ECONOMIC IMPACT OF APPLYING TELEMARKETING CALLING STANDARDS TO THE MARKET RESEARCH INDUSTRY

This report was prepared for the
Association of Market and Social Research Organisations
by Econtech Pty Ltd.

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Introduction

In response to the increasing level of community concern about the growth of unsolicited telemarketing calls, the Australian Government introduced the Do Not Call Register legislation on 30 June 2007. Under this legislation, the Australian Communications and Media Authority (ACMA) is responsible for establishing and overseeing the operation of the Do Not Call Register (DNC Register) and for developing and establishing a national standard for minimum levels of conduct by telemarketers.

ACMA recently developed the *Telecommunications (Do Not Call Register) (Telemarketing and Research Calls) Industry Standard 2007* (the Industry Standard). This standard specifies minimum levels of conduct for telemarketing **and** research calls. Amongst other measures, the new industry standard restricts the calling hours/days for making telemarketing and research calls. These new measures are expected to affect the market research industry significantly.

The Association of Market and Social Research Organisations (AMSRO), commissioned Econtech to model the economic impacts on the market research industry and on the Australian economy of applying the Industry Standard to research calls.

Modelling Approach

The impact of applying the Industry Standard to research calls on the market research industry and on the Australian economy is estimated using the MM600+ model. MM600+ is a long-term computable general equilibrium (CGE) model of the Australian economy that models a long-run equilibrium (approximately 5 to 10 years). It distinguishes 108 industries that produce 672 products, making it six times more detailed than any comparable model.

Importantly, in MM600+, market research services are included as a separate product produced by the legal, accounting, marketing and business management services industry. This means that the model is able to estimate the specific impacts that the Industry Standard will have on the production, consumption and price of market research services.

To simulate the economic impacts of applying the Industry Standard to research calls, the following three scenarios are modelled.[1]

- Scenario 1 (Baseline Scenario). This scenario assumes that the Industry Standard does not exist and thus, market researchers call at the usual hours/days.
- Scenario 2 (Full Restrictions Scenario). This scenario assumes that the Industry Standard is applied to research calls. The scenario incorporates the restrictions to market research calls with respect to calling hours on weekdays and Saturday, and the prohibition on making calls on Sundays.

[1] Importantly, this study estimates the economic impact of applying the Industry Standard to research calls only; it does not include the impact of applying the Industry Standard to telemarketing calls. As such, the scenarios described in this section assume that the telemarketing calls do not face any restrictions and continue to be made at the usual hours/days.

- Scenario 3 (Partial Restrictions Scenario). This scenario assumes that the prohibition on making calls on Sunday is excluded from the Industry Standard and that the proposed restrictions with respect to calling hours on weekdays and Saturday remain unchanged.

Differences in economic outcomes between the Baseline Scenario and the Full Restrictions Scenario are calculated to determine the costs of applying the Industry Standard[2] to research calls. Similarly, differences in economic outcomes between the Baseline Scenario and Partial Restrictions Scenario are calculated to determine the costs of the Industry Standard if the prohibition on making calls on Sunday was excluded.

The main inputs used by Econtech for the economic modelling are estimates of productivity losses caused by applying the Industry Standard to the market research industry.

Results

The main general findings of this analysis are as follows.

Detailed Market Research Industry Effects

- With the full restrictions on market research calls under the Industry Standard (Scenario 2), production in the market research industry is lower than under the Baseline Scenario by 0.11 per cent annually. If the prohibition on making calls on Sunday is excluded from the Industry Standard (under Scenario 3), industry production is still lower by 0.02 per cent annually. These industry production effects are attributable to lower productivity stemming from the restrictions imposed by the Industry Standard.
- Lower productivity in the market research industry is expected to lead to higher prices for this industry's services than under the Baseline Scenario.
- Compared to the Baseline Scenario, employment in the market research industry is simulated to be about 1.1 per cent higher under the Full Restrictions Scenario (this implies a gain of about 139 jobs[3]) as the restrictions on productivity mean more workers are needed. Under the Partial Restrictions Scenario, employment in this industry is simulated to be about 0.2 per cent higher (a gain of about 25 jobs), compared to the Baseline Scenario.

Wider Industry Effects

- Lower production and higher prices in the market research industry will directly affect production in downstream and upstream industries. Specifically, lower production of (and consequently lower demand for inputs by) the market research industry impacts on industries that supply inputs to that industry. Further, a higher price for market research services impacts on industries that consume these services.
- The industries that show the biggest production impacts are the property and business services (which includes market research services), mining, and manufacturing industries.
- On average, employment in most of the industries is simulated to be lower under both the Full and the Partial Restrictions Scenarios, when compared to the Baseline Scenario. The reason for this is that the lower production and higher prices in the market research

[2] Including the prohibition on making research calls on Sundays.
[3] Based on 2002 ABS data on employment in the market research industry.

industry will directly affect production in downstream and upstream industries. As production in these upstream and downstream industries declines, employment falls.

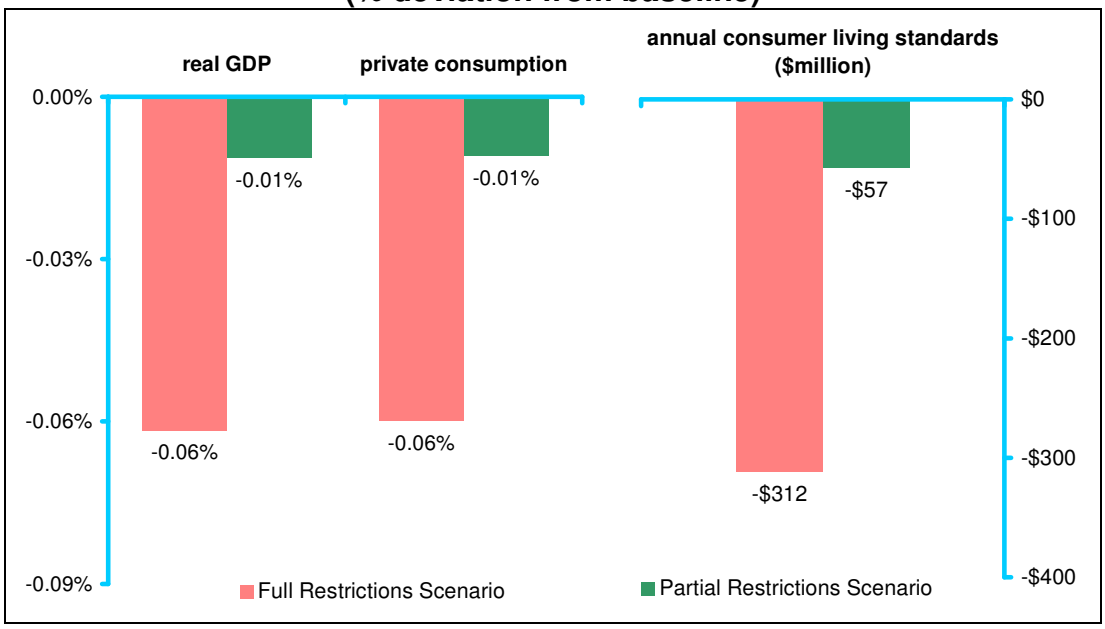
- The only industry that shows an increase in employment when compared to the Baseline Scenario is the property and business services industry. This increase in employment is mainly fuelled by the increase in employment in the market research industry, which is part of the property and business services wider industry.

National Macroeconomic Effects

- On average, the full Industry Standard restrictions on calling hours and the prohibition on making calls on Sundays (Scenario 2) would lower real GDP by 0.06 per cent, when compared to the Baseline Scenario (equivalent to about $990.3 million of real GDP in 2005/06, 2004-05 prices). If the prohibition on making calls on Sunday is excluded from the Industry Standard (Scenario 3), GDP would be 0.01 per cent lower.
- Annual private consumption is 0.06 per cent lower under the Full Restrictions Scenario than under the Baseline Scenario. Annual private consumption is 0.01 per cent lower under the Partial Restrictions Scenario, when compared to the Baseline Scenario (equivalent to about $181.4 million of real GDP in 2005/06, 2004-05 prices).
- If the Industry Standard is implemented as it currently is (Scenario 2), consumer living standards would be lower by around $312 million (2005 prices) per year compared to the Baseline. Further, if the prohibition on making calls on Sunday is excluded from the Industry Standard, consumer living standards would be lower by $57 million (2005 prices) per year.

Chart A summarises these results.

Chart A
National Macro-economic Effects
(% deviation from baseline)



Source: Econtech MM600+ simulation

1. Introduction

In response to the increasing level of community concern about the growth of unsolicited telemarketing calls, the Australian Government introduced the Do Not Call Register legislation on 30 June 2007. Under this legislation, the Australian Communications and Media Authority (ACMA) is responsible for establishing and overseeing the operation of the Do Not Call Register (DNC Register) and for developing and establishing a national standard for minimum levels of conduct by telemarketers.

ACMA recently developed the *Telecommunications (Do Not Call Register) (Telemarketing and Research Calls) Industry Standard 2007* (the Industry Standard). This standard specifies minimum levels of conduct for telemarketing **and** research calls. Amongst other measures, the new industry standard restricts the calling hours/days for making telemarketing and research calls. These new measures are expected to affect the market research industry significantly.

The Association of Market and Social Research Organisations (AMSRO), a peak body of the Australian market research industry, commissioned Econtech to model the economic impacts on the market research industry and on the Australian economy of applying the Industry Standard to research calls. It is expected that this study will highlight the importance of excluding market research calls from the new industry standard.

Importantly, this study estimates the economic impact of applying the Industry Standard to research calls. This estimate does not include the economic impacts of applying the Industry Standard to telemarketing calls.

This report is structured as follows.

- Section 2 provides background information.
- Section 3 outlines the methodology used to simulate the impacts of applying the Industry Standard to research calls.
- Section 4 evaluates the economic impact on the market research industry and on the Australian economy of applying the Industry Standard to research calls.

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

The specific purpose of this report is to model the economic impacts on the market research industry and on the Australian economy of applying the Industry Standard to research calls.

The findings in this report are subject to unavoidable statistical variation. While all care has been taken to ensure that the statistical variation is kept to a minimum, care should be taken whenever using this information. This report only takes into account information available to Econtech up to the date of this report and so its findings may be affected by new information. Should you require clarification of any material, please contact us.

2. Background

In response to the increasing level of community concern about the growth of unsolicited telemarketing calls, the Australian Government introduced the DNC Register legislation on 30 June 2007. Under the DNC Register legislation, ACMA is responsible for establishing and overseeing the operation of the DNC Register and for developing and establishing a national standard for minimum levels of conduct by telemarketers.

According to ACMA, the DNC Register is due to commence operation in May 2007. Importantly, industry lobbying was successful in having market research left out of the DNC Register on the basis that researchers are not telemarketers and that market research calls are not a form of telemarketing. However, as part of the Do Not Call initiative, ACMA developed new calling standards for telemarketing **and** research calls.

The Industry Standard specifies minimum call standards, which aim to provide greater certainty for consumers on the minimum level of conduct they can expect from those making unsolicited telemarketing and research calls. A key feature of the Industry Standard is that it defines when calls can and can not be made. For example, some of the minimum requirements included in the Industry Standard are the following:

- telemarketing calls will not be permitted before 9 am or after 8 pm on weekdays;
- research calls will not be permitted before 9 am or after 8.30 pm on weekdays; and
- no calls covered by the standard will be permitted before 9 am on any day, after 5 pm on Saturdays or at any time on Sundays or national public holidays (excepting when consent has been given by the call recipient in advance to receive the call).

Importantly, by reducing the times at which research companies can conduct interviews, the Industry Standard will significantly reduce researchers' ability to obtain a representative sample of people. This will arise because those people who can only be contacted between 8 pm and 9 pm on weekdays or during the weekends, will now not be able to be contacted. The lack of coverage of this group of people will affect the quality of the sample and the quality of the research conducted by market research companies. This, in turn, will cause a loss to the market research industry, as well as to the users of survey information.

Furthermore, according to AMSRO, much of the weekday telephone interviewing is conducted from 5 pm to 9 pm (a four hour shift). Therefore, the time restrictions imposed by the Industry Standard will decrease the ability of market research companies to attract interviewers, causing financial and administrative stress to the industry.

Interestingly, the Industry Standard applies to:

- all telemarketing calls made to an Australian number to offer, advertise or promote goods, services, interests in land, business opportunities, or to solicit donations;
- all research calls to conduct opinion polling and to carry out standard questionnaire-based research; and
- calls made for the above purposes by organisations exempt from the general prohibition on calling numbers listed on the DNC Register, such as charities, registered political parties, and religious organisations.

The Industry Standard is required to commence at the same time as *Part 2 of the Do Not Call Register Act 2006*, expected to commence on 31 May 2007.

3. Modelling Approach

This section provides details of the modelling approach used to estimate the economic impacts on the market research industry and on the Australian economy of applying the Industry Standard to research calls. The section is structured as follows. Section 3.1 outlines the scenarios that are simulated using Econtech's MM600+ model to quantify the economic costs of applying the Industry Standard to research calls. Section 3.2 outlines the main data inputs that Econtech uses to build the alternative scenarios and describes how these inputs are derived. Section 3.3 discusses the main features of the economic model (MM600+) that is used to estimate the economic impacts on the market research industry and on the Australian economy of applying the Industry Standard to research calls.

3.1 Scenarios

To simulate the economic impacts of applying the Industry Standard to research calls on the market research industry and on the Australian economy, the following three scenarios are modelled.[4]

- Scenario 1 (Baseline Scenario). This scenario assumes that the Industry Standard does not exist and thus, the market research industry continues making research calls without restrictions.
- Scenario 2 (Full Restrictions Scenario). This scenario assumes that the Industry Standard is applied to research calls. The scenario incorporates the proposed restrictions to market research calls with respect to calling hours on weekdays and Saturday, and the prohibition on making calls on Sundays. These restrictions are outlined in the Industry Standard and explained in the Background Section.
- Scenario 3 (Partial Restrictions Scenario). This scenario assumes that the prohibition on making calls on Sunday is excluded from the Industry Standard and that the proposed restrictions with respect to calling hours on weekdays and Saturday remain unchanged.

Differences in economic outcomes between the Baseline Scenario and the Full Restrictions Scenario are calculated to determine the costs of applying the Industry Standard[5] to research calls. Similarly, differences in economic outcomes between the Baseline Scenario and Partial Restrictions Scenario are calculated to determine the costs of the Industry Standard if the prohibition on making calls on Sunday was excluded.

The main inputs for each of the scenarios are discussed in detail below.

3.2 Model Inputs

The main inputs used by Econtech for the economic modelling are estimates of the productivity losses in the market research industry caused by the Industry Standard under each of the scenarios outlined in the previous section. These figures are estimated by Econtech following three steps. Each of these steps is now discussed in more detail.

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[4] Importantly (as mentioned before) this study estimates the economic impact of applying the Industry Standard to research calls, it does not include the impact of applying the Industry Standard to telemarketing calls. As such, the scenarios described in this section assume that the telemarketing calls do not face any restrictions and are continued to be made at the usual hours/days.

[5] Including the prohibition on making research calls on Sundays.

Step One

In Step One, Econtech obtained information from two different market research companies on the hit rate (number of completed interviews per hour) for six different jobs (surveys). This information is presented in Table 3.1.

Table 3.1
Hit Rates* for Six Jobs Undertaken by Two Market Research Companies

	Monday to Friday		Saturday	Sunday
	Hits per hour between 4:30 pm & 8:30 pm	Hits per hour between 8:30 pm & 9:00 pm	Hits per hour between 9:00 am & 5:00 pm	Hits per hour between 9:00 am & 5:00 pm
Job 1	1.44	1.57	1.74	1.82
Job 2	2.14	2.27	2.40	2.26
Job 3	0.26	0.32	0.32	0.46
Job 4	1.80	1.80	1.70	2.00
Job 5	1.70	1.70	1.40	1.50
Job 6	3.60	3.70	3.80	3.60
Average	1.82	1.89	1.89	1.94

Source: Millward Brown and the Wallis Consulting Group.
* Hit rate= number of completed interviews per hour.

Using the hit rate information from these six surveys, Econtech calculated the average hit rates for the different hours and days presented in Table 3.2 below.

Table 3.2
Average Hit Rates by Day/Time

Mo-Fri	**Average Hit Rate**
4:30 pm - 8:30 pm	1.82
4:30 pm - 5:00 pm*	1.82
5:00 pm - 8:30 pm*	1.82
8:30 pm - 9 pm	1.89

Saturday	**Average Hit Rate**
9:00 am - 5:00 pm	1.89

Sunday	**Average Hit Rate**
9:00 am - 5:00 pm	1.94

Source: Econtech estimates based on information presented in Table 3.1.
* Assumes that hit rates between 4:30 pm and 5:00 pm and hit rates between 5:00 pm and 8:30 pm are the same as the hit rate between 4:30 pm and 8:30 pm.

Step Two

Based on Scenarios 1 to 3 described in Section 3.1, Econtech created Table 3.3. This table describes the working hours available under each scenario.

Table 3.3
Available Working Hours under Each Scenario

	Mo-Fri	Saturday	Sunday
Baseline Scenario	5 pm - 9 pm	9 am - 5 pm	9 am - 5 pm
Full Restrictions Scenario	4:30 pm - 8:30 pm	9 am - 5 pm	-
Partial Restrictions Scenario	4:30 pm - 8:30 pm	9 am - 5 pm	9 am - 5 pm

Source: Econtech

Using Table 3.2 and 3.3, Econtech calculated the total hits per week under each scenario. Since the total hours worked per week are different between each scenario, it is not possible to compare the hits per week between scenarios. As such, to be able to compare hit rates between scenarios, Econtech calculated the average hits per hour using the hours worked per week under each scenario. These estimates are presented in Table 3.4.

Table 3.4
Average Hits per Hour under Each Scenario

	Mo-Fri (5 days) hits	Saturday hits	Sunday hits	Total hits p/w	Hrs worked p/w	Average hits p/hr
Baseline S.	36.64	15.15	15.52	67.31	36.00	1.87
Full Restrictions S.	36.47	15.15	0.00	51.61	28.00	1.84
Partial Restrictions S.	36.47	15.15	15.52	67.13	36.00	1.86

Source: Econtech estimates.

Step Three

In Step Three, Econtech calculated the productivity losses for the market research industry under the Full and Partial Restrictions Scenarios relative to the Baseline Scenario. These estimates are presented in Table 3.5 below. Importantly, these estimates are based on the information of the average hits per hour under each scenario presented in the last column of Table 3.4.

Table 3.5
Productivity Changes under Each Alternative Scenario (Relative to the Baseline Scenario)

	Productivity change
Full Restrictions Scenario	-1.41%
Partial Restrictions Scenario	-0.26%

Source: Econtech estimates.

The productivity losses in Table 3.5 are the inputs introduced into MM600+ to estimate the economic impacts of the Full and Partial Restrictions Scenarios. The next section explains the main features of MM600+.

3.3 MM600+ Model

The economy-wide costs of applying the Industry Standard to research calls were estimated using Econtech's MM600+ model. MM600+ is a long-term computable general equilibrium

(CGE) model of the Australian economy that models a long-run equilibrium (approximately 5 to 10 years). It distinguishes 108 industries that produce 672 products, making it six times more detailed than any comparable model. The industry and production classification used in MM600+ is based on Australian and New Zealand Standard Industry Classifications (ANZSIC) used by the Australian Bureau of Statistics (ABS).

Importantly, in MM600+, market research services are included as a separate product produced by the legal, accounting, marketing and business management services industry. This means that the model is able to estimate the specific impacts that the Industry Standard will have on the production, consumption and prices of the market research services.

MM600+ has the following important features that make it well suited for the analysis for this project.

- It estimates the effects of policy changes on key macroeconomic aggregates such as GDP, exports, imports, consumption and investment.
- It breaks down the effects of policy changes into 108 industries and 672 products. This means that the model is able to estimate the impacts of applying telemarketing calling standards to the market research industry across industries and products.
- For each industry and product, it produces comprehensive results including for production, employment, consumption, trade flows and prices.
- It provides valid measures of changes in consumer welfare or living standards based on compensating and equivalent variations so that policy changes can be correctly evaluated in terms of the public interest.

The alternative scenarios modelled in this report are based on the standard long-run closure of the MM600+ model. Thus, the long-run closure shows the long-term effects of policy changes, after the economy has fully responded. This is fitting because economic policies should be judged against their lasting effects on the economy, not just their effects in the first one or two years. Some of the assumptions underlying the long-term closure are as follows.

- Profit maximisation: the representative business in each industry chooses inputs and outputs to maximise profit subject to prices and a production function exhibiting constant returns to scale.
- Labour market equilibrium: in the long-run the labour market is assumed to attain equilibrium, so that an economic shock has no lasting effect on total employment.
- External trade balance: in the long-run, external balance is assumed to be achieved, so that trade shocks have no lasting effect on the trade balance.
- Budget balance: in the long-run fiscal policy must be sustainable, and in MM600+ this is achieved by assuming budget balance.
- Private saving: in the long-run the level of private sector saving and associated asset accumulation must be sustainable.

More detailed information about MM600+ is presented in Attachment A.

4. Results

The previous section described the scenarios that were simulated using MM600+, outlined the main data inputs that Econtech used to build the scenarios and described how these inputs were derived. This section provides the results of modelling the economic impacts of applying the Industry Standard to research calls at three different levels, as follows.

- Section 4.1 describes the detailed economic impacts on the market research industry.
- Section 4.2 describes the wider industry impacts of the Industry Standards.
- Section 4.3 presents the average annual economy-wide impacts of applying the Industry Standards to research calls.

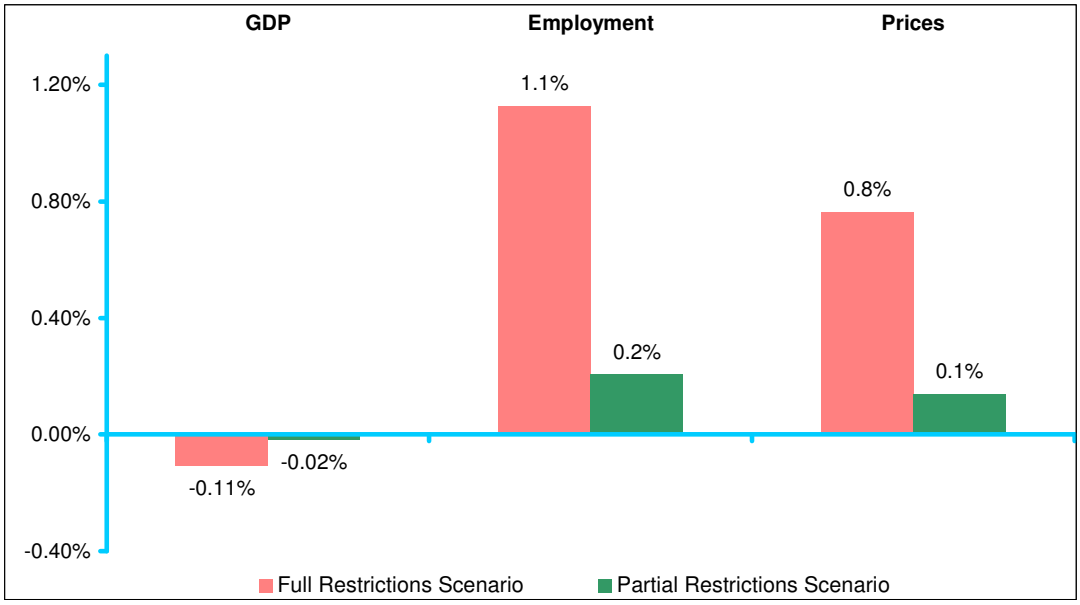
4.1 Detailed Market Research Industry Effects

This section shows the economic impacts on the market research industry of:

- applying the Industry Standard to research calls as it currently is (Scenario 2); and
- excluding the prohibition on making calls on Sunday from the Industry Standard (Scenario 3).

The effects of these scenarios on the production, employment and prices of the market research industry are shown in Chart 4.1.

Chart 4.1
Average Annual Market Research Industry Effects
(% deviations from baseline)



Source: Econtech MM600+ simulation

As shown in Chart 4.1, production in the market research industry is lower by 0.11 per cent annually under the Full Restrictions Scenario, when compared to the Baseline Scenario. Furthermore, Chart 4.1 shows that production in the market research industry is lower by

0.02 per cent annually under the Partial Restrictions Scenario, when compared to the Baseline Scenario. These industry production effects are the result of expected productivity losses stemming from the restrictions imposed by the Industry Standard.

In comparison with the industry effects of the Partial Restrictions Scenario, the effects of the Full Restrictions Scenario are much bigger. This is a logical result since the Full Restrictions Scenario includes more restrictions to the industry than the Partial Restrictions Scenario.

Lower productivity in the market research industry is expected to lead to higher prices in this industry. The overall impacts on the price of market research services are shown in Chart 4.1.

The Industry Standard also has a significant impact on employment of the market research industry. Specifically, Chart 4.1 shows that, on average, employment of this industry is simulated to be about 1.1 per cent higher under the Full Restrictions Scenario. Based on 2002 ABS data on employment in the market research industry[6], this implies a gain of about 139 jobs, compared to the Baseline Scenario. Similarly, Chart 4.1 shows that average annual employment of this industry is simulated to be about 0.2 per cent higher under the Partial Restrictions Scenario, which implies a gain of about 25 jobs in this industry, when compared to the Baseline Scenario.

Importantly, the employment effects shown in Chart 4.1 include two separate impacts. The first impact comes from lower productivity in the market research industry. As productivity declines, more labour is needed to produce the same amount of output. The second impact on employment comes from the lower production experienced in the industry. As production declines, employment falls. The net effect in employment will depend on the magnitude of each of these impacts. Chart 4.1 shows that for both scenarios, the net effect is an increase in employment in the market research industry.

4.2 Wider Industry Effects

Production Effects

This section outlines the simulated wider industry production impacts of the Full and Partial Restrictions Scenarios for industries upstream and downstream of the market research industry. These effects are presented in Chart 4.2.

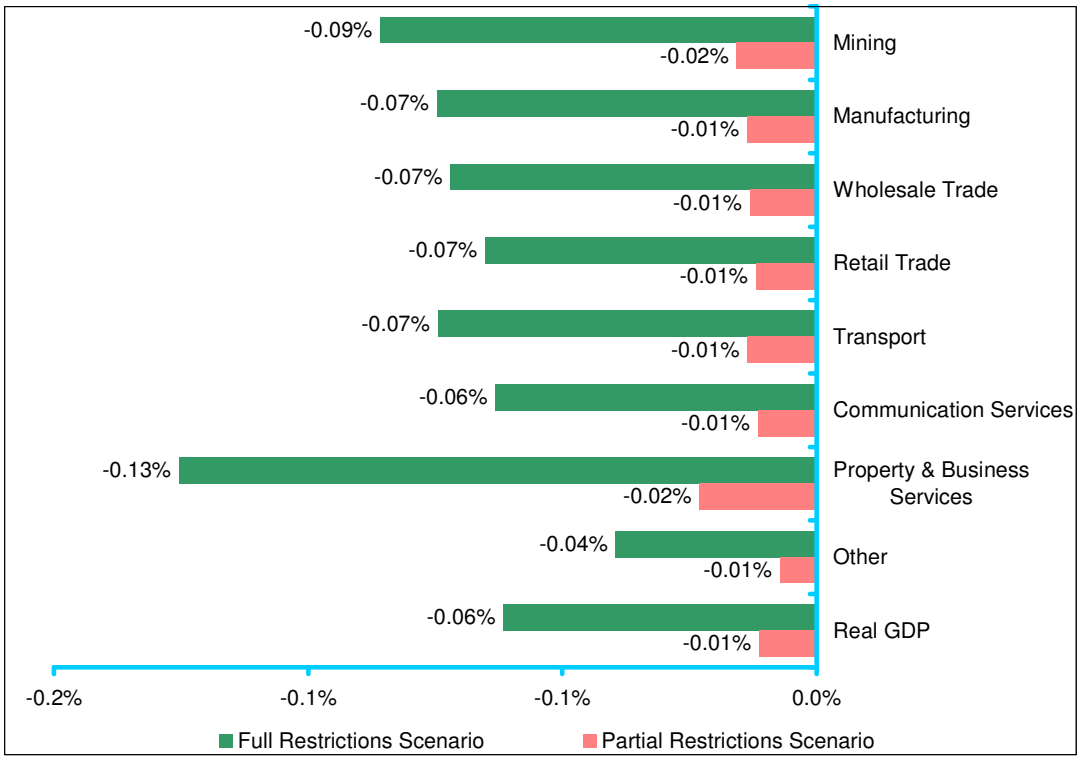
As shown in the chart, the lower production and higher prices in the market research industry will directly affect production in downstream and upstream industries. This is because the market research industry has an important role as a supplier to, and consumer of the products of, other industries. Specifically, lower production (and subsequent lower demand for inputs) by the market research industry impacts on industries that supply inputs to that industry (e.g. communications services). Further, higher prices for market research services will impact on industries that consume products from that industry (e.g. wholesale and retail trade).

[6] ABS (2001-02), *"Market Research Services Australia",* Cat 8556.0.

Chart 4.2 shows that, while most industries lose, the biggest percentage losses are concentrated in the property and business services (which includes market research services), mining, and manufacturing industries.

Under the Full Restrictions Scenario, the property and business services industry shows lower annual production of about 0.13 per cent when compared to the Baseline Scenario. This effect is mainly fuelled by a fall in production and the increase in prices in the market research industry, which is part of the wider property and business services industry. Similarly, Chart 4.2 shows that average annual production of this industry is simulated to be about 0.02 per cent lower under the Partial Restrictions Scenario, when compared to the Baseline Scenario.

Chart 4.2
Average Annual Wider Industry Production Effects
(% deviations from baseline)



Source: Econtech MM600+ simulation
Note: The 'Other' industry segment includes Agriculture, Forestry and Fishing; Electricity, Gas and Water; Construction; Accommodation, Cafes and Restaurants; Finance and Insurance; Government Admin and Defence; Education; Health and Community Services; Cultural and Recreational Services; Personal and Other Services; and Ownership of Dwellings.

The mining industry also shows significant production effects. Under the Full Restrictions Scenario, production in this sector is 0.09 per cent lower than under the Baseline Scenario. Similarly, under the Partial Restrictions Scenario, average annual production of this industry is simulated to be about 0.02 per cent lower, when compared to the Baseline Scenario. As a consumer of market research services and business services more widely, the mining industry is expected to be affected by the increase in the price of these services.

Finally, Chart 4.2 shows that average annual production in the manufacturing industry is expected to be around 0.07 per cent lower under the Full Restrictions Scenario and 0.01 per cent lower under the Partial Restrictions Scenario, when compared to the Baseline Scenario. The lower production in the manufacturing industry is mainly fuelled by two factors. First, the manufacturing industry is a supplier of inputs to the market research industry (such as paper products, and printing and publishing services). With lower production in the market research industry, the demand for inputs from other industries (like the manufacturing industry) will also be lower, affecting production in these other industries. Second, the manufacturing industry is a consumer of market research services. As such, the increase in the price of these services will impact industries that consume market research services (like the manufacturing industry).

Further details on the production effects under the Full and Partial Restrictions Scenarios by ANZSIC industry classification are shown in Attachment B.

Employment Effects

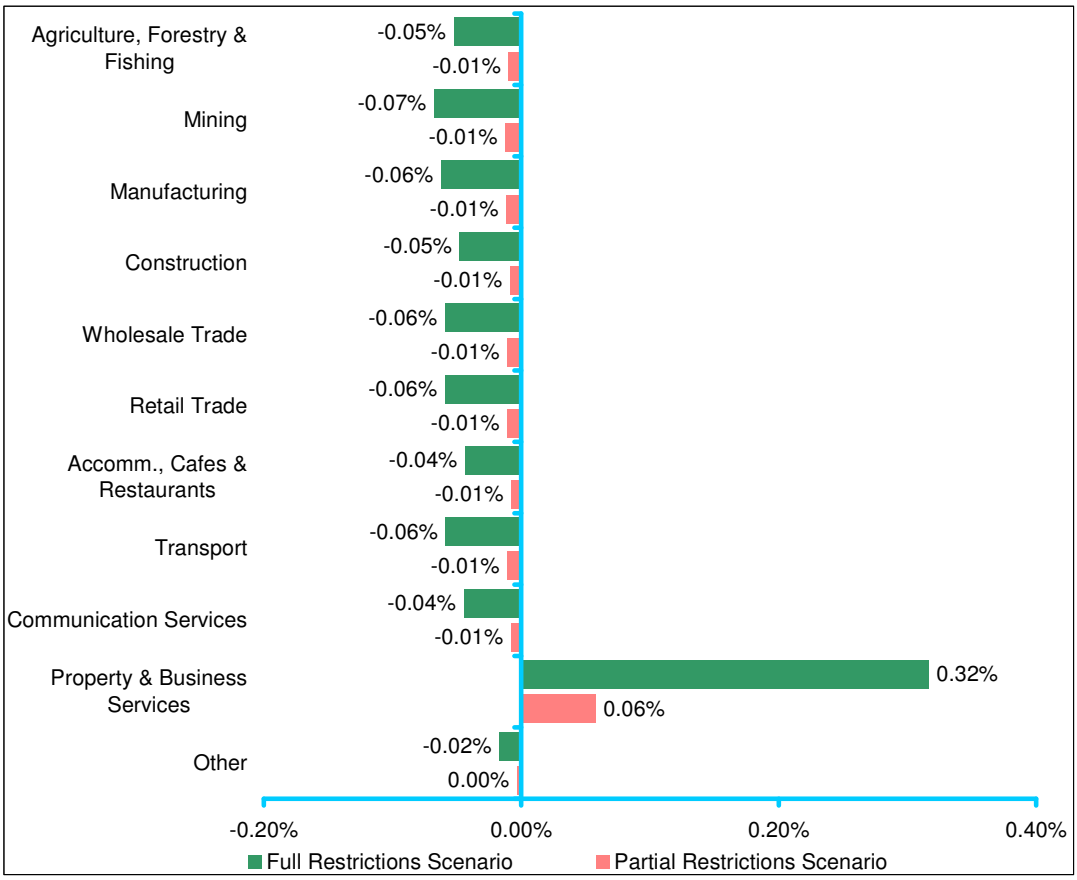
This section outlines the simulated wider industry employment impacts of the Full and Partial Restrictions Scenarios for industries upstream and downstream of the market research industry. These effects are presented in Chart 4.3.

Chart 4.3 shows that, on average, employment in most of the industries is simulated to be lower under both the Full and the Partial Restrictions Scenarios, when compared to the Baseline Scenario. The reason for this is that, as explained in the previous subsection, the lower production and higher prices in the market research industry will directly affect production in downstream and upstream industries. As production in these upstream and downstream industries declines, employment falls.

Furthermore, Chart 4.3 shows that the only industry that does not show a decrease in employment is the property and business services industry. Indeed, this industry shows and increase in employment of around 0.32 per cent under the Full Restrictions Scenario and an increase of around 0.06 per cent under the Partial Restrictions Scenario, when compared to the Baseline Scenario. This increase in employment is mainly fuelled by the market research industry, which is part of the property and business services wider industry. As explained in the previous subsection, the increase in employment of the market research industry is caused by the lower productivity in the industry. As productivity in the industry declines, more labour is needed to produce the same amount of output, increasing the employment in the market research industry and consequently, on the property and business services wider industry.

Further details on employment effects of the Full and Partial Restrictions Scenarios by ANZSIC industry classification are shown in Attachment B.

Chart 4.3
Average Annual Wider Industry Employment Effects
(% deviations from baseline)



Source: Econtech MM600+ simulation
Note: The "Other" industry segment includes Electricity, Gas and Water; Finance and Insurance; Government Admin and Defence; Education; Health and Community Services; Cultural and Recreational Services; and Personal and Other Services.

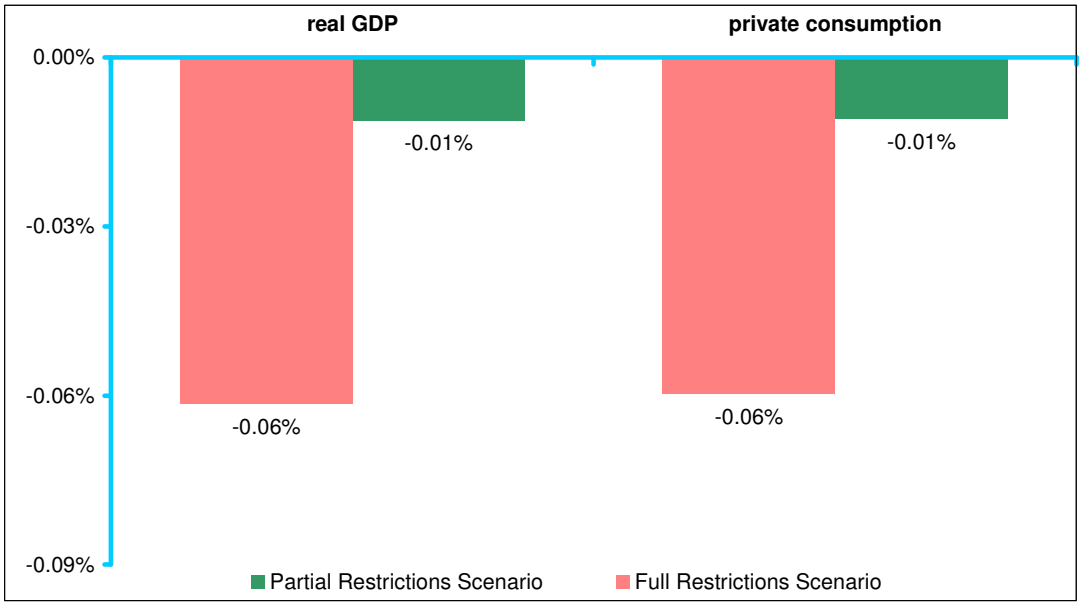
4.3 National Macroeconomic Effects

This section provides estimates of the average annual economy-wide costs of applying the Industry Standard to market research calls. In particular, Chart 4.4 shows the average annual effects of the Full and Partial Restrictions Scenarios on real GDP and private consumption, when compared to the Baseline Scenario.

Chart 4.4 shows that on average, the Industry Standard restrictions on calling hours and the prohibition on making calls on Sundays (Scenario 2) would lower real GDP by 0.06 per cent, on average, per year. That is, the labour productivity losses caused by the Industry Standard's restrictions would lead to a long-term decrease in GDP of 0.06 per cent, when compared to the Baseline Scenario (equivalent to about $990.3 million of real GDP in 2005/06, 2004-05 prices). Similarly Chart 4.4 shows that, on average, if the prohibition on making calls on Sunday is excluded from the Industry Standard (Scenario 3), GDP would be lower by 0.01 per cent (equivalent to about $181.4 million of real GDP in 2005/06, 2004-05 prices).

In comparison with the effects of the Partial Restrictions Scenario, the economy-wide effects of the Full Restrictions Scenario are much bigger. This is a logic result since the Full Restrictions Scenario includes more restrictions to the market research industry than the Partial Restrictions Scenario.

Chart 4.4
National Macro-economic Effects
(% deviation from baseline)



Source: Econtech MM600+ simulation

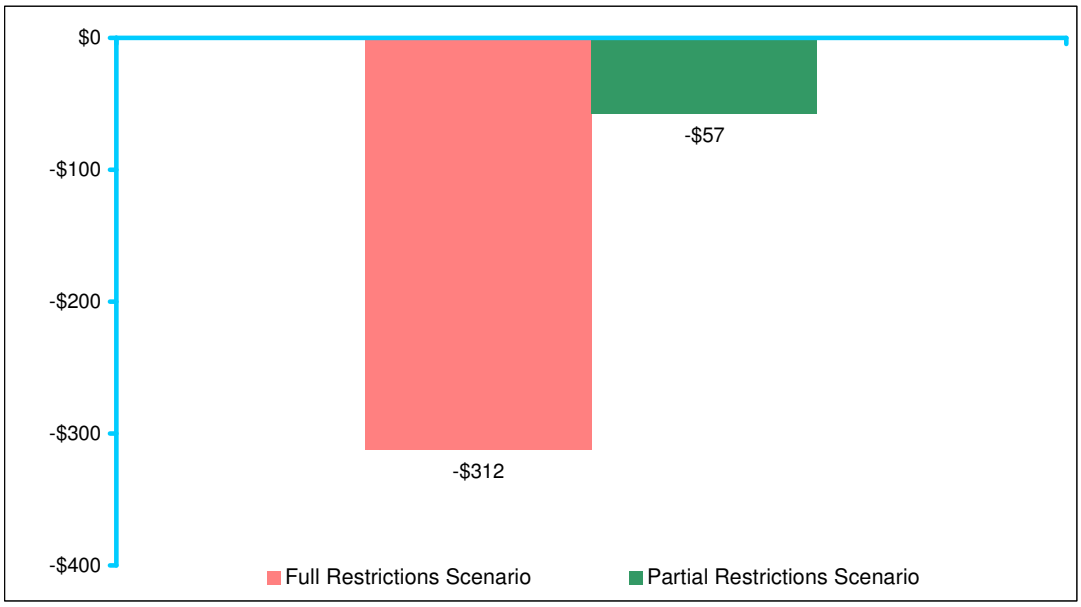
Chart 4.4 also shows the effects of the Full and Partial Restrictions Scenarios on private consumption. The chart shows that average annual private consumption is 0.06 per cent lower under the Full Restrictions Scenario than under the Baseline Scenario. Similarly, this chart shows that average annual private consumption is 0.01 per cent lower under the Partial Restrictions Scenario, when compared to the Baseline Scenario.

Finally, Chart 4.5 shows the effects on consumer living standard of applying the Industry Standard to research calls, over the long run.

In the past, when analysing the impacts of a policy change on the national economy, the traditional focus has been on using GDP to measure the impact on living standards. However, it has long been the standard practice of Econtech to use consumption as the measure of living standards instead of GDP. This is a better measure because living standards derive from consumption, not GDP, so in principle, consumption is a more appropriate measure of changes in living standards than GDP. Therefore, the best single measure of the impact of the Industry Standard on living standards is private consumption.

Chart 4.5 shows that if the Industry Standard is implemented as it is currently (i.e. including restrictions with respect to calling hours on weekdays and Saturday and the prohibition on making calls on Sundays), annual average consumer living standards would be lower by $312 million (2005 prices). Further, the chart also shows that if the prohibition on making calls on Sunday is excluded from the Industry Standard, annual average consumer living standards would be lower by $57 million (2005 prices).

Chart 4.5
Annual Consumer Living Standard Effects
($ million, 2005 prices, deviations from the Baseline Scenario)



Source: Econtech MM600+ simulation

Attachment A – A Guide to Econtech's Murphy Model 600 Plus (MM600+)

This Appendix provides a guide to Murphy Model 600 Plus (MM600+).

Type of Model

MM600+ can be compared with MM2, Econtech's economic forecasting model. Econtech first forecasting model was MM, developed in 1987/88, followed by two versions of MM2, the first in 1994 and the second in 1996. These models are based on quarterly data. Comprehensive dynamic structures are used in generating quarter-by-quarter forecasts of the economy extending nine years into the future. Econtech distributes MM2 in MM Simulator for Windows software, which is widely used by businesses and governments to produce their own forecasts and scenarios for the Australian economy.

Econtech's first industry model, MM303, was developed in 1997/98. It was then upgraded to MM600+ in 1999/00 under a contract to the Australian Competition and Consumer Commission. These models are based on a very detailed picture of the industrial structure of the economy that can only be found in the input-output tables published by the ABS. MM600+ uses the unpublished version of these tables to distinguish the production of 672 products by 108 industries. MM600+ is currently implemented in Excel and is used by Econtech in project consulting engagements for businesses and governments.

In developing two different types of economic models for forecasting and industry work, Econtech has followed a "horses for courses" approach. The forecasting model, MM2, provides quarter-by-quarter results but only distinguishes 18 industries. The industry model, MM600+, distinguishes 672 products, but only provides short-term and long-term results. It is not practicable to integrate both models into a single "super" model that provides quarter-by-quarter results for 672 products because quarterly ABS data are not available at that fine level of product detail.

MM600+ can be compared with other industry models such as the PRISMOD model of the Department of the Treasury and the Monash Model of the Centre of Policy Studies at Monash University in three key areas:

- detail;
- coverage; and
- time dimension.

MM600+ has a high level of detail in terms of both products and indirect taxes.

In MM600+, 108 industries produce 672 products. The other two models distinguish about 110 products.

MM600+ distinguishes 24 types of existing indirect taxes plus a GST of any design. This is similar to PRISMOD, while Monash has less tax detail with three types of existing indirect taxes and no GST.

Turning to economic coverage, MM600+, like Monash, is a computable general equilibrium (CGE) model, giving it wide coverage of the Australian economy. While PRISMOD covers

only industry costs and prices, MM600+ and Monash also cover industry production and employment.

The third and final area of model comparison is the time dimension. As explained in sections 6 and 7, MM600+ provides estimates of both short-term and long-term effects. By comparison, PRISMOD provides estimates of long-term effects only. While Monash does not provide estimates of long-term effects, it does provide estimates of year-by-year effects.

Table A.1
Model Comparison

Model	MM600+	PRISMOD	Monash
Products	672	107	about 110
Indirect taxes	25	similar	3
Coverage	prices, production	prices	prices, production
Time dimension	short & long term	long-term	annual

CGE modelling is well-established in Australia due mainly to the pioneering work of Peter Dixon in developing the ORANI model and then the Monash Model.

While some Australian CGE models are adaptations of Dixon's ORANI model, MM303/MM600+ was developed from scratch. At the same time, there are similarities between the models.

This is partly because ORANI and MM600+ are both in the CGE family, and therefore model computable, market-clearing outcomes under optimising behaviour. Similarly they both inevitably rely on input-output tables published by the ABS.

It is also because Dixon's work, as reported in Dixon, Parmenter, Sutton and Vincent (1982) and Dixon, Parmenter, Powell and Wilcoxen (1992), was an important source of ideas for MM600+ such as:

- import demand for each commodity is modelled in three categories: intermediate goods, consumption goods, and investment goods; and
- there is a detailed treatment of distribution margins.

The ORANI model also has some ideas not found in MM600+, including some refinements specific to agriculture. Equally, MM600+ has some ideas not found in ORANI/Monash, including an extended range of economic choices or behavioural responses, as discussed in section 5.

Beyond these similarities and differences in ideas, the main differences between the two models are in the areas of detail and time dimension, as already summarised in Table A.1.

Implementation of Model

Implementing MM600+ involved constructing a database, choosing a software environment, setting up a baseline simulation, and then putting the model into action performing simulations of actual or proposed economic shocks.

Econtech obtained a special series of the input-output tables from the ABS. In these unpublished tables, 107 industries produce about 1,000 products, compared with the published tables which only distinguish 107 products i.e. one product per industry. The unpublished tables also include a series of special tables containing extra detail on indirect taxes.

In constructing the database for MM600+, the ABS input-output data were manipulated to give an exactly-balanced, economically meaningful database. This included the following adjustments:

- aggregating from about 1,000 products to 672 products;
- treating "Sales by Final Buyers" as sales of used cars;
- constructing a travel composite commodity, used in modelling export demand for inbound travel in Australia;
- identifying household and business import demand for Australian travel overseas.
- balancing industry usage with product supply;
- imputing labour income to employers and self-employed; and
- allocating inventory investment.

Turning to the topic of software environment, MM600+ is implemented in Excel. The database is constructed in a series of workbooks linked backed to raw ABS data, which is also in the form of Excel workbooks. This implementation gives easy access to all model inputs, outputs and equations. Thus all inputs and equations can be altered and all outputs can be viewed.

MM600+ is specified in levels as a non-linear system, not in changes as a linear system, so model solutions are always exact. It is solved iteratively in Excel using Excel's standard iterative method for resolving "circular references". A model simulation in Excel under a very tight convergence criterion[7] takes about 30 minutes and involves about 500 iterations of the model.

Simulations of economic shocks involve varying the values of one or more model inputs relative to their baseline values. With open access to all model inputs, a wide variety of shocks can be conducted. These can involve virtually any shift in technology, tastes, foreign demand or taxation.

To enable more sophisticated analysis of the welfare effects of taxation and other reforms, the model provides for positive/negative externalities in consumption for each product, the values for which can be set by the model user.

[7] For example, for convergence, annual GDP, which is about $500,000,000,000, can change by no more than $1,000 from the previous iteration, implying a precision of 1 in 500,000,000.

Product Detail

As noted in the previous section, in the input-output tables published by the ABS, 107 industries produce 107 products.

In building MM600+, Econtech decided to incorporate a higher level of product detail than found in the published input-output tables. This is available in unpublished input-output tables that we obtained in electronic form from the ABS. The ABS derives the published tables by aggregating from these more detailed unpublished tables.

While the unpublished tables include about 1,000 detailed products, some aggregation was necessary because some data for detailed products are censored by the ABS to protect the confidentiality of individual companies. However, aggregation was kept to a minimum. This gave the 672 products that appear in MM600+ .This is the maximum achievable level of product detail.

The high level of product detail in MM600+ has many advantages. In commissioning MM600+ as a further development of Econtech's earlier CGE model, MM303, the ACCC requested the high level of product detail so that model estimates could serve as a more useful point of comparison in the ACCC's price monitoring work.

The high level of product detail also means that many policy changes can be analysed without the need for further disaggregation. For example, petrol and diesel are distinguished from other petroleum products, making it easier to accurately model the changes in fuel taxation under the New Tax System, as these tax changes are different for petrol, diesel and other fuels.

It also means that the gains from some micro-economic reforms can be more fully captured. For example, a finer level of disaggregation better reveals the diversity in rates of customs duty, leading to more reliable estimates of the gains from tariff reforms that produce benefits by reducing this diversity.

Tax Detail

The treatment of taxation is particularly detailed in MM600+. The model distinguishes 24 different indirect taxes on industry production and products, as listed below. These can each be varied either universally, or as they apply to each industry or product or end purchaser. In addition, MM600+ provides for a GST, under which each product/industry can be classified as taxable, input-taxed or GST-free.

Production Taxes	Product Taxes
Land Tax	GST
LGA Rates	Sales tax
Liquor & Gambling Taxes	Stamp Duty
Payroll Tax	Gambling Taxes; Former State Licence Fees
Taxes on Insurance	Primary Production Taxes
Motor Vehicle Taxes	Regulatory Service Fees
Stamp Duties	Excise Taxes
Taxes on use of goods etc	Motor Vehicle Taxes
Fringe Benefits Taxes	Financial Institution Duties

Departure Tax	Customs Duty on Exports
Other Indirect Taxes nec	Other Commodity Taxes
Total Subsidies	Commodity subsidies
	Customs Duty on Imports

This high level of indirect tax detail is only possible because MM600+ uses the unpublished input-output tables. While these unpublished tables distinguish 24 categories of indirect taxes, the published tables distinguish only three categories.

In modelling the changeover to the New Tax System, it was important to accurately represent the application to industries and products of sales tax, GST and fuel taxes.

The ABS input-output tables have significant shortcomings in their application of sales tax to products. For example, they do not allow for the "aids to manufacture" exemption on sales tax on inputs into the agriculture, mining, manufacturing and utilities industries. They also overstate sales tax collections on motor vehicles.

Also, obviously the input-output tables do not incorporate the just-introduced GST.

To address these sales tax and GST areas, Econtech commissioned a review by KPMG of the wholesale sales tax and GST treatments of each of the 672 products appearing in the model. We also built in the "aids to manufacture" exemption form sales tax. These tax assumptions were in turn reviewed by the ACCC in conjunction with the ATO.

The remaining significant complication in accurately modeling the changeover to the New Tax System is the complex nature of the changes to fuel taxation. MM600+ takes into account that changes in diesel fuel tax are different in each on the following areas:

- qualifying road use;
- non-qualifying road use;
- rail and marine transport;
- agriculture and fishing use;
- mining use; and
- other non-transport use.

MM600+ also takes into account that *ANTS* does not include any cuts to taxation of fuel used in air transport, including both aviation turbine fuel and aviation gasoline.

Economic Choices and Elasticities

MM600+ models how changes in relative prices affect economic choices, leading to changes in the industry pattern of production and employment. The main price-sensitive choices in the model involve:

- business choice between labour and capital;
- business choice between different types of capital;
- business choice between different forms of energy;

- business choice between road and rail freight transport;
- business choice of its size;
- choice between import and local sources of supply;
- business choice between local and export destinations for sales;
- consumer choice between broad commodity groups;
- consumer choice within broad commodity groups; and
- demand for Australian exports.

In modelling economic choices, values need to be assigned to the elasticities that govern the sensitivity of each choice to changes in relative prices. The following explains each of the economic choices listed above in more detail and also gives the associated values for the elasticities. The only elasticities not presented below are trade elasticities.

Substitution between labour and capital

The elasticity of substitution between labour and capital in production in each of the 108 industries is set to 0.75 in MM600+, consistent with Econtech's econometric research for MM2.

Substitution between different types of capital inputs

MM600+ provides for substitution between different types of business capital e.g. motor vehicles, computers, buildings etc. Business holdings of motor vehicles and computers are price sensitive, making it important to allow for substitution between different forms of business capital.

In MM600+ the elasticity of substitution between different forms of business capital is set at 0.5. In modelling this substitution, the user cost of each form of capital is calculated by applying a required rate of return plus a depreciation rate to the price of new investment, where both the depreciation rate and the price of new investment vary from one form of capital to the next.

Substitution between different forms of energy

MM600+ allows for substitution by business between different forms of primary energy, including black coal, brown coal, LPG and natural gas. Allowing for these substitution possibilities is vital when assessing the economic effects of energy development projects, or in examining greenhouse gas emission issues.

For most industries, the elasticity of substitution between forms of primary energy is set to 4.5. The exception is the electricity industry, where the elasticity has been set to 6, to reflect the high sensitivity of the choice of type of electricity generation to the relative cost of different forms of energy.

Substitution between road and rail freight transport

MM600+ allows for substitution by industry between road and rail freight transport. It does this by drawing on earlier work by the Industry Commission, incorporated in the ORANI-HILMER model, on the elasticity of substitution between road and rail freight transport. For most products this elasticity is set to 2, but lower values are used for some products. Substitution between freight transport modes is modelled both for transport from business to business (or importer to business) and from business to export wharves.

Business choice of its size

In MM600+, the representative business in each industry selects its size to minimise unit costs. The small business exemption from payroll tax distorts this choice so that in each industry the selected size is less than the technically efficient size.

In modelling the technically efficient size, it is assumed that for the representative business in each industry the need for primary factors (i.e. capital and labour), F, depends on its level of output, Q, according to the following equation.

$$F = Q + a.(QC–Q) + a.Q.\ln(Q/QC)$$

For technical efficiency, Q=QC. The sensitivity of efficiency to variations in Q away from QC is given by the parameter a. Fuss and Gupta, analysed 91 Canadian manufacturing industries and found that there was an average loss of efficiency of about 4 per cent from operating at one-half of the technically efficient scale. Using that result, in MM600+ the parameter a has been set to equal 0.13 in each industry.

In most states, payroll tax is calculated by applying the payroll tax rate to the business wage bill net of a tax-free threshold. This threshold provides a larger reduction in unit cost for smaller businesses than for larger businesses, distorting the choice of business size.

The technically efficient business size, QC, was then set separately for each industry so that the model correctly predicts industry payroll tax collections. This involves using the corollary of the fact that industries dominated by small businesses do not pay much payroll tax because of the tax-free threshold.

The model has been used to examine the distorting effect of the small business exemption from payroll tax on business size in an Econtech report of 23 June 1998 for the Australian Chamber of Commerce & Industry on “Payroll Tax: Is it as Good as a VAT or as bad as sales tax?”.

Substitution between imports and local supply

As in the Monash Model, allowance is made for substitution between imported and local sources of supply for each importable commodity for each of three categories of end use. The categories of end use are: recurrent inputs; business investment; and other components of final demand. The values of the Armington elasticities governing this substitution were originally based on those used in the Monash Model in 1997, but some have been modified in the light of experience with MM600+.

Substitution of local producers between supplying the export and home markets

In modelling export supply, MM600+ distinguishes between the production of a commodity for the home market and production for the export market. For each commodity, an elasticity of transformation links production for the two markets.

To the extent that a commodity's transformation elasticity is set to less than infinity (the value implicit in the ORANI model), an allowance if made for some friction in switching supply between the two markets. This friction may arise because some exported commodities are tailor made for export, or are more narrowly defined than the corresponding home commodity e.g. Australian consumers may eat all types of apples while we may only export Fuji apples to Japan — this affects the ability to switch supply between the two markets.

Based on model simulation experiments, the exports elasticity of transformation has been set to 0.5 for water transport and black coal, 1.5 for other minerals, and 2.5 for all other exports.

Substitution between broad consumption groups

Substitution between broad consumption groups is modelled in a linear expenditure system of consumer demand. The parameters of this system were estimated by Econtech using quarterly national accounts data extending from 1974-75 to 1996-97 and are set out in Table A.2. Implied price and income elasticities are also presented in Table A.2.

As expected, consumer demand for the following groups is income inelastic: food; cigarettes & tobacco; gas, electricity & fuel; fares; and operation of motor vehicles. Equally, consumer demand for the following groups is income elastic: financial services; other services; and personal travel imports (i.e. overseas holidays);

Table A.2
Consumption Group Parameters and Elasticities
Estimation Period: 1974.3-1997.2

		β	γ	Budget share	Income elast.	Price elas.	ν
A	Food	0.078	1320	14.5%	0.54	-0.34	-1.0
B	Cigarettes and tobacco	0.011	164	1.9%	0.57	-0.39	-0.5
C	Alcoholic drinks	0.040	187	4.1%	0.97	-0.65	-1.0
D	Clothing, fabrics and footwear	0.041	342	5.2%	0.78	-0.52	-0.5
E	Household appliances	0.031	93	2.9%	1.10	-0.73	-0.5
F	Other household durables	0.032	233	3.8%	0.83	-0.55	-0.5
G	Health	0.084	268	7.8%	1.08	-0.68	-0.5
H	Dwelling rent	0.208	531	18.4%	1.13	-0.62	-0.5
I	Gas, electricity and fuel	0.012	205	2.2%	0.52	-0.36	-1.0
J	Fares	0.010	160	1.8%	0.54	-0.37	-1.0
K	Purchase of motor vehicles	0.042	119	3.8%	1.11	-0.73	-0.5
L	Operation of motor vehicles	0.045	440	6.2%	0.72	-0.48	-0.1
M	Postal and telephone services	0.019	72	1.8%	1.03	-0.70	-0.5
N	Entertainment and recreation	0.038	314	4.9%	0.79	-0.52	-0.75
O	Financial services	0.054	1	3.9%	1.40	-0.92	-0.5
P	Other goods	0.093	67	7.1%	1.31	-0.82	-0.5
Q	Other services	0.130	-161	8.2%	1.59	-0.96	-0.5

R	Personal Travel Imports	0.032	-103	1.6%	2.03	-1.36	-0.5

Substitution within broad consumption groups

MM600+ also allows for substitution within broad consumption groups. Alcoholic drinks serves as an example. Clements et al. conclude that "the price elasticity of alcohol as a whole is about -1/2" (p.77). However, because of substitution between different forms of alcohol, price elasticities for individual alcoholic beverages are larger at –0.8, –0.7 and –1.9 for beer, wine and spirits respectively (p. 78). Thus it is important to allow not only for substitution between broad consumption groups, but also for substitution within consumption groups.

To allow for substitution within consumption groups, the consumer demand system in MM600+ is derived from a generalisation of the indirect utility function associated with the linear expenditure system. In this two-level generalisation, an intra-group substitution parameter, ν, appears which can take different values for different groups, as shown in the last column of Table A.2. This parameter is set to –0.5 for most groups (zero equates to no intra-group substitution, as in the Monash model). This value implies that the price elasticity for an individual consumption commodity is up to 1.5 times the size of the price elasticity for the consumption group in which it belongs.

Under this approach, consumer demand for consumption of commodity *k* in group *i* is given by the following equation.

$$X_{ik} = \alpha_{ik}.\gamma_i + \phi_{ik}.(\beta_i/P_{ik}).(C - \Sigma P_j.\gamma_j).(Q_i/P_{ik})^{-\nu i}$$

where:

$$P_i = \Sigma \alpha_{il}.P_{il} \text{ for all i}$$

$$Q_i = [\Sigma \phi i_l.P_{il}^{\nu i}]^{1/\nu i} \text{ for all i}$$

$$\Sigma \alpha_{il} = 1 \text{ for all i}$$

$$\Sigma \phi_{il} = 1 \text{ for all i}$$

$$\Sigma \beta_i = 1$$

Export demand

Export demand elasticities in MM600+ range from -4 for wool, where Australia has market power, and tourism, where product differentiation is important, to -12 for a broad range of exports. The pattern of elasticities for minerals and minerals processing were developed in 1998 in consultation with Malcolm Gray, a commodities consultant engaged by the Minerals Council of Australia.

Long-term Closure

MM600+ has two different closures frames — a short-term closure and a long-term closure — so that it can provide results from an economic shock for two different time frames. The long-term closure is described in this section while the short-term closure is described in the next section.

The long-term closure models a long-run equilibrium. For most economic shocks, the long run is likely to be attained in five to ten years.

In the long-run, economic agents optimise, all markets are in equilibrium, and assets and liabilities follow sustainable paths. Some of the key assumptions involved are:

- *profit maximisation*: the representative business in each industry chooses inputs and outputs to maximise profit subject to prices and a production function exhibiting constant returns to scale. This involves choosing inputs of capital and labour and outputs for the local and export markets;

- *labour market equilibrium*: in the long-run the labour market is assumed to attain equilibrium, so that an economic shock has no lasting effect on total employment. This assumption is implemented by fixing the level of total employment;

- *external balance*: in the long-run net liabilities to the foreign sector must follow a sustainable path. This assumption is implemented by setting the trade balance equal to the cost of servicing payments on foreign-owned capital — the real exchange rate needed to achieve this outcome is determined by the model;

- *budget balance*: in the long-run the budget balance must be sustainable. Specifically, in MM600+ the government budget is assumed to be in balance. It is necessary to designate a swing fiscal policy instrument to achieve that outcome. Generally, the rate of tax on labour income is used as the swing fiscal policy instrument; and

- *private saving*: in the long-run the level of private sector saving and associated asset accumulation must be sustainable. Further, one potential problem with long-run models is that saving (i.e. sacrificing present consumption for future consumption) can appear artificially attractive, because the model results show the gain in future consumption but not the sacrifice of present consumption. To address both of these issues, saving is held constant in MM600+ by fixing the quantity of capital that is owned locally.

MM600+ pays particular attention to the correct measurement of changes in national economic welfare. It uses the compensating variation and equivalent variation from welfare economics. These are alternative measures of the gain in real consumer spending.

More specifically, under a linear expenditure system model of consumer demand, these measures of welfare change virtually equate with changes in real supernumerary (or non-essential) consumption. Real supernumerary consumption is calculated by subtracting nominal "essential" consumption from nominal total consumption to obtain nominal supernumerary consumption, before deflating using the ideal price index for supernumerary consumption.

In MM600+ effects on vertical equity can also be measured. This is done by calculating movements in real supernumerary consumption for consumers at different income levels. In the results, the benefits of an economic reform are tilted towards low-income earners if the ideal price index for essential consumption falls by more than the ideal price index for supernumerary consumption.

Short-term Closure

The long-term closure factors in full adjustment of industry capital stocks to economic shocks, which is a protracted process that may take five to ten years.

Because of this lengthy capital stock adjustment process, short-term closures have been developed for economic models. These short-term closures hold industry capital stocks fixed.

In the case of MM600+, the short-term closure is different because it was developed under a contract to the ACCC to mimic the price exploitation guidelines issued by the ACCC in March 2000. Under these guidelines, businesses:

> "should not increase the net dollar margins on their goods and services as a result of the New Tax System changes alone".

While this rule applies to June 2002, the short-term closure is only designed for the introduction year of the New Tax System, 2000/01.

Under this short-term closure, the long-term closure is modified by holding fixed the price of capital services in each industry. This means that changes in the cost of non-capital inputs flow through fully into prices, but changes in the cost of capital inputs have no effect on prices.

This is a reasonable representation of the ACCC guidelines as they apply in 2000/01.

Under the guidelines, savings in the cost of capital inputs only need to be passed on into prices as existing capital is replaced. This would not occur to a significant extent in 2000/01, so it is reasonable to model the guidelines by holding fixed the cost of capital inputs.

Equally, the ACCC guidelines require that savings in the cost of non-capital inputs are passed on fully into prices, and this is also captured in the short-term closure.

The short-term closure is only designed to mimic the ACCC guidelines, not other short-term applications, where a more conventional short-term closure based on fixed capital stocks would need to be used.

A conventional short-term closure is similar in that changes in the cost of capital inputs would have no effect on prices. However, it differs in that only part of changes in the cost of non-capital inputs would flow through into prices, with the proportion varying from one product to the next depending on supply and demand elasticities in each market.

Applications

MM303/MM600+ has been used in modelling the changeover to the New Tax System as well as many other applications.

The changeover to the New Tax System has been modelled for:

- companies
- industry associations
- governments; and
- the ACCC.

Companies

MM303/MM600+ is the most widely used model for estimating the effects of the New Tax System on company costs. MM600+ services have been supplied to companies by Econtech itself as well as through Ernst & Young, KPMG and Firmstone & Feil. These taxation services have been used by major companies in each of the following industries.

- mining
- pharmaceuticals
- other manufacturing
- media
- water
- retailing
- hotels
- road transport
- rail transport
- communications
- banking
- insurance
- professional services

Industry Associations

Econtech has used MM303/MM600+ to analyse the effects of the New Tax System for the following industry associations.

- Australian Automobile Association
- Australian Chamber of Commerce & Industry
- Australian Bankers Association
- Australian Hotels Association
- Australian Pharmaceutical Manufacturers Association
- Distilled Spirits Industry Council of Australia
- Housing Industry Association
- Master Builders Australia
- Minerals Council of Australia
- Plastics and Chemicals Industry Association
- Printing Industry Association of Australia
- Water Services Association of Australia

Governments

Econtech developed the Econtech ANTS Savings Calculator, which has been used by the following governments for estimating the effects of the New Tax System on the costs of their agencies.

- Commonwealth Government
- New South Wales Government
- Victorian Government
- Queensland Government
- WA Government
- SA Government
- Tasmanian Government
- ACT Government
- NT Government

ACCC

- Under contract to the ACCC, Econtech further developed its MM303 model to produce MM600+.

- The ACCC has used the results from MM600+, together with industry information, in its Shopping Guide covering the likely effects of ANTS on about 200 consumer prices.

- The ACCC Small Business Cost Savings Estimator - a tool to help small business comply with the ACCC price exploitation guidelines - was developed for the ACCC by Econtech.

Other Applications

MM303/MM600+ was also used in the following industry policy consultancies.

- a study for Chevron of its proposed natural gas pipeline from PNG to Gladstone

- a study for a major corporation of a proposed shale oil project

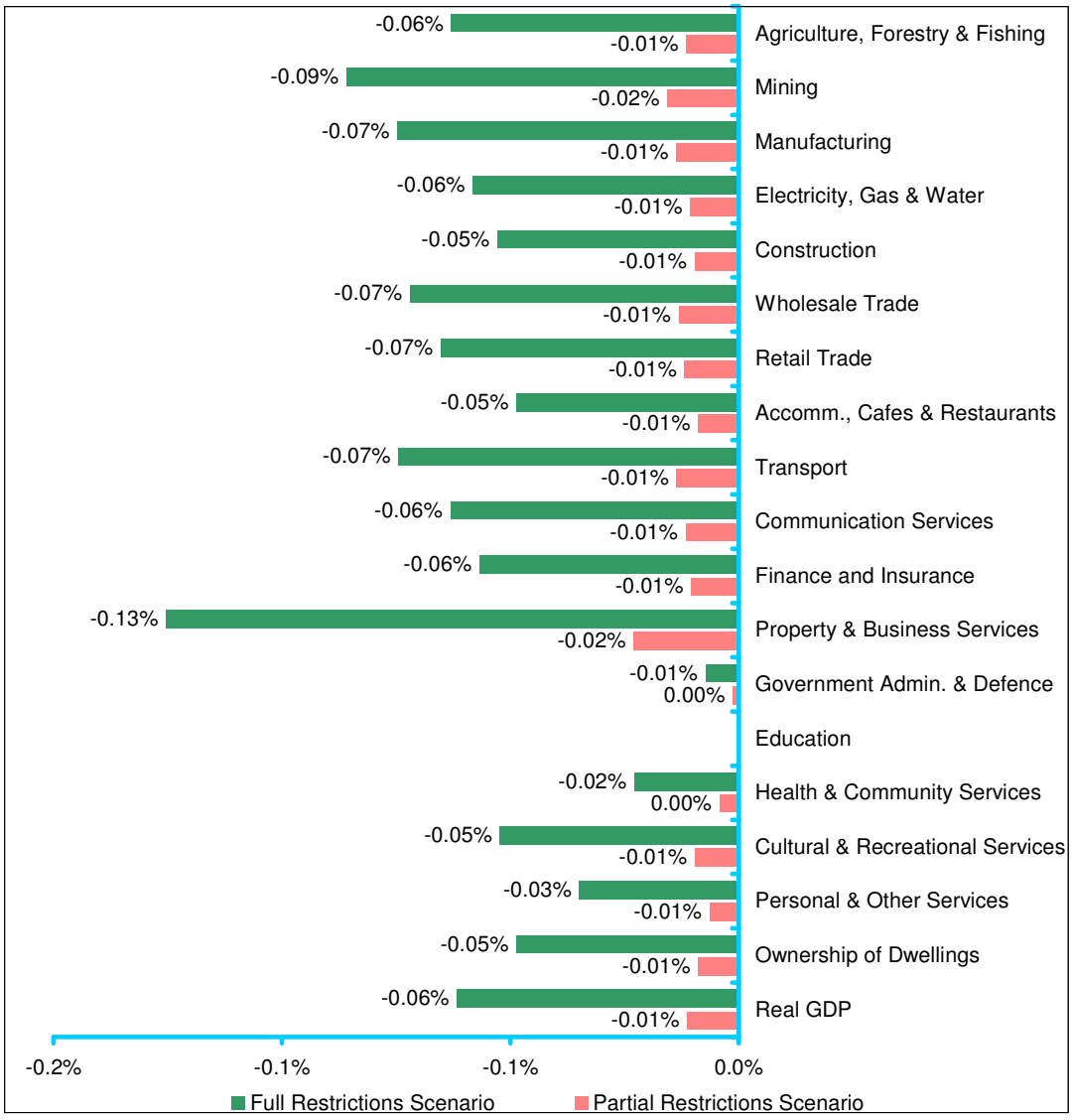
- a study for an oil company of a possible business decision with major implications for the oil industry

- a study for the Australian Greenhouse Office on National Average Fuel Consumption

- a study for two oil companies of a proposed merger of their oil refining operations.

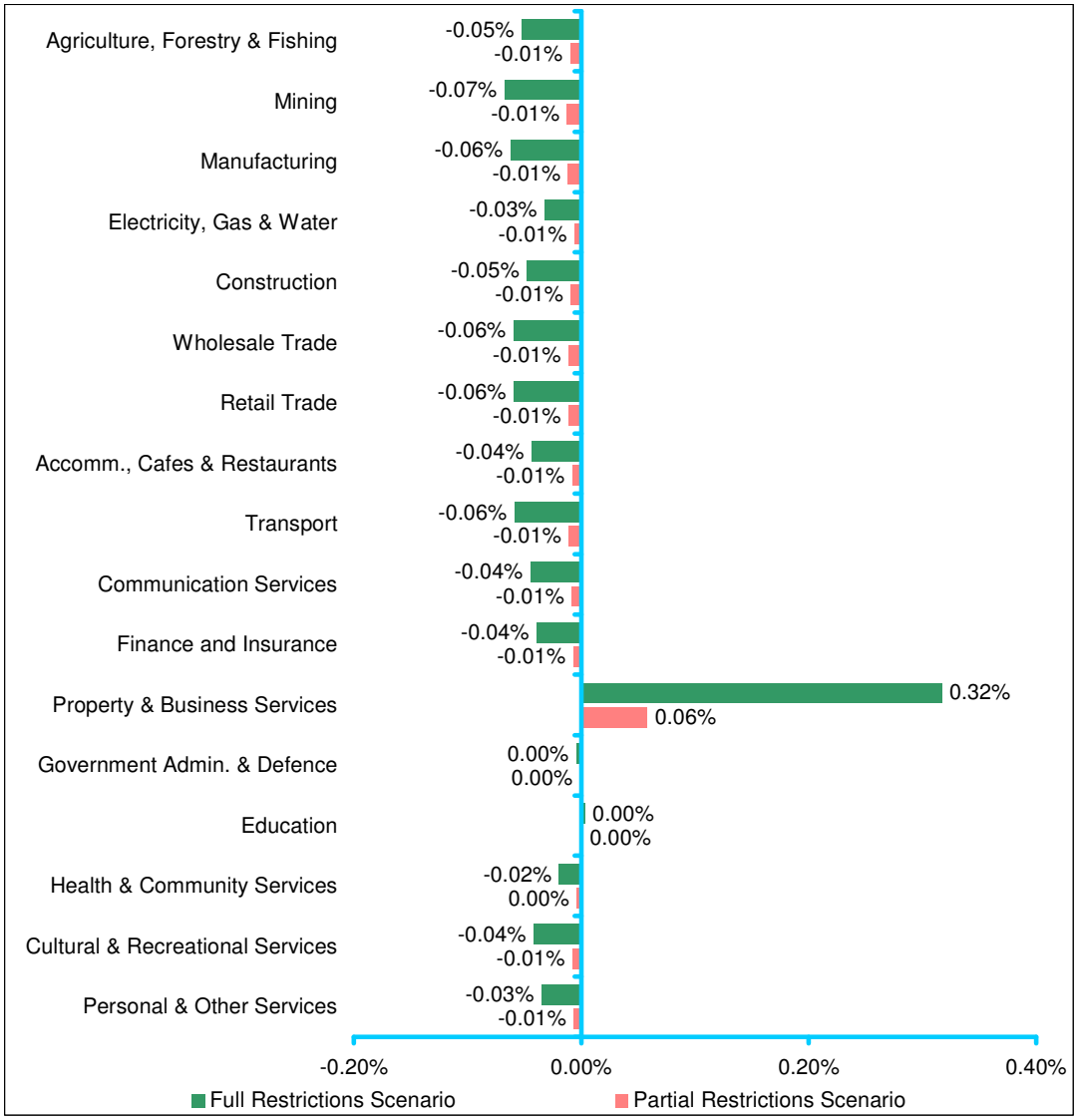
Attachment B – Detailed Results

Chart A.1
Detailed Average Annual Wider Industry Production Effects
(% deviations from baseline)



Source: Econtech MM600+ simulation

Chart A.2
Detailed Average Annual Wider Industry Employment Effects
(% deviations from baseline)



Source: Econtech MM600+ simulation