, after saving at a sustainable rate, choose between leisure and consumption, and then divide their consumption between the 284 goods and services. They do so in a way that maximises their utility. This behaviour is illustrated in Diagram 3.7.

Household full income is the amount of income that households would earn if they maximised their time working and consumed no leisure. Full income is made up of full labour income net of tax, after-tax income from owning assets, and transfers from government.

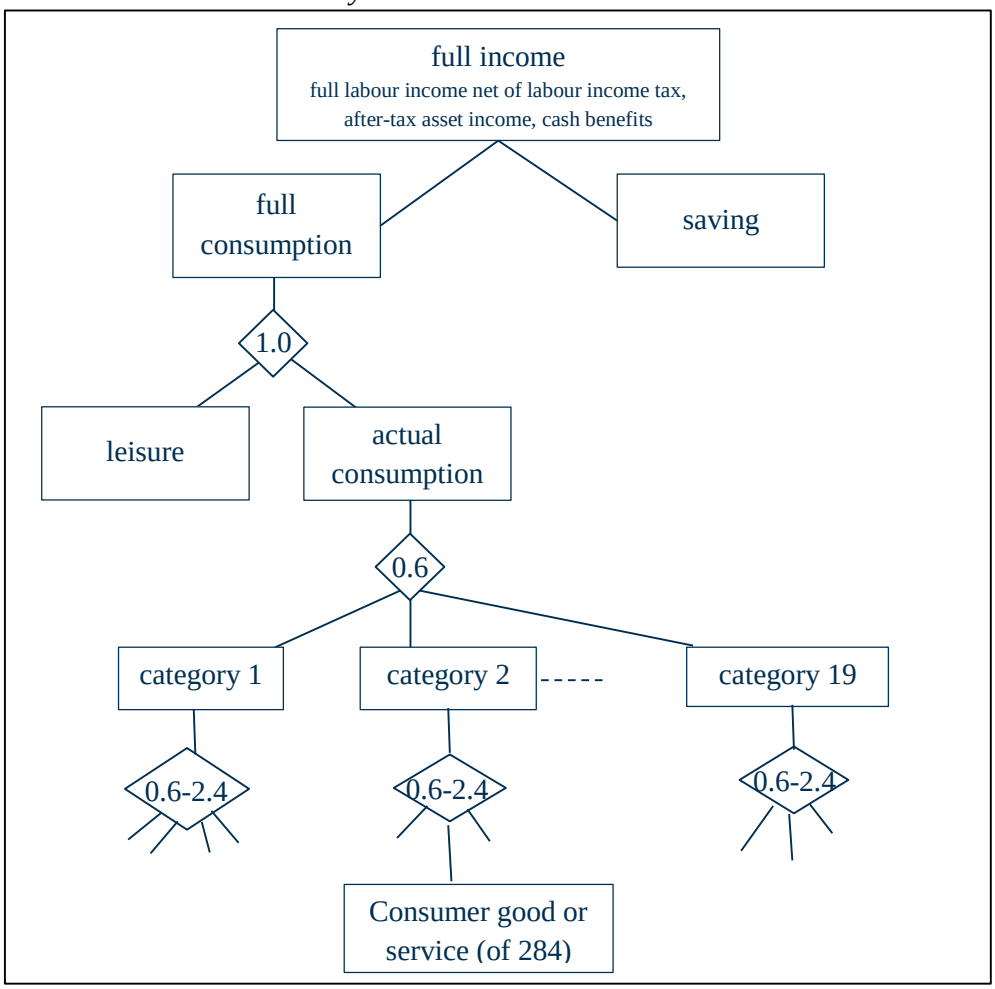
Household saving out of full income is set at a sustainable rate, namely the rate at which the assets owned by households grow in line with GDP. After saving at this rate, the remainder of full income is available for 'full consumption' – which includes the consumption of leisure and of goods and services.

As illustrated in Diagram 3.7, a 3-tier CES utility function is used in modelling the price-sensitive choices that households make concerning their labour supply and the level and pattern of their consumer demand. The first tier describes household choice between leisure and consumption, the second tier describes their choices between 19 broad categories of consumption, and the third tier their choices within each of these broad categories. These three tiers are now discussed in turn.

After meeting their savings target, in the first tier households decide how much of their time to spend in leisure, and how much to spend working. The cost of taking leisure is the amount that would have been earned if the time were instead spent working – which is the real after-tax wage.

Having made their saving and leisure decisions, households are left with a budget for actual consumption expenditure. This budget is allocated across the 284 goods and services distinguished in the model in the second and third tiers of decision making.

Diagram 3.7 Household choices and utility



In the second tier, households allocate their spending across 19 broad categories of consumption. Those broad categories are listed in Table 3.1.

Table 3.1 Broad Categories of Consumption

Food	Transport services
Alcoholic beverages	Communication
Cigarettes and tobacco	Goods for recreation and culture
Clothing and footwear	Recreational and cultural services
Housing services	Education services
Water and sewerage services	Catering
Electricity, gas and other fuel	Accommodation services
Furnishings and household equipment	Other goods and services
Health	Financial services
Vehicle purchase and operation	

In the final tier, households choose their pattern of consumption within each of the broad categories, which gives consumer demand for each of the model's 284 goods and services. There is likely to be more scope for households to vary consumption patterns within broad categories than between broad categories. This is taken into account by using a higher default elasticity of substitution of 1.2 in the final tier, compared to 0.6 in the preceding tier. With the final tier, the elasticity of substitution varies between the broad categories, reflecting differing degrees of substitutability.

A.3.4 Measuring household living standards

Measuring household welfare or living standards needs to take into account both stages of the household decision making process.

In the second stage, the assumed homothetic nature of household preferences means that the indirect utility function, V, takes the following simple form.

$$V = CF\$/PFC$$

In the above, CF refers to full consumption, including leisure and actual consumption. CF$ is total nominal expenditure on full consumption, while PFC is the associated constant utility price index.

In the first stage, expected utility depends on the three factors, as set out in section 3.3. This first factor was the expected value of asset income. However, its contribution to utility has already been taken into account in the second stage via the inclusion of asset income in full income, as seen in Diagram 3.7. This ensures that changes in asset income flow through dollar-for-dollar to utility via CF$.

In the first stage, as seen in section 3.3, expected utility also depends on two other factors, the variance of asset income and the amenity of each asset. This needs to be taken into account by extending the concept of nominal full consumption used in defining indirect utility as follows.

$$CFE\$ = CF\$ + \Sigma a(i).W(i) - \gamma.\sigma^2(W)/(2.W)$$

$$V = CFE\$/PFC$$

In the above, W refers to total wealth and W(i) to a component of wealth. The parameters represented by Greek letters are $\sigma^2(W)$, which is the variance in asset income and wealth associated with uncertainty in capital gains, and γ, which reflects the degree of risk aversion. Taking into account that the variance in asset income depends on the variances and covariances of asset returns, $\sigma(i,j)$, the expression for extended nominal full consumption becomes the following.

$$CFE\$ = CF\$ + \Sigma a(i).W(i) - \gamma.\ \Sigma\Sigma W(i).W(j).\sigma(i,j)/(2.W)$$

In practice, the covariances in asset returns are calculated using the data in Peat et al. (2012) on standard deviations and correlations of returns.

$$\sigma(i,j) = \rho(i,j,).\sigma(i).\sigma(j)$$

Having constructed an indirect utility function, welfare losses can now be measured. In comparing a policy scenario ("p") with a baseline scenario ("b"), the loss in consumer welfare from the policy scenario can be measured using either the compensating variation, CV, or the equivalent variation, EV.

$$CV = \{PFC(p)/PFC(b)\}.CFE\$(b) - CFE\$(p)$$

$$EV = CFE\$(b) - \{PFC(b)/PFC(p)\}.CFE\$(p)$$

In practice, the model calculates the EV. Formally, this is defined as the amount of income that households could forego under the baseline scenario while still enjoying the same level of utility as they would under the policy scenario.

For ease of interpretation, the model reverses the sign of the EV so that it measures welfare gains as positive and welfare losses as negative.

One application of the EV is in determining the excess burden of taxes, which is a measure of the welfare loss per dollar of tax revenue raised. Excess burdens can be calculated for each tax and compared across taxes to assist policy makers in designing a tax system which minimises the adverse impact of raising revenue on household welfare.

A.3.5 Government

On the expenditure side of the government budget, it is assumed that real government final demand for the 284 goods and services is determined exogenously by government spending policies. Because government expenditures are exogenous in real terms, if prices change, then nominal government expenditures change accordingly. Cash benefits paid to households are modelled as lump sum transfers.

On the revenue side of the government budget, the model distinguishes indirect taxes on production and components of final demand, as well as direct taxes such as company income tax, personal income tax, and mining taxes. To ensure that the government budget position is sustainable, the model user designates a swing tax policy that adjusts automatically to keep the budget in balance in long run equilibrium. In the IECM, either the tax rate on labour income or cash benefits or GST can be used for this purpose.

A.3.6 Foreign sector

The modelling of Australia's relationship with the foreign sector recognises Australia's position as a small, open economy. This is the case for both trade and capital flows.

Australia is a price taker for imports, meaning that changes in the Australian economy do not influence the foreign-currency price of imports. Likewise, Australia is also close to being a price taker for exports, with a standard value for the export price elasticity of demand of -12. For some industries, where Australia has some market power or product differentiation (e.g. tourism services) a lower value of -6 is used.

Under the small country assumption, Australia can access the world market for funds, so long as the post-corporate tax rate of return that is achieved matches the given rate required on the world capital market. That is, the after-tax required rate of return on capital is determined overseas and is not influenced by changes in the domestic economy.

Australian wealth is allocated across four asset classes using a CAPM, as outlined in section 3.3. With levels of Australian-owned assets determined in this way, any change in the capital stock is funded by a change in foreign-owned capital.

Foreign ownership of the capital stock must also be in a sustainable long-run equilibrium. The annual inflow of investment funds, recorded on the capital account in the balance of payments, is an amount that ensures that the foreign-owned capital stock grows at a sustainable rate – the long-run rate of GDP growth. The payments to service this borrowing, an outflow on the current account, reflects the required after-tax return on the foreign-owned assets.

Together, the inflow on the capital account and the outflow on the current account imply a certain trade balance if external balance is to be achieved. Exchange rate adjustments ensure that this balance is achieved.

A.4 Industry detail

The original Independent CGE model, which was developed in 2012, followed comparable models in basing its industry detail on the standard ABS input-output tables. Those tables distinguish around 110 industries, the precise number depending on the year of the tables. The Independent Extended CGE model (IECM) was developed in 2014. Among its enhancements to the original model, it extends its detail to distinguish 284 industries. The 284 industries are listed in Table 4.1. The two main aspects of this development work were to devise a method for disaggregating the original 114 industries and to choose the specific disaggregation.

To split the original industries, a disaggregation is needed for both the demand and supply sides.

On the demand side, a disaggregation is available from the ABS product details tables. The 2009/10 edition of these tables provide the demand side information for as many as 1,231 products. These were aggregated to obtain the demand side information for the 284 industries used in the extended model.

On the supply side, there is no disaggregation available from the ABS. In disaggregating from 114 to 284 industries, on the supply side inevitably an initial, simplifying assumption was made that the cost structure of each sub-industry was the same as for its parent industry. This assumption will be refined over time. In particular, in undertaking model applications that may be sensitive to this assumption, the sub-industries that are important for the application will be identified and investigated and, where appropriate, adjustments will be made to the allocation of costs between sub-industries.

In principle, using the 2009/10 product details tables allows a model developer to distinguish anything between 114 and 1,231 industries. Choosing 284 industries involved a trade-off between model richness and model maintenance costs. The trade-off was resolved by distinguishing industries that are more likely to be useful in model applications.

A complication in using the product details tables is that there are a significant number of entries that are suppressed by the ABS to protect the confidentiality of individual businesses. However, the information that is provided, together with reasonable assumptions, were used to obtain estimates for these entries that are considered to be reasonable. This was a time-intensive process.

Table 4.1 List of Industries in the Independent Extended CGE model

0101A	Sheep Farming
0101B	Beef Cattle Farming
0101C	Grain Growing
0101D	Dairy Cattle Farming
0102A	Poultry Farming
0102B	Deer Farming
0102C	Other Livestock Farming
0103A	Nursery and Floriculture Production
0103B	Mushroom Growing
0103C	Vegetable Growing (Under Cover)
0103D	Potatoes
0103E	Other Vegetables
0103F	Fruit and Tree Nut Growing
0103G	Other Crop Growing
0201Z	Aquaculture
0301Z	Forestry and Logging
0401A	Fishing
0401B	Hunting and Trapping
0501A	Forestry Support Services
0501B	Agriculture and Fishing Support Services
0601Z	Coal mining
0701A	Crude oil (incl. condensate)
0701B	Gas Extraction
0801Z	Iron Ore Mining
0802A	Gold Ore Mining
0802B	Other Metal Ore Mining
0901A	Construction Material Mining
0901B	Other Non-Metallic Mineral Mining and Quarrying
1001A	Exploration
1001B	Other Mining Support Services
1101A	Meat Processing
1101B	Poultry Processing
1101C	Bacon and Ham
1101D	Other Smallgoods
1102Z	Processed Seafood Manufacturing
1103A	Milk
1103B	Cheese
1103C	Ice cream and other dairy products
1104A	Jams
1104B	Other Fruit Processing
1104C	Vegetables, frozen
1104D	Vegetables, prepared or preserved
1104E	Tomato pulp, puree and paste
1104F	Other processed vegetables
1105Z	Oils and Fats Manufacturing
1106A	Grain Mill Product Manufacturing
1106B	Cereal, Pasta and Baking Mix Manufacturing
1107A	Bread Manufacturing
1107B	Other Bakery Product Manufacturing
1108A	Sugar Manufacturing
1108B	Confectionery Manufacturing

1109A	Potato, Corn and Other Crisp Manufacturing
1109B	Prepared Animal and Bird Feed Manufacturing
1109C	Coffee and tea, including substitutes
1109D	Other Food Product Manufacturing n.e.c.
1201Z	Soft Drinks, Cordials and Syrup Manufacturing
1202Z	Beer Manufacturing
1205A	Spirit Manufacturing
1205B	Wine and Other Alcoholic Beverage Manufacturing
1205C	Cigarette and Tobacco Product Manufacturing
1301Z	Textile Manufacturing
1302Z	Tanned Leather, Dressed Fur and Leather Product Manufacturing
1303A	Textile Floor Covering Manufacturing
1303B	Rope, Cordage and Twine Manufacturing
1303C	Cut and Sewn Textile Product Manufacturing
1303D	Textile Finishing and Other Textile Product Manufacturing
1304Z	Knitted Product Manufacturing
1305Z	Clothing Manufacturing
1306Z	Footwear Manufacturing
1401Z	Sawmill Product Manufacturing
1402Z	Other Wood Product Manufacturing
1501Z	Pulp, Paper and Paperboard Manufacturing
1502A	Paper Stationery Manufacturing
1502B	Sanitary Paper Product Manufacturing
1502C	Other Converted Paper Product Manufacturing
1601A	Printing and Printing Support Services
1601B	Reproduction of Recorded Media
1701A	Automotive petrol; gasoline refining or blending; motor spirit (incl aviation spirit)
1701B	Kerosene (incl kerosene type jet fuel)
1701C	Petrodiesel
1701D	Other Petroleum Refining and Petroleum Fuel Manufacturing
1701E	Other Petroleum and Coal Product Manufacturing
1801Z	Human Pharmaceutical and Medicinal Product Manufacturing
1802Z	Veterinary Pharmaceutical and Medicinal Product Manufacturing
1803A	Basic Chemical Manufacturing
1803B	Basic Polymer Manufacturing
1803C	Fertiliser and Pesticide Manufacturing
1803D	Other Basic Chemical Product Manufacturing
1804A	Soap and Toothpaste Manufacturing
1804B	Other Cleaning Compound Manufacturing
1804C	Cosmetic and Toiletry Preparation Manufacturing
1901A	Tyre Manufacturing
1901B	Other Polymer Product Manufacturing
1902Z	Natural Rubber Product Manufacturing
2001Z	Glass and Glass Product Manufacturing
2002Z	Ceramic Product Manufacturing
2003Z	Cement, Lime and Ready-Mixed Concrete Manufacturing
2004Z	Plaster and Concrete Product Manufacturing
2005Z	Other Non-Metallic Mineral Product Manufacturing
2101A	Basic Ferrous Metal Manufacturing
2101B	Basic Ferrous Metal Product Manufacturing
2102A	Alumina Production
2102B	Aluminium Smelting

2102C	Copper, Silver, Lead and Zinc Smelting and Refining
2102D	Gold - primary and secondary (excl from purchased scrap)
2102E	Other Basic Non-Ferrous Metal Manufacturing
2102F	Basic Non-Ferrous Metal Product Manufacturing
2201Z	Forged Iron and Steel Product Manufacturing
2202Z	Structural Metal Product Manufacturing
2203A	Metal Container Manufacturing
2203B	Sheet Metal Product Manufacturing (except Metal Structural and Container Products)
2204Z	Other Fabricated Metal Product manufacturing
2301A	Motor Vehicle Manufacturing
2301B	Motor Vehicle Body and Trailer Manufacturing
2301C	Automotive Electrical Component Manufacturing
2301D	Other Motor Vehicle Parts Manufacturing
2301E	Other Transport Equipment Manufacturing n.e.c.
2302A	Shipbuilding and Repair Services
2302B	Boatbuilding and Repair Services
2303Z	Railway Rolling Stock Manufacturing and Repair Services
2304Z	Aircraft Manufacturing and Repair Services
2401A	Photographic, Optical and Ophthalmic Equipment Manufacturing
2401B	Medical and Surgical Equipment Manufacturing
2401C	Other Professional and Scientific Equipment Manufacturing
2401D	Computer and Electronic Office Equipment Manufacturing
2401E	Communication Equipment Manufacturing
2401F	Other Electronic Equipment Manufacturing
2403Z	Electrical Equipment Manufacturing
2404Z	Domestic Appliance Manufacturing
2405A	Pump, Compressor, Heating and Ventilation Equipment Manufacturing
2405B	Specialised Machinery and Equipment Manufacturing
2405C	Other Machinery and Equipment Manufacturing
2501Z	Furniture Manufacturing
2502A	Jewellery and Silverware Manufacturing
2502B	Toy Manufacturing
2502C	Sporting Product Manufacturing
2502D	Other Manufacturing n.e.c.
2601A	Fossil Fuel Electricity Generation
2601B	Hydro-Electricity Generation
2601C	Other Electricity Generation
2605A	Other electricity service income
2605M	Margin - Electricity transmission, distribution and on selling (2620-2640)
2701A	Other gas service income
2701M	Margin - gas distribution
2801Z	Water Supply, Sewerage and Drainage Services
2901Z	Waste Collection, Treatment and Disposal Services
3001Z	Residential Building Construction
3002Z	Non-Residential Building Construction
3101A	Road and Bridge Construction
3101B	Other Heavy and Civil Engineering Construction
3201Z	Construction Services
3301A	Non-margin - wholesaling services
3301B	Commission-Based Wholesaling
3301M	Margin - wholesaling services
3901A	Non-margin - retailing services

3901B	Retail commission on sales
3901M	Margin - retailing services
4401Z	Accommodation
4501A	Meal preparation and presentation
4501B	Beverage serving service
4501C	Takeaway food
4501D	Catering services
4501E	Net losses from gambling - Clubs, pubs, taverns and bars (Hospitality)
4501M	Margin - food and beverage services (4511-4530)
4601A	Non-margin - Road Freight Transport
4601B	Road Passenger Transport
4601M	Margin - Road Freight Transport
4701A	Non-margin - Rail Freight Transport
4701B	Rail Passenger Transport
4701M	Margin - Rail Freight Transport
4801A	Non-margin - Water Freight Transport
4801B	Water Passenger Transport
4801M	Margin - Water Freight Transport
4901A	Non-margin - Air and Space Freight Transport
4901B	Air and Space Passenger Transport
4901M	Margin - Air and Space Freight Transport
4801C	Scenic and Sightseeing Transport
4801D	Non-margin - Pipeline and Other Transport
4801N	Margin - Pipeline and Other Transport
5101Z	Postal and Courier Pick-up and Delivery Service
5201A	Water Transport Support Services
5201B	Airport Operations and Other Air Transport Support Services
5201C	Other Transport Support Services
5201D	Warehousing and Storage Services
5201M	Margin - Water Transport Support Services
5401A	Newspaper and Magazine publishing
5401B	Book publishing
5401C	Other Publishing
5401D	Software Publishing
5501A	Motion Picture and Video Activities
5501B	Sound Recording and Music Publishing
5601A	Radio Broadcasting
5601B	Television Broadcasting
5701A	Internet Publishing and Broadcasting
5701B	Internet Service Providers and Web Search Portals
5701C	Data Processing, Web Hosting and Electronic Information Storage Services
5801A	Wired Telecommunications Network Operation
5801B	Other Telecommunications Network Operation
5801C	Other Telecommunications Services
6001A	Libraries and Archives
6001B	Other Information Services
6201A	Banks, building societies, credit unions
6201B	Other Depository Financial Intermediation
6201C	Non-Depository Financing
6201D	Financial Asset Investing
6301A	Life Insurance
6301B	Health Insurance

6301C	General Insurance
6301D	Superannuation Funds
6301M	Marine insurance provision (Margin)
6401A	Financial Asset Broking Services
6401B	Other Auxiliary Finance and Investment Services
6401C	Auxiliary Insurance Services
6601A	Goods and Equipment Rental and Hiring
6601B	Non-Financial Intangible Assets (Except Copyrights) Leasing
6701A	Residential Property Operators: owner-occupied
6701B	Residential Property Operators: rented
6702A	Non-Residential Property Operators
6702B	Real Estate Services
6901A	Scientific Research Services
6901B	Architectural Services
6901C	Surveying and Mapping Services
6901D	Engineering Design and Engineering Consulting Services
6901E	Other Specialised Design Services
6901F	Scientific Testing and Analysis Services
6901G	Legal Services
6901H	Accounting Services
6901I	Advertising Services
6901J	Market Research and Statistical Services
6901K	Corporate Head Office Management Services
6901L	Management Advice and Related Consulting Services
6901O	Veterinary Services
6901P	Professional Photographic Services
6901Q	Other Professional, Scientific and Technical Services n.e.c.
7001Z	Computer Systems Design and Related Services
7210A	Employment Placement and Recruitment Services
7210B	Labour Supply Services
7210C	Travel Agency and Tour Arrangement Services
7210D	Other Administrative Services
7310A	Building Cleaning, Pest Control and Gardening Services
7310B	Packaging Services
7501Z	Public Administration and Regulatory Services
7601Z	Defence
7701Z	Public Order and Safety
8010A	Preschool Education
8010B	Primary Education
8010C	Secondary Education
8010D	Special School Education
8110A	Technical and Vocational Education and Training
8110B	Higher Education
8210A	Adult, Community and Other Education
8210B	Educational Support Services
8401A	Hospitals
8401B	Medical Services
8401C	Pathology and Diagnostic Imaging Services
8401D	Dental Services
8401E	Optometry and optical dispensing
8401F	Other Allied Health Services
8401G	Other Health Care Services

8601A	Aged Care Residential Services
8601B	Other Residential Care Services
8601C	Child Care Services
8601D	Other Social Assistance Services
8901A	Museum Operation
8901B	Parks and Gardens Operations
8901C	Creative and Performing Arts Activities
9101A	Sports and Physical Recreation Activities
9101B	Horse and Dog Racing Activities
9101C	Amusement and Other Recreation Activities
9201A	Casino Operation
9201B	Lottery Operation
9201C	Other Gambling Activities
9401Z	Automotive Repair and Maintenance
9402A	Machinery and Equipment Repair and Maintenance
9402B	Other Repair and Maintenance
9501A	Personal Care Services
9501B	Funeral, Crematorium and Cemetery Services
9501C	Laundry and Dry-Cleaning Services
9501D	Photographic Film Processing
9501E	Parking Services
9501F	Other Personal Services n.e.c.
9501G	Private Households Employing Staff and Undifferentiated Goods- and Service-Producing Activities of Households for Own Use
9502A	Religious Services
9502B	Civic, Professional and Other Interest Group Services

A.5 Baseline scenario and validation

The model uses a variety of recent data, but the main source is the detailed Input-Output (IO) tables from the ABS, giving the model a detailed picture of the Australian economy. The latest available tables are used, specifically the 2009/10 IO tables released in late 2013. This also means that the model uses the contemporary ABS industry classification, ANZSIC 2006. The model is calibrated so that it exactly reproduces this 2009/10 data.

The next step is to simulate a baseline scenario for use as a point of reference. This involves two aspects, uprating the economy from 2009/10 to 2013/14 and normalising the economy to a sustainable position. That is, the baseline scenario provides a normalised, or sustainable, version of the 2013/14 economy.

Uprating the economy from 2009/10 to 2013/14 involves simulating the model after adjusting the model's inputs for the effects of economic developments from 2009/10 to 2013/14. This includes allowing for growth in wages, import prices, productivity and employment from 2009/10 to 2013/14.

Normalising the economy involves taking into account the differences between the structure of the economy in 2009/10, compared to an economy in a long-run sustainable equilibrium. This involves normalising the trade balance, the government budget balance, rates of business investment, and the level of the terms-of-trade.

The model has been tested to ensure that it observes a number of widely-accepted balance and neutrality properties for CGE models.

- GDP by expenditure always equals GDP by income. This is true for both nominal and real GDP in all simulations, which is a useful check on the consistency of the model's coding.
- Walras' Law states that if all but one market is in equilibrium, then the last market must also be in equilibrium. In the IECM, equilibrium is not imposed in one of the 8 labour markets, but is nevertheless always achieved in that market in model simulations as a consequence of Walras' Law.
- The IECM observes price neutrality. When the average nominal wage or numeraire is increased by two per cent, all prices in the model increase by exactly two per cent, and all real variables are unaffected, in accordance with the expected price neutrality property.
- The IECM also observes real neutrality. This means that when all of the exogenous real variables are two per cent higher, all of the endogenous real variables are also two per cent higher. The exogenous real variables in the IECM are: full labour supply; real general government final demand by industry; the supplies of industry-specific fixed factors; the supplies of land; the initial holdings of the four real assets owned by the household sector; and the size of the world economy.

A.6 Business tax

Analysis of the business tax system is important. High or poorly designed business taxes have the potential to cause major economic distortions because of the open economy assumption that the after-tax required rate of return on capital is determined overseas. This assumption implies that an increase in taxation of foreign investment into Australia may need to be offset by higher pre-tax returns on capital to maintain the after-tax returns received by foreign investors. Higher pre-tax returns are achieved by reducing investment and capital, which leads to lower labour productivity.

In light of this, the model has a highly detailed treatment of business taxation, with a focus on important features of the current Australian system as well as tax designs that have been proposed around the world. This takes into account factors such as: the different tax treatments of debt and equity financing; the complex system of depreciation allowances and tax concessions; franking credits; foreign tax credits; and the potential for international profit shifting.

Treatment of debt and equity financing

Four alternative business income tax systems that have been proposed around the world are provided for in the IECM. These systems differ in the deductions available for the costs of debt and equity financing, and are modelled as follows.

- Standard corporate income tax (CIT), such as the current Australian system, allows deductions for the interest costs of debt financing, but no deduction with respect to equity financing costs.
- Comprehensive business income tax (CBIT), allows no deductions for financing costs, giving the widest possible tax base.
- Allowance for corporate equity tax (ACE), gives deductions for the interest costs of debt financing, along with an imputed cost for equity financing.
- Allowance for corporate capital tax (ACC), allows a single deduction for an imputed cost for the full capital base, so both equity and debt financing costs are covered by the one deduction.

Both ACE and ACC aim to provide deductions that cover all capital financing costs. With the full cost of capital deductible, the tax base is intended to only include economic rents. In principle, this means that a business tax system based on ACE or ACC would be more efficient than the existing CIT system.

In modelling deductions for the cost of debt financing (under the CIT and ACE), the debt-to-equity ratio of each industry has been estimated using ATO Taxation Statistics data. This allows the model to take into account that the current company income tax system provides higher tax deductions for industries which tend to have higher debt-to-equity ratios.

Depreciation allowances and tax concessions

Company income tax in Australia allows for a number of depreciation allowances and tax concessions, which differ by asset type. The model takes into account the following aspects of the system of depreciation allowances.

- The tax system allows for depreciation at historic cost which is less generous than economic depreciation which would be calculated at replacement cost.

- Tax and economic depreciation rates differ for each of the nine types of produced assets in the model. Where tax depreciation rates are more concessional for some types of capital than for others, the choice of the mix of capital may be distorted.

- Immediate expensing is allowed for investment in some assets, sometimes with a loading. This includes certain R&D expenditure, which can be immediately expensed, with loadings that differ by industry.

Franking credits

Some corporate tax revenue is refunded when franking credits are used, reducing the overall contribution to the budget from company tax. However, some franking credits are "lost" because companies may choose to retain profits rather than distribute them as franked dividends, or because the franking credits accrue to overseas investors who are not able to use them. The use of franking credits is explicitly modelled as part of the CAPM that was discussed in section 3.4. In the CAPM, the availability of franking credits creates a tax bias in favour of Australian wealth being allocated to Australian-based capital.

Choice of firm location

Multinational firms can generate rents through access to intangible assets such as brand names, patents and market power. Company income tax can have an important effect on the locational choice of multinational firms and their rents, which is taken into account in the model. It assumes that multinational firms have access to a firm-specific fixed factor that represents their intangible assets. They allocate the factor between countries to maximise their profit.

The response of firm-specific capital to an increase in the Australian company tax rate is not dissimilar to the response of variable capital. In both cases, capital is likely to be withdrawn, until pre-tax returns rise sufficiently to restore after-tax returns to the levels available in other jurisdictions.

Profit shifting

The model takes into account that multinational companies may seek to reduce their business tax liability by shifting profits from Australia to countries with lower rates of business tax. Profit shifting may occur through transfer pricing, the method of internal charging for company know-how and the way debt is allocated between countries.

Following de Mooij and Devereux (2011), profit shifting, which is assumed to involve costs, is modelled as a shifting of part of the company tax base from Australia to tax havens. The extent of profit shifting depends on the extent of the gap between the Australian company tax rate and the tax haven tax rate. The model takes into account the overall effect that this behaviour has on both revenue collections and the user cost of capital.

A.7 References

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Appendix B: Detailed results

The following tables provide detailed economic impacts for the proposed 20% tax credit for dividends paid from the foreign-sourced income of Australian MNCs. These impacts are expressed as deviations from the baseline scenario, in which there is no change to the existing policy for taxing dividends. Thus, the results show the impacts on the economy of the proposed rebate.

Sources of household income (nominal)	
	20% credit for direct
Labour income	0.0%
business capital	-6.1%
housing capital	0.0%
direct offshore	63.6%
portfolio offshore	-36.7%
total local capital income	0.0%
less personal income tax before dividend credits	0.3%
Dividend tax credits use	8.6%
Cash benefits	-1.4%
Total household income	**0.0%**

Household welfare	
	20% credit for direct
consumption	0.05%
leisure	0.04%
full consumption	0.05%
asset-adjusted full consumption	0.09%
asset-adjusted full nominal consumption	0.08%
Household welfare $m 2013/14 terms	1,023
Budget cost $m 2013/14 terms	1,749
Net Benefit / Budget Cost (%)	**58.5%**

Government budget $m 2013/14 (nominal)	
	20% credit for direct
General Government Final Demand	33
Cash benefits	1,749
Indirect taxes	-5
Business income tax	-40
Dividend tax credits use	-2,282
PIT before div credits	545
Total	**0**

Local portfolio shares	
	20% credit for direct
business capital	-2.1%
housing capital	0.0%
direct offshore	4.2%
portfolio offshore	-2.1%
Total	**0.0%**

Wealth (nominal)	
	20% credit for direct
Total productive assets	0.0%
plus Australian investment abroad	17.1%
less foreign investment in Australia	8.6%
Australian wealth	**0.0%**