

# **THE IMPLICATIONS OF A NEW TAX SYSTEM (ANTS) — MODELLED USING MM600+**

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## Introduction

The Commonwealth Government is implementing A New Tax System (*ANTS*) that uses a Goods and Services Tax (GST) to reform the indirect tax system. This report analyses the broad economic effects of *ANTS* using Econtech's new Murphy Model 600 Plus (MM600+).

The GST is a relatively broadly based indirect tax that is being used to replace relatively narrowly-based indirect taxes including wholesale sales tax, financial institutions duty on bank accounts, and stamp duties on shares. This will affect industry costs, production and employment as well as consumer prices. It also represents a move towards a more neutral system of indirect taxes, delivering a long-term improvement in economic efficiency.

In analysing these economic effects, the MM600+ model used in this report is highly detailed, has broad economic coverage, and provides both short-term and long term effects:

- it is highly detailed with 672 goods and services compared with about 107 in other models;
- it provides information on the timing of likely changes in costs and prices, with results for the year 2000/01, the short-term and the long-term;
- it produces estimates not only of changes in costs and prices, but also of long-term changes in industry production and employment; and
- it incorporates the changes to *ANTS* negotiated with the Democrats in May 1999.

On the other hand, some other models, including the Treasury's PRISMOD model, contain a module dealing with the effects of *ANTS* on different types of households. This important type of modelling is necessary for assessing the equity of *ANTS* but this is outside of the scope of MM600+.

Besides equity, another important issue in tax reform is simplicity. The *ANTS* package will affect the administration and compliance costs of the taxation system but this is also outside of the scope of MM600+.

This report does not analyse the reform to the business tax system following from the Ralph Report. The business tax reforms have been analysed previously in reports prepared by Econtech for the Senate Inquiry into the Ralph proposals.

The next section of this report outlines the main measures of *ANTS*. Section 2 outlines the economic model used to analyse *ANTS* and the scope of its results. Section 3 presents the estimates of the national effects of *ANTS*, while section 4 presents the broad industry effects. The main conclusions on the economic effects of *ANTS* are drawn together in section 5.

The results from Econtech's MM600+ are also used to estimate the effects of *ANTS* on individual companies. This involves applying the modelling results to a company's financial information. This is to assist companies in negotiating maximum cost reductions from suppliers and in re-pricing their own products to meet ACCC guidelines. MM600+ is the most widely-used model in this area. Please contact us for more information.

## 1. ANTS

### 1.1 GST Regime

*ANTS* sets the GST rate at 10 per cent, making calculations of GST payments simple. The GST is estimated to raise \$29 billion when fully in place in 2002/03. On that basis, the same GST would have raised about \$20 billion had it been in operation in 1996/97<sup>1</sup>. This report presents *ANTS* in 1996/97 terms, a year for which firm, comprehensive tax data are already available.

Under the GST, an industry is treated in one of three ways.

An industry that is taxable pays GST on the value of its sales, but can claim rebates of GST paid on its taxable purchases. Thus, in effect, a taxable industry pays tax on its value added — the difference between the value of its sales and the value of its purchases. An industry that is input taxed does not pay GST on the value of its sales, but also cannot claim rebates of GST paid on its taxable purchases. An industry that is GST-free does not pay GST on the value of its sales, but can claim rebates of GST paid on its taxable purchases. A GST-free industry is precisely that, except to the extent that it makes purchases from industries affected by input taxation.

Table 1 summarises the main provisions of the GST. Private consumption expenditure of \$317 billion is divided into three portions, corresponding to the three different taxation treatments under a GST.

The taxable portion, which amounts to \$170 billion, is the largest.

The GST-free portion amounts to \$71 billion. It includes fresh food of \$27 billion, health services of \$25 billion, and other services of \$13 billion such as education, childcare and community care. Many of these sectors are heavily supported by government spending. Any gain to the government's budget from applying GST to these sectors would probably be largely offset by government compensation measures, so there is no point in applying GST to them. Overseas holidays, which amount to \$6 billion, are GST-free because it is impossible to apply GST to them.

The remaining portion of private consumption, amounting to \$76 million, is input taxed. This includes rental services and most financial services.

Rental services include rental payments for tenanted dwellings, and imputed rental payments for owner-occupied dwellings. Instead of these rental payments being subject to GST, GST is applied indirectly through taxation of new dwellings and dwelling maintenance costs.

The other item in the input-taxed portion is financial services. Payment for these services can take the form of fees and interest rate margins. While fees are easy to identify with individual uses of financial services, interest rate margins are more difficult to allocate. For that reason, most financial services are taxed on their inputs rather than their value added.

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<sup>1</sup> Consumer spending, which accounts for most of the GST base, is projected to rise by over 40 per cent from 1996/97 to 2002/03, due to a combination of growth in real spending and prices.

**Table 1**  
**GST Regime**

	Total \$b, 1996/97	Taxed Portion \$b, 1996/97
<i>Current Inputs for:</i>		
Ownership of dwellings		4 (f)
Financial Services		8 (c)
Total Current Inputs		13
<i>Capital Inputs for:</i>		
Ownership of dwellings		23 (f)
Financial Services		4 (c)
Total Capital Inputs		27
<i>Exports:</i>		
Australian spending by Foreign Travellers	6	3 (a)
<i>Private Consumption of:</i>		
Food	41	14 (h)
Cigarettes and tobacco	6	6
Alcoholic drinks	13	13
Clothing, fabrics and footwear	16	16
Household appliances	9	9
Other household durables	12	12
Health	25	0 (b)
Dwelling rent	64	0 (f)
Gas, electricity and fuel	6	6
Fares	5	4 (g)
Purchase of motor vehicles	11	11
Operation of motor vehicles	18	18
Postal and telephone services	6	6
Entertainment and recreation	16	16
Financial services	13	1 (c)
Other goods	23	23
Other services	28	15 (d)
Personal Travel Abroad	6	0 (e)
Total Private Consumption	317	170
Grand Total GST Base (post-GST)		213
GST Rate (per cent)		10%
GST Collections (\$b, 1996/97) (i)		19

Notes:

- (\*) All values in the table are simulated values for 1996/97, inclusive of GST.
- (a) Inbound tourists pay GST except on pre-purchased domestic airfares.
- (b) Health is GST-free.
- (c) Most financial services are input taxed.
- (d) All of other services are taxable, except the following which are GST-free:  
education, child care, community services & religious organisations.
- (e) Expenditure by Australians on overseas travel is GST-free.
- (f) Dwelling Rent is input taxed on current inputs, and capital inputs (new houses & additions).
- (g) For domestic residents, fares are taxable except international airfares which are GST-free.
- (h) Fresh food is GST-free while processed food is taxable.
- (i) GST collections = GST Rate/(1 + GST Rate)] X Grand Total GST Base (post-GST)

## 1.2 Tax Reductions

Table 2 shows how the annual revenue from the GST is used to finance reductions in existing taxes in *ANTS*. All calculations are based on data for 1996/97. The contributions to the government's budget from the GST include revenue from the GST itself of \$20 billion, and further gains from indirect effects of \$1 billion. The indirect effects are twofold. First, *ANTS* lifts GDP, thereby boosting incomes and tax collections. Second, the reductions in existing indirect taxes lead to reductions in the cost to government of goods and services it purchases from the private sector<sup>2</sup>. This total contribution of \$21 billion is used as follows.

*ANTS* abolishes wholesale sales tax at an annual cost of \$13 billion. Compared with a GST, sales tax is inefficient because of its narrow uneven coverage of consumer spending.

*ANTS* also abolishes financial institutions duty on bank accounts at an annual cost of about \$1 billion. Stamp duties on marketable securities such as shares are also abolished in *ANTS*, at a further annual cost of \$1 billion.

Next, *ANTS* includes changes in special taxes, including cuts to fuel taxes at a cost of \$3 billion. Changes in excises on petrol, diesel, beer and spirits and changes in gambling taxes are being used to achieve specified price change targets. This report assumes that the subsequent indexation of excise rates discounts the CPI for the effect of *ANTS*. If this assumption is not met, the specified price change targets will be exceeded.

Finally, besides covering the cost of the cuts to existing indirect taxes just listed, Table 2 shows that the GST also generates extra revenue of \$3 billion that is used as a contribution to income tax cuts. This is a measure of the "tax mix switch" from direct taxes to indirect taxes in *ANTS* that underlies an overall increase in consumer prices.

*ANTS* also includes measures that are not reported in Table 2 and are outside of the scope of the economic modelling. This includes calls to the budget totalling \$9 billion made up of further income tax cuts (\$4 billion), increases in social security payments (\$3 billion), and programs for health insurance, first home owners and the environment (\$2 billion). This is financed by changes to business tax (\$3 billion) and the budget surplus (\$6 billion).

**Table 2**  
**Government Budget Effects**

Description	Change in real amount, \$b
GST	20
Wholesale Sales Tax	-13
Stamp Duties on Securities	-1
Financial Institutions Duty	-1
Special: Alcohol, Cigs, Gambling, Fuel	-3
Contribution of GST to income tax cuts	-3
Other (indirect effects)	1
Total Budget Effects	0

<sup>2</sup> While government purchases are generally sales tax exempt, the cost structures of suppliers to government are affected by indirect taxes on "upstream" industries. Some of these indirect taxes are removed as part of *ANTS*.

### 1.3 Timing of ANTS Measures

Most measures in *ANTS* will be introduced in 2000/01. However, some measures have already been introduced in 1999/00 while others will not be introduced until 2001/02 and 2002/03. Details on the timing of the introduction of *ANTS* measures are in Table 3.

**Table 3**  
**Timing of ANTS Measures**

Measures
<i>1999/00:</i>
Increase in tobacco excise
Cut in top rate of w/sale sales tax from 32 to 22 per cent
<i>2000/01:</i>
Introduction of GST at 10 per cent
Abolition of remaining w/sale sales tax
Changes to special taxes on fuel, alcohol & gambling
Cuts in personal income tax
<i>2001/02 and 2002/03:</i>
Abolition of stamp duty on securities
Abolition of financial institutions duty
Introduction of full GST input tax credits for motor vehicles

For the purpose of evaluating *ANTS* as economic policy, it is appropriate to model the full package of measures, irrespective of the timing of their introduction. Thus, for this report, the full *ANTS* package was simulated using MM600+.

On the other hand, for the purpose of forecasting the economic effects of *ANTS*, the timing of the introduction of measures is important. There is particular interest in forecasting the effects of *ANTS* on costs and prices in the year where the major measures are being introduced, 2000/01. To meet this interest, MM600+ was simulated again, this time inputting only the measures to be introduced in 2000/01.

Results from both of these simulations are reported in following sections where appropriate.

## 2. Economic Modelling

### 2.1 Comparison with Other Models

Econtech's modelling of *ANTS* began with Murphy Model 303 (MM303), which was developed under contract to a state treasury in the second half of 1997. It was a detailed model with 305 goods and services, and a detailed treatment of indirect taxes, including sales tax and GST. As a computable general equilibrium model, it had wide coverage of the economy, providing results on the effects of *ANTS* on industry costs, prices, production and employment. It was a long-term model providing estimates of long-term effects.

In late 1999 and early 2000, Econtech developed MM600+ from its original MM303 under a contract with the Australian Competition and Consumer Commission (ACCC). This first major step was to develop a new closure for the model to make short-term results available in addition to the existing long-term results. This new closure has been in use since late 1999. The second major step was extending the detail in the model from 305 goods and services to 672. This work was completed recently.

MM600+ can be compared with other industry models dealing with indirect tax reform — Treasury's PRISM0D, Monash and STATAx — in three key areas:

- detail;
- coverage; and
- time dimension.

The key feature distinguishing MM600+ from other models is its high level of detail. In MM600+, 108 industries produce 672 goods and services, as detailed at Appendix A. Each of the other models is far less detailed, distinguishing only about 107 goods and services.

Like MM303, MM600+ distinguishes 24 types of existing indirect taxes plus a GST of any design. This is similar to PRISM0D and STATAx, while Monash has less tax detail with three types of existing indirect taxes and no GST.

Turning to the issue of economic coverage, MM600+, like Monash, is a computable general equilibrium (CGE) model, giving it wide coverage of the Australian economy. While PRISM0D and STATAx estimate the effects of *ANTS* on industry costs and prices, MM600+ and Monash also estimate the effects on industry production and employment.

The third and final area of model comparison is the time dimension. As explained in section 2.3, MM600+, like STATAx, provides estimates of both the short-term and long-term effects, while PRISM0D provides estimates of the long-term effects only. Monash does not provide estimates of long-term effects but does provide estimates of year-by-year effects.

**Table 4**  
**Model Comparison**

Model	MM600+	PRISM0D	STATAx	Monash
goods & services	672	107	107	about 107
indirect taxes	25	similar	similar	3
coverage	prices, prod'n	prices	prices	prices, prod'n
time dimension	short & long term	long-term	short & long term	annual



## 2.2 Other Aspects of MM600+

Like MM303, the main data source for MM600+ is the unpublished but more detailed version of the ABS input-output table. This is used to achieve the high level of detail on goods and services and taxes found in MM600+. The model is calibrated to the 1993/94 input-output table, and will be updated to the 1995/96 table when it becomes available.

In developing the database for MM600+, Econtech commissioned a review by one of the big five accounting firms to confirm the appropriate wholesale sales tax rate and GST treatment of each of the model's 672 goods and services. This review was important for the final accuracy of the model, because it identified many shortcomings in the ABS treatment of sales tax in the input-output table that needed to be corrected for MM600+.

Like MM303, MM600+ allows for the exemptions from sales tax on inputs available to some industries, including agriculture, mining and manufacturing. MM600+ also models in detail the changes to fuel taxation in *ANTS*. It 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 off-road use.

It 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.

MM600+ allows for the different asset lives of different investment goods. This is important because the savings in investment costs from abolition of sales tax are concentrated in short-lived assets, such as road motor vehicles and computers that currently bear sales tax of 22 per cent, rather than long-lived assets such as constructions, that are sales tax free.

Like MM303, MM600+ models how the changes in the industry pattern of costs and prices from *ANTS* are likely to 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 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
- foreigners demand for Australian exports.

Tax reform and other micro-reforms remove distortions to relative prices, and generate gains when these changes in relative prices affect the above choices made by economic agents. MM600+ pays particular attention to the correct measurement of the ensuing gains 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.

## 2.3 Time Dimension

The original MM303 was developed under a long-term closure. However a short-term closure has now been developed to meet the need for estimating the effects of *ANTS* on costs and prices in 2000/01. For a more detailed discussion of this issue, see Appendix B.

The main reason that *ANTS* will have different effects on costs and prices in the long-term than the short-term is that it reduces taxation of investment. Specifically, about one-quarter of sales tax falls on new business investment, and when sales tax is abolished business investment in road motor vehicles, computers and office equipment will be cheaper.

This will induce a gradual expansion in industry capital stocks of these and other capital items, boosting industry production and thereby pushing down consumer prices. In the long-term, when capital stocks have fully adjusted, the abolition of sales tax on new investment will have been passed on in full to consumers in the form of lower prices.

Studies imply that this capital stock adjustment takes five to ten years to complete. This means that results from long-term models, including PRISMOD and the long-term closure of MM600+, apply from five to ten years into the future onwards. It also means that the lower cost of new investment under *ANTS* is likely to gradually flow through to lower production costs and consumer prices over a period of five to ten years.

To estimate the likely effects of *ANTS* in 2000/01, a short-term model closure is needed that excludes any effect of changes in the cost of new investment, including from the abolition of sales tax, on production costs and prices. This is also consistent with the approach of the ACCC, which is overlooking price changes that occur from July 1999 to July 2002. It has issued a rule that businesses:

“should not increase the net dollar margins on their goods and services as a result of the New Tax System changes alone” (section 2.14 of guidelines).

This implies that there is no immediate pass-on of the fall in the cost of new investment into production costs and consumer prices.

Equally, it requires a full pass to consumers of all other savings, including savings in the cost of business recurrent inputs and direct savings from cuts to taxes on consumer items.

This last aspect differs from economic theory, which predicts that there will only be a full pass-on in the long-term. In the short-term, it predicts only a proportion will be passed on, with the proportion varying from one product to the next depending on supply and demand elasticities. Obviously, it would be impractical for the ACCC to require companies to comply with re-pricing guidelines based on this theory, as it would require detailed, precise knowledge of demand and supply elasticities throughout the economy that no one possesses.

Instead, for administrative practicality, the ACCC’s rule is based on full pass-on and this has been built in to the short-term closure of MM600+. This leads to price changes, both up and down, that are greater than would be predicted by short-term economic theory.

Because the short-term closure of MM600+ is based on an administrative pricing rule rather than economic theory, it does not produce valid estimates of production effects. Also, the ACCC rule sets maximum price increases (or minimum price cuts) so the short-term price effects from MM600+ are the maximum of what should be expected under the ACCC rule.

## 2.4 Applications

MM303/MM600+ has been used in numerous reports on the effects of *ANTS* for businesses, governments, and industry associations.

MM303/MM600+ is the most widely-used model for estimating the effects of *ANTS* on the costs of individual companies. It has been used to analyse cost changes for two or more companies in each of the following industries:

- mining;
- pharmaceuticals;
- other manufacturing;
- electricity;
- water;
- retailing;
- hotels;
- transport;
- communications;
- banking;
- insurance;
- business services; and
- media.

In government, MM303/MM600+ has been used by the governments of each of the eight states and territories, as well as by the Commonwealth Government, to estimate the cost savings for major government agencies in each jurisdiction.

The industry associations that have commissioned reports by Econtech using MM303/MM600+ on the effects of *ANTS* on their industry include:

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

### 3. National Effects

This section presents MM600+ estimates of the national price and production effects of *ANTS*. Production effects are only available for the long-term for the reason given in section 2.3. Price effects are provided both for the introduction year of *ANTS*, 2000/01, as well as for the long-term. There should be a gradual phasing from the price effects in 2000/01 to the long-term effects over a period of five to ten years.

The 2000/01 effects are mainly of interest for economic forecasting. They were generated in a simulation of the measures in *ANTS* that are being introduced in 2000/01, as listed earlier in Table 3, using the short-term closure for MM600+.

The long-term effects are mainly of interest for economic policy. They were generated in a simulation of the full *ANTS* package using the long-term closure for MM600+.

#### 3.1 Prices

Table 5 summarises the price effects in 2000/01 and the long-term. *ANTS* is estimated to add 3.0 per cent to the CPI in 2000/01, when the effect of the introduction of the GST is partly offset by the abolition of sales tax on consumer items and business recurrent inputs and by cuts to fuel taxes.

This addition to the CPI eases back to 1.3 per cent in the long-term. This is helped by the price reducing effects of abolition of stamp duty on securities and financial institutions duty in 2001/02, and the phased introduction of full GST input tax credits for motor vehicles in 2001/02 and 2002/03. It is also helped by the delayed flow through to costs and prices of the earlier abolition of sales tax on investment. These results for the total CPI as extended to the eight groups that make it up in section 4.1.

These CPI effects refer to the difference the *ANTS* package makes to the level of the CPI, whereas economic forecasts usually refer to the inflation rate as measured by the percentage change in the CPI. Thus care is needed in applying these results to forecasts of the inflation rate. Some illustrative calculations now follow.

**Table 5**  
**National Effects – Prices**  
**(% effect)**

Description	2000/01	Long-term
<i>Consumer Prices &amp; Exchange Rate:</i>		
Consumer Price Index (13th series)	3.0%	1.3%
Consumer Price (national accounts)	1.6%	0.3%
Exchange Rate	0.6%	3.3%
<i>National Accounts (prices):</i>		
private consumption	1.6%	0.3%
gen. gov't road const'n	-1.0%	-3.1%
other gen. gov't final dd	-0.4%	-2.0%
housing investment	9.0%	7.1%
business investment	-3.9%	-8.0%
exports	-0.7%	-3.7%
imports	-0.6%	-3.2%
gdp	0.8%	-1.2%

Suppose the annual inflation rate in the absence of *ANTS* was forecast at 2.8 per cent, within the target band of 2-3 per cent used by the Reserve Bank. Given that *ANTS* will add 3.0 per cent to the level of the CPI in 2000/01, this gives an inflation forecast for that year of 5.9 per cent ( $= 100 \times \{[1.028 \times 1.03] - 1\}$ ). This is similar to the government's comparable forecast of  $5\frac{3}{4}$  per cent.

In the out-years, as mentioned above, the addition to the level of the CPI is estimated to ease back from 3.0 to 1.3 per cent. If this occurs evenly over the five-year period to 2004/05, *ANTS* will reduce annual inflation in 2001/02 to 2004/05 from 2.5 per cent to 2.1 per cent.

One striking result in Table 5 is that the effect of *ANTS* on consumer prices is sensitive to the measure of consumer prices that is used. In 2000/01, while *ANTS* is estimated to add 3.0 per cent to consumer prices as measured by the CPI, it is estimated to add only 1.6 per cent to consumer prices as measured in the national accounts. This is mainly due to the different way that consumer housing costs are measured in the national accounts and the CPI.

The national accounts base all housing costs on rental prices. Rental prices are clearly the appropriate measure of housing costs for renters, while economists argue that they are also appropriate for owner-occupiers, as they represent the opportunity cost of occupying your house rather than renting it to someone else. In 2000/01, *ANTS* is estimated to raise rents (and thus housing costs as measured in the national accounts) by only 0.7 per cent.

The CPI uses rents to measure the housing costs of renters, but mainly uses new house prices to measure the costs of owner-occupiers. In 2000/01, *ANTS* is estimated to raise the price of new houses by 9.0 per cent and overall housing costs as measured in the CPI by 5.2 per cent.

If housing costs in the CPI were measured the same (and more appropriate) way as in the national accounts, the estimated addition to the CPI from *ANTS* would be reduced from 3.0 to 2.1 per cent.

Further, the CPI overstates the rise in the cost of living from *ANTS*. To a limited extent, consumers will limit the rise in their cost of living from *ANTS* by switching their spending away from items with the higher price rises towards items with lower price rises or price falls ("substitution effect"). As a fixed weighted index, the CPI makes no allowance for this.

On the other hand, as a current-weighted index, the measure of consumer prices used in the national accounts has the opposite problem — it exaggerates the saving to consumers from the substitution effect.

The 1993/94 input-output table understates the importance of restaurant and take away meals in consumer spending, and *ANTS* will add about 8.8 per cent to their price in 2000/01. This leads to an understatement by MM600+ of about 0.2 per cent in the likely rise in consumer prices as measured in the national accounts. Adjusting for this lifts the estimated addition to consumer prices to 1.8 per cent in 2000/01 and 0.5 per cent in the long-term. This does not affect the estimate of the rise in the CPI.

Overall, in 2000/01 *ANTS* will add about 2 per cent to the true cost of living but about 3.0 per cent to the CPI. The CPI rise is higher because of limitations in its measure of housing costs and because it does not allow for the substitution effect.

*ANTS* will also affect the exchange rate by lowering local business costs. The abolition of wholesale sales tax, stamp duties on shares and financial institutions duty on bank accounts,

as well as the cuts to fuel excises, will all lower business costs. This improves the international competitiveness of trade-exposed sectors. To restore external balance, the Australian dollar is bid up by about 0.6 per cent in 2000/01 and 3.3 per cent in the long-term, as shown in Table 5 and broadly reflecting the saving in local business costs.

The higher Australian dollar from *ANTS* reduces import prices, which helps lessen the rise in the CPI to that estimated here. However, the ACCC guidelines are not specific about businesses passing on cost savings from the effect of *ANTS* on the exchange rate. If these cost savings are not passed on in full, the rise in the CPI may be higher than forecast here.

### 3.2 Production

The long-term changes in the pattern of prices shown in Table 5 leads to the long-term changes in volumes or quantities shown in Table 6.

**Table 6**  
**National Effects – Volumes**  
**(% effect)**

Description	Long-term
<i>National Accounts (real):</i>	
private consumption	0.7%
gen. gov't road cons'tn	1.8%
other gen. gov't final dd	0.0%
housing investment	-3.6%
business investment	6.1%
exports	4.0%
imports	2.9%
GDP	1.4%
<i>Other:</i>	
Annual Economic Welfare Gain (\$million)	538

Table 6 shows that *ANTS* leads to a gain in annual national economic welfare of about \$0.5 billion. This estimate is conservative and arises largely from the replacement of inefficient wholesale sales tax with the more efficient GST. The replacement of stamp duties on shares and financial institutions duty on bank account taxes with the GST would also lead to gains but, like other CGE models, MM600+ does not adequately pick up the inefficiencies arising from these two taxes, leading to understatement of the welfare gain from *ANTS*.

The lower cost of new business investment under *ANTS* stimulates the volume of business investment, which is estimated to rise by over 6 per cent.

This raises the capital intensity of production, leading to higher productivity and a gain in GDP estimated at 1.4 per cent. The gain in GDP is also assisted by an improved allocation of labour between industry sectors associated with the move away from narrowly-based indirect taxes towards a broadly-based more neutral tax in the form of the GST.

At the same time, *ANTS* raises the cost of new housing investment by about 7 per cent, leading to a fall in the volume of housing investment estimated at about 4 per cent.

## 4. Industry Effects

### 4.1 Consumer Price Index Effects

MM600+ generates estimates of the effects of *ANTS* on consumer prices for each of the 672 goods and services in the model. These have been aggregated to estimate the price effects for each of the 101 expenditure classes that make up the 13<sup>th</sup> series CPI. These in turn have been aggregated using the CPI weights to the group level and then to the all groups result.

Chart 1 shows the effects of *ANTS* in both 2000/01 and the long-term on the prices for the eight groups that make up the 13<sup>th</sup> series CPI, as well as the all groups result, which has already been discussed in section 3.1.

While the overall increase in consumer prices, as measured by the Consumer Price Index, is 3.0 per cent in 2000/01 and 1.3 per cent in the long-term, there is considerable variation around these figures from group to group. The following comments concentrate on the 2000/01 effects, which are mostly higher than the long-term effects.

*ANTS* is estimated to add 2 per cent to the price index for the Food group in 2000/01. This rise is entirely due to a rise in the price of restaurant and takeaway foods (which are subject to GST) estimated at 8.8 per cent. The weighted average price of all other foods (which are predominately GST-free) is estimated to fall by 0.5 per cent.

*ANTS* is estimated to add 8 per cent to the price index for the Clothing group in 2000/01. While *ANTS* is expected to add nearly 9 per cent to the price of most clothing and footwear, the clothing accessories class in the CPI is estimated to rise by just over 3 per cent, as it includes items subject to sales tax which is being abolished.

*ANTS* is estimated to add 5 per cent to the price index for the Housing group in 2000/01. This factors in a rise in the price of new houses of 9.0 per cent and a rise in rents of 0.7 per cent. As explained in section 3.1, the CPI overstates the true rise in housing costs. Housing costs as a whole are best mentioned by housing rents alone.

*ANTS* is estimated to add 3 per cent to the price index for the Household Equipment and Operation group in 2000/01. Abolition of sales tax means that *ANTS* adds only 0.3 per cent to the price of appliances and 2.4 per cent to the price of furniture. However, *ANTS* adds 7.8 per cent to the price of postal and communication services.

*ANTS* is estimated to have no effect on the price index for the Transportation group in 2000/01. The government has promised that the price of petrol will not rise as a result of *ANTS*. The price of motor vehicles is expected to fall by 6.8 per cent due to the abolition of sales tax, while motor vehicle repair and servicing will rise in price by 4.4 per cent.

*ANTS* is estimated to add 5 per cent to the price index for the Alcohol and Tobacco group in 2000/01. This factors in the government's commitment that *ANTS* will add only 1.9 per cent to price of a carton of full strength beer and will have no effect on the retail price of whisky. On-premise prices will rise by more. In 2000/01, *ANTS* is estimated to add 7.9 per cent to the price of cigarettes.

*ANTS* is estimated to have no effect on the price index for the Health and Personal Care group in 2000/01. Health is mostly GST-free. The price of toiletries and personal care

products is unchanged due to the abolition of sales tax on some items. In this group, only hairdressing and personal care services rise in price, the estimated rise being 6.3 per cent.

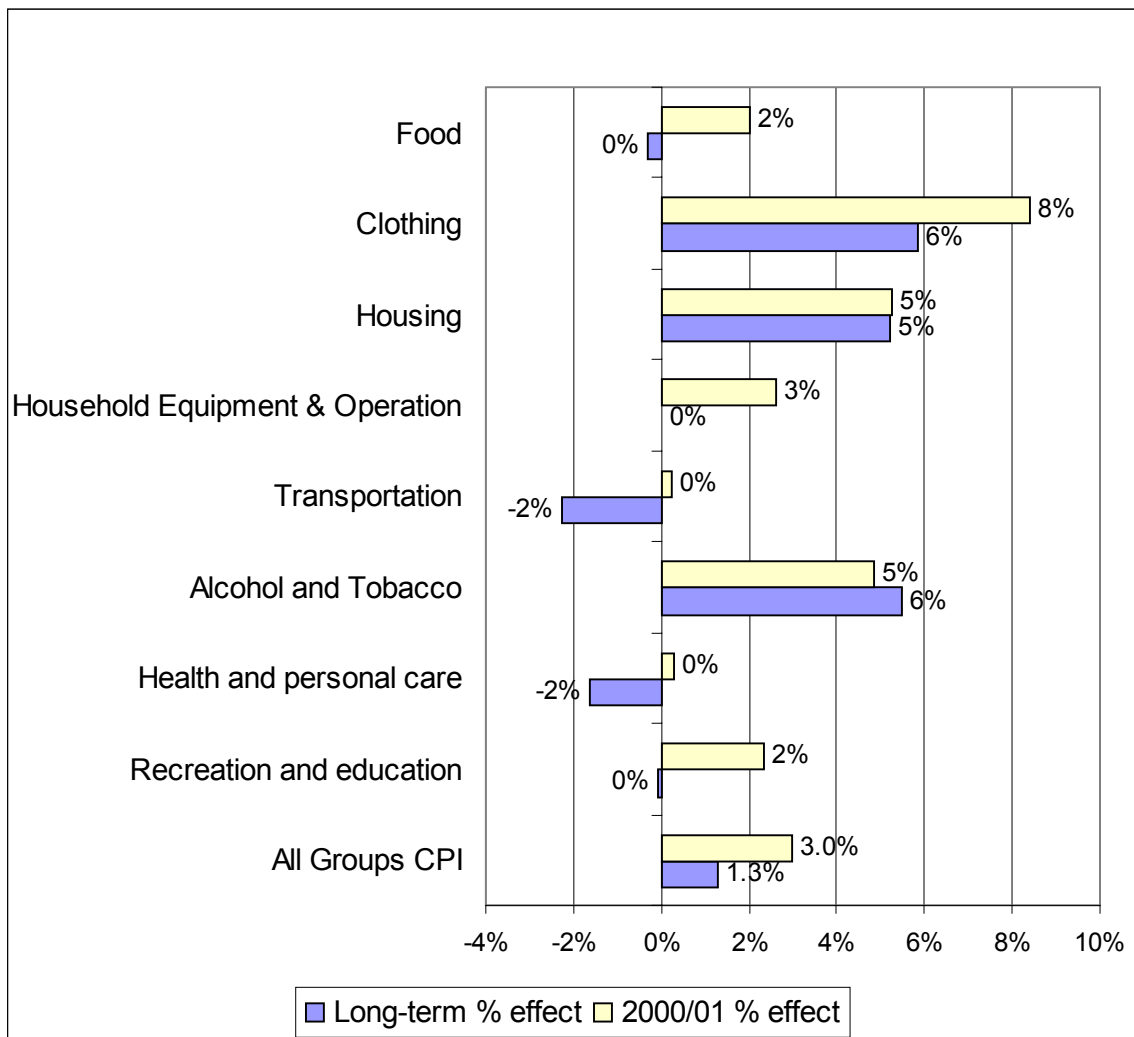
*ANTS* is estimated to add 2 per cent to the price index of the Recreation and Education group in 2000/01. Abolition of sales tax will reduce the price of audio, visual and computing equipment by an estimated 4.5 per cent. At the same time, *ANTS* will add 5.3 per cent to the price of domestic holiday travel and accommodation.

The 13<sup>th</sup> series CPI is limited in that it omits some significant areas of consumer spending, notably spending on financial services and gambling.

The 14<sup>th</sup> series CPI, to be introduced from October 2000, will add financial services as a ninth group, but the details are not yet available. The addition of financial services will have little effect on our estimate that *ANTS* will add 3.0 per cent to the CPI in 2000/01. However, financial institutions duty on bank accounts will be abolished in 2001/02, producing a fall in the price of financial services. This means that the estimate that *ANTS* will add 1.3 per cent to the CPI in the long-term is overstated. An adjusted estimate would be 1.1 per cent.

The *ANTS* document implies that state gambling taxes will be reduced to offset the GST on gambling. This means that if gambling were added to the CPI, which is not envisaged, *ANTS* would have no effect on its price.

**CHART 1  
CONSUMER PRICE INDEX EFFECTS**





## 4.2 Industry Production Effects

Chart 2 shows the long-term effects of *ANTS* on production levels for each industry division. Most divisions gain, with the average gain of 1.3 per cent matching that of GDP(P), similar to the gain for GDP(E) of 1.4 per cent. MM600+ also generates far more detailed estimates of production effects, covering each of the model's 672 goods and services. Short-term production effects are not available for the reason explained in section 2.3.

Industry divisions that are particularly hard hit by the narrowly-based indirect taxes that are abolished in *ANTS* (sales tax, bank account taxes and business stamp duties), achieve the largest output gains from moving to a tax environment that treats different industries more equally. This does not mean that they are “winners” from *ANTS*. Rather, it means that they have been “losers” from the current inefficient tax system.

National employment is held fixed as a long-term assumption. This means that employment gains and losses in different industries must exactly balance out, as shown in Chart 3.

As indicated already, *ANTS* makes capital cheaper, leading to the adoption of more capital-intensive methods of production, so production rises in most industries, as seen in Chart 2.

*ANTS* is estimated to add about 2 per cent to production in Agriculture, Forestry and Fishing, above the average for all industries, as measured by GDP, of 1.3 per cent. Agriculture benefits from *ANTS* more than most industries because fresh-food is GST-free, a tax concession worth \$4 billion annually. This leads to lower prices for fresh food, while consumer prices overall increase. This increases demand for agricultural products.

Mining obtains a long-term gain in output from *ANTS* of about 5 per cent. This is because Mining receives a larger cost saving than most other industries. Labour costs, for which there is no saving, are relatively unimportant in Mining compared with other industries. The cost savings in Mining are mostly indirect, being in supply chains feeding into the industry. Mining itself has an exemption from sales tax, and already receives a diesel fuel rebate, so its direct savings from *ANTS* are small. In the long-term, the cost savings in Mining outweigh an expected long-term appreciation of the \$A of about 3.3 per cent. The resulting gain in international competitiveness lies behind the estimated gain in production.

The abolition of wholesale sales tax under *ANTS* is of particular benefit to Manufacturing, which obtains a production gain of about 3 per cent. This is because wholesale sales tax is basically a tax on Australian sales of certain manufactured goods. Its removal will reduce the price of those goods, even after allowing for the offset from GST, stimulating local demand and production. Production gains are largest in areas of Manufacturing where sales tax is most concentrated, specifically road motor vehicles and electronic equipment.

*ANTS* is estimated to leave production in Electricity, Gas & Water broadly unchanged. Business demand rises broadly in line with the rise in general business activity that is reflected in the gain in GDP of 1.3 per cent. However, this is offset by lower consumer demand. While consumer demand for water is maintained because it is GST-free, the application of GST reduces consumer demand for electricity and gas.

*ANTS* is estimated to leave broadly unchanged production in the Construction industry. On the non-dwelling side of the industry, businesses purchasing non-dwelling construction will be able claim back GST paid as a credit and prices will fall, stimulating higher volumes. On the other hand, on the dwelling side of the industry housing services will be input taxed,

meaning that new housing will be subject to GST and no credit will be allowed, so prices will rise, reducing volumes. Overall, higher non-dwelling construction activity will be broadly offset by lower dwelling construction activity.

*ANTS* is estimated to add about 3 per cent to production in the Wholesale Trade industry. Wholesale Trade is closely linked to the distribution of manufactured goods. The gains to the Manufacturing industry from *ANTS* boost Wholesale Trade.

*ANTS* is estimated to add about 1 per cent to production in the Retail Trade industry. Retail Trade is heavily dependent on consumer spending. Production in this industry increases in line with the consumer benefits of tax reform.

*ANTS* is estimated to cut about 1 per cent from production in the Accommodation, Cafes and Restaurants industry. Compared with other industries, *ANTS* provides the Accommodation, Cafes and Restaurants industry with a relatively small cost saving. This industry is labour intensive and *ANTS* is assumed not to provide any saving in labour costs. GST-induced higher prices for both households and foreign tourists will reduce demand and production in this industry.

*ANTS* is estimated to add about 3 per cent to production in Transport and Storage, significantly above the average for all industries, as measured by GDP, of 1.3 per cent. Land and water transport are significantly cheaper under *ANTS*, due to cuts in excise rates for diesel fuel and petrol. This leads to lower transport prices, which boosts demand and production.

*ANTS* is estimated to leave production broadly unchanged in Communications. Business use of Communications is expected to rise broadly in line with the predicted gain in GDP of 1.3 per cent. Because of GST, households will face higher communication prices, although the price of standard letters and local phone calls are being held unchanged by government policy. Higher household prices for some communications will reduce demand and production. Overall, under *ANTS* an increase in business use of Communications will be broadly offset by a decline in household use.

*ANTS* adds about 2 per cent to production of Finance and Insurance. Under the GST, banking is input taxed, meaning that no GST will be charged on sales, but no refund can be claimed on GST paid on purchases. Consistent with ACCC guidelines, this increase in bank costs is expected to be passed on to bank customers in the form of small increases in bank charges. *ANTS* also abolishes Financial Institutions Duty (FID) on bank accounts from 1 July 2001. Thus this is a delayed measure, coming in one year after most other measures in *ANTS*. Abolition of FID will make banking cheaper, despite higher charges, stimulating demand and production.

*ANTS* is estimated to add about 1 per cent to production in Property and Business Services, similar to the average for all industries, as measured by GDP, of 1.3 per cent. Property and Business Services mostly sells to business customers, who will generally be able to claim back any GST as a credit. Thus its demand and production increases in line with general business activity. Thus it is unsurprising that this industry's percentage gain in production is similar to that for GDP.

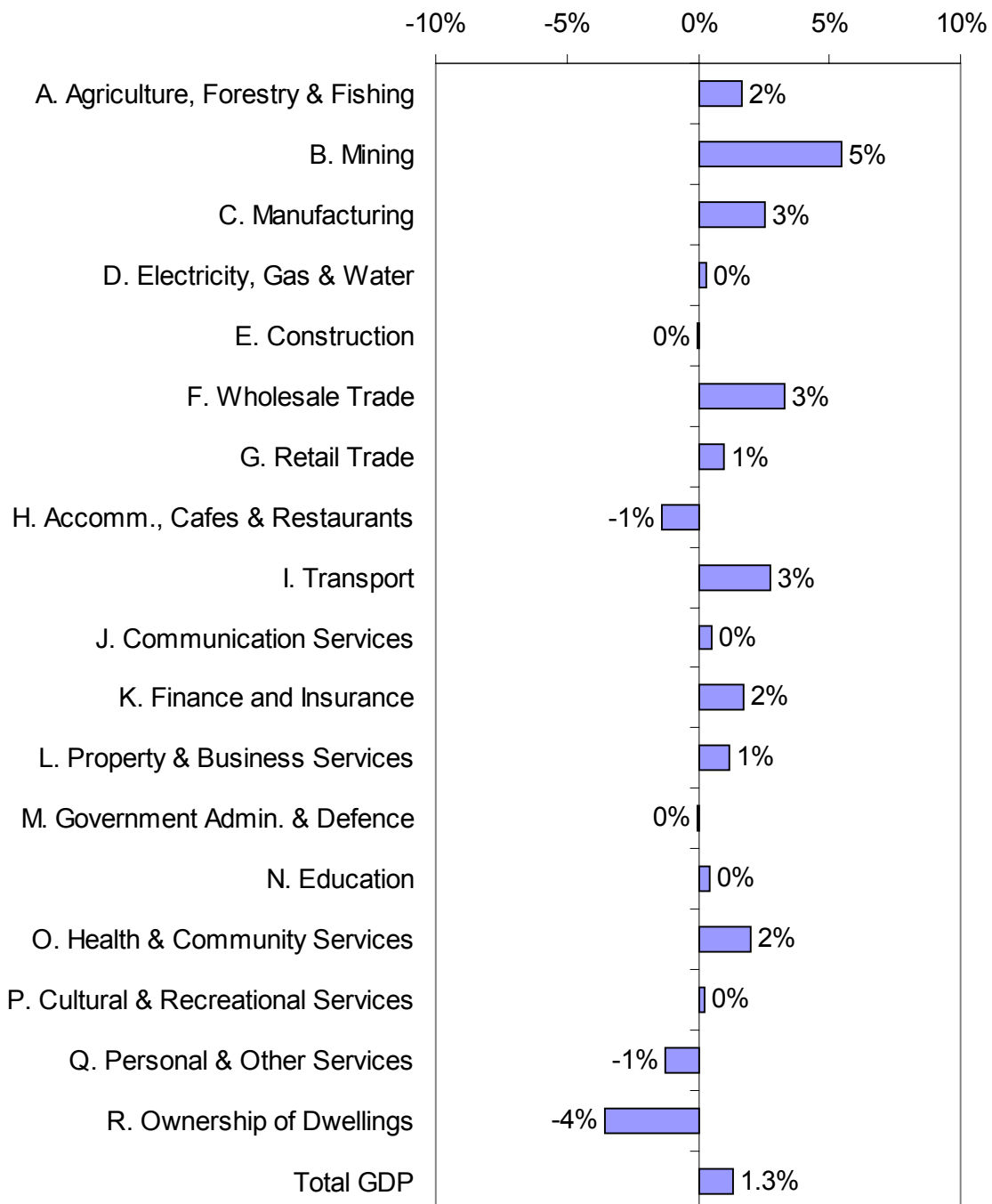
Cultural & Recreational Services are dominated by gambling. *ANTS* keeps unchanged the overall level of tax on gambling, with GST being offset by reduced gambling taxes. Thus *ANTS* leaves broadly unchanged production of Cultural & Recreational Services.

As a labour-intensive service industry that is subject to GST, Personal & Other Services needs to raise prices, leading to lower demand and a production loss of about 1 per cent.

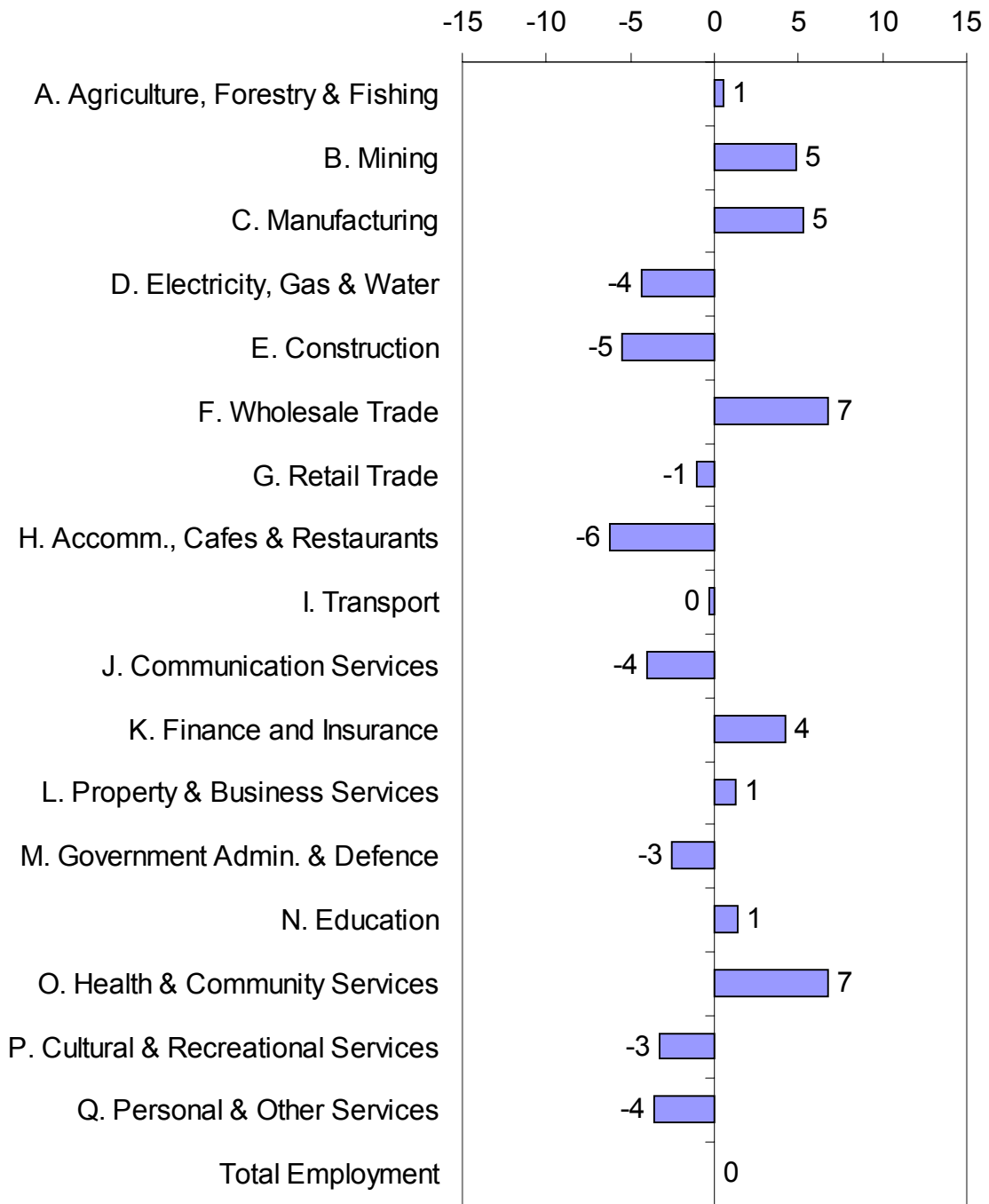
GST on new dwellings and dwelling maintenance expenses means a fall in production of Ownership of Dwellings (housing services) of about 4 per cent.

In sectors dominated by government, production levels are determined more by government spending than by indirect taxes. Thus *ANTS* has only minor effects on production levels in Government Administration & Defence, Education, and Health & Community Services.

**CHART 2  
PRODUCTION EFFECTS**



**CHART 3**  
**NATIONAL EMPLOYMENT SHIFTS**  
(‘000 persons)



## 5. Conclusions

*ANTS* is based on the introduction of a Goods and Services Tax (GST). As a broadly-based tax, the GST is more efficient than the relatively narrowly-based indirect taxes that it is replacing, such as wholesale sales tax.

*ANTS* was fed into Econtech's MM600+, a detailed economic model that distinguishes the production of 672 different goods and services and the application of 24 different types of existing indirect taxes, and any type of GST. MM600+ has wide coverage of the economy, providing estimates of the effects of *ANTS* on industry costs, prices, production and employment. Long-term effects are available for all of these variables, while effects for 2000/01 are also available for costs and prices.

*ANTS* is expected to result in a once-only lift in the Consumer Price Index of 3.0 per cent in 2000/01 and 1.3 per cent in the long-term. The long-term effect is lower because abolition of financial institutions duty and stamp duty on shares is deferred to 2001/02, full GST input tax credits for road motor vehicles are deferred to 2002/03, and there is a delay before the abolition of sales tax on investment flows through fully to lower consumer prices.

In 2000/01, while *ANTS* is expected to add 3.0 per cent to the CPI in 2000/01, it will add only 2 per cent to the true cost of living. The CPI rise is higher because of limitations in its measure of housing costs and because it does not allow for the effects of *ANTS* on the pattern of consumer spending.

These estimates assume that the indexation of excise rates discounts the CPI for the effect of *ANTS*. They also assume a full pass through into lower prices of the strengthening in the exchange rate expected from *ANTS*, although the ACCC guidelines are not specific on this.

Within the CPI, the largest price rises are for the Clothing group (+8%), the Housing group (+5%) and the Alcohol & Tobacco group (+5%). On the other hand, there is no price rise for either the Transportation group or the Health and Personal Care group.

*ANTS* is conservatively estimated to result in a permanent gain in annual national economic welfare of \$0.5 billion. This estimate largely reflects the efficiency gains from replacing sales tax with the GST. In reality, there would also be additional efficiency gains from replacing stamp duties on shares and financial institutions duty with a GST but the inefficiencies associated with these other two narrowly-based taxes are difficult to model.

The gain in GDP is estimated at 1.4 per cent. Lower prices for capital goods stimulate a permanent lift in business investment of about 6 per cent, leading to more capital and higher production levels.

The largest gains in output are for industries most disadvantaged by the inefficient, narrowly-based indirect taxes that are being abolished in *ANTS*. These include Mining with an output gain of 5 per cent, and Manufacturing, Wholesale Trade and Transport, all with gains of 3 per cent. On the other hand, Ownership of Dwellings has a loss of 4 per cent.

Besides the broad economic assessments of the type contained in this report, Econtech also analyses the effects of *ANTS* on individual companies. Specifically, it applies the detailed modelling results for cost changes for 672 goods and services to a company's financial information. This is to assist companies in negotiating maximum cost reductions from suppliers and in re-pricing their own products to meet ACCC guidelines.

**Appendix A: Industries and Goods and Services in MM600+**

MM600+ contains 108 industries producing 672 goods and services, as detailed in the table.

Code	Industry	Goods and Services
0101	Sheep	Sheep and lambs (incl 0122 part, 0123 part) Wool (shorn and dead) (incl 0122 part, 0123 part)
0102	Grains	Wheat (incl spelt) and meslin, unmilled (incl 0122 part) Oats, unmilled (incl 0122 part) Rice, in the husk (incl 0122 part) Oilseeds (incl 0122 part) Cereal grains nec (incl 0122 part) Misc. grains
0103	Beef cattle	Cattle and calves (incl 0122 part, 0123 part)
0104	Dairy cattle	Whole milk, chilled but otherwise untreated
0105	Pigs	Pigs
0106	Poultry	Poultry, for slaughtering Eggs
0107	Other agriculture	Plant nurseries Cut flower and flower seeds Potatoes Beans, french and runner; peas, green or blue Cabbages, brussels sprouts, cauliflowers and headed broccoli Carrots Lettuces Onions - white and brown Tomatoes Vegetables nec Grapes - table Grapes - wine Currants, raisins, lexias and sultanas Apples - fresh and sun-dried Pears and quinces - fresh and sun-dried Stone fruit - fresh and sun-dried Kiwi fruit Bananas - fresh and sun-dried Pineapples - fresh and sun-dried Plantation fruit nec - fresh and sun-dried Citrus fruit - fresh and sun-dried Edible nuts (excl peanuts) Strawberries Berries, orchard fruit and small fruit nec - fresh and sun-dried Horse studs Deer farming Honey Pet breeding and live animals nec Sugar cane Cotton (excl ginned) Mushrooms Tobacco Hops Grass, lucerne and clover seed Hay, cereal grasses and fodder Agriculture nec Raw coffee and chicory

		Cocoa beans (excl roasted)
		Natural rubber
0200	Services to agric.; hunting	Cotton, ginned
		Cotton seed
		Sheep shearing services
		Aerial agricultural services
		Services to agriculture nec
		Skins and pieces, raw
0300	Forestry and logging	Forestry and services to forestry
		Softwoods - conifers
		Hardwoods, brushwoods, scrubwoods, etc, hewn timber and timber nec (incl firewood)
		Forest products nec
0400	Commercial fishing	Rock lobsters
		Prawns
		Finfish trawling
		Squid jigging
		Line fishing
		Crustaceans and molluscs (saltwater); seaweed; beche-de-mer; shell gathering
		Fish, crustaceans and molluscs farming; freshwater fishing
		Services to fishing nec
1100	Coal; oil and gas	Black coal (all types incl briquettes)
		Brown coal-lignite (incl briquettes)
		Crude oil (incl. condensate)
		Natural gas
		Liquefied natural gas; liquefied natural petroleum gases; oil and gas nec
1301	Iron ores	Iron Ore Mining
1302	Non-ferrous metal ores	Gold Ore and Copper Ore Mining
		Lead ores and concentrates (excl silver-lead-zinc ores)
		Silver and zinc ores
		Uranium concentrates
		Misc. Non-ferrous metal ores
1400	Other mining	Gravel
		Sand
		Dimension stone
		Limestone (incl shell and coral)
		Clays nec (incl brick, pipe, tile and shale)
		Salt
		Natural phosphates
		Misc. mining
1500	Services to mining	Petroleum exploration (own account)
		Petroleum exploration services nec
		Mineral exploration (own account)
		Mineral exploration services nec
		Mining services nec
2101	Meat and meat products	Poultry, slaughtered
		Fresh meat
		Casings, bungs, weasands and runners
		Edible offals (excl poultry)
		Edible tallow (excl refined)
		Inedible tallow (excl refined) and other unrefined animal oils and fats
		Raw hides and skins
		Meal of meat, offal and blood, not for human consumption
		Bacon and ham (incl canned)
		Misc. Meat Processing

2102	Dairy products	<ul style="list-style-type: none"> <li>Liquid whole milk, graded, tested or chilled</li> <li>Flavoured liquid whole and skim milk</li> <li>Other liquid whole milk (incl pasteurised milk)</li> <li>Cream (incl thickened), not concentrated or sweetened</li> <li>Sour cream, yogurt and other cultured milk products</li> <li>Ice cream and frozen confections</li> <li>Buttermilk (excl cultured) and skim milk (excl liquid skim)</li> <li>Whey and whey cream</li> <li>Cheese and curd</li> <li>Milk based food preparations</li> <li>Misc. dairy products</li> </ul>
2103	Fruit & vegetable products	<ul style="list-style-type: none"> <li>Jams</li> <li>Preserved fruit and fruit products</li> <li>Vegetables, frozen</li> <li>Sauces (excl worcestershire and apple)</li> <li>Misc. fruit &amp; vegetable processing</li> </ul>
2104	Oils and fats	<ul style="list-style-type: none"> <li>Margarine</li> <li>Misc. oil &amp; fat</li> </ul>
2105	Flour and cereal foods	<ul style="list-style-type: none"> <li>Wheat flour (excl self raising)</li> <li>Cereal breakfast foods</li> <li>Flour (self raising)</li> <li>Misc. flour &amp; cereal</li> </ul>
2106	Bakery products	<ul style="list-style-type: none"> <li>Bread and bread rolls</li> <li>Cakes, pastries, pies; crumpets</li> <li>Biscuits and biscuit crumbs; rusks; ice cream cones and wafers; unleavened bread</li> </ul>
2107	Confectionery	<ul style="list-style-type: none"> <li>Chocolate confectionery (excl chocolate coated biscuits and white chocolate)</li> <li>Cocoa products (excl chocolate confectionery)</li> <li>Chewing gum, white chocolate and other confectionery not containing cocoa</li> </ul>
2108	Other food products	<ul style="list-style-type: none"> <li>Raw sugar</li> <li>Fish, canned</li> <li>Rock lobster and crayfish (incl tails), chilled or frozen</li> <li>Processed seafoods (excl canned fish, frozen fish meat, rock lobster and crayfish)</li> <li>Fish fillets</li> <li>Coffee and coffee essences</li> <li>Mustard; worcestershire sauce; mayonnaise and salad dressing</li> <li>Flavouring essences, industrial</li> <li>Misc. food mfg</li> </ul>
2109	Soft drinks, cordials, syrups	<ul style="list-style-type: none"> <li>Natural and artificial mineral waters and aerated waters (excl sweetened or flavoured)</li> <li>Mineral waters and aerated waters, sweetened or flavoured, canned</li> <li>Mineral waters and aerated waters, sweetened or flavoured, bottled</li> <li>Misc. soft drink</li> </ul>
2110	Beer and malt	<ul style="list-style-type: none"> <li>Beer and Malt Manufacturing</li> </ul>
2111	Wine and spirits	<ul style="list-style-type: none"> <li>Vermouth, sparkling wines and other beverage wines of fresh grapes (incl fortified)</li> <li>Cider, perry, mead and wine-based mixed drinks (coolers)</li> <li>Brandy and fortified spirits</li> <li>Distillation wine from grapes</li> <li>Misc. spirits</li> </ul>
2112	Tobacco products	<ul style="list-style-type: none"> <li>Cigarettes, cigars, cheroots and tobacco</li> </ul>
2201	Textile fibres, yarns etc	<ul style="list-style-type: none"> <li>Labels and badges, textile, with printed lettering or design</li> <li>Textile finishing nec</li> <li>Wool, scoured (degreased but not carded, combed or carbonised)</li> </ul>



	Wool, carbonised
	Yarns of continuous synthetic filament or artificial fibres (incl viscose or acetate)(excl elastic sewing thread)
	Broadwoven fabric of continuous synthetic fibres (excl pile or chenille)
	Narrow woven textile fabrics (incl tape); synthetic tyre cord yarns or fabric
	Sewing thread
	Yarn of cotton (excl sewing thread, elastic or elastomeric); yarn gimped, chenille and loop-wade
	Face washers, cotton towels, and baby napkins of textile fabrics
	Broadwoven textile fabric, fibres nec
	Broadwoven fabric, woollen
	Woollen blankets and rugs (excl electric)
	Yarn, spun, woollen nec
	Misc. fibres, yarns & fabrics
2202	Textile products
	Rope and cable (excl wire), cordage (excl tyre cord yarn), twine or net products
	Tarpaulins; sails; tents; annexes; textile hosepiping; textile motor vehicle covers
	Blinds and awnings of textile fabrics (incl canvas) and woven textile materials (incl cotton)
	Made-up textile products nec
	Carpets and floor rugs of textile materials; mats and matting (excl grass, sisal or coir)
	Labels and badges, woven
	Bags, sacks and packets of textile or canvas
	Misc. textile product mfg
2203	Knitting mill products
	Hosiery (incl pantyhose, stockings, tights and socks)
	Pullovers, jumpers, sweaters and cardigans - knitted
	Fabrics (excl elastic or elastomeric), knitted or crocheted
	Knitted or crocheted fabric nec
	Curtains in the piece (incl continuous), knitted or crocheted
	Knitted articles nec, fabric knitted at the same establishment
2204	Clothing
	Womens and girls shirts and blouses
	Womens and girls T-shirts and tank tops
	Dresses, skirts, slacks, shorts, tunics, uniforms, jeans, overalls, leotards, coats, capes, suits and ensembles
	Womens and girls outer nightwear (incl dressing gowns, robes etc)
	Hats and other headgear (incl safety) (excl rubber bathing caps)
	Fur and sheepskin articles, (incl clothing) (excl headwear, footwear, handbags, purses and toys)
	Swimwear and tracksuits
	Clothing accessories (incl shawls, scarves, ties, gloves, belts, headbands)
	Leather clothing
	Dustcoats, mens and boys trousers (excl suit), shorts, jeans, overalls and work shirts, textile (excl waterproof)
	Waterproof, plastic and rubber clothing
	Mens and boys suits and uniforms (incl trousers), coats, blazers and jackets (excl leather, plastic or waterproof)
	Mens and boys woven shirts (with collars)
	Mens and boys outer nightwear (incl dressing gowns, robes, etc)
	Foundation garments (incl brassieres, corsets and girdles)
	Mens and boys T-shirts and tank tops
	Woven sleepwear (incl pyjamas and nightdresses) and infants clothing
	Misc. Clothing
2205	Footwear
	Footwear with uppers of leather and outer soles of rubber or plastic

		(excl sports footwear)
		Sports footwear; rubber thongs
		Footwear with uppers of leather and outer soles of leather or composition leather (excl sports footwear)
		Misc. footwear
2206	Leather and leather products	Leather, vegetable or chrome tanned (incl re-tanned), dressed or finished; chamois leathers
		Leather (excl dressed or finished)
		Hides and skins, pickled or preserved; tanned or dressed skins with hair or wool retained; fellmongered wool
		Leather handbags, suitcases, bags, travel sets for personal toilet articles, purses, key cases, wallets and billfolds
		Handbags, suitcases, bags, travel sets for toilet articles, purses, key cases, wallets and billfolds (excl leather)
		Saddlery and harness, of any material
2301	Sawmill products	Undressed sawn timber (incl treated) from logs sawn at the same unit
		Sawmill products nec
		Woodchips, softwood
		Woodchips, hardwood
		Resawn timber from timber already sawn at another unit (excl sleepers, palings and shingles)
		Dressed timber and mouldings nec
		Floorboards and weatherboards from dressed timber
2302	Other wood products	Doors, wooden
		Roof trusses, wooden
		Wall and window frames, wooden
		Veneers
		Laminated wooden boards (incl particle board)
		Builders joinery and carpentry nes, wooden
		Frames, wooden (incl for paintings, photographs, mirrors, etc)
		Misc. wooden product mfg
2303	Pulp, paper and paperboard	Vegetable parchment, tracing, glazed transparent or translucent papers (excl greaseproof); paper and paperboard nec
		Paper stock (incl toilet paper stock, facial tissue and similar paper stock used for household or sanitary purposes)
		Misc. pulp, paper & paperboard
2304	Paper bags and products	Solid paperboard containers
		Containers, bags and packets, fibreboard nec
		Corrugated paperboard containers and sheeting
		Paper bags, packets and sacks (incl paper multiwall bags)(excl bags of composite material)
		Toilet, tissue, serviettes, towels & similar paper for household and sanitary purposes, in sheets or perforated rolls
		Paper trays, dishes, plates and cups; paper egg containers and fruit wrapping pads
		Misc. paper product mfg
2401	Printing; services to printing	Commercial, job, general, commission (incl paper stationery) and screen printing
		Trade advertising material, catalogues; printed pictures, designs & photos; forms; calendars & printed matter nec
		Envelopes, paper (excl commission printing)
		Writing pads, exercise books, registers, account books and loose leaf refills (excl commission printing)
		Paper labels, printed or imprinted (excl commission printing)
		Services to printing
		Printing trade services nec
		Misc. printing and services
2402	Publishing; recorded	Newspapers, printing or publishing; periodicals (excl bound)

	media etc	published once a week or more Newspapers - advertising sales Magazines and bound periodicals publishing; periodicals published less than weekly Other periodicals - advertising sales Books, sheet music, maps, atlases, touring guides, charts, plans or other printed articles (eg art prints) publishing Books, maps and sheet music - advertising sales Pre-recorded audio, magnetic, video or computer tapes or disks, compact disks and records, manufacturing/publishing
2501	Petroleum and coal products	Automotive petrol; gasolene refining or blending; motor spirit (incl aviation spirit) Gas oil or fuel oil (excl motor spirit and kerosene) Kerosene (incl kerosene type jet fuel) Liquefied petroleum gas produced at refineries Refinery products nec Misc. other petroleum & coal products
2502	Basic chemicals	Mixed fertilisers Synthetic rubber Polystyrene Polypropylene Polyvinyl acetate and synthetic resins (excl adhesives) Plasticisers Synthetic organic colouring agents and preparations (incl organic colour lakes, pigments and dyes) Organo-inorganic compounds; heterocyclic compounds; nucleic acids Sulphuric acid and oleum Synthetic inorganic colouring agents and preparations (incl inorganic pigments and chemical whites) Misc. basic chemical mfg
2503	Paints	Paint (excl bituminous) and primer, undercoat or lacquer Filler or putty, caulking compound Misc. paint mfg
2504	Pharmaceuticals etc	Pharmaceutical goods, for human use; barrier creams, toilet lanolin and suncreening preparations Veterinary products nec Pesticide Manufacturing
2505	Soap and detergents	Glycerine; candles Soap products Toothpaste and other dentifrices Laundry bleach Disinfectants (incl phenyl) Scouring compounds and abrasive cleaners Surface-active washing or cleaning preparations nec
2506	Cosmetics and toiletries	Hair shampoo, conditioner, sprays, colouring and other hairdressing preparations Aftershave & shaving preparations; lipstick, eye makeup; beauty cream or lotions; face lotions & powders Misc. cosmetics & toiletries
2507	Other chemical products	Inks Adhesives (excl bituminous) and glues Polishes (incl cream and liquid) and waxes (incl beeswax) Gelatine (incl derivatives) Misc. chemical products
2508	Rubber products	Rubber Tyre Manufacturing Rubber gloves, mittens and mitts Rubber belting (incl V belts)

		Rubber tubes, pipes and hose
		Rubber products nec
2509	Plastic products	Plastic bottles
		Plastic tubes, pipes and hoses
		Extruded sheets and sections nec
		Rigid fibre reinforced plastic articles (incl rigid plastic sheets, swimming pool shells and tanks)
		Foam and sponge plastic sheets, plates and strip (incl foam insulation and padding)
		Plastic foam products nec
		Plastic sacks, packets and bags (incl garbage bags)
		Plastic drums, drum linings, boxes, cases, crates & packaging accessories (incl stoppers, lids, caps & seals)
		Misc. Plastic Product Mfg
2601	Glass and glass products	Safety glass (incl windscreens and laminated sheet glass)
		Glassware nec
		Misc. Glass & Glass Product mfg
2602	Ceramic products	Clay bricks (excl refractory bricks)
		Refractory products (incl bricks, cement and clay)
		Industrial ceramic goods
		Ceramic roofing, flooring and wall tiles (incl terracotta)
		Ceramic wash basins and permanent fixture type sanitary ware
		Tableware, ornamental pottery and domestic ware nec
		Ceramic goods nec
		Misc. ceramic product mfg
2603	Cement, lime & concrete	Cement (incl hydraulic and portland)(excl adhesive or refractory)
		Lime (incl quick, hydrated, slaked and agricultural)
		Ready mixed concrete and mortar
2604	Plaster; other concrete products	Concrete, cement, fibrous-cement or artificial stone pipes; concrete box culverts
		Plaster board, sheets, panels or tiles
		Concrete, cement and artificial stone bricks, blocks, building boards and tiles
		Misc. Plaster & other concrete products
2605	Non-metallic min. products nec	Mineral wool and mineral wool products
		Cut, dressed, polished or shaped stone products
		Glass fibre and glass wool products
		Misc. non-metallic mineral product mfg
2701	Iron and steel	Iron or steel seamless tubes or pipes (excl cast or forged)
		Iron or steel tubes or pipes (excl cast, forged or seamless)
		Ferrous metal steam, gas and water fittings, taps, cocks, valves or parts (excl cast or forged)
		Misc. steel and tube mfg
		Metallurgical coke, coke breeze and retort carbon
		Basic iron, pig iron, sponge iron and spiegeleisen; iron or steel granules and powders
		Ferro-alloys (incl manganese, silicon or chrome)
		Iron or steel primary forms (incl ingots) and semi-finished products
		Iron and steel bars, rods, angles, shapes and sections (incl sheet piling)
		Iron or steel rails, rail fastenings or other rail accessories
		Misc. iron & steel mfg
2702	Basic non-ferrous metals etc	Alumina
		Aluminium alloys and aluminium recovery (from alumina smelted at the same unit)
		Copper (incl brass) primary recovery and secondary recovery from drosses, ashes or other waste materials

	Silver, lead and zinc primary recovery and secondary recovery from drosses, ashes or other waste materials
	Copper, silver, lead or zinc secondary recovery from purchased scrap
	Copper, silver, lead and zinc alloys
	Non-ferrous metal castings, diecastings and forgings
	Non-ferrous metals, not elsewhere specified, primary & secondary recovery from drosses, ashes or other waste material
	Nickel, tin, antimony and other non-ferrous metals, not elsewhere specified, secondary recovery from scrap
	Misc. basic non-ferrous metals
2703	Structural metal products
	Reinforcing steel rods or bars
	Reinforcing welded steel mesh
	Misc. structural metal products
	Aluminium/aluminium framed doors (incl roller/concertina) & windows (incl glass); door/window frames; roller grilles
	Aluminium combined door-window units
	Architectural aluminium products (excl sheet metal), for building nec
	Iron or steel window-frames
	Metal (excl aluminium) door or door frames
2704	Sheet metal products
	Architectural metal products (excl sheet metal), for building nec
	Metal cylinders (incl aerosol containers) for compressed or liquified gas
	Metal containers nec
	Sheet metal ducting
	Sheet metal sanitary ware
	Sheet metal stoppers, caps, lids, capsules for bottles, threaded bungs, bung covers, seals & packing accessories nec
	Sheet metal vats, tanks, milk or cream cans
	Sheet metal non-electric tableware, kitchenware or other household articles and parts (excl sanitary ware)
	Sheet metal products nec
2705	Fabricated metal products
	Metal nuts, bolts (incl expansion), screws, rivets, washers, dowel pins, masonry anchors and turnbuckles
	Metal coating and finishing
	Non-ferrous metal steam, gas and water fittings, valves or parts
	Metal hand tools (excl gardening or power operated or pneumatic)
	Metal hand tools nec (incl gardening tools; excl power operated)
	Cutlery, kitchen ware and table ware, non-precious metal
	Cutlery nec, non-precious metal
	Metal hand tool accessories & attachments (incl screwdriver & drill bits)(excl twist drills & dies)
	Springs (incl leaves for springs)
	Woven or linked wire fabric (excl mattress supports)
	Welded wire fabric (excl reinforcing)
	Boilers (incl auxiliary plant)
	Plate iron, steel or aluminium (incl alloys) containers (incl vats, tanks, casks, drums, cans, boxes, and similar)
	Aluminium venetian blinds (incl plastic coated)
	Metal blinds and awnings (excl aluminium venetian blinds)
	Locks (incl parts & padlocks); metal fittings & mountings for windows & doors (incl hinges & hydraulic door closures)
	Metal freight containers (excl stock crates)
	Fire extinguishers
	Television antennae
	Misc. fabricated metal products
2801	Motor vehicles and parts etc
	Motor vehicle bodies
	Caravans, camper trailers and similar vehicles

		Semi-trailers (incl stock crates and timber jinkers)
		Trailers
		Body panels for trucks and buses
		Transport equipment, parts and accessories nec
		Repairing and servicing (2811-2819, 2829)
		Motor scooters and motor cycles
		Finished motor vehicles with less than 10 persons capacity
		Finished motor vehicles with 10 or more person capacity
		Chassis with engines for motor vehicles
		Motor vehicle transmission assemblies (excl in association with the manufacture of complete vehicles or engines)
		Misc. Motor Vehicles & Parts
2802	Ships and boats	Boats (incl rowing/sail) & other vessels under 50 tonnes displacement (excl inflatables, canoes, surf/sailboards)
		Repairing and servicing (2821-2822)
		Misc. Ship & boat building
2803	Railway equipment	Locomotives and trams (incl underframes); railway rolling stock
		Repairing and servicing (2823)
2804	Aircraft	Aircraft and aircraft parts
		Repairing and servicing (2824)
2805	Scientific etc equipment	Optical instruments and appliances nec
		Spectacle and contact lenses
		Surgical, medical equipment and appliances (incl artificial joints, limbs or eyes, pacemakers & needles or syringes)
		Watches (incl metal watch straps), watch cases, clocks and parts
		Radio and radar equipment, navigational aids, and radio remote control equipment
		Misc. Photographic & scientific equip.
2806	Electronic equipment	Photocopying machines and parts
		Calculators and electronic cash registers
		Mainframe data processing machines
		Computers, business machines, electrical and electronic equipment and parts nec
		Office and accounting machinery (excl calculating, accounting and similar machines)
		Office machines, parts and accessories nec
		Electrical line, telephone and telegraph equipment (excl headphones)
		Television receiving sets
		Record, tape, cassette or compact disc players and sound recording equipment
		Electronic equipment and parts nec
		Misc. electronic equipment mfg
2807	Household appliances	Domestic gas, solid fuel, oil or spirit fired stoves, ovens and ranges
		Domestic gas space heaters
		Domestic electric space heaters
		Domestic solid fuel, oil or spirit fired space heaters
		Domestic refrigerators and freezers
		Compressors for refrigerating and air conditioning equipment
		Commercial refrigeration cabinets etc, free-standing (incl water coolers)
		Clothes washing machines, drying cabinets, tumble driers and dishwashing machines
		Domestic appliances nec (incl electric, gas)
		Electro-thermic appliances nec
		Parts and component equipment nec, for household appliances
		Misc. household appliance mfg
2808	Other electrical equipment	Automotive insulated cable, wire or strip

		Cable, wire and strip, uninsulated or insulated nec
		Insulated winding wire
		Insulated optical fibre cable
		Electric light or lamp bulbs or tubes (incl filament or fluorescent)(excl automotive)
		Incandescent light fittings
		Electric light fittings nec
		Transformers
		Electric motors (excl automotive)
		Electric welding and cutting machines, plant and equipment
		Electrical welding (incl arc) equipment (incl wire, rods and electrodes)
		Generators (excl automotive)
		Misc. electrical & equipment mfg
2809	Agricultural, mining etc machinery	Lawn mowers
		Ploughing, seeding, planting and fertilising equipment
		Harvesting, threshing and haymaking machinery (incl straw or fodder balers or agricultural mowers)
		Agricultural wheeled tractors (excl crawler)
		Irrigation equipment and parts (incl hose fittings)(excl domestic type sprinklers)
		Agricultural machinery nec
		Agricultural machinery parts nec
		Construction and earthmoving wheeled tractors (excl crawler)
		Construction machinery nec
		Construction machinery parts nec
		Crushing and grinding machinery
		Mining or drilling machinery and parts (incl coal or rock cutters, boring, sinking or tunnelling machinery)
		Wheeled tractors (excl crawler, agricultural, construction and earthmoving)
		Materials equipment nec
		Elevators or escalators and parts
		Misc. Mining & Construction Machinery
2810	Other machinery and equipment	Non-domestic cooking or heating machinery for food or drinks
		Food processing machinery and parts nec
		Gas welding and cutting equipment (excl filler welding rods)
		Wood and metal working machinery and parts nec
		Saw blades
		Metal dies, die sets and moulds
		Hand tools, power operated (incl portable electric hand tools) nec
		Pumps and pumping machinery (incl petrol bowsers and air or gas compressors)
		Pump and compressor parts nec
		Complete air conditioning units nec (incl packaged units, ducting etc)
		Space heating equipment nec (incl parts)
		Marine propulsion engines
		Engines nec
		Industrial machinery and parts for textile manufacture and treatment industries (excl industrial sewing machines)
		Printing machinery and parts
		Industrial machinery and equipment nec
		Bearings and parts
		Industrial machinery and equipment parts nec
		Repairing and servicing (2863-2864, 2866-2867, 2869)
2901	Prefabricated buildings	Complete prefabricated metal or metal framed garages, carports,

	hangers or sheds (incl machinery or hay sheds)
	Fabricated steel nec
	Prefabricated and transportable buildings nec
2902 Furniture	Complete and assembled domestic seating
	Complete & assembled wooden or predominantly wooden domestic furniture (excl seating or custom made built-in)
	Non-domestic furniture nec, wood or predominantly wood, complete, assembled
	Complete & assembled sheet metal furniture and parts, storage structures or shelving (incl domestic and non-domestic)
	Mattress supports (excl un-upholstered wire, link mesh, wire springs or rubber)
	Pillows, cushions, bean bags and innerspring, foam, sponge or water mattresses (excl rubber)
	Complete and assembled non-domestic seating (excl medical, dental or veterinary)
	Complete & assembled metal or predominantly metal (excl sheet metal) office & other non-domestic furniture
	Complete and assembled metal or predominantly metal (excl sheet metal) domestic furniture (excl seating)
	Complete and assembled other domestic furniture not elsewhere specified (excl wooden or metal)
	Complete and assembled other office and non-domestic furniture not elsewhere specified (excl wooden or metal)
	Unassembled or partly assembled furniture or shelving (incl parts)
2903 Other manufacturing	Badges, coins and medals, sheet metal
	Jewellery (incl worked precious and semi-precious stones) and silverware
	Toys (excl fur or leather)
	Sporting goods (incl canoes, sailboards or surfboards)(excl motorised vehicles, clothing or footwear)
	Paint brushes or rollers, accessories and parts
	Brushes for personal use (incl tooth, shaving, hair, nail or eyelash)(excl paint, bottle scrubbing & industrial)
	Advertising signs, name-plates and sign-plates (excl electric)
	Pens, pencils and refills, crayons and chalk
	Writing and marking equipment nec (incl carbon paper)
	Umbrellas
	Musical instruments (incl strings)
	Manufacturing nec
	Repairing and servicing (2941-2949)
3601 Electricity	Electricity generation and distribution
3602 Gas	Gas production and distribution
3701 Water, sewerage and drainage	Water, sewerage and drainage
4101 Residential building	Residential building construction (4111, 4112, 42 part)
	Repair and maintenance of residential buildings (4111, 4112, 42 part)
4102 Other construction	Non-residential building construction (4113, 42 part)
	Repair and maintenance of non-residential buildings (4113, 42 part)
	Road and bridge construction (excl repair and maintenance)(4121)
	Road and bridge repair and maintenance (4121, 42 part)
	Non-building construction nec (4122, 42 part)
	Repair and maintenance of non-building construction nec (4122, 42 part)
4501 Wholesale trade	Margin - wholesaling services
	Non-margin - wholesaling services (excl repairing and servicing)
5101 Retail trade	Margin - retailing services
	Non-margin - retailing services (excl repairing and servicing)



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5401	Mechanical repairs	Tractors, agricultural or construction machinery repairing and servicing (4611 part) Motor vehicle, outboard motor and lawn mower repairing and servicing (4620 part)
5402	Other repairs	Business machines and equipment repairing and servicing (4614 part) Wholesale repairing and servicing nec (46 part, 47 part) Household electrical appliances repairing and servicing (5261 part) Retail repairing and servicing nec (52 part, 53 part)
5701	Accommodation, cafes & restaurants	Accommodation services (5710)  Margin - restaurant, hotel and licensed club services (5720 part, 5730 part, 5740 part) Meal preparation and presentation (5730 part, 5740 part) Licensed and non-licensed club services nec (5740 part)
6101	Road transport	Margin - road freight transport services Non-margin - road freight transport Bus and tramway transport services Road passenger transport services nec
6201	Rail, pipeline, other transport	Margin - railway freight transport services  Non-margin - railway freight transport services nec Railway passenger transport services Margin - pipeline transport services Transport services nec
6301	Water transport	Margin - ocean and inland water freight transport services Non-margin - Water Transport
6401	Air and space transport	Margin - air freight transport services Non-margin - Air and Space Transport
6601	Services to transport; storage	Parking services  Services to road transport nec Margin - services to water transport (6621-6629) Road freight forwarding Forwarding agency services (excl road freight forwarding) Customs agency services; services to transport nec (6644, 6649) Storage Misc. Services to Transport
7101	Communication services	Postal services Courier services Domestic telecommunication services Overseas telecommunication services
7301	Banking	Bank services - imputed charge Bank services nec
7302	Non-bank finance	Building society services nec - imputed charge (7322, 7330) Building society services nec Credit union services - imputed charge Credit union services nec Authorised money market dealer services - imputed charge Money market corporations - IBSC Money market corporations - explicit charge Australian Industry Development Corporation and Victorian Development Corporation Services Finance services - imputed charge Finance services nec
7303	Financial asset investors	Financial asset investors Holding company services nec
7402	Life & super	Life insurance and superannuation fund services (7411-7412)

7403	Other insurance	Health insurance services Margin - marine insurance services Fire insurance services Houseowner and household insurance services Crops (incl hailstone damage) and livestock insurance services Motor vehicle comprehensive and compulsory third party insurance services Misc. insurance
7501	Services to finance etc	Security broking and dealing services Services to finance and investment nec (incl imputed charge) Services to insurance
7701	Ownership of dwellings	Ownership of dwellings
7702	Other property services	Property operator and developer services Real estate agent services Agricultural or pastoral property broking, leasing, renting or valuing Non-financial asset investors Motor vehicle hire Ship and boat leasing or hire (except on a financial lease basis) Caravan, car trailer, box trailer or horse trailer hire Transport container leasing or hire Transport equipment leasing nec Plant leasing, hiring and renting services nec
7801	Scientific research etc	Research services Architectural services Surveying services Consulting engineering services Quantity surveying services Meteorology services Technical services nec Data processing services Information storage and retrieval Computer maintenance services Computer consultancy services
7802	Legal, accounting etc services	Legal services  Accounting services Advertising services Commercial art and display services Market research services Business administrative services Business management services
7803	Other business services	Employment placement and contract staff services (excl casting agency service) Typing, copying and mailing services Security and investigative services (except police) Pest control services Cleaning services Contract packing services nec Collecting and credit reporting services Business services nec
8101	Government administration	Federal government administrative services  State government administrative services Local government administrative services Judicial services
8201	Defence	Defence services
8401	Education	School, post-school and educational services nec
8601	Health services	Hospital and nursing home services

	Medical services (8621, 8622, 8631)
	Dental services
	Optometry and optical dispensing; health services nec (8632, 8635, 8636, 8639)
	Ambulance services
	Community health centre services (medical and paramedical)
	Veterinary services
8701	Community services
	Childminding centres
	Community care services (8721, 8722, 8729)
9101	Motion picture, radio etc
	Motion picture production
	Film hiring services
	Motion picture theatre services
	Radio and television station services (9121-9122)
9201	Libraries, museums, arts
	Library, museum and art gallery services
	Zoological and botanical services
	Recreational parks and gardens operation
	Music and theatre production operation
	Creative arts (own account)
	Sound recording studios operation
	Performing arts venue operation
	Casting agency operation
	News reporting services (excl own account)
	Services to the arts nec
9301	Sport, gambling etc
	Horse and dog racing operation
	Sports grounds and similar facilities operation nec
	Ski slope and similar services
	Sports and services to sports nec
	Lottery operation
	Casinos operation
	Gambling services nec
	Totalisator agency services
	Recreation services nec
9501	Personal services
	Personal and household goods hiring (incl video hire)
	Laundry and dry-cleaning services
	Photographic film processing
	Photography services nec
	Funeral directing services
	Crematoria and cemetery services
	Hairdressing and beauty salon services
	Personal services nec
	Domestic services of private household employees
9601	Other services
	Religious organisations
	Interest groups
	Police services
	Corrective centres
	Fire brigade services (excl forest)
	Sanitary and garbage disposal services
	Travel Imports

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## Appendix B: Time Dimension

This Appendix expands on the discussion of the closures of MM600+ contained in section 2.3. The original MM303 was developed under a long-term closure. However a short-term closure has now been developed to meet the need for estimating the effects of *ANTS* on costs and prices in 2000/01.

### B.1 Long-term Closure

Under the long-term closure, standard long-term modelling assumptions are used. This includes that total national employment and national ownership of capital are fixed. Gains from micro-reform such as *ANTS* then depend on allocating these scarce resources more efficiently between industries.

A key assumption of long-term modelling is that industry capital stocks have fully adjusted to the change in the economic environment that is being modelled, such as *ANTS*.

*ANTS* provides an incentive for most businesses to expand their capital stocks. About one-quarter of sales tax is applied to new business investment, and when sales tax is abolished business investment in road motor vehicles, computers and office equipment will be cheaper. This will induce a gradual expansion in industry capital stocks of these and other capital items, boosting industry production and thereby pushing down consumer prices.

In the long-term, when capital stocks have fully adjusted, the abolition of sales tax on new investment will have been passed on in full to consumers in the form of lower prices.

### B.2 Conventional Short-term Closure

Because of the time taken by this capital stock adjustment process, short-term closures have been developed for economic models. These short-term closures hold industry capital stocks fixed. With industries unable to change their stocks of capital, there is no flow through of changes in the cost of new investment to production costs and consumer prices.

Thus the lower cost of business investment will flow through to lower consumer prices in the long-term but not the short-term. A key issue is estimating the length of time needed to arrive at the long-term outcome of a full flow through.

In economic theory this flow through is tied to the adjustment of industry capital stocks. Dynamic economic models and econometric studies of investment imply that this capital stock adjustment takes five to ten years to complete. This means that results from long-term models, including PRISMOD and the long-term closure of MM600+, apply from five to ten years into the future onwards.

The accountancy perspective is somewhat different. At one extreme is the historic cost view that cheaper new investment only flows through fully to production costs when the economy's capital stock has been entirely replaced, which would take many decades. At the other extreme is the replacement cost view. On this view, cheaper new investment will lead to an immediate revaluation of the economy's capital stock and will flow through to production costs immediately.

Neither of these views is accepted by economists. Economic theory implies that capital stocks need to adjust to their new position, which takes time, so the replacement cost view is wrong. Equally, there is no need for an industry's entire capital stock to be replaced, so the historic cost view is also wrong. Rather, this adjustment only needs to occur at the margin by existing businesses expanding or new businesses entering an industry.

At the same time, there will be an immediate effect on the share market. Share market values of capital reflect the present value of its expected future earnings. Because cheaper new investment will eventually lead to lower selling prices, this will generate an expectation of lower earnings on existing capital, leading to an immediate fall in its market value. Thus abolition of sales tax leads to a capital loss on existing assets that have been purchased at sales tax inflated prices.

This immediate fall in the market value of existing assets will have no direct effect on the selling prices of items produced using those assets. Rather, as explained above, the adjustment of those prices is tied to the adjustment of capital stocks, which takes time. An exception to this rule is where the items being sold are storable for long periods of time, in which case expected future selling prices will have an influence on current selling prices. However, most consumer spending is on services and perishables.

In summary, cheaper new investment under *ANTS* is likely to gradually flow through to lower production costs and consumer prices over a period of five to ten years.

### B.3 ACCC Short-term Closure

The ACCC is oversighting price changes that occur from July 1999 to July 2002 and has issued the rule that businesses:

“should not increase the net dollar margins on their goods and services as a result of the New Tax System changes alone” (section 2.14 of guidelines).

A new ACCC short-term closure has been developed for MM303 that mimics this rule. This closure holds fixed the prices that industries pay for capital services. While this differs from the conventional short-term closure of holding capital stocks fixed, it has the same effect in that it blocks any effect on production costs from changes in the cost of new investment.

The ACCC short-term closure is explained further in Table B.1 by showing the implications of *ANTS* for the various components that make up an industry's production costs.

There is no change in compensation of employees because wage rates are assumed to be unaffected by *ANTS*. While employees will face higher consumer prices due to *ANTS*, they will be more than compensated with higher take home pay due to the income tax cuts. Thus employee living standards will rise under *ANTS* without the need for any special wage rise.

**Table B.1**  
**Effect on ANTS on Industry Costs in the Short-term and Long-term**

Item	Short-term	Long-term
Compensation of employees	No change	No change
Non-labour recurrent expenses	Saving	Larger saving
Depreciation	No change	Saving
Net operating surplus/EBIT/net margin	No change	Saving
Income	Saving	Larger saving

Other (non-labour) recurrent expenses will be lower as a result of *ANTS*. This is due to cost savings from the abolition of sales tax, stamp duties on shares and financial institution duty as well as cuts to fuel taxes. This will occur both directly, to the extent that an industry pays the taxes that are being cut, as well as indirectly when cost savings are passed on from further up the supply chain. The ACCC rule requires that all cost savings are passed along supply chains to consumers in full.

Depreciation costs represent one component of capital costs. Since the short-term closure holds fixed the prices businesses pay for capital services, there is no short-term saving in depreciation costs. This is consistent with the ACCC rule. However, the ACCC rule does require that depreciation savings are passed on as they are realised. Thus Table 5 shows long-term savings in depreciation.

The remaining part of an industry's income in Table 5 is its EBIT, which is similar to the national accounts concept of net operating surplus. It also equates with the "net dollar margin" that features in the ACCC rule. The ACCC rule stipulates that businesses cannot use *ANTS* to increase their net dollar margin, so it is shown as unchanged in the short-term column of Table B.1. As with depreciation, this is achieved in the short-term closure by holding fixed the prices businesses pay for capital services, which include the net return to capital represented by the net margin.

Turning to the long-term column for EBIT, it is usually assumed in long-term economic models that rates of return on capital are fixed in world capital markets. *ANTS* reduces the cost of new investment which will flow through to a lower value for an industry's capital. Because the value of capital is lower, the world rate of return on that capital can be achieved with a lower dollar EBIT. Therefore the long-term column of Table 5 shows a reduction in net margin or EBIT. This is consistent with section 2.42 of the ACCC guidelines:

"both dollar and *percentage* margins will be relevant to the assessment of longer-term price movements" (emphasis added).

The ACCC short-term closure accords with the conventional short-term closure in blocking any pass through from abolition of sales tax on new investment to production costs and consumer prices. However, it differs in its assumption of full pass through of other tax changes in *ANTS*, including abolition of sales tax on consumption and business recurrent inputs, as well as the introduction of the GST on consumption.

Economic theory predicts that in the short-term only a proportion of these other tax changes will be passed on, with the proportion varying from one commodity to the next depending on supply and demand elasticities in each market. Obviously, it would be impractical for the ACCC to require companies to comply with re-pricing guidelines based on this theory, as it would require detailed and precise knowledge of demand and supply elasticities throughout the economy that no one possesses.

Instead, for administrative practicality, the ACCC's rule implies that, as a maximum, short-term changes in prices are to be based on a full pass on of the *ANTS* changes to the taxation of recurrent inputs and consumer purchases. Even though economic theory predicts that this full pass on will only occur in the long-term, it is incorporated into the short-term closure of MM600+ to mimic the ACCC's rule. This leads to three important points about interpreting the results under this short-term closure.

First, because the ACCC re-pricing rule differs from a standard short-term closure for an economic model, its use in MM600+ renders invalid the associated estimates of short-term production effects. The short-term closure only provides valid estimates of price effects, not production effects, consistent with the focus of the ACCC on re-pricing.

Second, the ACCC rule used in MM600+ sets maximum price increases (or minimum price cuts). This means that the short-term price effects from MM600+ are the maximum of what should be expected in practice under the ACCC rule.

Third, the ACCC rule requires that savings in costs must be assessed at the company level, whereas the economic modelling refers to industries. To the extent that an individual company's cost structure varies from that of the industry of which it is a part, its maximum permitted price increase may vary from the price change shown for its industry by MM600+.

This makes it necessary for companies to apply the results of the economic modelling to their own cost structures to determine their own maximum permitted price increases (or minimum price falls). Econtech has performed this calculation for many companies.