

## **ESTIMATING THE NEW TAX SYSTEM EFFECT ON THE CONSUMER PRICE INDEX**

This report was prepared for the Independent Pricing  
and Regulatory Tribunal by Econtech Pty Ltd.

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## Introduction

The Independent Pricing and Regulatory Tribunal (IPART) regulates prices of a range of NSW businesses operating in electricity, gas, water and public transport. Under that regulation, some prices for some of these businesses are indexed to the Consumer Price Index (CPI). Rises in the CPI are taken as an indication that business costs are rising, justifying a rise in the prices of the regulated businesses.

As explained below, the introduction of A New Tax System (ANTS) could have led to double counting of the effects of ANTS in increasing regulated prices. IPART avoided this double counting by adopting the following two-step process.

In the first step, each regulated business made an explicit adjustment for ANTS upon its introduction on 1 July 2000. In re-setting prices on that date, Econtech's modelling was used to estimate direct and indirect cost savings from ANTS that were deducted before GST of 10 per cent was added where applicable. This approach meant that utilities did not suffer any windfall gain or loss from the introduction of ANTS.

Similar price adjustments occurred throughout the economy, leading to an ANTS-related jump in the CPI. However, this ANTS component of the rise in the CPI does not justify any further rise in regulated prices. This is because the direct and indirect effects of ANTS on regulated businesses were already fully taken into account in the initial price adjustment on 1 July 2000. Allowing a second ANTS-related price rise would represent double counting, resulting in a windfall gain for the utility owner and the price impact on the consumer exceeding the net impact of ANTS on the industry.

To avoid this double counting problem, IPART decided to exclude the effects of ANTS when indexing regulated prices to the CPI. This second step of the IPART price adjustment process for ANTS recognises that only the rise in the adjusted CPI can serve as an indicator of the underlying rise in business costs, justifying a rise in prices for regulated businesses.

The only other way of avoiding the double counting problem would have been to continue to adjust regulated prices using the CPI only. Under this approach, there would not have been industry-specific price adjustments on 1 July 2000 reflecting the differing effects of ANTS on each regulated industry. Instead, regulated prices would have all been adjusted by the same percentage, reflecting the economy-wide effect of ANTS on the headline CPI. This blunter method of adjustment would have led to substantial windfall gains and losses for regulated businesses in different industries.

In formulating its Guidelines of March 2000 on "Price Exploitation and the New Tax System", the ACCC recognised the double counting problem. It stated that, where prices are indexed to the CPI, such as commercial property rents and some regulated prices, the CPI may need to be adjusted to exclude the effects of the introduction of ANTS. See the ACCC Guidelines for further explanation.

In this report, Econtech constructs for IPART an ANTS CPI Adjuster that can be used to adjust the headline CPI to remove the effects of ANTS. The resulting adjusted CPI provides an estimate of what the CPI would have been had ANTS not been introduced. It is suitable for use by IPART in indexing the prices of regulated businesses in the second step of their ANTS price adjustment process. It is also consistent with the estimates of cost savings made in the first step, which were also based on Econtech modelling.

This report is based partly on an earlier report prepared by Econtech for the Business Coalition for Tax Reform (BCTR). The BCTR report of 15 December 2000, titled "Adjusting the Consumer Price Index to Remove the Effects of the New Tax System", is available on the BCTR website ([www.bctr.org](http://www.bctr.org)). To help businesses comply with the ACCC Guidelines, the BCTR commissioned Econtech to construct an adjusted CPI for use by businesses with prices, such as some commercial property rents, that are indexed to the CPI.

The BCTR report provided a CPI Adjuster extending for two years from the introduction of ANTS i.e. from the September quarter 2000 to the June quarter 2002..

IPART's needs are similar. Indeed, the ANTS CPI Adjuster constructed in this report for IPART is identical to the CPI Adjuster constructed for the BCTR, except that the IPART Adjuster extends for a further two years to the June quarter 2004 and incorporates the effects of tax changes to be introduced during those two years. This is to match the length of the last expiry date of IPART's current price determinations.

Another difference is that IPART will be using the ANTS CPI Adjuster in a specific way that it is consistent with the methods that it used in determining price rises for regulated businesses when ANTS was introduced on 1 July 2000. Econtech assisted in that initial price adjustment process by providing software for regulated businesses to use to estimate their cost savings from the introduction of ANTS. These estimated cost savings were deducted from existing prices before GST was added.

This report is structured as follows.

- Section 1 outlines the economic model used to simulate the effects of ANTS on the CPI.
- Section 2 identifies the specific ANTS measures that have been modelled.
- Section 3 explains how the short and long term results were used to construct the quarterly ANTS CPI Adjuster.
- Section 4 demonstrates how the ANTS CPI Adjuster is used to adjust the CPI to remove the effects of ANTS.
- Section 5 discusses issues in estimating the timing of the effects of ANTS on the CPI.
- Section 6 explains how the ANTS CPI Adjuster can be applied in adjusting prices for agencies regulated by IPART.

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

The purpose of this report is for Econtech to construct for IPART an ANTS CPI Adjuster that can be used to adjust the headline CPI to remove the effects of ANTS. The adjusted CPI is for use by IPART in indexing the prices of regulated businesses.

The findings in this report are subject to unavoidable statistical variation. While all care has been taken to ensure that the statistical variation is kept to a minimum, care should be taken whenever using this information. Should you require clarification of any material, please contact us.

## 1. Modelling Approach

Section 1 outlines the economic model used to simulate the effects of ANTS on the CPI.

The effects of the New Tax System on the CPI are estimated using Econtech's MM600+ model of the Australian economy. This highly detailed model distinguishes the prices of 672 different products. It estimates the effects of the changeover to the New Tax System on those prices using detailed information on how the GST and 24 other indirect taxes apply to each product. The adjustment of prices is based on the unchanged dollar margin rule specified by the ACCC.

Before the introduction of the NTS, Econtech used its MM600+ model to estimate the likely effects of the ANTS on prices paid by businesses and consumers. The results of this modelling were used by the governments of each of the eight states and territories, the Commonwealth Government, the ACCC, 12 industry associations, and many corporations.

Now that the first detailed picture of the actual effects of ANTS on prices is now available from the CPI for the September and December quarters, it is important to use this information to review the predictive accuracy of our earlier modelling. This involved comparing the actual price movements for the 89 expenditure classes that make up the CPI with the predicted NTS effects, estimated using MM600+. For most expenditure classes the actual effects closely matched the predicted effects, and for the remaining expenditure classes the differences are explained by non-NTS factors such as higher world oil prices. Therefore we reached the conclusion that our earlier modelling was sound and no changes were needed in the modelling assumptions.

MM600+ is the second version of Econtech's tax reform model, and follows the first version, that was known as MM303. It was MM303 that was used by the businesses regulated by IPART to estimate their cost savings from the introduction of ANTS.

In developing MM600+ from MM303, the following features were added.

- The product detail was extended from 305 to 672 product groups.
- ATO statutory sales tax rates for each product were identified and used in place of the less reliable ABS estimates of sales tax.
- MM600+ has been used to isolate the effects of ANTS measures that were introduced at different times.

Although MM600+ is more detailed and accurate than MM303, using MM600+ does not have any major systematic effects on the aggregate results that we have identified. Rather, using MM600+ instead of MM303 for this exercise is simply a case of updating to the latest and best-available version of the model.

## 2. ANTS Measures

This section identifies the specific ANTS measures that have been modelled.

In modelling the effects of the ANTS on the CPI for this project, it is important to follow the list of ANTS tax changes that is given in section 1.17 of the ACCC Guidelines, and repeated below in Table 2.1.

**Table 2.1**  
**Introduction Dates for ANTS Measures**

29 July 1999	1. Top WST rate dropped from 32% to 22%
1 Nov. 1999	2. Change to per stick excise on tobacco
1 July 2000	3. Introduction of GST
	4. Abolition of WST
	5. Changes to excise; diesel fuel rebates & grants; fuel sales grants scheme
	6. Introduction of Wine Equalisation Tax
	7. Introduction of Luxury Car Tax
	8. Abolition of bed taxes in NT and NSW
1 July 2001	9. Abolition of stamp duty on quoted marketable securities
	10. Abolition of Financial Institutions Duty
	11. Vehicle GST input tax credits raised from 0% to 5%
1 July 2002	12. Vehicle GST input tax credits raised from 5% to 10%

The table shows that the GST and some other key ANTS measures were introduced on 1 July 2000. Other ANTS measures were introduced earlier or later.

This table does not include two NTS-related measures that have an effect on the CPI.

First, on 1 February 2001, excise rates were adjusted for the movement in the CPI from the June quarter 2000 to the December quarter 2000. Because of the impact of the ANTS on the CPI, these excise increases were larger than otherwise, at 4.0 per cent rather than 1.0 per cent. After consulting with the ACCC, these additional excise increases have not been included in the modelling of the ANTS tax changes. Indexation adjustments of excise are not on the list of ANTS tax changes in section 1.17 of the ACCC Guidelines.

Second, the ANTS included a Child Care Benefit that resulted in a fall of 15.1 per cent in price of child care in the September quarter 2000 CPI. However, the Child Care Benefit is not part of the list of ANTS tax changes in the ACCC guidelines and so has not been included in the modelling.

For this project, the above ANTS measures were simulated using MM600+, taking into account that different measures were introduced at different times.

Two versions of the model were simulated, one allowing for short-term cost savings and one also allowing for long-term cost savings. Running the short-term version in addition to the long-term version helps in identifying the timing of the effects of ANTS on the CPI.

### **3. ANTS CPI Adjuster**

This section explains how the short and long term results were used to construct the quarterly ANTS CPI Adjuster.

The short-term version, covering ANTS measures introduced up to 1 July 2000, shows a contribution of ANTS to the CPI of 3.00 per cent. This is assumed to have been reflected in the September quarter 2000 CPI, giving an ANTS CPI Adjuster for that quarter of 1.0300, as shown in Chart 3.1 below. The timing of the feed through of the short-term and long-term effects of the ANTS measures is explained further in section 5.

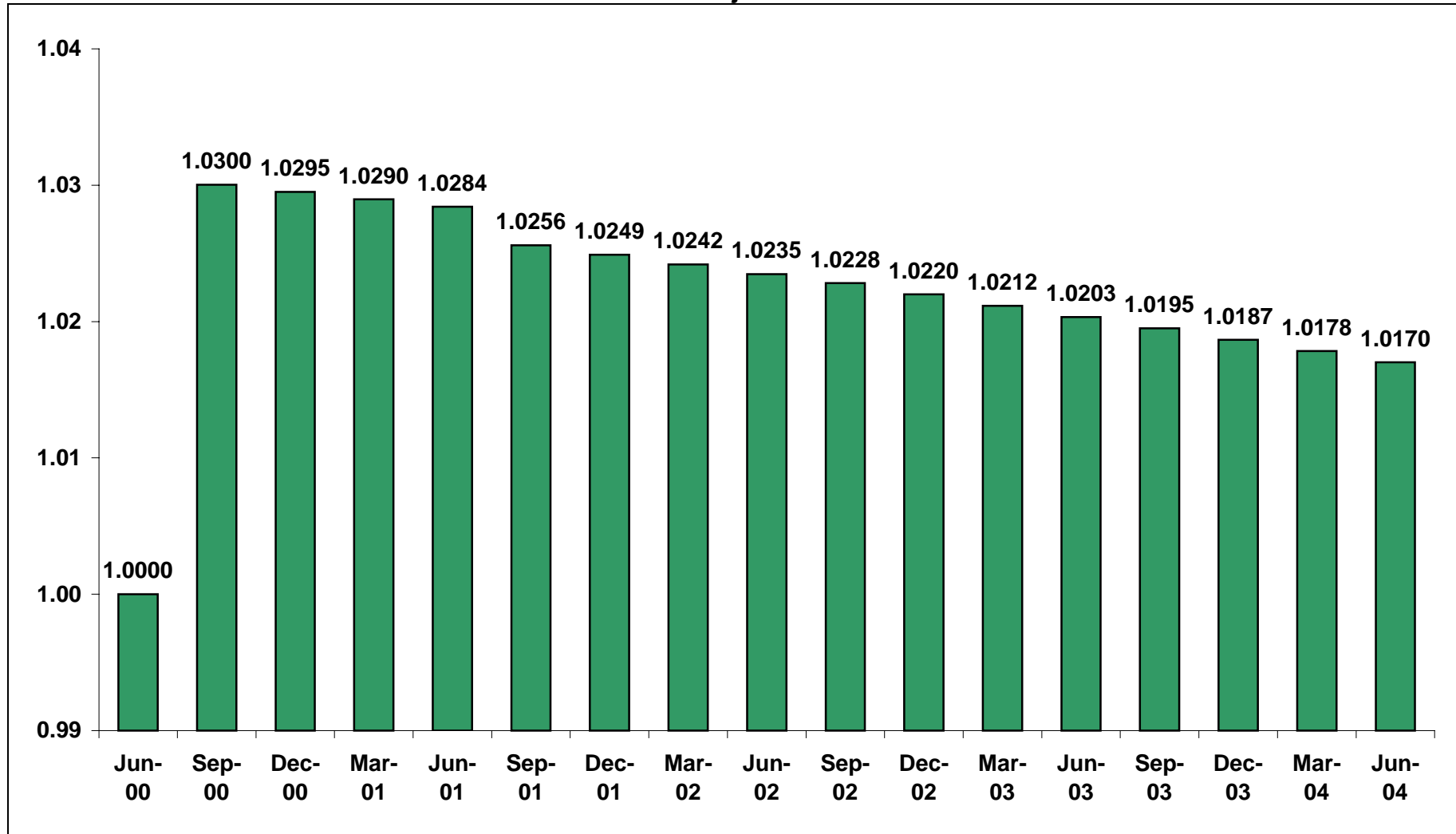
The long-term version factors in the tax changes beyond July 2000 listed in Table 2.1 and results in a significantly smaller contribution to the CPI. The three measures that will be introduced on 1 July 2001 are all tax reductions, and so will work to reduce the CPI. Thus

the ANTS CPI Adjuster falls noticeably in Chart 3.1 in moving from the June quarter 2001 to the September quarter 2001. The reduction in the capital cost of new vehicles to businesses on 1 July 2002 has no short-term effect on the CPI but has a long-term effect that develops gradually. Consequently, the ANTS CPI Adjuster falls slightly more rapidly from the September quarter 2002.

The long-term version also allows fully for lower consumer prices flowing from long-term cost savings to business from the abolition of sales tax on investment goods such as business motor vehicles, computers and office equipment. Under our methodology, this lowest value for the impact of ANTS on the CPI is reflected in the ANTS CPI Adjuster from the June quarter 2007 onwards, where it takes a value of 1.012.

In constructing the quarterly ANTS CPI Adjuster, it is assumed that there is a steady phasing in of long-term ANTS CPI effects, from the initial short-term effects, over a period of five years from the introduction date of the ANTS measure. Thus the ANTS CPI Adjuster shown in Chart 3.1 gradually falls.

**Chart 3.1**  
**ANTS CPI Adjuster Estimates**





#### 4. Using the ANTS CPI Adjuster to Adjust the CPI

This section demonstrates how the ANTS CPI Adjuster is used to adjust the CPI to remove the effects of ANTS.

The use of the ANTS CPI Adjuster can be illustrated using the September quarter 2000 as an example, as in Table 4.1.

**Table 4.1**  
**Use of ANTS CPI Adjuster in the September Quarter 2000**

	Jun-99	Sep-99	Dec-99	Mar-00	Jun-00	Sep-00	Dec-00
<b>adjuster</b>	1.0000	1.0000	1.0000	1.0000	1.0000	1.0300	1.0295
<b>8 capital cities</b>							
headline CPI	122.3	123.4	124.1	125.2	126.2	130.9	131.3
1-qtr % change		0.9%	0.6%	0.9%	0.8%	3.7%	0.3%
4-qtr % change					3.2%	6.1%	5.8%
adjusted CPI	122.3	123.4	124.1	125.2	126.2	127.1	127.5
1-qtr % change		0.9%	0.6%	0.9%	0.8%	0.7%	0.3%
4-qtr % change					3.2%	3.0%	2.7%

The headline CPI in the September quarter 2000 was 130.9. However, this was affected by the NTS, reflected in a value of the ANTS CPI Adjuster for that quarter of 1.0300. Dividing the actual CPI of 130.9 by the ANTS CPI Adjuster of 1.0300 gives an Adjusted CPI of 127.1, as shown in the table. This means that while the headline CPI rose by 3.7 per cent in the quarter and 6.1 per cent since the same quarter of the previous year, the corresponding figures for the Adjusted CPI are only 0.7 per cent and 3.0 per cent.

The series of adjusted CPI figures over the period to the June 2004 quarter forms the index to be used by IPART, using the following formula:

$$\frac{\text{Headline CPI}}{\text{ANTS CPI Adjuster}}$$

Chart 4.1 shows how the ANTS Price Indices apply to the 11 groups that make up the CPI.

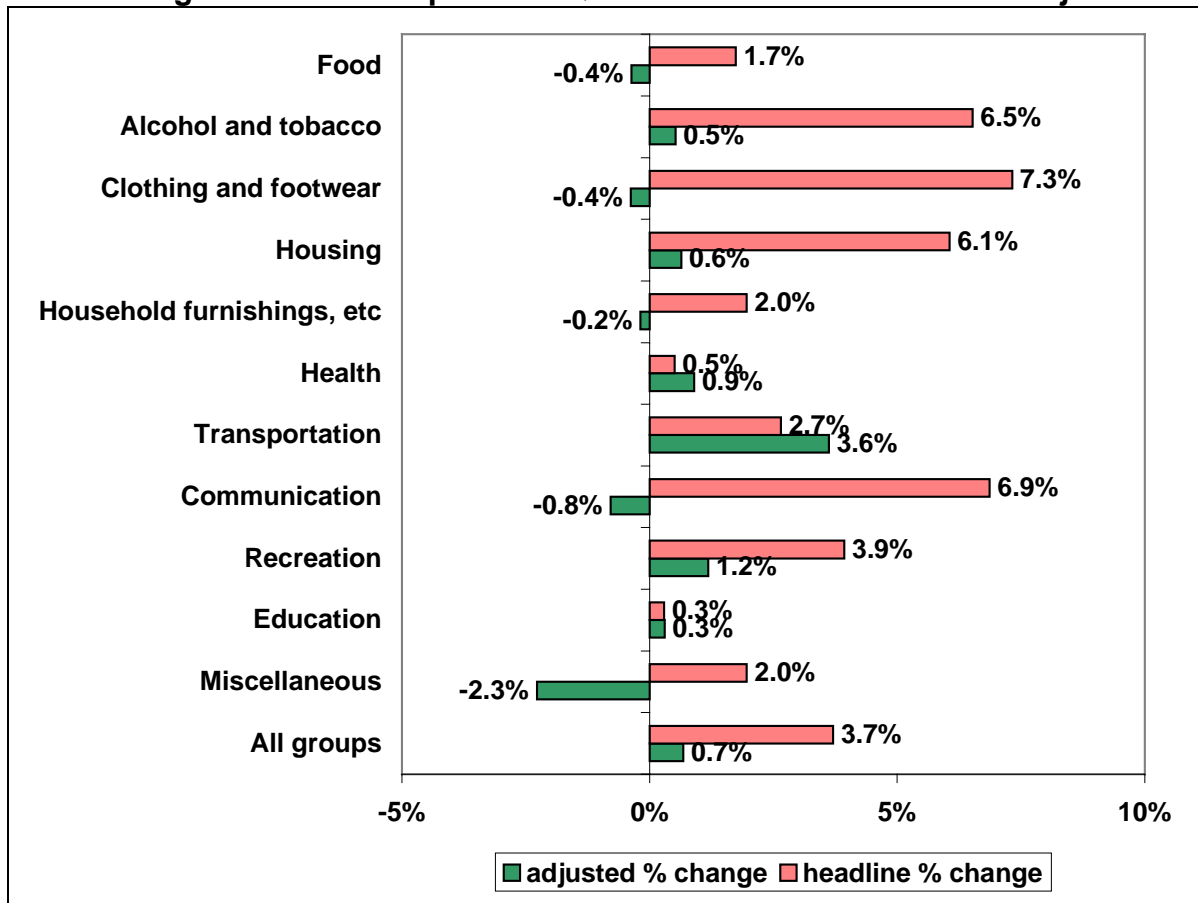
Chart 4.1 shows that the headline CPI for the September quarter 2000 quarter rose by 3.7 per cent while the Adjusted CPI rose by only 0.7 per cent after applying the ANTS CPI Adjuster, as calculated in Table 4.1.

There are big variations in the price movements for the groups making up the CPI, ranging from 0.5 per cent for Health to 7.3 per cent for Clothing and Footwear. However, much of this variation is due to the effects of the NTS.

After the ANTS CPI Adjuster has been applied to remove the effects of the NTS, the Adjusted price movements show much less variation. For most groups, the adjusted price movements are no more than about one percent up or down.

One exception is the Transport group, where the price rise is 3.6 per cent, even after the adjustment factor has been applied. This large increase is mainly due to the effect of higher world oil prices on petrol prices; it is not an ANTS effect.

**Chart 4.1**  
**% Changes in CPI for September Quarter 2000 — Headline and Adjusted**



The only other exception is the Miscellaneous group where the ANTS CPI Adjuster shows a fall of 2.3 per cent. This is mainly due to a sharp fall in the net cost of child care in the CPI due to the Child Care Benefit introduced as part of the NTS. As explained in section 2, the Child Care Benefit is not covered by the ACCC Guidelines and so its effect on the CPI has not been excluded.

## 5. Timing Issues

This section discusses issues in estimating the timing of the effects of ANTS on the CPI.

One important consideration in estimating this timing is the ACCC Guidelines. Sections 2.46 and 2.47 of the ACCC Guidelines state in part that:

“...The ACCC anticipates that for most businesses cost savings on non-capital inputs will have been fully obtained within six months. Capital cost savings should be reflected in lower depreciation charges and prices from the time new capital is acquired.”

This implies that savings in non-capital inputs are expected to be achieved within six months, whereas savings in capital inputs are expected to develop slowly as existing capital is replaced with new capital.

In practice, the September quarter 2000 CPI rose by a little less than would have been expected. It was only three months into the NTS, yet the rise in the CPI was less than if all savings in non-capital costs had been passed on, even though this had been expected to take up to six months. Taking this into account, in this report it has been assumed that when an ANTS measure is introduced, all savings in non-capital costs are passed on in the same quarter. This makes evident the uncertainties in precisely estimating the timing of the ANTS effects on the CPI.

Furthermore, this report assumes that the estimated short-term cost savings of the agencies regulated by IPART are felt immediately i.e. in the September quarter 2000. In theory, the ACCC anticipates that for most businesses, cost savings on non-capital inputs from the introduction of the GST will be fully obtained over a period of six months.

Savings in capital costs are assumed to steadily flow through into consumer prices over five years. This is based on the approximate replacement cycle for most capital goods that were subject to sales tax, such as business motor vehicles, computers and office equipment.

The different timing of the CPI effects from savings in non-capital inputs and capital inputs is allowed for by using two versions of the model, as reported in section 2. The short-term version only allows for savings in non-capital costs, while the long-term version also allows for savings in capital costs.

The timing of price changes for durable goods in response to the ANTS changes is another source of uncertainty. Market forces may lead to a smoothing of the price adjustment for durable goods such as houses and motor vehicles.

For these and other reasons, the estimates of the timing of the effects of the changeover to the ANTS on the CPI are not precise. However, the estimates of the size of the effects are more precise. Therefore, over time the lack of complete precision in estimating the timing of the effects is likely to broadly even out when indexing charges and prices to the Adjusted CPI.

## **6 Application of Results to IPART Agencies**

This section explains how the ANTS CPI Adjuster can be applied in adjusting CPI indexation of prices of businesses that are regulated by IPART. The ANTS CPI Adjuster provides CPI discount factors for each quarter from September quarter 2000 to June quarter 2004, as was shown in Chart 3.1.

IPART will be using the ANTS CPI Adjuster in a way that it is consistent with the methods that it used in determining price rises for regulated businesses when ANTS was introduced on 1 July 2000. Econtech assisted in that initial price adjustment process by providing software for regulated businesses to use to estimate their cost savings from the introduction of ANTS. These estimated cost savings were deducted from existing prices before GST was added.

When ANTS was introduced, for simplicity IPART made a once-only adjustment of prices on 1 July 2000, even though the cost savings of the regulated businesses would increase with time.

Further, two different methods were used in estimating this once-only price adjustment. For consistency, two different methods also need to be used in making proposed once-only adjustments to future CPI indexation of regulated prices.

The first method for adjusting regulated prices on 1 July 2000 only took into account short-term cost savings. For consistency, for businesses where the first method was used, adjustments to the CPI should be based on short-term cost savings in the economy in general. This is reflected in the value for the ANTS CPI Adjuster for the September quarter 2000 shown in Chart 3.1 of 1.0300. Values of the Adjuster for subsequent quarters are not relevant for these agencies.

The second method for adjusting regulated prices on 1 July 2000 took into account the time profile of cost savings until the end of the relevant regulatory cycle, to allow for a cost re-set at the time of the next review and determination. For consistency, for businesses where this second method was used, the ANTS CPI Adjuster should be used to calculate adjustments to the CPI for the same period.