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Economic Analysis of the Impacts of Using GST to Reform Taxes

September 2011

This report was prepared for CPA Australia

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Executive Summary

On May 2 2010, the Australian Treasury released its comprehensive review into Australia's tax and transfer system, *Australia's Future Tax System: Report to the Treasurer*, dubbed 'the Henry Tax Review.' The report documents the findings of a comprehensive review of the Australian taxation system, including modelling of the economic efficiency of taxes, which was undertaken by KPMG Econtech.

Following this, the Australian Government will be holding a public Tax Forum in early October 2011, which will consider directions for future tax reform in the context of the Henry Tax Review. The aim of the forum is to continue the tax reform discussion, and to hear the community representatives' view on building the tax reform agenda.

The Henry Tax Review recommended the abolition of various relatively inefficient state taxes such as conveyancing duties and insurance levies. However, to maintain revenue for the government, other relatively more efficient taxes may need to be raised to fund the abolition of the inefficient taxes. This has the potential to improve overall efficiency of the economy by reducing costs for businesses and households, and increasing overall productivity.

One of the relatively efficient taxes in Australia is recognised to be the GST. Furthermore, Australia's GST rate is amongst the lowest in all OECD countries, making it a potential candidate for reform. Thus, whilst there are challenges in re-designing the current GST framework, it is nevertheless important to include it in any discussions about tax reform.

Hence, to inform debate around the potential role of the GST in the Australian tax environment (particularly ahead of the upcoming Tax Forum), the CPA Australia commissioned KPMG Econtech to undertake an objective economic study to inform discussion around the potential role of the GST in the Australian tax environment. This report examines the economic impacts of increasing the GST to fund a reduction in a number of more inefficient taxes. The four alternative scenarios examined in this report are listed below.

- *12.5% GST replacing less efficient taxes* - increase GST rate to 12.5% to fund the abolition of selected relatively inefficient taxes.

- *15% GST replacing less efficient taxes* - increase GST rate to 15% to fund the abolition of selected relatively inefficient taxes.

- *20% GST replacing less efficient taxes* - increase GST rate to 20% to fund the abolition of selected relatively inefficient taxes.

- *Uniform GST replacing less efficient taxes* - extend the 10% GST to all goods and services (except those that are currently input-taxed) to fund the abolition of selected relatively inefficient taxes.

The inefficient taxes to be abolished are in the following order:

1. Insurance Taxes – Insurance Duty and Fire Insurance Levy;

2. Motor Vehicle Taxes – Stamp Duty and Motor Vehicle Registration;

3. Commercial Conveyancing Duty; and

4. Payroll Tax.

Where there is still additional revenue remaining from the higher GST rate after abolishing the inefficient state taxes, the extra revenue is used fund other tax reductions and to address equity concerns. Specifically, this additional revenue is used to reduce company income tax rate, the tax rate on the top bracket of personal income tax, and as a transfer payment to households.

Key Findings

Impact on Living Standards

Chart 1 illustrates the impacts on living standards as a result of each scenario. Because the efficiency costs of raising the GST are lower than the efficiency benefits of abolishing the inefficient taxes, all of the tax reforms lead to an overall higher level of living standards. The size of the impact depends on the size of increase in the GST, as well as the nature of the inefficient taxes abolished.

It is important to note that the standard of living impacts presented here are aggregate measures. Specifically, individuals with a larger exposure to the abolished taxes will tend to enjoy higher living standards, whilst those who have a larger exposure to the GST will tend to either benefit less or be negatively impacted upon.

Overall, it is estimated that aggregate living standards in the economy would be higher under each of the alternative tax reform scenarios.

Chart 1
Annual impacts on living standards (deviation from baseline, $billion)[1]
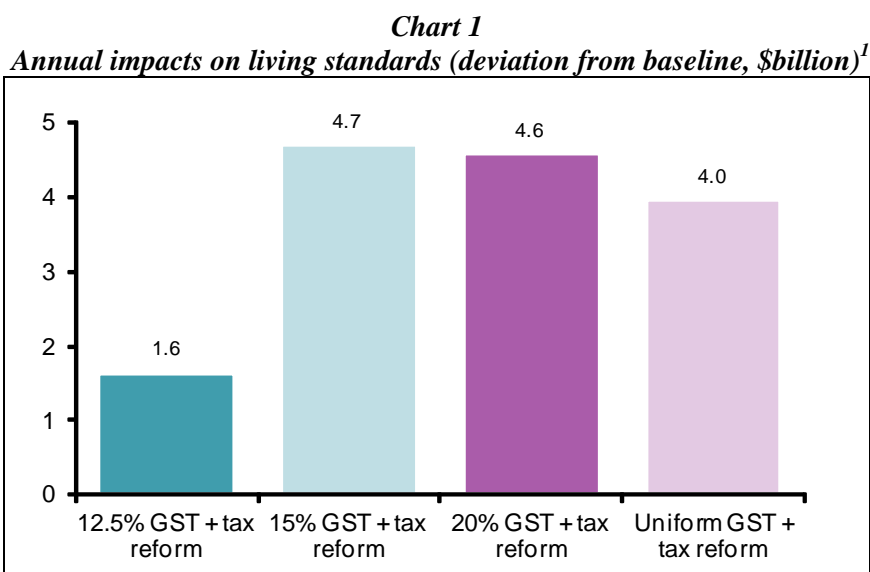
Source: KPMG Econtech, MM900 simulations

Impact on Industry Activity

The variations in taxes that are abolished and in the design of the GST also lead to different impacts on industry activities, as shown in Chart 2. In all scenarios, total GDP is higher than would otherwise be the case. This is because the abolition of inefficient taxes leads to higher multi-factor productivity from improved allocative efficiency. Despite the increase in GST, which tends to discourage activity and output, the efficiency effect on output dominates, leading to an overall higher level of GDP.

Impacts at the industry level tend to be non-uniform. While most sectors experience higher activity levels because of the tax reforms, sectors with larger exposures to the GST and/or smaller exposures to the abolished taxes are expected to have reduced levels of output.

For example, the Finance and Insurance industry is likely to experience large benefits from the tax reforms, as it would no longer be subject to insurance taxes. On the other hand, the Education and Health industry is likely to be negatively impacted under the uniform GST scenario – this is because, under this scenario, these services become subject to a tax that was not previously applicable. Thus, the price of these services would be higher after the application of GST, while not benefiting significantly from the abolition of less efficient taxes.

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[1] The scenarios include the abolition of inefficient taxes as outlined in the scenario descriptions.

Chart 2
Impacts on Industry Activity (per cent deviation from baseline)
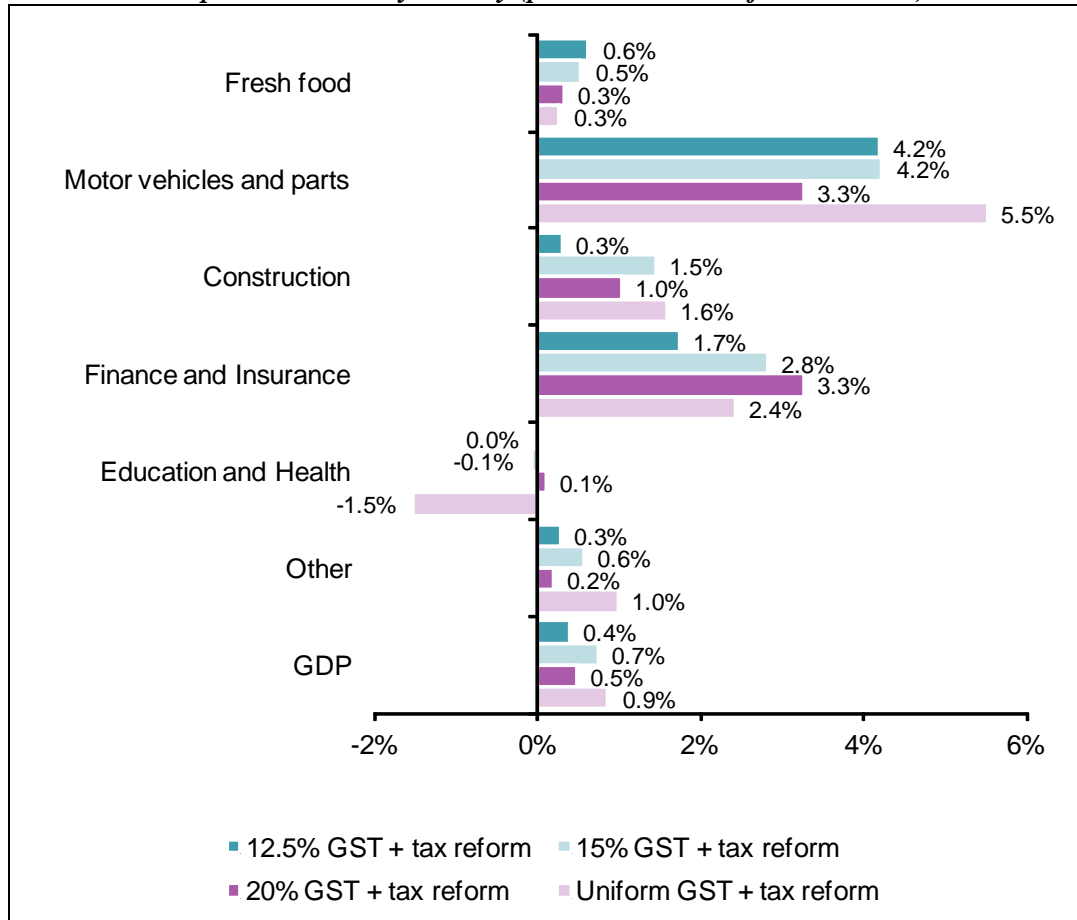
Source: KPMG Econtech, MM900 simulations

The results from these scenarios illustrate that there are likely to be positive impacts on the economy if a relatively more efficient tax, such as GST, is used to abolish existing taxes that are less efficient.

It should be recognised that, before designing such a policy, it would be important to further examine the impacts on different groups in the economy, as these aggregate impacts are likely to vary significantly according to a groups' exposure to the taxes in the policy.

However, this paper illustrates that there are definite potential gains from this type of reform. Therefore, it is clearly worth further examining the role of the GST as part of the longer term tax reform and productivity improvement agenda.

1.   Introduction

The effectiveness of the Australian tax system is an issue that concerns all Australians. It affects the operation of businesses, households and governments. Australia's tax-transfer system forms an integral part of our economic and societal structure through its influence on decisions of saving, consuming, investment, and working.

In recognition of this, the Australian Government recently commissioned a panel of experts to undertake a review of Australia's Future Tax System, headed by Ken Henry and termed 'the Henry Tax Review'. The review panel provided its report to the Australian Government in December 2009.

In May 2010, the Australian Government released the final report of the Henry Tax Review, the most comprehensive review of Australia's tax system to date. This report provides an excellent background to the consideration of tax reform options, because it discusses the general principles of tax reform and includes modelling of the economic costs of a number of state taxes. These economic costs were modelled by KPMG Econtech, using the same framework used in this report.

Following this, the Australian Government announced that it will convene a public Tax Forum in early October 2011 to consider future tax reform options in the context of the Henry Tax Review. The discussion paper for this forum was released on 28 July 2011[2], with the aim to "inform public debate on priorities and directions for continuing tax reform in the lead-up to the Tax Forum." This discussion paper identifies economic growth as one of the important factors in the design of a tax system.

Taxes are important sources of funding for government services, such as education, health and welfare. However, taxes also affect the way that the economy operates, and can lead to less productive use of resources and lower living standards. The design of a tax can have an impact on how distorting (or inefficient) a tax can be. As a consequence of differences in design, there is significant variation in efficiency in the taxes currently faced by businesses and households in Australia.

For example, many of the state taxes are recognised as the more inefficient taxes. The more inefficient or distorting a tax is, the more likely resources will be moved away from their highest-value use. This will lead to lower productivity across the economy.

On the other hand, consumption taxes (such as Australia's GST) are generally considered to be one of the more efficient types of taxes. International organisations such as the International Monetary Fund (IMF) have recognised the implications of these efficiency differences, suggesting in 2010 that they would "welcome more reliance on consumption-based taxes [in Australia]. This would allow for the elimination of inefficient taxes at the state level that impede labor mobility and allow for reductions in federal personal income taxes that would encourage increases in labor supply and saving."[3]

A 2009 survey of international tax rates[4] showed that Australia's 10 per cent GST rate is at the lower end of the world GST/VAT scale. The average GST/VAT rate across all 115 surveyed countries was around 15.25 per cent in that year. In addition, this survey showed that the 10 per cent Australian GST rate is one of the lowest GST/VAT rates amongst all OECD countries, with many OECD countries such as Denmark, France, Germany and the U.K. imposing GST/VAT rates around 20 per cent.[5]

Despite these attributes, the GST was not included as one of the taxes examined in the Henry Tax Review. While the 2011 Tax Forum discussion paper contains some discussion questions around the

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[2] *Tax Reform Next Steps for Australia*, Australian Government, Tax Forum Discussion Paper, July 2011.
[3] IMF 2010 Article IV Consultation Concluding Statement, September 15, 2010.
http://www.imf.org/external/np/ms/2010/091510.htm
[4] KPMG Corporate and Indirect Tax Rate Survey, 2009
[5] Table B.1 in Appendix B lists the GST rates in 2010 for OECD countries.

GST, these are focused on the incentives caused by GST distribution, rather than on the costs/benefits of including GST in the mix of potential tax reforms.

It is recognised that there are definite challenges in including changes to the GST in any reform agenda (including that any changes require the unanimous approval of the States and Territories[6]). This is reflected in the IMF's 2010 statement that, "On tax reform, the [Australian] authorities noted that increasing consumption taxes would be difficult, as they are perceived as regressive. Further, the government has a clear policy that the GST rate will not be increased or the base broadened."[7] This was further reinforced by the Treasurer Wayne Swan's recent comment that "The government will not be touching the base or the rate of the GST – end of story."[8]

As discussed above, the GST is believed to be relatively more efficient compared to many other existing Australian taxes. As such, the GST may have the potential to contribute to a more efficient economy.

Productivity in the Australian economy is something that CPA Australia believes is an important issue in today's economic climate. In its pre-budget submission this year, CPA Australia focussed on "matters that are aimed at enhancing the productivity and efficiency of Australia's economy going forward."[9] It is also our understanding that CPA Australia is looking to release a number of papers that examine options around improving productivity. As one of this series, this report looks at tax reform in terms of economic efficiency/productivity.

Thus, CPA Australia commissioned KPMG Econtech to undertake an objective economic study of using an increase in the GST to fund a reduction in some of the more inefficient taxes. This report is a discussion paper around the economics of the GST and other taxes, and is not designed to make specific policy recommendations.

In this report, KPMG Econtech starts by investigating the efficiency of the main Australian taxes including the GST. The level of tax reductions that could be funded with an increase in the GST is then examined, along with the overall impact of this type of tax-mix switch.

Each of the tax scenarios in this study has been designed by CPA Australia with the aim of improving efficiency in the Australian Tax system and, in doing so, the productivity of the Australian economy. This gives a good basis for discussion around the existing tax system design. Of course, it is recognised that efficiency is just one metric for the design of a "good" tax system, along with other goals such as equity and simplicity.[10] Some potential equity implications are discussed further in Section 4.1.

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[6] See Clause 31 of the Intergovernmental Agreement on the Reform of Commonwealth-State Financial Relations, June 1999.

[7] IMF, Australia: 2010 Article IV Consultation—Staff Report; and Public Information Notice on the Executive Board Discussion, October 2010. http://www.imf.org/external/pubs/ft/scr/2010/cr10331.pdf

[8] Matthew Franklin and Siobhain Ryan, *Wayne Swan resists pressure to put GST on forum agenda*, The Australian, July 29, 2011.

[9] CPA Australia, Pre-Budget submission 2011–2012, February 2011.

[10] It should also be noted that, in recognising the difficulties around tax reform of this nature (as reflected in the Government's hesitation to include the GST in any recent tax reform discussions), it is unlikely that any changes to the GST could be introduced overnight. However, policy options including GST should form part of an ongoing longer-term dialogue.

1.1   Structure of Report

This report is structured as follows.

- Chapter 2 analyses and compares the efficiency of the main Australian taxes, including the GST.

- Chapter 3 outlines the tax scenarios that are modelled in this report, namely various levels of tax reductions funded by an increase in GST.

- Chapter 4 presents the economy-wide results for each of the tax scenarios that are modelled in this report.

- The Attachments provide:

    o a definition of each of the taxes examined in this analysis (Attachment A);

    o a comparison of GST/VAT rates across OECD countries (Attachment B);

    o detail on the MM900 excess burden modelling approach for each tax (Attachment C);

    o an outline of the MM900 model (Attachment D); and

    o tables showing the detailed results for each of the tax scenarios (Attachment E).

2.   The economic cost of taxation

As discussed above, taxes are used to fund important government services, such as education, health and welfare. However, taxes also affect the way that the economy operates, and can lead to less productive use of the resources available in Australian economy, and lower living standards.

This chapter compares the economic costs of a number of Australian taxes, and shows that some taxes have a greater negative impact on the economy than others. To do this, this chapter first discusses how the economic cost of a tax can be measured using its 'excess burden'. The costs of each tax are then discussed and compared, making use of estimates from KPMG Econtech's model of the Australian economy, MM900. A more detailed discussion of the economic cost of each tax, as well as how it is modelled in MM900, can be found in Appendix A. This analysis is important background to the next chapter, which will consider ways that tax reform can reduce the impact of the tax system on the Australian economy.

As mentioned earlier, this paper is focussing on the efficiency of taxation, which is just a metric for the design of a "good" tax system. Any final policy designs should also take into account other goals such as equity and simplicity.

2.1   The excess burden

Most taxes distort the choices made by households, businesses, and the foreign sector in some way.

- Taxes can affect the incentives for households to work, and affect choices about the level and pattern of consumption.

- Taxes can affect choices made by firms about their levels of production or their use of different types of labour, capital, land and natural resources.

- Taxes can affect choices about whether to use imported or domestically produced goods and services.

- Taxes can affect the demand by foreigners for Australia's exports.

When taxes affect the choices made by households, businesses and the foreign sector, the economy does not operate in its most productive way. For example, if taxes reduce the incentive to work, then employment would be lower than would otherwise be the case, leading to lower household incomes. If taxes affect firms' operating decisions, and result in resources not being allocated to their most efficient uses, then the productivity of these resources will be lower. These productivity impacts, in turn, impact on output and national income. In this way, taxes can result in a loss in *living standards/ consumer welfare*,[11] over and above the revenue raised from the tax.

Different taxes will distort the economy in different ways, and therefore can be expected to impact consumer living standards to differing extents. Taking this into account, given any specific revenue requirement, the tax system can be designed to minimise its impact on the economy. To do this, the impact of each tax on the economy first needs to be measured and understood.

The extent to which a tax reduces living standards can be measured by its *excess burden*, which is the loss in living standards from a tax divided by the amount of revenue raised. This is a measure of the economic cost of a tax per dollar of revenue, and allows direct comparisons to be made between taxes.

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[11] 'Consumer living standards' or 'consumer welfare' is the benefit derived by Australian households from their consumption, savings and leisure time. It is a measure of aggregate welfare of all consumers in the economy.

There are two types of excess burden that can be estimated, as follows.

- The *marginal excess burden* (MEB) is defined as the additional loss in living standards from increasing a tax by a small amount, per dollar of additional government revenue. The MEB is useful for considering small changes to the current tax system.

- The *average excess burden* (AEB) is defined as the total loss in living standards from imposing a particular tax, per dollar of government revenue raised. These measures are useful for considering the imposition or abolition of a certain tax.

The greater the excess burden of a tax, the greater the loss in living standards per dollar of revenue, and the less *efficient* the tax is said to be. The following section presents estimates of the excess burden of a number of Australian taxes, and explains why some taxes have a greater impact on living standards than others.

2.2   Estimates of the cost of Australian taxes

Chart 2.1 below presents estimates of the excess burden of each tax considered in this report. There are major variations in the economic costs between the taxes, with average excess burdens ranging from 6 cents per dollar of revenue raised to around 70 cents per dollar.

Chart 2.1
Excess Burden Estimates of selected Australian Taxes (cents per dollar of revenue)
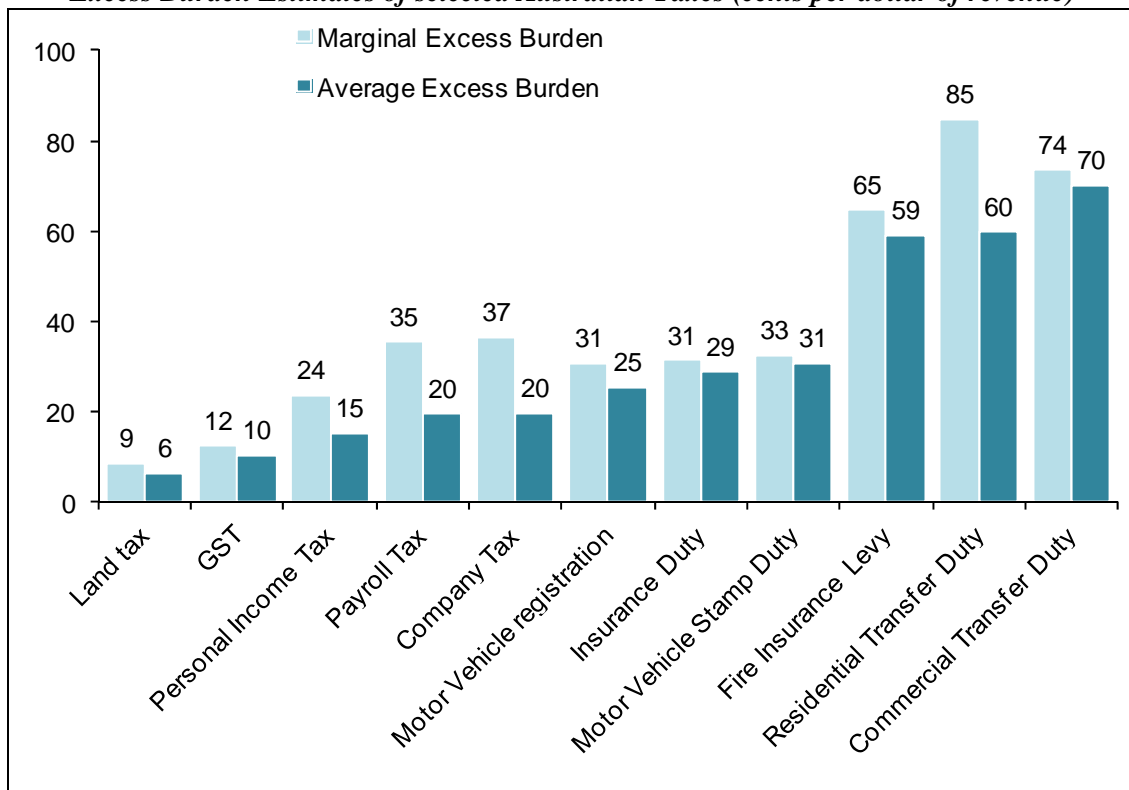
Source: KPMG Econtech MM900 model simulations

The variation in the excess burden of different taxes is explained mainly by two principles.

- The *mobility principle* recognises that the excess burden of a tax is higher, the higher the mobility of its tax base. When a tax is applied to a highly mobile tax base, that tax base is likely to shrink, distorting economic activity by more than if the tax base were relatively immobile.

- The *narrowness principle* recognises that the excess burden of a tax is likely to be higher, the narrower the tax base. For example, if a tax is applied to only one particular good, then for any given level of revenue it requires a proportionally higher tax rate to be applied to this narrower base. As the distorting impact of a tax is related to the tax rate (with the economic cost increasing faster as the rate is increased), then higher rate taxes on narrow bases have a greater economic cost.

These principles can be illustrated and understood by dividing the taxes identified in the chart above into three categories: taxes on mobile bases, taxes on immobile/ broader bases and taxes on narrow bases. The impacts of each tax are described below, and are explained in more detail in Appendix B.

Taxes on mobile bases

Investment funds are highly mobile internationally, and sensitive to the rate of return that they can earn. When a tax reduces the return to capital, investors can simply withdraw their funds. This increases the cost of funding, which can lead to a reduction in the capital stock in Australia, and a less productive use of resources than would otherwise be the case. Therefore, taxes on capital are taxes on a highly mobile base, and tend to have high excess burdens.

Conveyancing stamp duties are levied on the value of property transactions, which includes the improved value (or capital value) of property. This means that they are a tax on both land and capital, and have a very high excess burden, whether they are levied on commercial or residential properties.

- Conveyancing stamp duties on commercial properties increase the cost of investing in capital improvements to property. Since investment funds are highly sensitive to the rate of return, stamp duties have a relatively large impact on investment levels. They also encourage businesses to substitute away from using structures in their production process and towards using other inputs such as labour and other types of capital. This distortion contributes to the very high excess burden for stamp duties.

- Conveyancing stamp duties on residential properties also reduce the incentive to invest in residential improvements to property. This economic cost is further exacerbated because stamp duties are a tax on property *transactions*, and they discourage households from moving even if their needs change.

Motor vehicle taxes also have a relatively high economic cost per dollar of revenue raised. Both registration fees (a tax on the stock of vehicles) and stamp duties (a tax on the transfer of vehicles) are taxes on capital and increase the cost of investing in motor vehicles. This leads to a reduction in investment in motor vehicles, and a high excess burden.

Company tax reduces profits, which leads to a higher after-tax cost of capital to firms. This, in turn, increases the cost of capital relative to other inputs to production, such as labour, which leads to a substitution away from capital and towards other inputs. This results in the economy having lower capital intensity levels and a less productive use of resources than would otherwise be the case. Therefore, company tax is estimated to have a high excess burden (with an MEB of 37 cents per dollar of revenue raised).

Taxes on immobile or broad bases

In contrast to capital, there are a number of tax bases that are relatively immobile, and less able to respond to taxes. Land is a good example of this. **Land tax** is levied as a percentage rate on the unimproved value of commercial land, and on rental properties. Because land is an immobile asset, the total supply of land cannot change in response to this tax. Since land tax does not affect the total amount of land used for productive purposes, it can have a relatively small economic impact.[12] This is reflected in the low excess burden estimate for land tax.

Household consumption and labour income are also relatively immobile tax bases. Taxes on these bases will reduce the purchasing power of wages, by either increasing the price level or directly lowering the after tax wage. This may reduce a household's incentive to work, and therefore reduce labour supply to the economy. However, the responsiveness of labour supply is moderated because households have certain consumption needs, and a certain willingness to work. Therefore, compared to taxes on more narrow or mobile bases, taxes on household consumption or labour income lead to smaller distortions to the operation of the economy, and smaller excess burdens.

GST is a broad-based tax on consumption, which is payable on most goods and services consumed in Australia. The main economic cost of GST is to raise the price level. This leads to a fall in the real wage or the real purchasing power of labour income, which may create a disincentive to work. This then flows through to reductions in consumption which, in turn, reduce the size of the overall tax base. However, since most goods and services are taxed, and taxed at the same rate, there is limited opportunity for households to avoid the GST by changing their consumption patterns[13]. As a result, the GST does not have a large impact on the pattern of consumption, and thus has a relatively small impact on economic activity. Thus, the broad base of the GST, in addition to the relative immobility of consumption as a tax base, leads to a low economic cost per dollar of revenue raised by the GST, and a low excess burden.

Similarly, **personal income tax (PIT)** also has a relatively low economic cost, because although it reduces the incentive to work, labour supply has only a moderate responsiveness to changes in the after tax wage. However, PIT is a progressive tax, providing an exemption from tax on income earned up to the tax-free threshold, and imposing increasing marginal tax rates at higher incomes. Compared with a flat rate PIT, this progressivity effectively narrows the base of the tax, and may increase the disincentive to supply labour for individuals with higher income. This leads to a medium excess burden for PIT.

Taxes on narrow bases

Like GST and PIT, **payroll tax** is also a tax on the relatively immobile base, labour income. Although payroll tax is paid by businesses, it is a tax on labour incomes because businesses will pass the cost to workers in the form of lower real wages (through either higher prices or lower wages). By itself, this would imply that payroll tax would have a moderate excess burden, as households would respond to this only by somewhat lowering their labour supply. However, payroll tax has an exemption for business below a certain threshold, which means that the tax only applies to around one-half of labour income. This narrowing of the tax base undermines the revenue raising ability of payroll tax. The small business exemption also creates a disincentive for businesses to expand beyond the size of the tax threshold, leading to less productive businesses. Taking the effects of the

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[12] However, land tax can distort the distribution of land use between industries. Land tax is levied differently depending on the aggregate land holdings of a tax payer and certain land uses are exempt from land tax. This non-uniformity in the current land tax system means that some land users face lower rates of tax than others. This distorts the distribution of land between industries away from those facing higher tax rates, and increases the economic cost per dollar of revenue for land tax.

[13] However, there are some goods on which GST is not paid, such as fresh food. This does create some economic cost because households will substitute towards consuming these items to a certain extent, distorting the pattern of economic activity. Despite this inefficiency, the GST has a low overall excess burden because if its broad and immobile tax base.

narrow tax base into account, payroll tax in its current form is the most inefficient of all of the taxes on labour that are considered in this study.

Taxes on insurance (including insurance stamp duties and fire insurance levies) are taxes on a narrow range of products. This means that consumers can readily avoid the tax by changing their consumption patterns, and reducing their use of insurance products (such as motor vehicle or home and contents insurance). Since household demand for insurance is relatively responsive to price, there is a relatively large distortion to economic activity per dollar of revenue raised by these taxes, leading to a high excess burden. On the other hand, types of insurance taken out by businesses are likely to be less responsive to price changes, and this offsets some of the excess burden. Nonetheless, the overall excess burden of insurance tax is estimated to be high, with an AEB of 29 for insurance duty and 59 for fire insurance levy.

The above discussion argues that some taxes have higher costs per dollar of revenue than others. This implies that the negative impact of the tax system on the economy could be reduced by replacing some of Australia's high-cost taxes with lower-cost taxes. In particular, many State taxes have relatively high economic costs, and reform to these taxes could result in large economic gains. Consideration of the potential gains from such reforms is the focus of the next chapter.

3.   Tax Scenarios - Design

The analysis in Chapter 2 argued that state taxes are among the more inefficient Australian taxes, since they create relatively large losses in average living standards per dollar of revenue raised. Furthermore, Australia's main consumption tax, the GST, creates a relatively low loss in average living standards for each dollar of revenue it raises. This suggests that if the GST can be used to replace more inefficient state taxes, there is a potential for gains to the economy, without any loss to tax revenue. Specifically, if resources in the economy are allocated closer to their most valuable use, this is likely to lead to higher productivity and consumer living standards.

The table below shows the level of tax revenue raised by the Australian Government in 2009-10 across the taxes identified in the previous chapter.

Table 3.1
2009-10 tax revenue from selected Australian Taxes ($ million)

	2009-10 $m
Income taxes levied on individuals	124,784
Income taxes levied on enterprises and non-resident witholding taxes	62,231
Goods and services tax (GST)	46,553
Employers' payroll taxes	*16,760*
Stamp duties on conveyances	*12,294*
Motor vehicle taxes	*6,963*
Insurance taxes	*4,597*
Other Commonwealth Taxes	33,865
Other State & Local Taxes	28,273
Total	336,320

Source: Australian Bureau of Statistics, 2009-10 Taxation Revenue, Australia
Note: Stamp Duties from commercial conveyancing contribute almost 40% of all conveyancing duties

The table above shows that three of the biggest tax revenue sources for Australian governments are income tax, company tax and the GST. The table also shows that around $40 billion revenue is currently collected from the state taxes that were identified in the previous chapter as relatively inefficient (payroll tax, conveyancing duty, motor vehicle taxes and insurance taxes).

This chapter investigates four scenarios in which the GST is used to pay for the abolition of a number of relatively inefficient state taxes. From the table above, a back of the envelope calculation estimates that a GST of nearly 19 per cent would be required to abolish the less efficient state taxes (including all of conveyancing duty) shown in italics in the table above.[14]

Each scenario looks at the level of reform that could be undertaken under alternative GST designs (rates or coverage). In each scenario, additional revenue is raised from the GST and less efficient state taxes are successively repealed, until overall government revenue is left unchanged. In doing so, a set of reforms with similar intent but of different scales are examined.

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[14] It should be noted that these sort of calculations only illustrate the direct impacts of any tax changes. That is, they do not take into account "indirect" impacts such as behavioural responses to changes in taxes, or any interaction in the taxes themselves. The results of the full analysis in Section 4 use a detailed CGE modelling framework to estimate not only the direct impacts, but also the indirect impacts.

The scenarios presented in this chapter are designed to be illustrative examples of the potential gains from some tax reform options. The following four alternative scenarios are examined.

1. **12.5% GST replacing inefficient taxes** - increase GST rate to 12.5% to fund the abolition of selected inefficient taxes.

2. **15% GST replacing inefficient taxes** - increase GST rate to 15% to fund the abolition of selected inefficient taxes.

3. **20% GST replacing inefficient taxes** - increase GST rate to 20% to fund the abolition of selected inefficient taxes.

4. **Uniform GST replacing inefficient taxes** - extend the 10% GST to all goods and services (except those that are currently input-taxed) to fund the abolition of selected inefficient taxes.

These scenarios are designed to focus on the potential benefits of tax reform. Each simulated reform has a neutral impact on the government budget, and does not include any changes to government spending policy[15]. Since each of the scenarios is revenue neutral, the extent to which inefficient taxes can be abolished will differ between scenarios. This analysis focuses first on the potential state taxes that could be abolished and then examines other tax reform options involving reductions in personal and company income tax.

Each scenario starts by abolishing inefficient state taxes, in order, until revenue neutrality is reached. The order in which the taxes are abolished is as follows:

1. Insurance Taxes – Insurance Duty and Fire Insurance Levy;

2. Motor Vehicle Taxes – Stamp Duty and Motor Vehicle Registration;

3. Commercial Conveyancing Duty; and

4. Payroll Tax.

The state taxes to be abolished are chosen because they have high economic costs per dollar of revenue. The first taxes to be abolished under each scenario are those with the smaller revenue yields, and have the potential to be relatively simple to reform. The last taxes to be abolished are commercial conveyancing duty and payroll tax – which are the taxes with large revenue yields, thus requiring a much higher level of alternative funding.

A notable exclusion from the list of state taxes that are abolished in the scenarios is that of residential conveyancing duty. While Chapter 2 argued that residential conveyancing duty has a high excess burden, there are a number of factors that must be considered before reforms are made to this revenue source, making it a complex issue that requires a more detailed analysis. In particular, it would be more meaningful if this tax were not examined in isolation, but instead examined in conjunction with other policies that affect housing investment decisions. For example, the housing market currently has access to tax benefits such as negative gearing, capital gains discounts and tax-free treatment for the main residence. The interaction of these other tax treatments with residential stamp duty should be assessed, along with equity considerations, to provide a full picture of the opportunities around reform of residential conveyancing duties.

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[15] Specifically, the modelling holds government spending fixed in real terms. This means that when tax reform affects prices, nominal government spending changes accordingly. The total tax revenues are also allowed to adjust cover this change in nominal spending, giving a budget neutral outcome.

Turning back to the taxes included in this analysis, in some cases, the GST revenue is more than enough to compensate for the loss in revenue from abolishing all of the taxes listed above. For these scenarios, the remaining GST revenue could be used to address other tax reform issues, including any equity concerns that may arise from changes to the tax system.

It should be noted that issues surrounding redistribution are beyond the scope of this analysis and should be examined carefully when fully assessing any tax reform policy.

In the CPA Australia scenarios in this report, any remaining revenue is used to:

- reduce the tax rate in the top income tax bracket by 1 percentage point;

- reduce the company tax rate by 1 percentage point; and

- return the remainder to the community. For example, the additional tax revenue could be distributed to households via a compensation package.[16]

This is further discussed when the results of these scenarios are presented later in this Chapter.

These scenarios have been simulated in KPMG Econtech's MM900 model, which is discussed in Appendix C. The following chapter show the estimated impacts of each alternative GST policy, with a particular focus on living standards and industry activity.

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[16] The benefits associated with this revenue transfer will depend upon the exact nature of the package, thus are beyond the scope of this analysis. This is discussed further in Section 4.1.

4. Tax Scenarios - Results

This chapter reports the estimated impacts of each alternative policy on the economy.

These results are presented as changes from the 2010 baseline scenario.[17] That is, the results show the economic outcomes if the tax reform is implemented, compared with the economic outcomes if there is no reform. Furthermore, the results presented in this chapter refer to the situation where the economy has fully adjusted to the tax policy change. Therefore, they show the lasting impacts of a policy, rather than the short-term transitional impacts.

The following sections discuss and compare the results of the four scenarios described in Chapter 3. First, the impact of each reform on consumer living standards, is discussed. Following this, the different impacts on output and employment are presented by industry. Finally, impacts on Australia's interactions in the international market are discussed, including the impact of reforms on the exchange rate, exports and imports. The most relevant results are included in this chapter of the report, and a more detailed set of results are available in the appendices.

4.1 Living Standards

Consumer living standards is used to assess the benefits of these policy reforms. It is an aggregate measure of the standard of living of Australian households, which is dependent on the benefits they derive from consumption, saving and leisure.

In this analysis, in each scenario, additional revenue is collected from the GST. By itself, this would lead to higher prices, which lowers the purchasing power of wages, and might lead to a reduction in the incentive to work. Therefore, by itself (without taking into account any benefits associated with the use of revenue raised), greater GST collections would likely lead to a loss in living standards.

However, higher GST revenues mean that a selection of state taxes with relatively high economic costs can be abolished. As discussed below, the abolition of these taxes is likely to lead to higher living standards for households. Therefore, the increase in the GST, coupled with the abolition of inefficient state taxes, may lead to an improvement in living standards.

Chart 4.1 shows that, under each scenario, the tax reforms would lead to an overall higher standard of living. This is because the costs of imposing the GST are smaller than the benefits of abolishing the inefficient taxes.   As discussed above, consumer living standards is an aggregate measure. Therefore, whilst the impacts of tax reforms are likely to vary considerably across different individuals, the impacts presented here show changes in *aggregate* living standards. Specifically, individuals who were more exposed to the taxes abolished will tend to benefit the most from the tax reform, whilst those who have a larger exposure to the GST will tend to either benefit less or be negatively impacted upon.

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[17] It is worth noting that the modelling is based on the current set of taxes in the Australian economy, and does not include new tax policies such as the Minerals Resource Rent Tax or the price on carbon. However, this should have only a marginal impact on the results for the scenarios analysed in this paper.

This is because the modelling results are presented as deviations from a baseline economy. If the new policies were incorporated into the modelling for this analysis, they would be held constant in both the baseline and the tax reform scenarios. Consequently, the inclusion of these taxes in the modelling for this paper would not be expected to make a noticeable difference to the results.

Chart 4.1
Annual impacts on living standards (deviation from baseline, $billion)
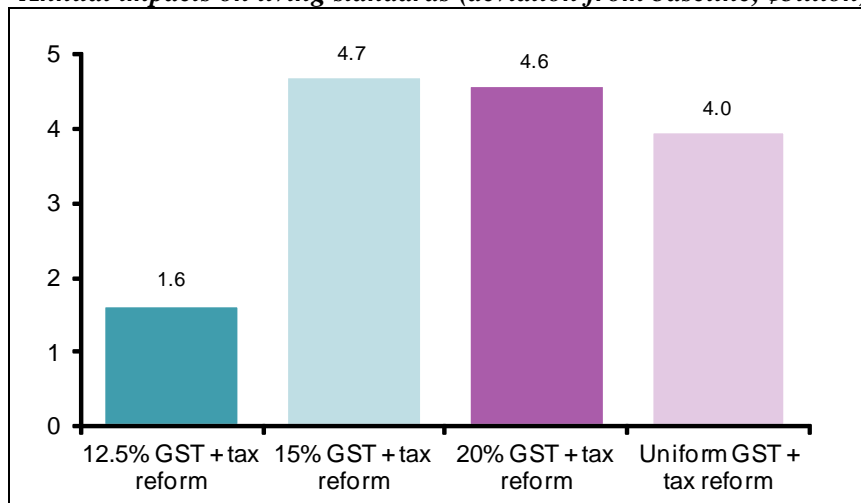
Source: KPMG Econtech, MM900 simulations
Note: The benefits in the chart arise from the abolition of inefficient taxes.

The MM900 model takes into account both direct and indirect impacts on the economy as a result of the tax reforms. It not only accounts for the direct price changes as a result of the changes in the tax mix, but also the indirect impacts on prices due to the changes in activities resulting from the tax reform. Therefore, the impact on living standards in chart 4.1 reflects both the direct and indirect impacts of the reform, including any adjustment in the consumption/work patterns of households.

Scenario 1: 12.5% GST replacing some less efficient taxes

In Scenario 1 (12.5% GST plus tax reform), the GST rate is raised from 10 per cent to 12.5 per cent. This increase in GST collections raises sufficient revenue (approximately $10.5 billion) to pay for the abolition of the following taxes.

1. Insurance taxes – insurance duty and fire insurance levy;

2. Motor vehicle taxes – stamp duty and motor vehicle registration;

3. 10% of commercial conveyancing duty.

Such a reform is estimated to result in annual household living standards being $1.6 billion higher than would otherwise be the case. This gain in living standards comes about because of the following.

- The abolition of insurance duty and fire insurance levy leads to lower insurance prices, and reduces the disincentive effect of the tax to take out insurance. This leads to higher consumption of insurance services, particularly by households.

- The abolition of motor vehicle stamp duty and motor vehicle registration fees leads to greater use of motor vehicles, particularly by businesses.

- The reduction of commercial conveyancing duty by 10 per cent leads to greater investment in improvements to land.

Overall, the abolition of these taxes means that the economy is allocating resources more efficiently, because some distortions to the way that businesses and households make decisions have been removed. This results in an improvement in productivity as more output can be generated from the same amount of resources.

Scenario 2: 15% GST replacing some less efficient taxes

In Scenario 2 (15% GST plus tax reform), the higher GST rate leads to additional GST revenues of just over $20 billion (compared to the current 10 per cent GST baseline). This means that more inefficient state taxes can be abolished in this scenario than in Scenario 1 (12.5% GST plus reform). In addition to the taxes abolished in Scenario 1, the following taxes can also be abolished under this scenario.

3. All of commercial conveyancing duty; and

4. 40% of payroll tax.

As additional inefficient taxes are removed in this scenario, there are larger increases in living standards than seen in Scenario 1 (12.5% GST plus tax reform), with annual living standards estimated to be $4.7 billion higher than without any tax reform. In addition to the enhancing impact achieved for living standards under Scenario 1 (12.5% GST plus tax reform), there are two additional impacts in this scenario.

- The complete abolition of commercial transfer duty reduces the tax-related disincentive to invest in commercial property. This means that businesses' can now make more productive use of commercial structures.

- The reduction in payroll tax has flow on effects to higher real wages, raising the incentive to work. It also reduces the disincentive for businesses to be smaller than the payroll tax threshold. This means that businesses' choice of scale is more closely related to efficiency considerations than to tax considerations.

Scenario 3: 20% GST replacing some less efficient taxes

In Scenario 3 (20% GST plus tax reform), the higher GST rate leads to additional GST revenues of just under $40 billion (again, compared to revenue under the existing 10 per cent GST). This is enough to fund the abolition of all the inefficient state taxes considered in this report. That is, in addition to the state taxes abolished in Scenario 2 (15% GST plus tax reform), all of payroll tax can be abolished under this scenario.

Further, after abolishing the inefficient state taxes, there is still additional revenue remaining from the higher GST rate. This revenue could be used in a number of ways; for example, to fund tax reductions in other taxes or to address equity concerns. In this CPA Australia scenario, this additional revenue has been used as follows:

- The company tax rate has been reduced by 1 percentage point, which leads to a higher after tax rate of return on investment in Australia, therefore higher levels of overseas investment in Australian industries. This leads to higher incomes and a gain in living standards.

- The tax rate on the top bracket of personal income tax has been reduced by 1 percentage point. This leads to a greater incentive to work.

The reduction in inefficient taxes leads to a gain in living standards that is higher than the loss from raising the rate of GST to 20 per cent. Overall, there is an annual gain of $4.6 billion.

The gain in living standards in Scenario 3 (20% GST plus tax reform) is slightly lower compared to that in Scenario 2 (15% GST plus tax reform). This is because raising the GST rate to 20 per cent raises more revenue than is required to pay for the abolition of the selected inefficient state taxes and the reduction in company tax and personal income tax.

- Although they are relatively small, there are nonetheless economic costs associated with the GST. Comparing the results of Scenario 3 (20% GST plus tax reform) to Scenario 2 (15% GST plus tax reform), the additional 5 per cent rate added to the GST has a greater economic cost than the benefits associated with the abolition of the remainder of payroll tax and the reduction in company tax and personal income tax.

- However, the 5 per cent additional GST also provides additional revenue beyond that needed for the tax reform. Specifically, after the tax reforms are implemented, there is an estimated $6.6 billion available for additional government spending or for use in addressing equity concerns through transfers back to households. The benefits of such policies are beyond the scope of this analysis, and so the estimated $4.6 billion gain in living standards will be conservative.

Scenario 4: Uniform GST replacing some less efficient taxes

In Scenario 4 (uniform GST plus tax reform), the GST rate is kept at 10 per cent, but the application of GST is broadened to include domestic consumption of products that are currently GST-free.[18] This broadening of the tax base raises sufficient revenue (approximately $11.5 billion) to pay for the abolition of the following taxes.

1. Insurance taxes – insurance duty and fire insurance levy;

2. Motor vehicle taxes – stamp duty and motor vehicle registration; and

3. 50% of commercial conveyancing duty.

In comparison to the previous scenarios, this scenario lies in between Scenario 1 (12.5% GST plus tax reform) and Scenario 2 (15% GST plus tax reform) in terms of the amount of revenue raised and, consequently, the level of inefficient taxes that can be abolished. As a result, the size of the estimated gains in living standards under this scenario also lies between the results in these two earlier scenarios.

However, interestingly, despite the revenue contribution of this scenario being much closer to the revenue raised under Scenario 1 (12.5% GST plus tax reform), the size of the benefits to living standards are closer to those seen under Scenario 2 (15% GST plus tax reform).

This is because there is an additional factor that makes this scenario efficiency-enhancing – namely that the removal of GST-free products broadens the tax base of the GST, and (as per the narrowness principle), makes the GST more efficient. This broadening of the GST base reduces incentives to substitute between products, thus removing some additional distortions in the economy – where consumption decisions may have been slanted towards GST-free items.   It is estimated that, coupled with the abolition of inefficient taxes, this tax reform leads to annual consumer living standards that are around $4 billion higher than otherwise would be the case.

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[18] Thus, under this scenario, GST is applied to all domestic consumption of goods and services except for those that are currently input-taxed.

4.2   Industry impacts

The use of GST to replace a set of relatively less efficient taxes in these simulations results in enhancements to average living standards. While the scenarios have the same broad design, the section above shows that the variations in the taxes that are abolished/reformed and variations in the rate and design of the GST lead to differences in the magnitude of the impact on living standards. These variations lead to variation in the impacts to the industrial composition of the economy.

Chart 4.2
Impacts on Industry Activity (per cent deviation from baseline)
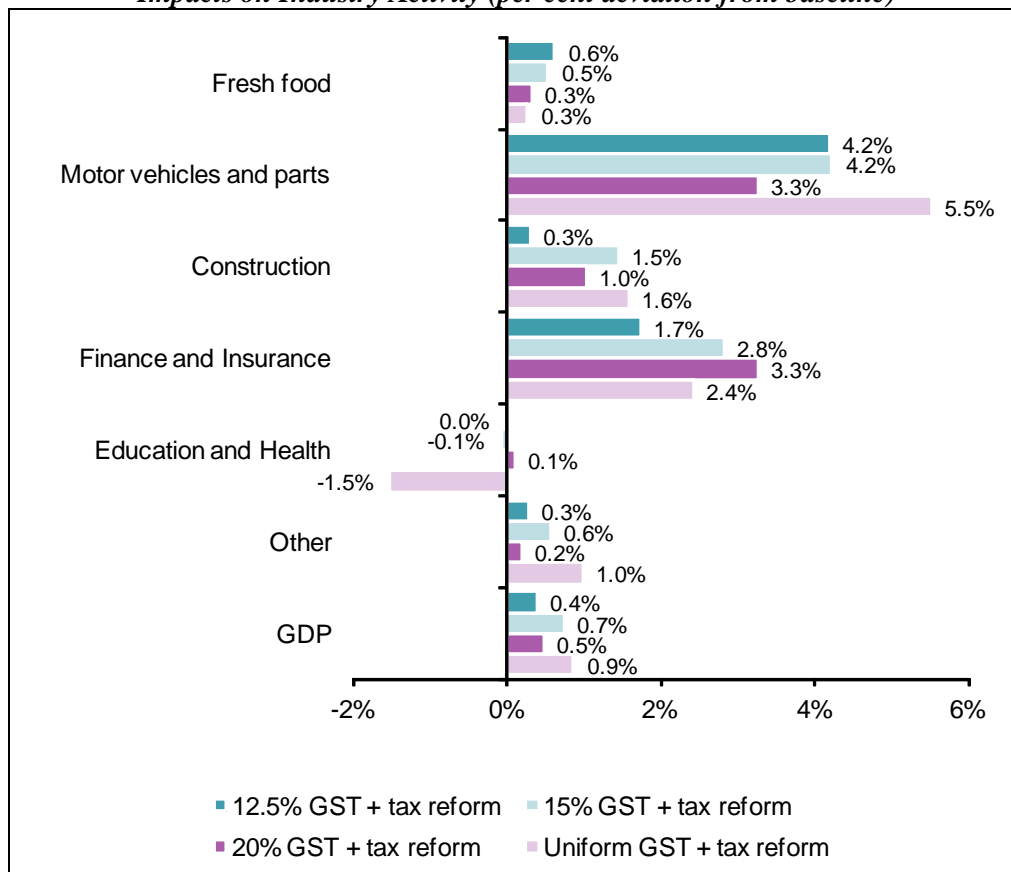
Source: KPMG Econtech, MM900 simulations

Impact on GDP

Chart 4.2 shows the estimated impacts of each scenario on output (as measured by industry value-added[19]) for key sectors of the Australian economy. In all scenarios, total GDP is higher than in the baseline.

- When the rate of GST is raised, this makes consumption prices higher, which means that the real wage (or the purchasing power of income) is lower. Lower real wages may have a discouraging impact on households' decisions to supply labour at a given wage, which can lead to lower output.

- However, when this is combined with the abolition of less efficient taxes, resource allocation becomes more efficient, which leads to higher output.

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[19] Value-added refers to the amount by which the value of a good is increased at each stage of its production, after subtracting initial costs.

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- In all scenarios, this positive impact on output outweighs the labour impact (from a higher GST), meaning that GDP is higher under all scenarios. Scenario 3 (20% GST plus tax reform) is expected to result in the smallest GDP increase and this is because the large GST increase has a more pronounced negative impact on output. This and the broader GDP impacts are further explained in the latter part of this chapter.

Industry Activity

Chart 4.2 also shows that, while most sectors are expected to be larger because of the simulated tax reforms, there are some sectors that are expected to be smaller than would otherwise be the case.

In the first three scenarios, the rate of GST is raised. By itself, this will tend to raise the overall price level, and reduce overall demand, along with economic activity. However, there are some industries that would benefit from a higher rate of the GST.

- Fresh food is not taxed under the GST, which means that the price of fresh food is not directly affected by the higher GST rate. Therefore, as the higher GST rate raises the prices of other items, consumers substitute toward consuming fresh food. This higher demand flows through to higher economic activity in fresh food industries.

- Some financial services are input-taxed under the GST, so when the GST rate is higher, financial services industries pay more GST on the goods and services they purchase as inputs. This raises the cost of providing financial services, but not by the full amount of the rate increase. Therefore, the price impact on financial services is smaller than the price impact on GST taxable goods and services. This means that households would substitute towards consuming more financial services, contributing to greater activity in the finance sector.

In contrast, Scenario 4 (uniform GST plus tax reform) leaves the rate of GST unchanged, but broadens the base to include items that are currently untaxed, such as fresh food items, health and education. As a result, while the price of most items will not be directly affected by the uniform GST, the price of items that are currently GST-free would be higher. This is reflected in the results shown in Chart 4.2, since the impact on output from the fresh food sector is smallest under the Uniform GST scenario (at 0.3%), and the impact on education and health is negative in this scenario.

In addition to GST, another important influence on the level of activity in the finance and insurance sector is that of **taxes on insurance**. In all scenarios, insurance duty and fire insurance levy are abolished. This lowers the price of insurance products, leading to higher demand for insurance products, particularly from households. This contributes to the higher level of activity in the finance and insurance sector, as can be seen in the results from all scenarios in Chart 4.2.

Another common factor across all four scenarios is the abolition of **taxes on motor vehicles** – stamp duty and registration fees. This reform reduces the cost of purchasing and operating motor vehicles for businesses and households. At the same time, the higher rate of the GST in the first three scenarios will somewhat offset the impact of abolishing motor vehicle taxes. Overall the cost of purchasing and owning motor vehicles is lower in each scenario, raising demand along with Australian production of motor vehicles, as seen in Chart 4.2.

Conveyancing stamp duty on business properties is also lower in all four scenarios. This reduces property costs to businesses, which encourages greater investment in improvements to land. As a result, construction services are in higher demand, which is reflected in the higher level of construction activity under each scenario.

However, the extent of the impact on the construction industry is different in all scenarios. This is explained by two main factors.

- First, the extent to which conveyancing duty on businesses is reduced is different in each scenario. The 12.5% GST scenario and the Uniform GST scenario raise enough revenue to reduce the rate of the tax, by 10 and 50 percent respectively. In contrast, the 15% GST and the 20% GST scenarios raise enough revenue to pay for the abolition of the tax entirely. This means that the 15% GST and the 20% GST scenarios will tend to have larger positive impacts on the construction industry.

- Second, the demand for construction services across the economy depends on the level of total economic activity. The impact on total production is smaller in the 15% GST and 20% GST scenarios, than the impact in the Uniform GST scenario, and this pattern is reflected in the construction sector.

In all scenarios GDP is higher than would otherwise be the case. However, the pattern in the total GDP impacts is interesting. Compared to Scenario 4 (Uniform GST plus tax reform), there are more inefficient taxes abolished in both Scenario 2 (15% GST plus tax reform) and Scenario 3 (20% GST plus tax reform), yet the GDP impacts are smaller in these two scenarios. The reason for the smaller GDP impacts in these two scenarios is related to the larger increase in GST and the abolition of payroll tax.

Under Scenario 2 and Scenario 3 (15% and 20% GST plus tax reform, respectively) the impact of a higher GST is used to fund the abolition (or partial abolition) of payroll tax. As discussed previously, the higher GST rate on its own tends to cause output to be lower. However, unlike the other inefficient taxes abolished, while the abolition of payroll tax contributes to higher living standards, it actually has a neutral impact on output, as explained in the following discussion.

In each state, the tax-free threshold in payroll tax gives an exemption to businesses with a payroll value smaller than the threshold. This creates an incentive for businesses in each industry to be smaller than would otherwise be the case. The smaller business size under payroll tax means that industries are not operating in the most productive manner. As a result, businesses are using more inputs (such as labour and capital) than is necessary to produce each item, and average costs are higher than they need to be. When payroll tax is removed, businesses no longer have an incentive to be smaller. As a result, businesses increase in size towards the optimal size of operation.

- Therefore, on one hand, the abolition of payroll taxes increases output as it lowers costs of businesses and improves productivity by making businesses operate at a more optimal scale.

- On the other hand however, the adjustment of business size and the lower costs mean that businesses require less capital to produce the same amount of output. This reduced demand for capital means that less foreign investment is required in each industry. In turn, less income (and GDP) is required to pay for this foreign debt.

Thus, in comparison to Scenario 4 (uniform GST plus tax reform), the higher GST under Scenarios 2 and 3 will have a higher negative impact on output. However, all three scenarios are achieving similar positive GDP impacts from the abolition of less efficient taxes (because the extra taxes abolished in Scenarios 2 and 3 are largely payroll tax – which has no impact on GDP). As such, the main difference between the GDP impact under Scenario 4 (uniform GST plus tax reform) and the GDP impact under scenarios 2 and 3, is dominated by the negative impact of a higher GST.

Importantly, although reducing payroll tax has a neutral impact on GDP, living standards are higher under these two scenarios (again compared to Scenario 4). Removing payroll tax contributes to the higher living standards in these tax reform scenarios because it:

- allows consumers to make decisions based on prices that more closely reflect the costs of production;

- allows resources in the economy to be reallocated towards more productive uses; and

- removes the incentive for business to be smaller than would otherwise be the case and therefore reduces waste because fewer inputs are used to produce each unit of output.

The reduction in personal income tax and company tax in Scenario 3 (20% GST plus tax reform) also raises living standards by improving the efficiency of the Australian economy. Unlike reducing payroll tax, these reforms also tend to raise the level of GDP.

- A lower rate of personal income tax leads to a higher real wage, and greater returns from work. This higher incentive to work leads to higher labour supply, and greater productive capacity in the economy.

- A lower rate of company tax leads to a higher return from investing in Australia. This results in greater investment and higher capital intensity levels, which raises the productivity of the Australian workforce.

Employment impacts

The employment impacts on each industry broadly follow the impacts on production in each industry, as shown in Chart 4.3.

For each scenario, the overall employment impacts are small. This means that the employment impacts for each industry represent a redistribution of employment between industries rather than a change to the overall employment level. In general, employment moves towards industries that are more directly affected by the tax reforms. In scenarios where demand for food, motor vehicles, construction services and financial services is higher, employment in these industries is also higher than would otherwise be the case. This results in a movement of employment away from industries that are not as directly affected by the tax reforms.

Overall, the employment impacts are more muted than the overall production impacts because changes in total employment in the long run are constrained by the willingness of households to supply labour. The value that households place on leisure time limits the extent to which households will choose to work more in response to a higher real wage. On the other hand, capital is highly mobile, and very responsive to changes in its rate of return. This means that, while capital movements can allow for relatively large changes in production levels, changes in employment are relatively small.

Chart 4.3
Employment impacts (% deviation from baseline)
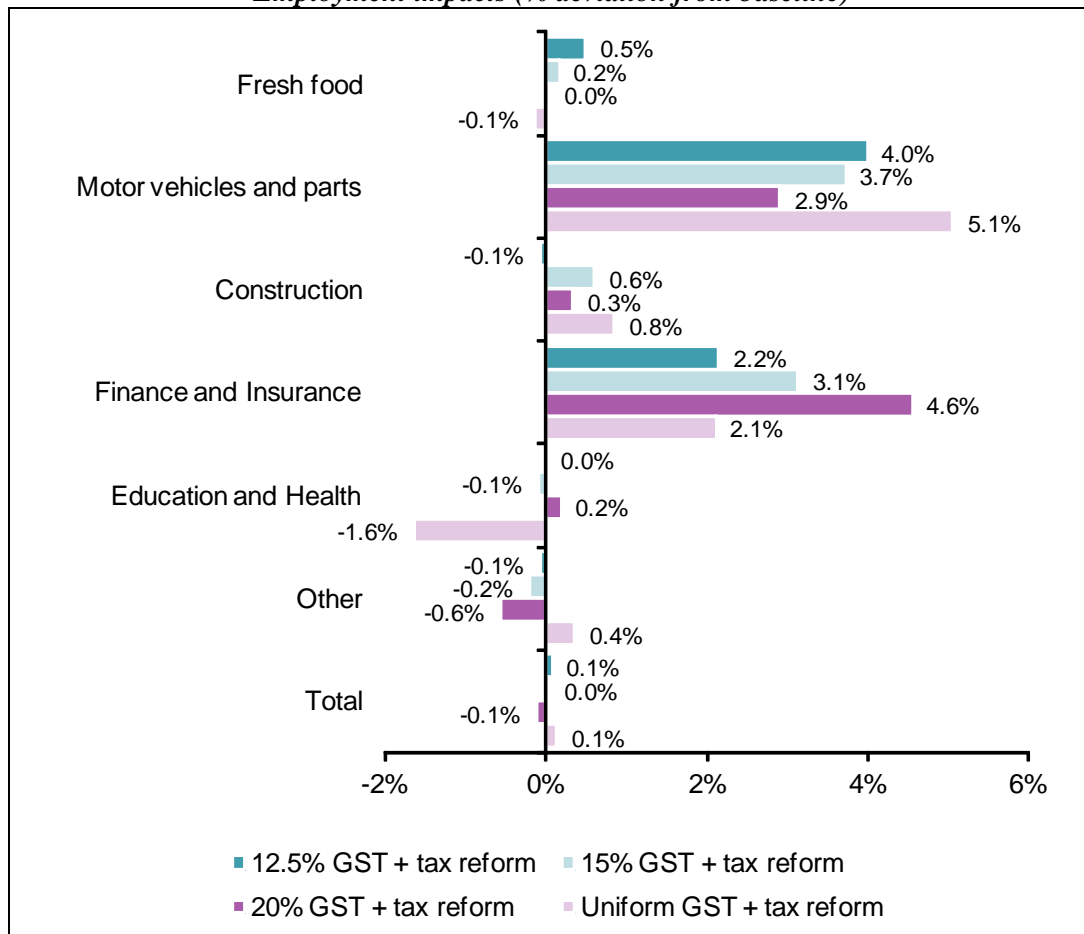
Source: KPMG Econtech, MM900 simulations

The small overall changes in employment can be largely attributed to changes in the incentives to supply labour. A number of factors which influence the incentive to work are shown in Table 4.1 below.

Table 4.1
Total employment impacts of tax reforms (% deviation from baseline)

Variable	12.5% GST + tax reform	15% GST + tax reform	20% GST + tax reform	Uniform GST + tax reform
CPI	-0.3%	-0.9%	0.0%	-0.7%
Real After-tax Wages	0.3%	0.9%	0.2%	0.7%
Employment	0.1%	0.0%	-0.1%	0.1%

Source: KPMG Econtech, MM900 simulations

In all scenarios, there is an increase in GST collections, which by itself tends to raise price levels. However, at the same time, the abolition of other taxes works to reduce price levels. In three of the scenarios, price levels (as reflected in the CPI) are lower than would otherwise be the case. The exception is the 20% GST scenario, where the higher GST rate offsets the reduction in prices associated with reductions in other taxes.

Whilst the overall price impact tends to be positive, price impacts on different sectors of the economy tend to be different. Specifically, the magnitudes of the two offsetting impacts on prices tend to be different in different sectors. Sectors whose major operations have a relatively large exposure to the

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abolished inefficient taxes tend to experience price decreases. For example, the transportation sector experiences price decreases in all scenarios as it is currently subject to motor vehicle taxes which are abolished in the tax reform scenarios. Price levels in the health sector are also lower because this sector is not subject to GST, thus does not experience higher prices under an increases GST rate. The clothing and footwear sector on the other hand has a relatively large exposure to the GST, hence price levels in the sector are higher under scenarios involving an increase in the GST rate. Table E.1 in Appendix E has more details on CPI impacts in different sectors.

It is worth noting that the size of the price rise will be smaller than the increase in the GST rate in any given sector. This is because the positive price impact of the GST is always offset to an extent by the price impact from abolishing the inefficient taxes.

Changes in the price level flow through to the purchasing power of wages, and lower prices lead to a higher after tax real wage in each of the scenarios. In addition, in Scenario 3 (20% GST plus tax reform) the reduction of personal income tax also directly raises the real after tax wage. Overall higher wages would tend to raise the incentive to supply labour and lead to higher employment levels.

However, there is another factor affecting the supply of labour, and this is the level of income that households earn from non-labour sources. In all scenarios, the tax reforms lead to the economy operating in a more efficient manner. This is particularly true for the 15% GST and the 20% GST scenarios because they involve the reduction of payroll tax. As discussed above, this reduces the incentive for businesses to be small, and increases their productivity. While higher productivity reduces the need for foreign investment in capital, it increases the return to locally owned capital. This raises non-labour income, and reduces the incentive to work. However, despite a lower incentive to work, the average living standards of Australian households would still be higher because they have higher incomes as well as more leisure.

Overall, these impacts lead to the effects on total employment shown in Table 4.1. The higher after tax real wages in the 12.5% GST scenario and the Uniform GST scenario lead to higher employment levels. However, in the 15% GST and the 20% GST scenarios, the impact of higher non-labour incomes outweighs this effect. In the long run, employment levels are the same as would otherwise be the case in the 15% GST scenario and slightly lower than would otherwise be the case in the 20% GST scenario.

4.3   Trade impacts

The tax reforms also affect Australia's interactions with the rest of the world, by affecting the cost of producing exports and the exchange rate.

Chart 4.3
Trade impacts (% deviation from baseline)
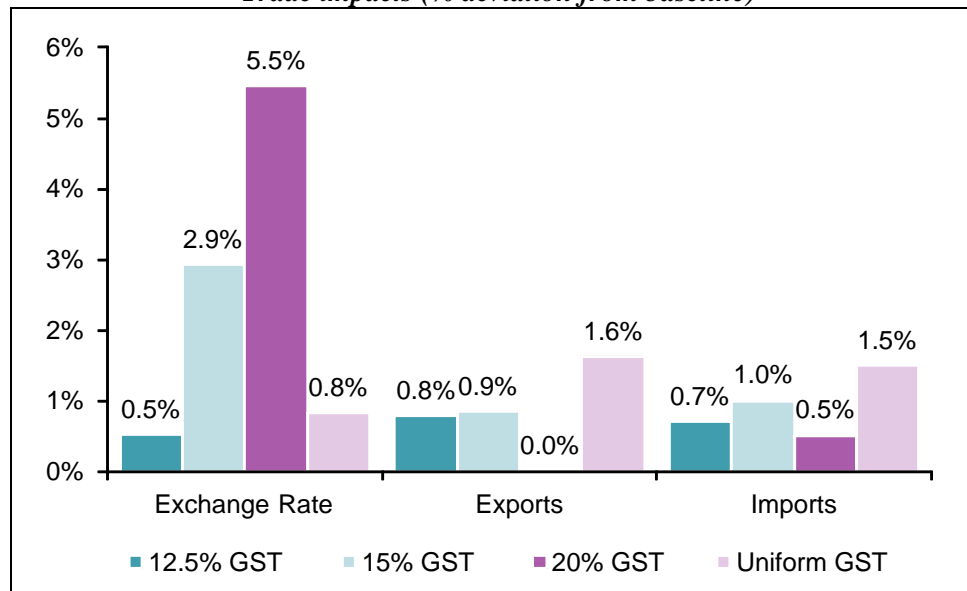
There are two main factors affecting the impact of tax reform on the level of Australian exports.

Firstly, the imposition of GST does not increase the price of exports because all exports are GST-free. On the other hand, the reduction of other taxes reduces the cost of production in Australian industries. These reforms also improve the productivity of Australian industries by removing distortions to the way that resources are allocated across the economy. Overall, these changes mean that the price of Australian exports on the foreign market are lower than would otherwise be the case, making Australian producers more competitive in the international market. Therefore, this raises the demand for exports, which puts upward pressure on the exchange rate, and also raises import levels.

Second, the reduction in payroll tax in the 15% GST and 20% GST scenarios has an important impact on the exchange rate. As discussed above, the removal of payroll taxes allows business to operate more productively and dampens the impact on the demand for foreign capital. This flows through to a lower reliance on foreign debt or equity to fund investments compared to the other scenarios. In the long run, this leads to lower outflows of Australian currency to service these debt and equity requirements, which puts upward pressure on the exchange rate. This appreciation in the real exchange rate offsets the tendency for higher exports, and also leads to higher levels of imports.

Appendix A: Definition of Taxes in MM900

The following table summarises how each tax in this report is modelled in MM900.

Table A.1
Summary of MM900 Tax definitions

Tax	MM900 modelling approach
GST	Each of the 889 products is distinguished to be taxable, input-taxed or zero-rated
Personal Income Tax	The tax includes personal income tax paid out of wages, the Medicare levy, fringe benefits tax and tax on employer superannuation contributions.
	This tax does not include personal income tax as it applies to income from savings, because savings decisions of households are modelled as a constant proportion of household income.
Payroll Tax	Tax on businesses for their total payments to employees (tax rate depends on business size)
Company Tax	Tax on net operating surplus of companies
Insurance Duty	Tax on insurance service products (refer to Table 3.9 for more details)
Fire Insurance Levy	Tax on insurance service products (refer to Table 3.9 for more details)
Motor Vehicle Taxes	Tax on the gross fixed capital formation on the products Motor vehicles with less than 10 person capacity and Motor scooters and motor cycles
	Tax on business and household ownership of vehicles (making it a tax on capital)
Commercial Transfer Duty	Tax on investment in commercial structures
Residential Transfer Duty	Tax on investment in residential structures and on moving costs

Appendix B: List of GST rates in OECD countries

The following table displays GST rates for OECD member countries in 2010. As shown, Australia has one of the lowest GST rates amongst all OECD countries.

Table B.1
GST rates in OECD member countries in 2010 (%)

GST rates in OECD member countries in 2010	
Australia	10.0
Austria	20.0
Belgium	21.0
Canada	5.0
Chile	19.0
Czech Republic	20.0
Denmark	25.0
Finland	22.0
France	19.6
Germany	19.0
Greece	19.0
Hungary	25.0
Iceland	25.5
Ireland	21.0
Italy	20.0
Japan	5.0
Korea	10.0
Luxembourg	15.0
Mexico	16.0
Netherlands	19.0
New Zealand	12.5
Norway	25.0
Poland	22.0
Portugal	20.0
Slovak Republic	19.0
Spain	16.0
Sweden	25.0
Switzerland	7.6
Turkey	18.0
United Kingdom	17.5

Source: OECD website.
Note: Since this OECD survey, some countries have increased their GST rates. For example, New Zealand increased its GST rate from 12.5 per cent to 15 per cent on 1 October 2010.

Appendix C: Detailed Excess Burden Modelling Approach

This Appendix presents the economic features of each tax in this analysis. This is followed by a discussion of the main features that drive the estimation of the economic costs of each tax. These economic costs are measured in terms of the excess burdens.

As discussed in Chapter 2, there are two types of excess burden that can be estimated, as follows.

- The *marginal excess burden* (MEB) is defined as the additional loss in living standards from increasing a tax by a small amount, per dollar of additional government revenue. The MEB is useful for considering small changes to the current tax system.

- The *average excess burden* (AEB) is defined as the total loss in living standards from imposing a particular tax, per dollar of government revenue raised. These measures are useful for considering the imposition or abolition of a certain tax.

For each of the different taxes discussed below, the marginal excess burden (MEB) is estimated by simulating a five per cent increase in the tax rate, while the average excess burden (AEB) is estimated by abolishing the whole tax.

C.1   Goods and services tax

Definition

The GST is a broad based consumption tax. The GST is applied at a rate of 10 per cent of the selling price payable on the supply or importation of goods and services.

For <u>taxable</u> products, the GST is levied on businesses at all stages of production, although businesses can usually gain a credit for GST paid on inputs. This ability to claim refunds on GST paid on business inputs means that GST is only actually paid by final consumers of goods and services, who thus bear the burden of the tax.

Some other goods and services, such as financial services and residential rents, are <u>input-taxed</u>. Input-taxed industries pay GST on their inputs and cannot claim its refund, but no GST is charged on the industry's supply.

A number of essential goods and services are <u>zero rated,</u> which means they are fully exempt from the tax. Specifically, tax is not payable on the supply of these goods and services, and any tax paid previously in the supply chain is refundable. Examples of these industries include health, education, basic food and charitable supplies.

Implications of current design

As noted in Chapter 2 of this report, consumption taxes like the GST are relatively efficient because:

- consumption is a very broad tax base; and

- if applied uniformly to all goods and services, consumption taxes do not change the prices of different goods relative to one another and as such do not distort the pattern of consumption.

In other words, a well-designed consumption tax does not affect consumer's choice between different goods as it raises the price of all goods by the same proportion. This means that the tax only influences behaviour by lowering the real income of consumers. In this way, it acts like personal income tax on labour income, creating a disincentive to supply labour, leading to an economic cost. (While labour income tax does this by removing tax from the additional pay, GST does this by reducing the purchasing power of that pay.)

However, the abovementioned differential treatment of goods and services (taxable, input-taxed and zero-rated) under the existing Australian GST means that different goods and services are taxed at

different rates. This raises the price of some goods relative to others. As a result, an additional negative impact arises as consumers adjust their consumption decisions by substituting towards the goods and services with lower tax impacts. Thus, the exclusion of certain goods and services narrows the base of GST (to roughly 70 per cent of consumer spending).

Overall, the current Australian GST could be expected to have a relatively low economic cost. However, it will be higher than the economic cost associated with a theoretical GST that is applied to all goods and services equally.

MM900 modelling

MM900 separately models consumption taxes on all 889 products. The GST is simulated by setting consumption taxes on each product to taxable, input-taxed or zero-rated. The excess burdens of GST are then estimated.

Results

The modelling results indicate that GST has a medium excess burden.

As discussed previously, the GST is relatively efficient because consumption is a very broad tax base; and the tax does not change the prices of different goods relative to one another if applied uniformly to all goods and services. However, the exemption and/or differential treatment of goods and services under the existing Australian GST imply that different goods and services are taxed at different rates. This distorts consumption decisions and creates an excess burden. Overall, KPMG Econtech estimates the AEB for GST to be 10 cents per dollar of tax revenue and the MEB to be 12 cents per dollar of tax revenue.

C.2   Land tax

Definition

Land taxes are levied on the commercial use of land, and on rental properties. All states and territories (except the Northern Territory) levy land tax on the unimproved value of a taxpayers aggregate holdings of land, excluding principal residences. Land used for primary production is exempt. Most states have a progressive land tax system and a tax-free threshold.

Implications of current design

Land tax is thought to have a low economic cost (or high efficiency), because it is a tax on the value of land, which is immobile.

The mobility principle suggests that a land tax can be designed so that decisions about the allocation of land are not affected by the tax. When a land tax is applied, the *before*-tax required rate of return on land (yield) must increase to cover the additional cost of the tax. However, because there is no change to the supply of land, this can only be achieved through a reduction in the value of land. Therefore, an efficient land tax only affects the value of the land it applies to, and not any other economic outcomes.

If the tax is applied evenly across all industries then all land values should be impacted upon equally, regardless of the land use. In this way, there is no incentive for any parcel of land to be used by one industry over another. As a consequence, a well-designed land tax does not affect decisions of how to use the land allocation, and involves only a transfer of wealth from landowners to the government.

However, two features of the current land tax design mean that it has some economic cost.

- Certain land uses are **exempt** from land tax, such as land used for primary production or owner-occupied dwellings. This exemption causes some industries to face lower land tax rates than others. This distorts the use of land towards industries that face lower tax rates, hence increase the economic cost per dollar of revenue for land tax.

- Land tax is levied using a **progressive rate scale** that is implemented through both a variable rate, which increases with the value of total land holdings, and a tax-free threshold. The progressivity in the design leads to a disincentive to hold extra (or higher value) land. This means industries are no longer producing with the technically efficient land size, raising the cost of production. The progressivity also decreases the amount of tax revenue collected. This adds to the economic cost per dollar of revenue for land tax.

MM900 modelling

In MM900, land tax is modelled as a tax on the value of land used in each industry. Land in MM900 is modelled as a factor of production that is fixed in total supply; hence the modelling of land tax as a tax on a fixed factor leads to a relatively low economic cost of the tax in MM900. This is reflective of economic theory on land tax.

MM900 incorporates three types of land (rural, residential and industrial) which are perfectly substitutable between industries that use the same type of land, and are not substitutable between industries that do not use the same type of land. Each type of land is fixed in total supply and can only be used by a fixed number of industries. This is consistent with the theory of land tax as outlined in the Henry Tax Review.

As discussed above, the exemption of certain industries lead to distortions in activities. In MM900, both the mining industries and agricultural industries use rural land, but only the mining industries pay land tax. The exemption of the agricultural industry therefore raises the costs of using land in mining industries relative to the costs of using that same land in agricultural industries. This will cause a shift away from mining production and towards agriculture.

Furthermore, the effective land tax rates in MM900 are different for different industries because of the effect of the land tax thresholds and the increasing marginal rates of land tax. Industries which tend to use higher values of aggregate land holdings will tend to have a higher effective rate of land tax. As discussed previously, this progressivity in land tax introduces a distortion in the model because industries with aggregate land holdings of lower value have a cost advantage over industries using aggregate holdings of higher value land.

To estimate the excess burdens, land tax is altered and the changes in living standards and tax revenues compared.

Results

As expected, the modelling results show that the excess burden of land tax is low with a MEB at 9 cents per dollar of revenue and an AEB at 6 cents per dollar of revenue. As discussed above, the low mobility of land leads to its low excess burden, as the land tax does not cause much distortion in activities. However, there are some distortions arising from exempting certain industries and the progressivity of the land tax schedule.

C.3   Personal income tax

Definition

Personal income tax is one of the three main taxes applied directly or indirectly to labour, with the other two being payroll tax and GST. Personal income tax in Australia has a progressive rate structure, which provides an exemption from tax on income earned up to the tax-free threshold. Also, beyond that threshold, lower marginal tax rates are applied to lower incomes compared to higher incomes.

Implications of current design

Labour has an intermediate level of mobility, and so under the mobility principle taxes on labour would be expected to have medium excess burdens. However, the narrowness principle also plays a role in determining the excess burdens of taxes levied on labour.

The base of personal income tax is narrowed through its progressive nature, as described above. This narrowing of the tax base[20] (compared with a flat rate labour income tax) leads to a medium excess burden. Of course there are compelling equity reasons for the progressive nature of the personal income tax scale, but its efficiency implications should still be understood.

MM900 modelling

The labour supply modelling in MM900 takes into account that the marginal and average rates of tax on labour have different impacts on the labour supply decision. These can be summarised as follows.

- How many hours an individual chooses to work, or the *intensive* margin of labour supply choice, depends on marginal tax rates.

- Whether an individual chooses to participate in the labour force or not, or the *extensive* margin of labour supply, depends on average tax rates.

The progressive nature of personal income tax means that marginal tax rates are higher than average tax rates. Thus, including both the intensive and extensive choice in the modelling gives a higher, and more credible, excess burden for labour income tax than would otherwise be case.

The responsiveness of labour supply to after-tax real wage is an important determinant of the excess burden of labour income tax. The excess burden estimates reported above have the compensated labour supply elasticity set at 0.2, so that when the real wage increases by 1 per cent and 'full' real income is unchanged, total labour supply increases by 0.2 per cent. The value of 0.2 used in MM900 is in line with the range of estimates in the literature.

It is worth nothing that in MM900, personal income tax includes income tax paid out of wages, the Medicare levy, fringe benefits tax and tax on employer superannuation contributions. However, it does not include income tax as it applies to income from savings, because savings decisions of households are modelled as a constant proportion of household income.

Results

As discussed above, the medium excess burden of personal income tax is in part due to labour having moderate mobility. Furthermore, the progressive rate structure narrows the base of labour income tax, contributing to its excess burden. KPMG Econtech estimates the AEB for labour income tax to be 15 cents per dollar of tax revenue and the MEB to be 24 cents per dollar of tax revenue.

C.4 Payroll Tax

Definition

Payroll Tax is a state tax calculated on wages paid or payable by an employer to its employees and deemed employees. It applies in all States and Territories of Australia, and is levied when total monthly or annual payments made to employees as wages and salaries[21] exceed the tax-free threshold.

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[20] This "narrowing" of the tax base can also be thought of as having an average rate of tax that is lower than the marginal rate of tax. While the marginal tax rate determines the distortionary impact of the tax, the average tax rate determines the revenue. Thus, the higher the marginal rate compared to the average rate, the higher will be the excess burden.

[21] All peripheral payments such as bonuses, fringe benefits and employer superannuation contributions are included as part of wages and salaries.

Different states and territories tend to have different payroll tax rates and thresholds. States and territories with higher thresholds tend to have high payroll tax rates so as to maintain revenue-raising ability. Table *C.1* shows the current rates and thresholds for each state and territory.

Table C.1
Payroll taxes (tax rates and thresholds effective from 1 July 2010 to 30 June 2011)

State/Territory	Rate (%)	Annual wages threshold ($'000)
New South Wales	5.45 (1 Jan 2011)	658
Victoria	4.9	550
Queensland	4.75	1,000
South Australia	4.95	600
Western Australia	5.5	750
Tasmania	6.1	1,010
Australian Capital Territory	6.85	1,500
Northern Territory	5.9	1,250

Source: Websites of the Office of State Revenue for all jurisdictions

Implications of current design

The excess burden associated with payroll taxes is caused by two distortions, along with the narrowing of the tax base due to its small business exemption.

Firstly, payroll tax causes distortions to households' labour supply decisions. This is because payroll tax drives a wedge between the wage received by households and the wage paid by employers. Similar to personal income tax, this wedge creates an excess burden by distorting the labour market. Although the statutory burden of the tax does not fall on workers, employers generally pass some of the burden of the tax on through lower real wages, either by offering a lower nominal wage or by raising output prices. Consequently, payroll tax can discourage labour supply by lowering the real purchasing power of wages.

The mobility of labour plays a role in determining the size of the excess burden due to labour supply distortions. Since the mobility of labour is only moderate, payroll tax is expected to have a relatively low excess burden if it is applied uniformly across all labour.

Secondly, the application of a small business exemption creates further distortions as it is applied unevenly to businesses of different sizes. Despite applying to all businesses, this exemption provides a relatively larger cost saving to small business (when calculated on a per unit of output basis). Treating small businesses more favourably compared to large businesses distorts businesses' optimal decisions regarding its operation size. Specifically, it creates a disincentive for these businesses to expand to reach the optimal size.

Also, around one-half of the payroll tax base in Australia is lost in practice because of the small business exemption. However, as discussed in Chapter The economic cost of taxation, labour supply decisions are affected by the *marginal* rate of tax, which is independent of the threshold for exemption. This means that while the small business exemption undermines the revenue-raising ability of payroll tax, it does little to encourage labour supply. This further contributes to the excess burden of the tax.

Finally, the differential treatments of payroll tax across states and territories create yet an additional distortion. Specifically, businesses have incentives to locate in states which offer lower payroll tax liabilities. This may imply that the excess burden of payroll tax is slightly higher than that estimated in this study.

Taking all of the above into consideration, payroll taxes can be expected to have a high excess burden.

MM900 modelling

MM900 models the impact of payroll taxes in distorting both labour markets (via the rate which is applied) and distorting business decisions on firm size (via a tax-free threshold).

As discussed above, small businesses are exempt from payroll tax via a tax-free threshold. This distorts businesses' decisions regarding their size. MM900 accounts for this bias by modelling the choice of firm size for a representative firm in each industry.

In the model, the representative firm selects its size to minimise unit costs, based on the prices of different inputs. In the absence of a payroll tax, firms choose to operate at the technically efficient size. This choice is distorted when payroll taxes are put in place. The efficiency cost of this distortion is determined by comparing the firm size in each industry under the operation of a payroll tax, with the technically efficient size estimated in the absence of a payroll tax.

Results

As discussed above, payroll tax is expected to have a high excess burden because the threshold:

- provides incentive for businesses to be smaller than the technically efficient size; and

- reduces the revenue raised while doing little to remove the disincentive effects in the labour market.

These economic impacts are reflected in the high estimates of the excess burden for payroll tax, with an AEB of 20 cents per dollar of revenue and a MEB of 35 cents per dollar of revenue at the national level.

C.5   Company Income Tax

Definition

The current company income tax is levied on the taxable income of Australian companies at the rate of 30 per cent, with a few exceptions applying to pooled development funds, certain classes of life insurance companies, credit unions and not for profit organisations[22].

Companies receive deductions because of capital depreciation. In most cases, the depreciation rate applied for tax purposes is higher than the economic rate of depreciation, meaning that the effective rate of tax paid is lower than the statutory rate. Research and development concessions are also available.

Implications of current design

Company income tax is applied to profits, or return to capital, land and other fixed factors. The fixed supply of land and other fixed factors means that their supply is not responsive to the tax. Therefore by the mobility principle there is little excess burden resulting from company income tax on return to land and other fixed factors.

However, the mobility principle also predicts company income tax to have a high excess burden resulting from taxing on the return to capital, which is highly mobile. There are three main factors contributing to the high excess burden of company income tax.

- Foreign capital is highly mobile. The model employs the standard assumption that capital is perfectly mobile internationally and the supply of foreign capital to Australia very sensitive to its rate of return. Therefore, foreign investment falls in the presence of company tax because the pre-tax required rate of return increases.

- Capital is substitutable for other factors of production. When company tax increases the cost of capital relative to other factors of production, such as labour, firms substitute away from capital and towards other input factors. This means production is less efficient than would otherwise be the case.

- Franking credits reduce the overall revenue collections. This is because individuals can receive personal income tax credits when they receive income in the form of dividend payments. However, MM900 does not capture the domestic saving arguments in favour of franking credits.

MM900 modelling

The incidence of company tax reflects the mobility of the factor to which it is applied. Company income tax incidence is complex because the tax is applied to profits, or return to capital, land and other fixed factors, spreading its impact three ways. However, capital is highly mobile internationally and will not bear the incidence of company tax that is applied to it. Instead, foreigners will withdraw their investment from Australia, and this increased scarcity of capital means that the productivity of capital will increase. The supply of capital will continue to fall until the increase in its pre-tax return fully offsets the increase in company income tax.

Results

The modelling results indicate that company income tax has a high excess burden.

As discussed above, the economic cost is due to large distortions resulting from taxing the highly mobile capital. The economic cost is exacerbated by the fact that company tax causes firms to

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[22] Special rates (and/or thresholds) apply to certain life insurance companies, FHSA trusts, RSA providers other than life insurance companies and credit unions.

substitute other input factors for capital, as the tax makes capital relatively more expensive. The MEB for company income tax is estimated to be 37 cents per dollar of tax revenue and the AEB is estimated to be 20 cents per dollar of tax revenue.

C.6   Transfer duties

Definition

Conveyancing transfer duty is a transaction-based tax paid on the sale price of a property. States and territories levy a stamp duty on the transfer of both residential and commercial property. Different rates and thresholds apply depending on the property type. Concessions apply to certain groups such as first home buyers and primary production land users.

Different states and territories tend to have different commercial transfer duty rates and thresholds.

Implications of current design

Transfer duty is a tax on transactions in residential and commercial property and is applied to the combined value of the land and its improvements. It is thought to have a high economic cost compared to other taxes, for the following reasons.

- Transfer duty increases the price that property buyers pay, hence may cause property development activity to be lower than would otherwise be the case.

- As a tax on transactions, transfer duty also may mean that property owners adjust their property consumption less frequently, particularly residential owner-occupiers. This may imply that households are less willing to change their property as their needs change, leading to lower living standards.

- Transfer duty increases the property prices for buyers, and some households or businesses (who would not otherwise have rented) may switch to renting. This again may cause living standards to be lower than would otherwise be the case.

The main economic cost from transfer duty is related to the first of those listed above. This is because transfer duties raise the cost of investing in new residential and non-residential structures. Since capital is highly mobile, the mobility principle implies the economic cost of transfer duties is likely to be high. For businesses, the higher cost of capital also provides incentives to substitute away from structures towards other input factors. For households purchasing residential buildings, the increased cost of investment will also lead to substitution away from housing consumption towards other forms of consumption.

An additional economic cost of transfer duties is regarding its impact on moving frequency, as highlighted in the second point above. Moving may be valuable to households because, for example, they may wish to move to be closer to work, to accommodate a larger family size, or to move into a smaller home upon retirement. Transfer duties increase the cost of moving and therefore discourage moving in favour of altering their existing dwelling. This distortion to households' decisions to move leads to an economic cost.

In regards to the third of the above listed points, home ownership rates are high in Australia, implying that the excess burden resulting from this point is likely to be small. Therefore, the modelling in this report focuses on the first two of those listed above.

MM900 modelling

MM900 models transfer duty as separate taxes on investment in residential and non-residential structures. This allows the excess burden of these types of transfer duty to be estimated separately.

Since capital is assumed to be highly mobile in MM900, the mobility principle predicts the costs of transfer duties to be high. In addition, MM900 captures the costs associated with firms substituting

between structures and other factors of production as transfer duties increase the relative cost of capital. These features make MM900 ideally equipped to model the economic cost of transfer duties.

MM900 also includes the impact that transfer duties have on a household's decision to move. As discussed previously, transfer duties increase the cost of moving, causing households to move less frequently than would otherwise be the case. This tends to lower household living standards, as they are less able to move to respond to changes in their needs.

MM900 takes this into account by capturing 'moving costs' (inclusive of transfer duty) as part of investment in housing services. The model treats moving as an input into the production of housing services, and transfer duties are a tax on these moving costs. Hence, transfer duties cause housing service production to move away from using 'moving', and towards using other factors of production, such as construction services (to construct physical dwellings) and land.

The lower frequency of moving leads to an inefficient allocation of the housing stock between different households. For example, it may be preferable for a retired couple to move out of a large house, and for a growing family to move in to this same house. However, transfer duties may prevent this transaction from occurring and the retired couple may remain in the large house and the growing family may instead extend their existing dwelling. This situation leads to an inefficiently large stock of housing, hence has an associated economic cost. These costs are accounted for in the excess burden of residential transfer duties estimated by MM900.

Results

The modelling results indicate that transfer duties in general have a very high excess burden.

As discussed above, the economic cost is due to higher costs and lower frequency of property transactions. Higher costs of commercial property result in a lower level of activity in the property market, leading to an economic cost.

Furthermore, commercial transfer duties imposed on businesses have a very high excess burden, because structures are a smaller proportion of the inputs into the production of goods and services by businesses. This means that there are greater opportunities to substitute away from using structures and towards other inputs, such as labour and other capital. MM900 is able to capture this cost because of its detailed modelling of the production technologies in each industry, which includes a choice between up to six factors of production.

These considerations mean that commercial transfer duties have an estimated AEB of 70 cents per dollar revenue and an MEB of 74 cents per dollar revenue.

C.7   Insurance taxes

Definition

Taxes levied on insurance can be divided into two categories – stamp duties and emergency services levies.

Stamp duties on insurance

States impose insurance taxes on the premium of a number of insurance products.[23] The rate ranges from 7.5 per cent in Queensland to 11 per cent in South Australia. New South Wales, Queensland and Tasmania have special rates on particular classes of general insurance business. With the exception of Western Australia, states and territories also impose taxes on life insurance policies. Additionally, NSW and the ACT apply a health insurance levy (known as the Ambulance Service Levy in the ACT) on health insurance policies. Victoria, Queensland, Western Australia, South Australia and Tasmania impose taxes on motor vehicle third party insurance, in addition to registration, other motor vehicle taxes and licence fees.[24] Also, workers compensation premiums are exempt from insurance taxes in all states other than Queensland.

Fire insurance levies

In addition to insurance stamp duties, the New South Wales, Victorian and Tasmanian Governments also impose fire levies on insurance companies.[25] These levies raise insurance premium on policies with fire risk coverage. This includes insurance policies covering commercial and residential property, as well as motor vehicles. Other states do not impose fire levies on insurance policies, but instead generally impose levies on the ownership of the assets that are subject to fire risk.

Implications of current design

Insurance stamp duties and fire insurance levies both have a relatively high economic cost. This is because they are both levied on a narrow base and at very high rates.

Insurance taxes drive a wedge between the prices that consumers of insurance pay and the prices insurance providers receive. The economic costs of insurance tax will be largely determined by the extent to which it causes the amount of insurance purchased to fall. Some insurance products, such as home and contents insurance and comprehensive motor vehicle insurance, are more responsive to price changes than others. This is consistent with the fact that some consumers do not hold these insurances at prevailing premium levels. Insurance products taken out by businesses on the other hand, are likely to be relatively unresponsive to price.

Since the insurance tax base – insurance services, is very narrow, its demand tends to be responsive to taxes. This is because the narrowness of the tax base makes it is easier for consumers to substitute away from insurance and towards un-taxed alternatives. Therefore, the narrowness of insurance services implies large distortion in its consumption, particularly by households, thus leading to an excess burden.

Insurance taxes also have a high effective rate due to the narrowness of its base. While the statutory tax base is typically the value of premiums, the true cost of insurance services to policyholders is the value of premiums net of expected benefits, or net premiums. This smaller tax base means that the effective rates of tax are far higher than the statutory rates. The higher tax rate leads to larger distortions in insurance demand, contributing to a higher economic cost.

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[23] Australian Government Commonwealth Grants Commission website, accessed 11 November 2010. (http://www.cgc.gov.au/state_finances_inquiries/2007_update_report2/working_papers/html/volume_2/09_insurance_tax/insurance_tax)

[24] Commonwealth Treasury, 2008, Architecture of Australia's tax and transfer system.

[25] In Victoria, the current Fire Service Levy is anticipated to be replaced with an alternative property-based levy with effect from 1 July 2012, however no further details are currently available.

MM900 modelling

MM900 includes both taxes on insurance (stamp duties and fire insurance levies), and the rate of each tax on insurance can be changed independently.

Further, there are eight separate insurance products in MM900 to which insurance taxes can be applied, and the rate of tax on each of these products can be modified independently. Currently, eight are subject to insurance stamp duties and three are also subject to fire insurance levies.

Results

As discussed above, insurance taxes impose high economic costs because they are levied on a narrow base (insurance services) which results in a high effective rate. While stamp duty on insurance imposes a high economic cost, with an AEB of 29 cents per dollar of revenue and a MEB of 31 cents per dollar of revenue, fire insurance levy is estimated to have a very high economic cost, with an AEB of 59 cents per dollar of revenue and a MEB of 65 cents per dollar of revenue.

Fire insurance levy has a higher excess burden for two reasons.

- The products to which the fire insurance levy is applied are often consumed by households (household and motor vehicle insurance) and therefore demand for these services is more responsive to price.

- The products to which fire insurance levy is applied have a higher overall rate of tax than the products to which stamp duties are applied. For example, fire insurance levy is applied to *fire and industrial special risks insurance*, *houseowner and household insurance* and *motor vehicle insurance*. Each of these products already have stamp duties applied to them, leading to a higher overall rate of tax, and a higher excess burden for the fire insurance levy.

C.8   Motor Vehicle Taxes

Definition

States and territories impose a variety of taxes on vehicle registration and vehicle sales. Motorcycles have separate flat fees, and some states impose different fees for commercial vehicles. The types of motor vehicle taxes imposed when purchasing, selling or registering a vehicle can be divided into two categories, annual taxes paid on vehicle ownership (registration), and taxes paid on the transfer of a vehicle (stamp duty).

Annual taxes on vehicle ownership

Vehicle registration fees apply at the initial registration of a vehicle and for annual renewals. Different types of vehicle attract different fees, with larger fees for various types of heavy vehicles.

Some states levy insurance charges for third party insurance as part of the registration fee. Various characteristics of the vehicle, such as its type (its sitting and carrying capacity), its intended use and the accident risk levels of the zones where the vehicle is located, are taken into consideration when determining the charges.

Taxes paid on the transfer of vehicles

Motor vehicle stamp duty is payable on registering a new vehicle or transferring a vehicle. The amount payable depends predominantly on the value of the vehicle.

Implications of current design

Both types of motor vehicle taxes lead to motor vehicle sales being lower than otherwise would have been the case. Business use of any capital item is sensitive to taxes, and as such, business demand for motor vehicles will be responsive to motor vehicle taxes. Households will also substitute away from

the use of motor vehicles in response to these taxes, but their response will not be as sensitive as businesses.

Motor vehicle transfer duty, like any other stamp duty, is a tax on transactions, and has similar sources of inefficiencies as other stamp duties:

- Motor vehicle transfer duties drive a wedge between the prices that sellers of motor vehicles receive and that which purchasers pay. Specifically, the prices that purchasers pay will be higher than the prices that sellers receive by the amount of the tax. This will lead to motor vehicle sales being lower than otherwise would have been the case.

- As a tax on transactions, motor vehicle transfer duty means vehicle owners adjust their vehicle consumption less frequently. This leads to a reduction in living standards because motor vehicle users would be less willing to change their vehicle ownership as their needs change, exacerbating the excess burden of motor vehicle stamp duties.

MM900 modelling

MM900 models stamp duties on motor vehicles paid by businesses are recorded as taxes on investment in motor vehicles. Registration charges and weight taxes are modelled together as a tax on the capital stock of industries.

MM900 captures the reduction in motor vehicle sales, but not the lower frequency and size of motor vehicle transactions discussed above. This is because standard CGE models are not able to capture this second distortion as it is difficult to incorporate the effect of transaction frequency on household living standards. Therefore the excess burdens associated with motor vehicle stamp duties estimated in MM900 are likely to be conservative.

Results

The estimated excess burden associated with motor vehicle taxes is high despite the modelling being conservative. In particular, the AEB of motor vehicle registration is estimated at 25 cents per dollar of revenue and the MEB at 31 cents per dollar of revenue. In comparison, the AEB of motor vehicle stamp duty is estimated at 31 cents per dollar of revenue and the MEB at 33 cents per dollar of revenue.

Appendix D: The MM900 Model

The scenarios contained in this report are run using KPMG Econtech's MM900 model. KPMG Econtech originally developed MM900 to estimate the excess burden of Australian taxes for the Commonwealth Treasury, in conjunction with the Henry Tax Review. As background to understanding the modelling results presented in this report, the general nature of the model is described in this appendix.

D.1   Key features

MM900 was developed with a special emphasis on the economic impacts of taxation, making it uniquely well suited to this study. In particular, MM900 has five key features which make it appropriate for analysing the economic impacts of Australian State and Commonwealth taxes and tax reforms.

1. MM900 contains 109 industries producing 889 products (or goods and services). This represents eight times the product detail of other models, allowing for modelling that much more closely identifies the tax bases for narrow product taxes, such as those on particular forms of alcohol and specific types of insurance (*product detail*).

2. MM900 distinguishes 19 different categories of taxes at the Commonwealth, State and Local levels in an economy-wide setting. This has been possible by sourcing additional tax information from the Australian Bureau of Statistics (ABS) that goes well beyond that identified in the published input-output tables used in comparable models (*tax detail*).

3. The model captures a very wide range of economic responses to taxes, including effects on incentives to work, employment and investment decisions, and patterns of consumer spending and trade. These economic responses are important because they are the source of the economic efficiency costs of taxes. However, some taxes are designed to achieve behavioural responses to address externalities – for example, tobacco excise aims to restrain cigarette consumption and its associated negative impacts – and so MM900 also allows for externalities in consumption (*extensive economic responses*).

4. There is detailed modelling of production processes in each industry capturing the roles of labour, capital and, unlike some models, land and natural resources. This detailed production modelling is needed to robustly model taxes on land, such as local government rates and land tax, and natural resources, such as the existing petroleum resource rent tax and the proposed minerals resource rent tax (*land and natural resources*).

5. The model also rigorously measures impacts on consumer welfare, taking into account the contributions from levels and patterns of consumer spending, leisure and saving. This is more appropriate than simpler modelling that focuses on GDP or consumption effects (*advanced consumer welfare effects*).

In summary, by capturing where particular taxes impact on the Australian economy, how different agents respond, and how these responses flow through to change consumer welfare, MM900 is well suited to modelling the economic impacts of Australian tax policy.

Furthermore, MM900 focuses on the long run, which is appropriate because decisions about tax policy should be based on their lasting economic impacts. MM900 is a member of the Computable General Equilibrium (CGE) family of economic models. Long-run CGE models are the most widely used type of model, in Australia and abroad, for quantifying the economy-wide effects of economic reform.

KPMG Econtech's MM900 model is the latest edition of a series of CGE models of the Australian economy focussing on tax analysis. The first edition, MM303, was developed for the South Australian Department of Treasury and Finance in the late 1990s to assist it in participating in a

developing debate on indirect tax reform. That debate culminated in the introduction of the New Tax System (NTS) in July 2000. In the lead up to the introduction of the NTS, MM303 was further developed to MM600+ to assist the Australian Competition and Consumer Commission (ACCC) in its price surveillance work. In 2009, in a study for the Commonwealth Treasury to support the AFTS review, MM600+ was re-developed as MM900, extending its tax analysis capabilities from indirect taxes to also include direct taxes. The results of the study are presented in a publicly available report (KPMG Econtech, 2010).

The following sections summarise the main features of MM900, emphasising those that are most pertinent to this tax study. It begins by describing the overarching assumptions of the model, and then moves on to summarise the behaviour of the 'economic agents' in the model – households, producers, government and the foreign sector. Following this, there is a discussion of the baseline in the model. Lastly, this appendix discusses the relevant model developments undertaken since KPMG Econtech's original work for the Henry Tax Review.

D.2   Overarching assumptions

MM900 follows a widely accepted CGE policy modelling approach. It refers to a long-run equilibrium, after the economy has fully responded to shocks. This long-run focus is important for tax policy, because good tax policy is based on the lasting effects of tax policy changes, not the transitional effects.

Optimising behaviour

Economic agents engage in optimising behaviour. In MM900, this means that a representative business in each of the 109 industries chooses inputs and outputs to maximise profit under perfect competition subject to a production technology with constant returns to scale. It also means that a representative household maximises utility, which depends on leisure, saving and consumption of products, subject to a budget constraint. This focus on consumer utility is important for drawing conclusions about how individual taxes affect consumer welfare.

Equilibrium

In keeping with MM900's long-run horizon, all markets are assumed to have achieved equilibrium. This includes markets for the six factors of production – low-skilled labour, high-skilled labour, structures, other capital, land, and other fixed factors – and markets for the 889 products (goods and services) that are produced. As such, our modelling does not estimate any of the transitional, short run impacts of tax reforms.

Government Budget constraint

Governments must always pay their way in the long run. For simplicity, in MM900 the government is assumed to always balance its budget. To achieve this, a budget policy instrument must be selected that, instead of being an input to the model, automatically adjusts to balance the budget. For this study, a hypothetical lump sum tax/transfer is chosen as the swing instrument, because the efficiency of any tax is traditionally assessed against a lump sum tax, which by definition is perfectly efficient. Hence, when a change in a tax rate is simulated in this study, the potential impact on the budget balance is automatically neutralized through a change in lump sum tax. Any change in consumer welfare can then be attributed to economic distortions associated with the tax that has been changed. This approach to tax efficiency analysis is standard in the literature.

Private Budget constraint

Private saving behavior must also be sustainable in the long run. As explained further below, the private propensity to save is constant in MM900. Based on that saving rate, together with the return to savings and the growth rate of the economy, the model then deduces the level of private assets.

Remaining assets are owned by the foreign sector and are supplied perfectly elastically at the world required rate of return on capital. In the long run, the stock of foreign liabilities (just like the stock of private assets) must also grow at the same rate as GDP, requiring a particular current account deficit. In MM900, the exchange rate adjusts to deliver that current account deficit (external balance).

D.3   Agents

There are four key economic agents in MM900 – households, producers, the government sector and the foreign sector. The following are brief summaries of the behaviours of these agents in the model.

Households

In MM900, a representative household maximises utility, which depends on leisure, saving and current consumption of products, subject to a budget constraint. From this behaviour, relationships for labour supply, total consumption expenditure, and its spread across 889 products are derived. Under this approach, households can be thought of as making three economic decisions, which are discussed in turn below.

Labour Supply versus Leisure

In MM900 households face a choice of how to divide the time in which they could be working, between work and discretionary leisure. The amount of time they devote to work depends on the after-tax real wage that is available from working. The higher the after-tax real wage, the more labour that households will supply, and the less time that they will spend in leisure.

MM900 makes full allowance for the taxes that influence this work-leisure choice. Taxes may reduce the economic return to work by reducing the nominal wage received and/or increasing consumer prices. For example, company tax is likely to be eventually largely passed on to households, through higher consumer prices or lower nominal wages. This would reduce real after-tax wages, and the consumer purchasing power generated by a given work effort would be eroded. This acts as a disincentive to work.

Importantly, explicitly including leisure in the analysis helps to make the estimates of welfare changes more robust. For example, continuing the example above, increasing company tax will reduce the after-tax real wage inducing a reduction in labour supply. On the one hand, reduced labour supply will reduce consumer welfare though lower wage earnings and therefore lower consumption and saving. However, on the other hand, reduced labour supply means that there will be more leisure taken, which partly offsets the reduction in utility from the lower consumption levels. Without the inclusion of leisure in the utility function, the consumer welfare loss from company income tax would be overstated.

Given the amount of labour that households choose to supply, they will receive a certain income. The next choice is how to divide this income between consumption and saving.

Consumption versus Saving

Saving behaviour poses an issue for long run models such as MM900. In particular, saving (i.e. sacrificing present consumption for future consumption) can appear artificially attractive. This is because, if saving rates are increased, long-run model results will show the gain in future consumption, but not the sacrifice of present consumption. To avoid this problem, households' propensity to save is constant in MM900. This saving generates welfare on the basis that it represents future consumption of the same products that are consumed in the present.

The assumption of a constant propensity to save means that MM900 is not useful for estimating the economic costs of taxes that primarily affect household saving behaviour. These taxes include personal income tax on income from assets, including the franking credit system, and taxes on superannuation earnings and benefits.

Having determined the split of income between consumption and saving, the next choice is how to divide consumption between the various products.

Pattern of Consumption

MM900 allocates total consumption expenditure between the 889 products (or goods and services) in the model using a consumer demand system that can be split into two-tiers. The two tiers are as follows.

- In the first tier, the consumer decides between 17 different broad groups of products.

- In the second tier, MM900 allows for substitution between individual products within these 17 broad groups, with the degree of substitutability able to vary from one group to the next, adding extra sophistication.

This level of detail in consumer decisions means that MM900 produces high quality estimates of welfare changes. For example, MM900 treats beer, wine and spirits as separate products, and they are all substitutable in consumption. Less disaggregated models treat all alcohol products as a single product group, and therefore miss the economic costs of taxing substitutable alcoholic beverages at different rates.

Producers

In MM900, production occurs in 109 industries that produce 889 products. Within each industry, a representative business operating under perfect competition chooses inputs and outputs to maximise profit subject to a production technology. Apart from the unusually large number of products in MM900, this approach is typical of CGE models.

For its production, each industry uses products produced by other industries as well as primary factors of production.

In MM900, there are 13 primary factors available to the whole economy, giving a fine level of detail in production technologies. The markets for each of these 13 primary factors must clear, so that demand equals supply for each factor. Each industry has a different production technology, that is, it uses a different set of inputs, with each industry using up to six of the 13 primary factors. For example, each industry can only use one of the three types of land. The industries which use each of the primary factors are listed in the table below. This gives an indication of the fine level of detail in production technologies that are modelled in MM900.

Table D.1
Primary factors in MM900

Factor	Industries	Number of industries
Land		
rural	Agricultural and Mining industries	16
residential	Ownership of dwellings	1
urban	All other industries	92
Other Fixed Factors		
Natural resource 1	Coal	1
Natural resource 2	Oil and gas	1
Natural resource 3	Iron ore	1
Natural resource 4	Non-ferrous metal ores	1
Brand	Beer	1
Network 1	Banking	1
Network 2	Non-bank finance	1
Structures		
residential structures	Ownership of dwellings	1
other structures	All other industries	108
Other capital		
other capital	All industries other than ownership of dwellings	108
Labour		
Skilled labour	All industries other than ownership of dwellings	108
Unskilled labour	All industries other than ownership of dwellings	108

This detail is important for robustly modelling the economic costs of certain taxes levied on primary factors, such as land tax, mining taxes and taxes on labour income. This is because each industry's demand for primary factors depends on the relative price of each factor. In each industry, the representative producer first chooses a mix of the three broad primary factors – labour, capital and fixed factors – taking into account their relative prices. Next, for each broad primary factor, they choose a mix between two types. For example, for capital, they choose a mix between structures (including buildings and engineering constructions) and other capital (such as machinery, vehicles, computers and other equipment), taking into account their relative prices. These mixes vary from one industry to the next.

Demand for the primary factors is driven by producer decisions, while supply depends on the factor considered. Due to their immobile nature, the supply of land and other fixed factors is constant. Labour is more mobile, and its supply depends on the decisions of households, which were discussed above. Capital supply depends on the international supply of funds, which is assumed to be highly mobile.

Government

Government sector spending accounts for part of final demand for various products, and is fixed in real terms in MM900. This spending is financed by a range of Commonwealth, State and Local Government taxes. The taxes included in MM900 are listed in **Table D.2** below.

Table D.2
Key taxes

General	By industry	By product
Labour income tax	Payroll tax	GST
Corporate income tax	Land taxes	Alcohol excise and WET
	Municipal rates	Tobacco excise
	Resource rent tax	Luxury car tax
	Motor vehicle registration	Import duties
		Fuel taxes
		Royalties and crude oil excise
		Gambling taxes
		Conveyancing stamp duties
		Motor vehicle stamp duties
		Stamp duties (other)
		Insurance taxes

Note: WET refers to the Wine Equalisation Tax.

The Government has a budget constraint, so that it must always pay its way in the long run. For simplicity, in MM900 the government is assumed to always balance its budget, at the national level. To achieve this, a budget policy instrument must be selected that, instead of being an input to the model, automatically adjusts to balance the budget. This 'swing' fiscal policy instrument can be specified as a hypothetical lump-sum transfer, GST or labour income tax.

For this report, the instrument chosen for each simulation is as follows:

- The hypothetical lump-sum transfer is used for simulating the economic costs of each tax (the excess burden). The automatic adjustment of lump-sum transfers to balance the budget has no effect on the economy, except to transfer income between the government sector and households. The change in transfers can be interpreted as a measure of the overall budget impact of the policy, as a positive budget impact translates to an increase in transfers from government to households.

- For most scenarios modelling specific policy experiments, the lump-sum transfer is also used. This allows the economic impact of the experiment to be examined in isolation of any impacts from taxes used to balance the budget. However, for some scenarios modelling policy experiments, the GST or labour income tax is used as the swing fiscal instrument. This means that the loss in revenue from abolishing a particular tax is automatically filled using either the GST or labour income tax, and the results include the economic costs of raising these taxes.

Foreign Sector

Australia's interactions with the global economy are important for the domestic economy. As a small country, Australia is generally considered to be close to being a 'price taker' on world markets. That is, it cannot influence the price at which it imports capital and goods and services. In MM900, Australia is also close to being a price taker for most exports.

In a world of highly mobile capital, Australia is assumed to be a price taker in world capital markets. This means that the world supplies capital to Australia at a fixed real after-tax rate of return. On the demand side, industries generate demand for structures and other capital following profit-maximizing behaviour. They do not differentiate between local and foreign-owned capital. The supply of locally-owned capital is determined by saving behaviour, while remaining capital demands are met by foreign-owned capital.

Similarly, the rest of the world supplies Australia, as a small open economy, with as much imports as demanded at the world price i.e. import supply is perfectly elastic. On the demand side, consumers and producers perceive imported and locally produced goods to be different from one another, and choose their mix of imported and locally produced goods and services depending on their relative prices.

For exports, Australia's status as a small open economy is again recognised, but this time by assuming that Australia is close to being a price taker, meaning it has a small degree of pricing power. That is, export demand is highly elastic but not perfectly elastic. This pricing power may arise through product differentiation or by supplying a large share of the world market. For most goods, export demand elasticities in MM900 are set to a very responsive -12[26]. For goods where Australia is considered to have some market power, export demand elasticities are lower. The smallest elasticity is for wool, where the value is -4, in recognition of our large share of the world market. The same elasticity is used for tourism, which takes into account the product differentiation between the tourism services that Australia offers compared with those offered by other countries.

D.4   The MM900 baseline

All results in MM900 are reported as estimated changes in variables relative to the baseline scenario. The baseline scenario (for all simulations) in this report is a simulated version of the 2009/10 economy. This is chosen to give a relevant and up-to-date baseline solution.

The data used in MM900 is highly detailed, and therefore not produced regularly by the ABS. The most recent data available is for the 2004/05 economy. To construct a more relevant baseline solution, the following three steps were undertaken.

- First, the overall size of the economy was up-rated to 2009/10 levels.

- Second, the effects of long-run expectations for the terms of trade are simulated.

- Third, selected tax policy changes were incorporated and their effects on the economy simulated.

There are some important differences between the actual outcomes for the 2009/10 economy and the MM900 baseline. Broadly, the structure of the 2004/05 economy is preserved, with some minor changes. For example production and consumption patterns will be similar to 2004/05 patterns. In this way, the baseline for the MM900 model is a "normalised" 2009/10 economy, which abstracts from any short-term influences on the economy such as the global financial crisis and commodity price fluctuations. This gives a more 'long-term' economic structure against which to compare alternative simulations.

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[26] Export demand elasticities are the percentage change in exports resulting from a one-percentage increase in the export price. The higher (more negative) the elasticity, the more of a price taker that Australia is, because international demand will react more to price increases. An elasticity of -12 corresponds close to a price-taking position.

D.5   Developments to MM900 since report to the Henry Tax Review

KPMG Econtech originally developed MM900 to estimate the excess burden of Australian taxes for the Commonwealth Treasury. Since this original report (KPMG Econtech, 2010) there have been a number of further developments to the model. The developments relevant for this report are outlined below.

The baseline for the MM900 model is a "normalised" 2009/10 economy, which abstracts from any short term influences on the economy such as the global financial crisis and commodity price fluctuations. For the original report to the Henry Tax Review, it was judged that it was appropriate to assume a long-run terms-of-trade equivalent to 2004/05 levels. However, given the continued high level of commodity prices since that time, it is now reasonable to assume that commodity prices can be sustained at a higher level than assumed previously. So the "normalised" economy for the baseline scenario now has a stronger terms-of-trade, similar to the level seen in 2005/06, but still well below the recent peak level.

Producers in MM900 use primary energy as an intermediate input to production, particularly the electricity industry and minerals processing industries. The level of primary energy used by producers is fixed as a proportion of production. However, MM900 has been developed to allow producers to substitute between different forms of primary energy, including black coal, brown coal and natural gas. This means that, for example, if a tax increases the relative price of black coal, MM900 will capture the subsequent substitution away from coal in industries using primary energy.

There has been further analysis of ABS data on land use and land rental prices for broad industry sectors. It was found that it was better to average the data on rental prices over time, rather than to use only one year of land data.

Conveyancing transfer duties are paid on the transfer of both residential and non-residential properties. When it was initially developed, MM900 varied the transfer duties on both types of property together. However, since that time, MM900 has been updated so that the rate of conveyancing transfer duties on residential properties can be varied independently from the rate of conveyancing transfer duties on non-residential properties, and vice versa. This is important because the economic cost of conveyancing transfer duties on non-residential properties is higher than for residential properties.

MM900 has also been further developed to include the impact that transfer duties have on a household's decision to move. Transfer duties increase the cost of moving house, and therefore cause households to move less frequently than would otherwise be the case. This leads to a lower quality of housing services being consumed by households, because they are less able to move into a different house as their needs change over time. In this way, moving can be thought of as an input into the production of housing services.

Motor vehicle stamp duty is paid both by businesses and households. In the ABS input-output tables, the business component is treated as a tax on investment in motor vehicles, while the household component is omitted, and the same approach was followed in the original report. However, for this report, the component applied to households has been included as a tax on consumption of motor vehicles, so that payments of this tax by both businesses and households are now included in the model.

The modelling in the report for the Henry Tax Review corrected for certain identified irregularities in how the ABS data allocates insurance tax collections between insurance products. Since then, KPMG Econtech has reviewed the ABS allocation of insurance taxes further, and as a result further irregularities have been identified and corrected. The new allocation improves on the ABS data by taking into account that workers compensation premiums are exempt from insurance tax in all states (apart from Queensland), and that general insurance products that are subject to both fire levies and stamp duties have a higher total tax burden than general insurance products that are subject to stamp duties alone.

Appendix E: Detailed modelling results for the scenarios

This Appendix presents more detailed modelling results for each of the four tax reform scenarios.

First of all, changes in price levels for each of the CPI groups are presented in the table below. As discussed in the body of the report, the overall price levels are lower for most scenarios, as the higher prices due to the GST increase is more than offset by the lowering of prices due to the abolition of the inefficient taxes. Whilst overall CPI tends to be lower, different sectors of the economy are impacted differently by the tax reforms, thus experiencing different CPI impacts.

In particular, prices in sectors whose major operations have a larger exposure to the abolished inefficient taxes tend to be lower after the tax reforms. For example, the Transportation and Financial and Insurance Services groups experienced the largest price decreases in most scenarios as they experience significant cost savings from the abolition of motor vehicle taxes, conveyancing duties and insurance taxes.

Table E.1
CPI impacts (% deviation from baseline)

	12.5% GST	15% GST	20% GST	Uniform GST
Food	0.2%	-0.9%	-1.1%	3.6%
Alcohol and Tobacco	1.2%	1.1%	2.9%	-1.3%
Clothing and Footwear	1.4%	1.4%	3.3%	-1.1%
Housing	0.6%	0.1%	1.3%	-1.1%
Household Contents and Services	1.3%	1.2%	3.0%	-0.6%
Health	-0.9%	-2.6%	-4.2%	8.2%
Transportation	-4.0%	-4.1%	-2.4%	-6.4%
Communication	1.2%	0.3%	1.9%	-1.7%
Recreation	1.4%	1.2%	3.1%	-1.2%
Education	-0.2%	-1.4%	-2.9%	9.3%
Financial and Insurance Services	-3.5%	-5.0%	-5.4%	-4.7%
CPI All Groups	-0.3%	-0.9%	0.0%	-0.7%

Source:KPMG Econtech MM900 simulations.

The higher prices in any sector, however, will be smaller than the increase in the GST rate. This is because the positive price impact of the GST is offset to an extent by the negative price impact from abolishing the inefficient taxes.

Table E.2 and *Table E.3* present additional industry GDP and employment impacts, in addition to the industries examined in the body of the report. As discussed earlier, different industries tend to experience different impacts on activities and employment, depending on their exposure to various taxes involved in the reforms. It is worth noting that, as discussed in Chapter 4, GDP is higher in every scenario.

Table E.2
GDP impacts (% deviation from baseline)

	12.5% GST	15% GST	20% GST	Uniform GST
Agriculture, Forestry & Fishing	0.9%	0.9%	0.7%	0.8%
Mining	0.7%	1.7%	1.8%	1.5%
Manufacturing	0.7%	0.9%	0.4%	1.4%
Electricity, Gas & Water	0.2%	0.8%	0.8%	0.1%
Construction	0.3%	1.5%	1.0%	1.6%
Wholesale Trade	1.0%	1.3%	0.9%	1.6%
Retail Trade	0.2%	0.3%	-0.1%	0.9%
Accomm., Cafes & Restaurants	-0.5%	-0.7%	-1.6%	0.7%
Transport	0.3%	0.5%	-0.2%	1.3%
Communication Services	-0.1%	0.5%	0.0%	1.2%
Finance and Insurance	1.7%	2.8%	3.3%	2.4%
Property & Business Services	0.5%	0.8%	0.3%	1.3%
Government Admin. & Defence	0.1%	0.0%	-0.1%	0.0%
Education	-0.1%	-0.3%	-0.4%	-1.4%
Health & Community Services	0.0%	0.1%	0.4%	-1.6%
Cultural & Recreational Services	-0.2%	-0.1%	-0.7%	0.9%
Personal & Other Services	-0.3%	-0.5%	-0.7%	-1.0%
Ownership of Dwellings	-0.4%	-0.2%	-0.5%	0.5%
Total GDP	0.4%	0.7%	0.5%	0.9%

Source:KPMG Econtech MM900 simulations.

Table E.3
Employment impacts (% deviation from baseline)

	12.5% GST	15% GST	20% GST	Uniform GST
Agriculture, Forestry & Fishing	0.7%	0.4%	0.3%	0.2%
Mining	0.6%	1.1%	1.3%	1.1%
Manufacturing	0.3%	0.3%	-0.1%	0.7%
Electricity, Gas & Water	-0.4%	-1.3%	-1.2%	-1.5%
Construction	-0.1%	0.6%	0.3%	0.8%
Wholesale Trade	0.6%	0.7%	0.4%	1.0%
Retail Trade	-0.1%	-0.2%	-0.5%	0.4%
Accomm., Cafes & Restaurants	-0.7%	-1.3%	-2.2%	0.2%
Transport	-1.4%	-1.7%	-2.2%	-0.9%
Communication Services	-0.9%	-1.6%	-1.9%	-0.4%
Finance and Insurance	2.2%	3.1%	4.6%	2.1%
Property & Business Services	0.4%	0.3%	-0.1%	0.9%
Government Admin. & Defence	0.2%	0.2%	0.2%	0.1%
Education	0.1%	-0.2%	-0.2%	-1.3%
Health & Community Services	0.0%	-0.1%	0.4%	-1.9%
Cultural & Recreational Services	-1.0%	-1.2%	-1.7%	-0.1%
Personal & Other Services	-0.6%	-1.0%	-1.5%	-0.5%
Total Employment	0.1%	0.0%	-0.1%	0.1%

Source:KPMG Econtech MM900 simulations.

The following table presents the budget impacts of each of the scenarios, broken down into individual taxes. These impacts are presented in nominal terms, and thus are influenced by changes in both prices and activities. Clearly, the tax revenue collections of the taxes directly involved in the tax reform are impacted upon. Furthermore, collections of other taxes will also be impacted to an extent, as the tax reforms impact on activities in the economy, which in turn affects the tax bases for these other taxes.

Table E.4
Budget impacts ($ billions deviation from baseline)

BUDGET IMPACT ($billion)	12.5% GST	15% GST	20% GST	Uniform GST
labour Income tax	0.1	0.1	-1.2	0.2
Company income tax	0.2	-1.5	-5.3	0.1
Payroll tax	0.0	-7.1	-18.0	0.0
Vehicle registration	-4.4	-4.4	-4.4	-4.4
Goods & Services Tax	10.5	20.3	39.8	11.5
Stamp duties on conveyances	-0.4	-4.4	-4.6	-2.1
Stamp duty on vehicle registration	-2.3	-2.3	-2.3	-2.3
Insurance taxes	-4.4	-4.4	-4.4	-4.4
Other	-0.2	-1.1	0.4	1.3
Expenditure	1.0	4.7	0.0	0.0
Budget	0.0	0.0	0.0	0.0

Source:KPMG Econtech MM900 simulations.