

An assessment of the direct impact of the Australian-United States Free Trade Agreement on Australian trade, economic activity and the costs of the loss of national sovereignty

**A report for the
Australian Manufacturing Workers Union (AMWU)**

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May 2004

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Contents

	Page no.
Summary and overview	i
S.1 The key elements in the AUSFTA	i
S.2 The methodology of this study	ii
S.3 The NIEIR evaluation of AUSFTA: Findings	iv
S.4 Why did the CIE reach the conclusions it did?	V
S.5 The CIE ideology: there is no cost to loss of political sovereignty	vi
S.6 Building knowledge-based economies: the key role of Governments	vii
S.7 The CIE study: an assessment based on implausible assumptions	vii
1. Introduction	1
1.1 The limitations of CGE models	1
1.2 Structure of the report	2
1.3 The time period of assessment	3
2. The key components of the AUSFTA that impact on economic activity	5
2.1 Other manufacturing trade	5
2.2 Textiles, clothing and footwear	5
2.3 Motor vehicles	6
2.4 Agriculture industries	6
2.5 Procurement policies	7
2.6 Foreign investment	7
2.7 Copyright	7
2.8 Pharmaceuticals	8
3. AUSFTA: The direct impact on Australian merchandise exports to the United States	9
3.1 Estimates of United States trade share elasticities	9
3.2 Australian exports to the United States	10
3.3 United States average tariffs	14
3.4 The AUSFTA: Increase in Australian exports	14
4. The AUSFTA: The increase in merchandise imports into Australia	25
4.1 The trade diversion impact	25
4.2 The net increase in Australian imports	25
4.3 Import risk security	26
5. The core methodology: the generation of probability distributions for motor vehicle industry outcomes	36
5.1 Uncertainty, risk and policy decision making	36
5.2 The potential outcomes for the Australian motor vehicle industry	37
5.3 The distribution of net present value	39

Contents (cont.)

	Page no.
6. AUSFTA: A risk assessment of merchandise trade effects	42
6.1 The merchandise net trade outcomes	42
6.2 The practical maximum benefit of increased merchandise exports to the United States	42
6.2.1 The AUSFTA: Australian exports to the United States – a back of the envelope assessment	42
6.2.2 CUSFTA: the outcomes 1989-2000	47
6.2.3 CUSFTA and AUSFTA: a macroeconomic approach	48
6.2.4 AUSFTA and Australian merchandise exports – the setting of the maximum practical benefit	51
6.2.5 AUSFTA: The export enhancement probability distribution	52
6.3 AUSFTA: Import probability distribution	53
7. The current drivers of growth in industrial economies	55
7.1 The five principles governing drivers of growth in high income industrial economies	55
7.2 The cost of deindustrialisation	67
8. Government procurement	69
8.1 Procedures	69
8.2 General principles	70
8.3 The CIE's estimate of benefits	71
8.3.1 Additional Australian sales in the US procurement market	71
8.3.2 Additional US sales in the Australian procurement market	73
8.4 Government procurement policies and related industry development policies	73
8.4.1 Local content preferences	73
8.4.2 AUSFTA and Government procurement: Australia's increased penetration of the United States market	78
8.4.3 Government procurement: offset schemes for industry development	80
9. Foreign investment and knowledge spill-overs	88
9.1 Exchange controls	88
9.2 Performance requirements	89
9.3 The Foreign Investment Review Board threshold	90
9.4 Sundry provisions	91
9.5 The CIE's estimate of benefits	91

Contents (cont.)

	Page no.
9. Continued	
9.6 The probability schedules: direct foreign investment	93
9.6.1 Cochlear: at least one Australian high technology success story	93
9.6.2 The Federal Government's vision for innovation driven growth	93
9.6.3 Direct foreign investment benefits: the practical minimum	94
9.6.4 The practical maximum	95
9.6.5 Most likely case	95
9.6.6 AUSFTA and foreign investment benefits – the probability distribution	97
9.7 The technological multiplier and knowledge spill-overs	97
9.7.1 Technology spill-overs: the probability distribution	98
9.8 Dynamic effects from trade liberalisation	98
10. Intellectual property and pharmaceuticals	101
10.1 Technology transfers	101
10.2 Copyright	102
10.3 The AUSFTA and the cost of pharmaceuticals	103
10.3.1 The practical maximum benefit	105
10.3.2 The most likely	105
10.3.3 The practical minimum benefit	105
10.3.4 The probability distribution	105
11. AUSFTA: total expected benefits, downside and upside risks	107
11.1 Flow-on effects are ignored	107
11.2 AUSFTA: The bottom line outcomes	108
11.3 AUSFTA: A comparison with the CIE results	108
12. For further thought	113
12.1 Additional risk assessment considerations	113
12.2 Free Trade Agreements, sovereignty and Asian countries	116
12.3 Australia: the future	117

List of tables

	Page no.	
S.1	NIEIR's findings of AUSFTA – net present value (NPV) by component	iv
2.1	Tariff rates: AUSFTA textiles, clothing and footwear phase down – United States imports into Australia	5
2.2	AUSFTA tariff phase down: textiles, clothing and footwear industries – Australian exports into the United States	6
2.3	Agricultural market access to the United States: duty free quotas by commodity	7
3.1	United States imports: trade responsiveness parameters – the 1990 decade	11
3.2	Australian merchandise exports into United States by 4-digit ANZSIC industries – 2003	15
3.3	Australian manufacturing: Exports to United States as per cent of turnover – 2002-03	21
4.1	AUSFTA: Trade creation and diversion – 2003	27
5.1	The Trigen distribution: parameters for the motor vehicle industry	39
6.1	AUSFTA: Increased exports and imports by ANZSIC industries – 2003	43
6.2	Australian exports into United States by tariff structure – 2003	48
6.3	Australia and Canada: share of United States imports – estimated equation coefficients	50
6.4	AUSFTA probability modelling: total merchandise exports excluding agriculture and motor vehicles	53
6.5	AUSFTA probability modelling: total merchandise imports excluding motor vehicles	53
8.1	Estimated tariff equivalents in place by discriminatory Australian Governments purchasing policies by sector, 1990-91	75
8.2	AUSFTA probability modelling: local content preferences – increased imports	78
8.3	AUSFTA probability modelling: Australian export benefits from United States procurement market	79
8.4	Survey responses: firms' views on the effectiveness of the endorsed supplier arrangements for industry development	82
8.5	AUSFTA probability modelling: offset elimination (technological multiplier)	83
8.6	AUSFTA: Benefits from elimination of offsets	85
9.1	Foreign investment – direct outcomes	96
9.2	AUSFTA probability modelling: foreign investment parameters and outcomes	96
10.1	AUSFTA probability modelling: the cost of pharmaceuticals	105
11.1	AUSFTA: direct imports	108

List of figures

	Page no.	
5.1	Two probable distributions for a given outcome	37
5.2	AUSFTA – Probability distribution Australian motor vehicle net trade outcomes	40
5.3	AUSFTA – Cumulative descending probability distribution Australian motor vehicle net trade outcomes	41
5.4	Distribution for net present value motor vehicle trade	41
6.1	Share of United States imports	50
6.2	CUSFTA’s impact on Canada’s share of US imports	51
6.3	Distribution for net present value exports excluding agriculture and motor vehicles	54
6.4	Distribution for net present value imports excluding agriculture and motor vehicles	54
7.1	GRP (minus mining) per person employed versus patents	58
7.2	Victorian regions GRP (minus mining) per person employed versus R&D supply	59
7.3	The virtuous cycle of growth for strong knowledge-based regions	60
8.1	Distribution for net present value offsets	86
8.2	Distribution for net present value procurement exports	86
8.3	Distribution for net present value local preference abolition	87
9.1	Distribution for net present value foreign investment	99
9.2	Distribution for net present value/spill-overs	99
9.3	Distribution for net present value/2005-2025 dynamic effects from trade	100
10.1	Distribution for net present value pharmaceuticals	106
11.1	Distribution for total/total NPV	109
11.2	Distribution for total/total NPV	109
11.3	Distribution for total undiscounted direct GNP impact 2005	110
11.4	Distribution for NPV percentage of GDP	110
11.5	Distribution for average employment	111
11.6	Distribution for employment 2025	111
11.7	Distribution for CIE net trade benefits/2005-2025 CIE benefits	112

Summary and overview

The Australian Federal Government, by signing the Australian United States Free Trade Agreement (AUSFTA), decided that the Agreement is in Australia's national interest and there is little risk of the Agreement not being in the national interest.

The Federal Government has been reinforced in this belief by a study it commissioned from the Centre for International Economics which attempted to derive a definitive "bottom line" economic outcome. According to this study, the bottom line is a cumulative discounted gain of \$52.5 billion over the 2005 to 2025 period using a 5 per cent discount rate. This represents 0.4 per cent of likely underlying discounted cumulative GNP to 2025.

More importantly, the CIE concludes that there is no risk of the outcomes being adverse. They argue that, at a 95 per cent probability level, by 2025 the outcome will be positive, albeit small.

S.1 The key elements in the AUSFTA

The key elements within the AUSFTA that are important in determining the overall economic outcome are as follows.

- (i) The abolition of tariffs in the merchandise trade between the two countries.
- (ii) The gradual abolition or reduction in quotas used by the United States against Australia's agricultural based exports, excluding sugar.
- (iii) The removal of the capacity of Australian Governments (Federal and State) to protect local industries' share in the Government procurement market against United States suppliers. In practice this will prevent Australian Governments from protecting the role of local industry against suppliers from all other countries. As against this, Australian exporters will gain access to United States procurement markets.
- (iv) The abolition of the ability of Australian Governments to use a range of policy instruments commonly used by Governments here and overseas to build knowledge-based economies and to assist depressed regions. These instruments relate to the use of Government purchasing power to extract benefits from mostly foreign companies to transfer knowledge, create export markets and foster domestic production in new and emerging technologies. These types of policies go under the name of offset policies. Under AUSFTA the prohibition against the use of offset policies applies, effectively, to procurement from all countries, not just the United States.
- (v) Changes to copyright and intellectual property protection which could significantly benefit United States corporations as it basically applies to knowledge-intensive industries which the United States has and we do not. The most direct impact of this may well be on the costs of pharmaceuticals to the Australian taxpayer.
- (vi) A very large reduction in the ability of the Federal Government to protect Australia's intellectual property base and build new firms to create export markets in the industries currently driving world trade. For companies with a capitalised value of between \$50 and \$800 million the Federal Government will no longer be able to prevent foreign investment that would result in the intellectual property embedded in these companies being transferred overseas, along with production. As many of these companies have the potential to grow to very large enterprises, the costs here could potentially run into billions upon billions of dollars.

(vii) Amongst the more controversial findings of the CIE Report on the AUSFTA is the inclusion of significant gains in services trade. In its modelling some 37 per cent of the income gain from trade liberalisation comes from services. These gains are calculated as an improvement in sectoral productivity. This approach was rejected in the ACIL study "*A Bridge Too Far*". In the present study NIEIR has excluded specific modelling of services trade for several reasons.

- To model services trade runs the risk of significant double counting of the benefits of changes to foreign investment, procurement and the embedded services component of merchandise trade.
- Previous NIEIR studies (*State of the Regions 2000*) show Australia has a significant competitive disadvantage relative to the United States in e-commerce. To the extent that the AUSFTA liberalises services trade and this factor comes into play, it is likely to involve significant losses rather than gains for Australia.
- In this study NIEIR has included substantial 'dynamic' trade liberalisation gains which, in part, could be considered as a proxy for gains in services trade.

For all these reasons services trade is explicitly excluded from the modelling of direct effects but partially captured in other effects that have been modelled.

Thus there are two core elements in the AUSFTA. One is the abolition or reduction of barriers in merchandise trade. This has received all the focus of attention. The other is the very large loss of political sovereignty for Australian governments (both Commonwealth and State) which will limit their ability to act in the national interest in the future. The United States is a first class knowledge-based economy. Australia is not. The loss of sovereignty provisions in AUSFTA will probably ensure that Australia will never become a knowledge-intensive economy.

If all Australian governments sign up for AUSFTA then there is a high risk that Australia could be locked into a return to its pastoral origins; a return to an economy almost totally reliant on its natural resource base. While Australia's overall rate of economic growth may still be satisfactory under a policy of pastoralisation, the consequences in terms of the supply of quality employment opportunities, the ability to retain the most skilled young, taxation policies, the concentration of economic power, worsening income and wealth inequalities, etc. run the risk of the country steadily becoming more ungovernable as time goes by.

Given these possibilities, how could any credible study of the AUSFTA possibly fail to note at least some downside risk? How did the CIE study come up with the conclusion it did? Before this can be answered the findings of the present study will be summarised.

S.2 The methodology of this study

The methodology of the present study is very simple. The key components of the AUSFTA are considered separately. They are:

- (i) agricultural exports to the United States;
- (ii) motor vehicle industry trade;
- (iii) Australia's other merchandise exports to the United States;
- (iv) other merchandise imports from the United States;
- (v) the share of foreign imports in the Australian Government procurement market;
- (vi) the share of Australian exports in the United States Government procurement market;

- (vii) the costs of the abolition of offset policies;
- (viii) the cost of the reduction in protection against predatory foreign investors;
- (ix) the extension of copyright protection;
- (x) the Pharmaceutical Benefits Scheme; and
- (xi) knowledge spill-overs.

Each element is examined and analysed in turn with the risks and range of possible outcomes for each component specified in terms of:

- practical minimum benefits;
- practical maximum benefits;
- the most likely case;
- the probability that outcomes will be more adverse than the specified practical minimum benefit case; and
- the probability that outcomes will be better than the practical maximum benefit case.

This information is quantified in terms of econometric evidence and actual outcomes from the past that are relevant to the future.

Using this information, statistical techniques are used to generate probability distributions for the range of outcomes for each component in stand-alone mode and for the components taken together. The overall or bottom-line assessment is obtained, not by using non-transparent models, but by combining all the probability distributions of the components to derive the probability distribution of the total outcome in a transparent manner.

To maintain comparability with the CIE report the present study compares the effect of the AUSFTA with a continuation of existing arrangements. Economic growth of 2.5 per cent per annum is assumed for the United States, and 2.8 per cent for Australia. These rates are somewhat lower than achieved by either country during the 1990s, but in both cases growth during that decade was fuelled by unsustainable increases in household debt. The assumed growth rates represent a return to economic fundamentals.

Variations to this base case could raise or lower the assessed gains to Australia. Plausible increases could be generated as follows.

- A higher rate of United States growth would enhance the benefits. This is, however, unlikely since the United States faces fundamental economic problems in its low savings/investment rate and its high balance of payments deficit. Rectification of these is likely to lower its growth rate for at least a decade.
- The assessed benefit could be increased by increasing the losses sustained by Australia in the base case. The most likely reason is that, in the absence of the Agreement, Australia will suffer trade diversion effects as the United States signs agreements with its competitors. Australia may also suffer from reduced quotas as the United States tightens protection for its agricultural sector. It must be admitted that the threat of trade diversion effects, at least, is real – this study includes an estimate of Australia's loss from trade diversion effects of the Canada-United States Free Trade Agreement during the 1990s.

On the other hand, two plausible changes to the base case could reduce the estimate of net benefit.

- The United States could fail to attain its assumed rate of growth.
- The Agreement contributes to a general retreat from multilateral free trade, with attendant losses at the global level. Particular losses to Australia might involve exclusion from trading blocs rival to the (United States dominated) bloc which Australia is entering under the Agreement.

Given the potential for both upwards and downwards variation, the assumed base case can be defended as a middle course. However, a full assessment of the Agreement would require consideration of alternative base cases, including its effects on multi-lateral trade and on the global freedom of transfer of knowledge.

NIEIR also acknowledges that its list of quantified effects is not exhaustive, particularly in areas where Australia loses sovereignty. Since these are, in general, areas where there are net costs, their exclusion tends to raise the estimated net benefit of the Agreement.

S.3 The NIEIR evaluation of AUSFTA: Findings

The NIEIR findings are given in Table S.1. Instead of finding an expected \$52.5 billion gain from AUSFTA, NIEIR finds an expected loss of -\$46.9 billion in net present value terms. In terms of trade, or at least those trade flows considered by the CIE, the two results are similar, with NIEIR finding a \$19.3 billion NPV gain. This includes dynamic trade liberalisation effects and compares with the CIE finding of \$21.0 billion. The difference is in NIEIR's assessment of the cost of the loss of political sovereignty.

AUSFTA component	Net present value to 2025		
	25 per cent probability	Mean	75 per cent probability
Agricultural exports	1.4	1.4	1.4
Motor vehicle trade	-2.1	-0.2	0.9
Other merchandise exports to the United States	21.8	23.7	25.5
Other merchandise imports from the United States	-14.6	-13.7	-12.7
Opening up of Australian Government procurement market	-9.5	-8.8	-8.0
Opening up of United States Government procurement market	2.0	2.1	2.2
Abolition of offset policies	-15.3	-14.0	-12.6
Lifting of restrictions on foreign capital inflow	-7.3	-3.8	-0.1
Copyright extension	-0.4	-0.4	-0.4
Pharmaceutical benefits	-31.4	-29.2	-26.9
Knowledge spill-overs	-11.2	-10.1	-9.0
Dynamic trade liberalisation effects	5.3	6.0	6.7
Total NPV	-52.4	-46.9	-42.0
Total as per cent of GNP	-0.43	-0.39	-0.35

Note: The first column gives the net per cent of the outcome where there is a 25 per cent probability of the actual outcome being less than the outcome stated. The last column gives the NPV where the actual outcome has a 75 per cent probability of being below the outcome stated.

More important, NIEIR's study yields a 25 per cent chance that the loss will exceed \$52.4 billion for the Australian economy under AUSFTA, and a 75 per cent probability that the actual outcome will be a loss of \$42.0 billion or more.

The NIEIR findings are conservative as loss estimates. They are direct outcomes only and do not reflect any second order effects or flow-ons. Taking these into account would increase the loss by at least 30 and 60 per cent.

In terms of employment, the expected loss of employment in average annual terms from what would otherwise have been the case is assessed at 57,700. However, by 2025 there is a 2.5 per cent probability that the employment losses will be greater than 195,400 from what otherwise would have been the case. This is balanced by a 5 per cent probability of employment losses in 2025 less than 81,400. This result indicates the extent to which the downside risks are greater than the upside risks.

The risks are large, as would be expected, given the loss of sovereignty the Agreement entails.

If the downside risks dominate, downside costs could accelerate dramatically. As they stand, the assessed costs are small compared to GDP. However, in a future negative economic climate the loss of sovereignty may generate long run expectations of an economy incapable of adopting the necessary strategies for change. Such expectations could:

- reduce the long run competitiveness of Australia for foreign capital;
- accelerate the outflow of Australian savings to develop industries overseas; and
- accelerate the gross outflow of workers with knowledge-intensive skills.

As for the upside risks, the downside risks reflect not the final outcome but an outcome that could be increased considerably by flow-on dynamics. The estimates are a base for the generation of a variety of different final estimates.

It is not necessary to appeal to negative expectations to obtain higher downside risks. Plausible sources include the public sector borrowing constraint multiplier effect, due to loss of revenue from reduced economic activity, and balance of payments constraint multiplier effects, where foreigners refuse to lend Australia any more money to cover the widening current account deficit that downside risks would trigger. This second multiplier reflects Australia's over-reliance on overseas borrowing, expressed in the accumulation of foreign debt without balancing accumulation of export-generating capital which yields revenue to repay the debt. Both multipliers would increase downside outcomes by between 100 and 200 per cent of the direct estimates made in this study.

When the flow-on factors are taken into account it is possible to envisage scenarios where the AUSFTA will start to have a significant impact on Australia's rate of growth to 2025. The implication of this study is that a negative impact has a significantly higher probability of occurring compared to a positive outcome.

S.4 Why did the CIE reach the conclusions it did?

There are a number of reasons why the CIE study cannot be used in any valid way for an overall national interest assessment of the AUSFTA. All the reasons stem from a central

fatal flaw in the CIE's approach, namely the ideology embedded in the model structure used to undertake the evaluation and which, no doubt, also influences the outlook of the analysts.

That is, what is important is not so much the scale of the numbers in Table S.1, but the sign. The flow-on effects in either direction will be large. The key question is, what direction?

It is important to point out that the CIE approach is probably as good as any in relation to the merchandise trade flow implications – the original focus of attention. It should, however, have stopped there. If it had stopped there, there would have been relatively minor issues with the CIE findings. The complexity of the other issues requires a much broader approach. In addition, setting the evaluation of the other issues in the same framework as merchandise trade, as the CIE has done, imposes an ideological straight-jacket on the evaluation which cannot be justified. This, of course, needs explanation.

S.5 The CIE ideology: there is no cost to loss of political sovereignty

The AUSFTA involves considerable loss of political sovereignty in that it will severely constrain what future Australian governments can do to influence domestic economic activity and employment. Also, they will have less ability to stop the stripping out and transfer overseas of Australian economic assets in terms of intellectual property and technology. Many of these assets were built up with large amounts of taxpayers' funds. One would logically expect there must be at least some risk of Australia being negatively affected by AUSFTA, even if the expected net benefit was positive. The CIE analysis produces no risk of economic loss. Why?

Part of the reason as to why is the nature of the modelling system used by the CIE. The modelling system is of the so-called Computerised General Equilibrium (CGE) type. Such models are not econometric models in the sense that all relationships in the model are estimated from historical data sets. Rather, they are theoretical models, where many of the key dynamics are determined from the theoretical assumptions built into the model structure. The models typically take their theoretical underpinnings from neoclassical macroeconomic theory, in the process imposing the outcome of neoclassical theory on all model results. Model results are inevitably that market forces left alone will produce optimal economic outcomes. Government intervention by interfering with market forces produces sub-optimal outcomes by assumption.

This is reflected in model mechanisms which impose a return to full employment no matter what the economic shock. These mechanisms, which have no validity other than as assumptions, imply that public policy has no major employment effects. This lack of effect apparently also produced, in the CIE modelling, the unfortunate conclusion that the AUSFTA does not matter much for economic activity, a conclusion which led to the need for a tertiary-sector productivity "fudge factor" to leverage up the economy-wide results.

The corollary of these assumptions is that loss of political sovereignty, because it limits the ability of Governments to intervene in the economy, would be an improvement. Therefore, the AUSFTA, by limiting the role of Government and increasing the degree of competition in the economy, leads to improved welfare. The CIE report simply assumes away all potential costs from loss of political sovereignty.

S.6 Building knowledge-based economies: the key role of Governments

A review of the economic performance of successful and unsuccessful countries over the last two decades quickly shows the absurdity of the CIE's ideological position. All the countries which have made the transition from medium-technology economies to advanced knowledge-intensive economies, capable of sustained innovation and hosting expanding high-technology industries, only did so because Governments took the leading role in driving economic development. They did this by:

- adopting policies ensuring the transfer of technology and intellectual property to their countries;
- ensuring that domestic capital was mobilised to exploit and create leading edge technology, often with enterprises under direct government control;
- adopting efficient planning methods to ensure that finance, resource requirements and export support were available when needed; and
- protecting indigenous intellectual property so it was retained for the benefit of the domestic economy.

This model goes for the most successful economy of the 1970s, Japan, the most successful economy of the 1980s, Taiwan, the most successful economy of the 1990s, Ireland and the most successful economy of this decade, namely China.

These countries have all used policy instruments to drive their economies which Australian governments, under AUSFTA, will not be able to do. Logic would demand that the loss of political sovereignty risks the imposition of large costs on the Australian economy. It is not surprising, therefore, that this study, based on plausible and realistic assumptions, indicates that the costs could well be large.

S.7 The CIE study: an assessment based on implausible assumptions

This study produces a very different assessment of the risks attached to AUSFTA than the CIE report, not by imposing on future Australian governments the assumption that they adopt policies currently applied by foreign Governments, but simply by looking at what they have achieved in the past and comparing this with what they will not be able to achieve in the future under AUSFTA.

Very successful offset policies used in the past by the Commonwealth to develop knowledge-based industries, such as the Partnership for Development Scheme and the Factor (f) Scheme for pharmaceuticals, will not be able to be redesigned (to ensure consistency with existing international treaty obligations) and used in the future. The ideological blinkers employed in the CIE study allowed the analysts to simply ignore these aspects.

In the same vein the CIE study simply assumed away any loss of welfare from governments not being able, under the AUSFTA, to impose local content restrictions on tenders.

In terms of the Australian Government procurement market, all the CIE sees is benefits from enhanced competition. The real world outcome is not on the CIE radar screen. Massive companies from the United States will use predatory pricing to undercut the much smaller scale domestic competition until Australian firms are driven out of business, after which monopoly excess profits can be extracted. The added costs of loss of supply chain capacity to overseas are not even considered a possibility.

However, the most absurd position taken in the CIE study is its view of foreign investment. In keeping with its ideological script, it assumes that foreign investment never leads to negative economic outcomes. In the CIE world, foreign investors never take over companies to strip them of their intellectual property and transfer key resources along with production offshore. In the CIE world, foreign investment is not used to knock out potential competitors that would come from Australia successfully developing national champions. In the CIE world, foreign investment is not used to gain control of Australia's national resources so that the rate of exploitation is slowed to optimise the companies' bottom line at the cost of Australia's national interest.

Since 60 per cent of the CIE's assessed gains to the national economy come from the liberalisation of foreign investment, it is little wonder that a more realistic assessment of the costs of foreign investment indicates a risk of significant negative outcomes under the AUSFTA.

Finally, any credible study of why Australia is so poor at developing knowledge-intensive innovation-driven industries will conclude that the lack of dense networks between researchers, universities, government and industry reduces the probability that innovation will be made, or if made, successfully commercialised in Australia. Policies which prevent intellectual-property-intensive companies from falling under foreign control and policies which strengthen the links between researchers, business and Government, such as the offset policies were designed to do, have high flow-on effects. These knowledge spill-over effects are fundamental to the creation of knowledge-intensive economies. They are effectively ignored in the CIE analysis.

Above all the lack of public debate on the core loss of sovereignty issue is a disgrace which will probably ensure that the national interest will be very ill served by the Agreement in its current form.

1. Introduction

The objective of this study is limited. It is not to undertake a complete analysis of the Australian-United States Free Trade Agreement (AUSFTA). This assessment is now being undertaken via the political evaluation process. The study objectives are:

- (i) to assess the impact of the AUSFTA on direct goods and services trade flows between Australia and the United States as constrained by the current structure of the two economies; and
- (ii) to assess the types of dynamic effects that are likely to flow from the AUSFTA and whether or not the provisions of the agreement are likely to encourage dynamic effects.

By 'dynamic effects' is meant forces for structural change in the economy which may increase (or reduce) the benefits over and above the benefits assessed, given the current economic structure of the two economies.

To prepare this study we have referred to the draft text of the AUSFTA as posted on the website of the Department of Foreign Affairs and Trade (DFAT). NIEIR has not had the benefit of deep legal analysis of the draft text and the study is, therefore, provisional.

1.1 The limitations of CGE models

In terms of (i) (the assessment of the impact of AUSFTA on the basis of the current economic structure of the two economies), the analysis is designed to complement the quantitative analyses that have been undertaken to this point. These have all used so-called computable general equilibrium (CGE) models. CGE models have become standard tools for assessing free trade agreements. However, as their use expands, their limitations are becoming better understood by trade professionals.

As M. Schiff and A. Winters note in their book *Regional Integration and Development*, (The World Bank and Oxford University Press, 2003), the limitations of CGE models include:

- CGE simulations of free trade agreements (FTA) are not unconditional predictions, but rather "thought experiments" about what the world would be like if the FTA had been in existence and fully operative in the base year; and
- although CGE models are quantitative, they are not empirical. Indeed, they are almost wholly theoretical with no possibility of rigorous testing against experience. At best, a high proportion of their individual relationships will be based on data and observation, but some components (much less the overall model) can hardly ever be tested. At worst, CGE models represent theory supplemented by incomplete base year data and "guestimated" parameters and relationships. (page 49)

In short, CGE models are not econometric models. Econometric models are built from functional relationships based, not on theoretical constraints grafted onto base year data, but on parameters estimated from long runs of time-series data. NIEIR operates full econometric models and contributes its models to the only fully econometric model of the world economy, namely the United Nations LINK model.

The implication is that the theoretical basis of these models determines what is and what is not taken into account. Most CGE models are based on neoclassical economic theory, which has high ideological content as a defence of idealised free markets. The markets built into the models always function perfectly, and the result built into the models is that any movement in the direction of market freedom will be beneficial.

Despite these deficiencies of CGE models, NIEIR does not consider it appropriate to directly apply the alternative econometric models to assess the AUSFTA. This is because in Australia's history, there is not enough experience with FTAs for their effects to be captured in model parameters. The case of closer economic relationships with New Zealand could not be held up as representative of the impact on the Australian economy of closer integration with the United States economy.

There is no alternative but to take a "building blocks" approach to assess the impact of the AUSFTA, via an explicit consideration of the direct trade and investment effects using as much econometric parameterisation as possible. Given the fact that the United States has experienced major trade agreements over the past 15 years in the form of the Canadian-United States Free Trade Agreement (CUSFTA), which merged into the North American Free Trade Agreement (NAFTA), it follows that many of the econometric parameters required for the assessment will have to be drawn from United States findings.

The building block approach also overcomes a weakness in the CIE methodology. The risk assessment carried out by the CIE is model biased. That is, the inputs were fed into the model and the lower and upper risk boundaries derived by altering the model parameters, which drive how the inputs impact on the total system. The weakness arises because this process automatically assigns the same risk setting to each dimension fed into the model. There are many elements in the AUSFTA all of which have different risk profiles. The risk dimensions considered by the CIE are too aggregated to develop a good sense of the risks involved.

1.2 Structure of the report

Section 2 describes the key features of AUSFTA from the direct trade perspective, focusing on tariff elimination and market access.

Section 3 assesses the likely increase in merchandise exports to the United States as a result of the AUSFTA, while Section 4 analyses the likely direct increase in United States merchandise imports into Australia. This analysis uses input-output tables which reflect the current and future structure of the economy and, in particular, the very large increase in import penetration that has occurred since the mid 1990s and is likely to continue.

Using the example of the motor vehicle industry, Section 5 develops a methodology for quantifying the risks associated with the AUSFTA. In Section 6 this is extended to general merchandise trade.

The rest of the report concerns the more subtle effects of the provisions of the AUSFTA which curb Australian political sovereignty. Chapter 7 introduces the topic with a discussion of the current drivers of growth in industrial economies, with emphasis on their basis in knowledge and technology. The principles developed in this section are applied to the AUSFTA provisions on Government procurement in Section 8, to the foreign investment provisions in Section 9, and to the intellectual property provisions in Section 10. Each of these sections includes an assessment of the range of risks.

Finally, Section 11 summarises the risks taken as a whole. Chapter 12 provides a conclusion plus some further thoughts on the effect of the AUSFTA on Australia's relations with Asia and on its economic and social future.

1.3 The time period of assessment

The analysis does not attempt to project the future of the United States or Australian economies without the AUSFTA. Hence, all results are benchmarked to the current level of activity in the Australian and United States economies, which allows the impact of the AUSFTA on Australia to be compared to the current level of Australian gross domestic product (GDP). This is equivalent to the CIE's approach, and is in part adopted to ensure comparability with the CIE results.

This approach creates problems with phase-in agreements. For example, many of the agricultural market access agreements for the United States market involve an 18 year phase-in period. To account for this the estimated end-year phase-in effect is discounted to the present by using a discount factor based on a consumer trade estimate of the growth of the Australian economy. This discount factor is 2.5 per cent per year. This means, for example, in the case of recent exports, the assessed effect is the year 18 effect divided by 1.56. However, outside agriculture, motor vehicles and textiles, clothing and footwear, there is no other discounting of the assessed trade flow changes. For these purposes, it is assumed that United States GDP grows by 2.5 per cent per annum to 2025, and Australian GDP grows by 2.8 per cent per annum. However, so as not to distort the results by using differential trade growth assumptions, the rate of merchandise import growth into both economies is assumed to be the same.

The limitations caused by not constructing a specific base case without the AUSFTA also affect CGE assessments. A full assessment of AUSFTA would take into account variation in costs and benefits generated by alternative plausible base cases.

It can be argued that a more favourable assessment of the Agreement would be reached if it were assumed that, in its absence, the United States restricts Australian exports compared to the present. This could happen directly, by reductions in quotas, or indirectly, by the grant of trade preferences to Australia's competitors which sign agreements with the United States while Australia does not. A base case in which the alternative to the Agreement is restriction in trade with the United States is quite plausible. The United States is engaged in bilateral trade negotiations with a number of Australia's competitors, and the domestic interests which are protected by quotas are vocal in their demands for additional protection.

To the extent that the Agreement protects Australia against adverse moves by the United States, there will be a benefit to Australia. The extent of this benefit is, however, difficult to quantify, particularly in the area of adverse quota change.

The possibility of adverse United States policy changes in the base case raises other possibilities. Two may be mentioned.

- The efforts of the United States to create a trade bloc by a series of bilateral agreements could provoke the effective creation of a rival trade bloc among the countries left out of the agreements. If these countries include the major Asian economies and exclude Australia because of the AUSFTA, the effects on Australia could be serious. Our analysis abstracts from these possible costs as it does from the costs of a retreat from multilateral trade.

- The United States is currently running a large balance of payments deficit. Our analysis once again abstracts from the effect of whatever measures the United States may take to address this problem. We have, however, reduced the assumed future rates of growth of both the United States and Australia below rates recently achieved, since it is likely that both countries will have to accept reduced growth while they attend to their balance of payments problems.

On balance, a comparison with the status quo seems warranted. Comparison with a base case in which the United States restricts Australian trade more than at present would increase the assessed benefits of the Agreement, while comparison with a base case in which the Agreement contributes to general restrictions on world trade would reduce the assessed benefits. The present assumption steers a middle course.

2. The key components of the AUSFTA that impact on economic activity

In terms of merchandise trade, the impact of the AUSFTA can be discussed under the industry headings of:

- motor vehicles;
- textiles, clothing and footwear;
- other manufacturing;
- agriculture;
- government procurement;
- foreign investment; and
- patented pharmaceuticals.

2.1 Other manufacturing trade

All tariffs on other manufacturing (and mining) imports from the United States into Australia will be set at zero from the first day of the agreement. In the case of the United States, this will be the case for most products.

2.2 Textiles, clothing and footwear

For Australia, the AUSFTA can be contrasted with the TCF tariff phase already committed for the next decade. This tariff phase down is one where:

- (i) all 2005 tariff levels are maintained to 2010;
- (ii) on 1st January 2010 tariffs above 10 per cent are reduced to 10 per cent and tariffs above 5 per cent are reduced to 5 per cent; and
- (iii) on 1st January 2015 all tariffs above 5 per cent will be reduced to 5 per cent.

Table 2.1 shows the TCF tariff phase down applicable under the agreement to United States imports into Australia.

Table 2.1 Tariff rates: AUSFTA textiles, clothing and footwear phase down – United States imports into Australia

Current tariff rates	Tariff rates on signing of agreement	Tariff rate 1 January 2010 to 31 December 2014	Tariff rate after 31 December 2014
5	3	0	0
10	5.5	3	0
15	8	3	0
25	15.5	8	0

Table 2.2 shows a similar tariff TCF phase down structure for Australian imports into the United States. The greater complexity is due to the complex structure of current United States TCF arrangements.

Tariff ratings	Signing of agreement	1 January 2010 to 31 December 2014	1 January 2015 onwards
3 per cent and above	3	0	0
3 to 5.5 per cent	90 per cent of price agreement rate	3 ^(a)	0
3 to 8 per cent	90 per cent of price agreement rate	3 ^(a)	0
3 to 15 per cent	90 per cent of the price agreement rate	8 ^(a)	0

Note: (a) If the 31 December 2009 rate is below 3 per cent it is held at the 31 December 2003 rate.

2.3 Motor vehicles

As for the TCF industries, Australia is undertaking a tariff phase down for motor vehicles over the next few years. In the absence of the AUSFTA, Australian motor vehicle tariffs will fall from 15 per cent to 10 per cent on 1 January 2005. On 1st January 2010 the tariff will be reduced to 5 per cent.

For Australian motor vehicle imports from the United States, all motor vehicle components gain zero tariff entry from the commencement of the agreement. The tariffs on passenger motor vehicles are in the B category. They will be removed in equal amounts till 1 January 2010 after which motor vehicles will be admitted duty free.

For the United States, motor vehicles and components will be tariff free from the signing of the agreement.

2.4 Agriculture industries

For Australia, all agricultural imports will be duty free from the signing of the agreement.

For the United States, this is not the case. The United States maintains both quotas and out-of-quota tariff regimes over a variety of agricultural products. These are called TRQ regimes. The TRQ regimes that are of particular interest to Australia are for beef, sugar, dairy products and other crops, such as tobacco, etc. For commodities covered by TRQ regimes quotas are set for each country's exports to the United States. If a country's exports exceed its quota, prohibitive tariffs are imposed on the out-of-quota product. For cheese, for example, the out-of-quota tariffs range between 60 and 65 per cent.

Table 2.3 shows the expansion of the duty-free quotas for key Australian agriculture products over a 17 year phase-in period. In general, duty-free quota access will be increased two to three times over the phase-in period.

The current United States TRQ regime for sugar is maintained unchanged.

Product	Quantity	Year of each of the phase-in periods	Quotas year 1	Quotas year 2	End of phase-in period	Imports after end of phase-in period
Beef	'000 metric tonnes	18	0	15	70	Unlimited
Ice cream	Million litres	17	7.5	7.95	19.1	Annual 6% growth
Condensed milk	'000 metric tonnes	17	3.0	3.18	7.6	Annual 6% growth
Butter	'000 metric tonnes	17	1.5	1.55	2.4	Annual 3% growth
Milk powders	'000 metric tonnes	17	4.0	4.16	7.49	Annual 4% growth
Cheese*	'000 metric tonnes	17	9.8	10.5	20.6	Annual growth approximately 4%
Peanuts	'000 metric tonnes	17	500	515	802	Unlimited
Tobacco	'000 metric tonnes	17	250	258	401	Unlimited
Cotton	'000 metric tonnes	17	250	258	401	Unlimited
Avocados	'000 metric tonnes	17	4.0	4.4	16.7	Unlimited

Note: * Cheddar, American, Swiss, European – gouda, etc.

2.5 Procurement policies

The AUSFTA will prevent governments from favouring local companies over United States companies in tenders for the delivery of goods and services to governments. In practice the implementation of this component will probably mean that, in effect, it will apply to tenders from all foreign companies. In addition, Australian governments will be prevented from attaching conditions on tenders for “offsets” in the form of industry development commitments. This constraint de jure will apply to all foreign tenderers.

2.6 Foreign investment

The Foreign Investment Review Board (FIRB) will not be able to disallow, in the national interest, any foreign investment from the United States where the value of the investment is less than \$800 million, save for investments in urban land and some other ‘sensitive’ areas.

2.7 Copyright

The length of copyright protection will be extended from 50 to 70 years.

2.8 Pharmaceuticals

There will be changes to Australia's Pharmaceutical Benefits Scheme which could effectively increase the power of foreign drug companies to obtain high prices for their products compared to what would have otherwise been the case.

These components of the AUSFTA will be analysed separately in this report.

3. AUSFTA: The direct impact on Australian merchandise exports to the United States

In order to assess the likely direct impact of the AUSFTA on Australian merchandise exports to the United States, given the current structure of the economy, the following elements are needed:

- econometrically based estimates of parameters (i.e. elasticities) indicating how much Australian import shares will increase as tariffs are reduced;
- Australia's imports and import shares into the United States markets; and
- the tariff levels currently prevailing against Australian imports.

3.1 Estimates of United States trade share elasticities

The most common parameter used to obtain estimates of how trade shares change when tariffs are reduced is the elasticity of substitution between imports into a given market. The greater the elasticity of substitution between imports, then the greater will be the increase in import share of a country that is given a tariff preference. The change in import share (and hence imports) for a given industry located in a country that is given a tariff preference is, for the United States and given its current trade structure, given by:

$$\overset{o}{im}_{i,z} = S_{i,z} Q_j \cdot (1 + \overset{o}{tar}_{i,z}) \quad (3.1)$$

Where:

$im_{i,z}$ = imports of country i into United States industry/commodity z ;

$S_{i,z}$ = share of imports for country i in United States industry/commodity z ;

$tar_{i,z}$ = average tariff rate of country i imported by the United States for industry/commodity z ;

Q_j = elasticity of substitution between imports into industry/commodity z for the United States;

o = denotes percentage change.

Equation (3.1) assumes that the impact of a tariff change will be the same as a change in the relative exchange rate or costs of production between country i and the United States. This is unlikely to be the case as exchange rate changes are likely to be discounted relative to tariff changes in trade decisions. This is because the latter are permanent and the former can be very changeable. For the purposes of this study it would be desirable to have econometric estimates of the direct impact of tariff changes by country on United States trade flows. Fortunately, such estimates are available for the 2-digit Harmonised Trade Commodity System (HS). The estimates are available from K. Fukao, T. Okutbo, and R. Stern, "An Econometric Analysis of Trade Divisions Under NAFTA", University of Michigan, October 2002.

For a given commodity, z , the estimated econometric function took the form:

$$\begin{aligned} \ln(S_{z,n}) &= a_{z,n}^0 + a_z^1 \ln(W_n) \\ &+ a_z^2 \ln(T_{z,n}) \\ &+ a_z^3 \text{country DUM}_{z,n} \\ &+ a_z^4 \cdot \text{TIMEDUM}_z \end{aligned}$$

Where:

- $S_{z,n}$ = country n share of United States imports of commodity z ;
 W_n = country n cost index;
 $T_{z,n}$ = one plus the tariff rate applied by the United States against country n for commodity z .

The other variables are dummy variables.

The results are presented in Table 3.1. Table 3.1 also shows econometric estimates of the elasticity of substitution between imports into the United States by industry/commodity. The estimates are from John Romalis, "NAFTA's and CUSFTA's Impact on North American Trade", University of Chicago, March 2002.

Of most importance is that the econometric estimates use data sets for the 1990 decade and, therefore, capture the impact of CUSFTA and NAFTA on United States imports. This impact will be directly relevant to any assessment of the likely consequences of AUSFTA.

For the analysis below, where the tariff elasticity is the wrong sign, that is positive, the default value was set at -1. For agricultural products, as can be seen from the table, the default value is -5. Given that Australia's share of United States imports is low, this gives a much greater responsiveness to Australian imports than what would be the case if the agricultural elasticity of substitution parameters in Table 3.1 were used. However, in the main the agricultural exports are not driven by tariff changes but by duty-free quota changes.

For many commodities the tariff elasticities are much higher than the implicit elasticities from the elasticity of substitution parameter. A value of 20 means that if the United States tariff rate is reduced from 5 per cent to zero for a country, the country's United States import share would double.

3.2 Australian exports to the United States

The first column of Table 3.2 shows the level of Australian imports in 2003 into the United States in US\$ million, using United States trade data sources, converting the 6-digit HS system to the Australian ANZSIC 4-digit industry code. The second column in the table gives the Australian share of United States imports by the 4-digit ANZSIC code.

From Table 3.2, Australia supplies 0.5 per cent of United States merchandise imports. The areas where Australia does have a substantially higher import share are the commodity-based areas of:

- meat;
- minerals;
- wine; and
- alumina.

Two digit harmonised trade category	Description	Tariff elasticity	t value of tariff elasticity	Elasticity of substitution parameter
01	Live animals	-5.0	n.a.	1.29
02	Meat and edible meat offal	-5.0	n.a.	14.1
03	Fish and crustaceans, molluscs and other aquatic invertebrates	-5.0	n.a.	3.38
04	Dairy produce; birds' eggs; natural honey; edible products of animal origin, nesoi	-5.0	n.a.	2.1
05	Products of animal origin, nesoi	-5.0	n.a.	1.88
06	Live trees and other plants; bulbs, roots and the like; cut flowers and ornaments	-5.0	n.a.	0.13
07	Edible vegetables and certain roots and tubers	-5.0	n.a.	1.73
08	Edible fruit and nuts; peel of citrus fruit or melons	-5.0	n.a.	0.44
09	Coffee, tea, mate and spices	-5.0	n.a.	-0.54
10	Cereals	-5.0	n.a.	1.28
11	Milling industry products; malt; starches; inulin; wheat gluten	-5.0	n.a.	-0.21
12	Oil seeds and oleaginous fruits; miscellaneous grains, seeds and fruits	-5.0	n.a.	-1.62
13	Lac; gums; resins and other vegetable saps and extracts	-5.0	n.a.	1.64
14	Vegetable plaiting materials and vegetable products, nesoi	-5.0	n.a.	-0.99
15	Animal or vegetable fats and oils and their cleavage products	-5.0	n.a.	3.75
16	Edible preparations of meat, fish, crustaceans, molluscs or other aquatic invertebrates	-5.0	n.a.	8.53
17	Sugars and sugar confectionery	-5.0	n.a.	1.46
18	Cocoa and cocoa preparations	-5.0	n.a.	1.91
19	Preparations of cereals, flour, starch or milk; bakers' wares	-5.0	n.a.	3.69
20	Preparations of vegetables, fruit, nuts, or other parts of plants	-5.0	n.a.	1.35
21	Miscellaneous edible preparations	-5.0	n.a.	2.71
22	Beverages, spirits and vinegar	-5.0	n.a.	0.61
23	Residues and waste from the food industries; prepared animal feed	-5.0	n.a.	3.35
24	Tobacco and manufactured tobacco substitutes	-5.0	n.a.	2.95
25	Salt; sulphur; earths and stone; plastering materials, lime and cement	-5.0	n.a.	1.12
26	Ores, slag and ash	-5.0	n.a.	-3.82
27	Mineral fuels, mineral oils and products of their distillation; bituminous substances	-5.0	n.a.	-1.07

Two digit harmonised trade category	Description	Tariff elasticity	t value of tariff elasticity	Elasticity of substitution parameter
28	Inorganic chemicals; organic or inorganic compounds of precious metals	-5.0	n.a.	3.61
29	Organic chemicals	-5.0	n.a.	6.38
30	Pharmaceutical products	-17.6	-1.8	10.15
31	Fertilisers	0.0	0.0	0.27
32	Tanning or dyeing extracts; tanning and derivatives; dyes, pigments and other	7.5	1.1	4.49
33	Essential oils and resinoids; perfumery, cosmetic or toilet preparations	5.6	0.7	5
34	Soap etc.; lubricating products; waxes, polishing or scouring products, candles	18.1	2.4	0.06
35	Albuminoidal substances; modified starches; glues; enzymes	3.8	0.3	3.76
36	Explosives; pyrotechnic products; matches; pyrophoric alloys; certain combust	0.0	0.0	5.57
37	Photographic or cinematographic goods	-16.6	-1.7	4.92
38	Miscellaneous chemical products	-11.3	-0.9	5.2
39	Plastics and articles thereof	-7.3	-1.2	3.57
40	Rubber and articles thereof	-1.6	-0.1	3.81
41	Raw hides and skins (no furskins) and leather	0.6	0.1	11.06
42	Articles of leather; saddlery and harness; travel goods, handbags and similar	12.4	1.3	2.45
43	Furskins and artificial fur; manufactures thereof	0.0	0.0	4.42
44	Wood and articles of wood; wood charcoal	-43.9	-2.9	0.74
45	Cork and articles of cork	-11.2	-0.8	19.4
46	Manufactures of straw, esparto or other plaiting materials; basketware and wickerware	-3.5	-0.7	-3
47	Pulp of wood or other fibrous cellulosic material; recovered (waste and scrap)	0.0	0.0	3.55
48	Paper and paperboard and articles (including paper pulp art)	-0.8	0.0	2.98
49	Printed books, newspapers, pictures and other printed products; manuscripts	-203.6	-3.4	2.69
50	Silk, including yarns and woven fabric thereof	-5.6	-0.8	9.02
51	Wool and fine or coarse animal hair, including yarns and woven fabrics thereof	-10.1	-1.4	7.8
52	Cotton, including yarn and woven fabric thereof	-31.5	-2.9	8.96
53	Vegetable textile fibres nesoi; yarns and woven fabrics of vegetable textile fibres	0.0	0.0	9.69

Two digit harmonised trade category	Description	Tariff elasticity	t value of tariff elasticity	Elasticity of substitution parameter
54	Manmade filaments, including yarns and woven fabrics	-5.0	-0.5	9.72
55	Manmade staple fibres, including yarns and woven fabrics	-9.3	-1.2	10.91
56	Wadding, felt and non-wovens; special yarns; twine, cordate, ropes and cables, etc.	-22.1	-1.3	6.33
57	Carpets and other textile floor coverings	-24.9	-1.2	8.02
58	Special woven fabrics; tufted textile fabrics; lace; tapestries; trimmings; embroidery	-8.8	-0.9	4.56
59	Impregnated, coated, covered or laminated textile fabrics	7.5	0.5	6.89
60	Knitted or crocheted fabrics	-10.5	-1.2	7.65
61	Articles of apparel and clothing accessories, knitted or crocheted	-5.4	-0.9	6.84
62	Articles of apparel and clothing accessories, not knitted or crocheted	-8.6	-1.4	6.24
63	Made-up textile articles nesoi; needlecraft sets; worn clothing and worn textiles	1.3	0.1	7.07
64	Footwear, gaiters etc. and parts thereof	-5.6	-0.7	4.12
65	Headgear and parts thereof	-10.5	-1.0	2.83
66	Umbrellas, sun umbrellas, walking sticks, seat sticks, whips, riding crops	-12.8	-2.4	1.54
67	Prepared feathers and down and articles thereof; artificial flowers	0.0	0.0	6.3
68	Articles of stone, plaster, cement, asbestos, mica or similar materials	-13.0	-1.9	2.06
69	Ceramic products	-6.0	-1.5	2.21
70	Glass and glassware	-4.5	-0.7	1.21
71	Natural or cultured pearls, precious or semi-precious stones, precious metals	18.4	1.6	8.4
72	Iron and steel	21.8	1.8	-2.11
73	Articles of iron or steel	-2.8	-0.3	1.22
74	Copper and articles thereof	15.6	1.1	2.93
75	Nickel and articles thereof	-35.0	-0.4	4.34
76	Aluminium and articles thereof	16.9	1.2	3.33
78	Lead and articles thereof	-5.9	-0.4	1.32
79	Zinc and articles thereof	-20.1	-1.3	3.02
80	Tin and articles thereof	0.0	0.0	-2.7
81	Base metals nesoi; cements; articles thereof	-21.5	-1.6	9.87
82	Tools, implements, cutlery, spoons and forks, of base metal; parts thereof	-5.3	-0.9	4.69
83	Miscellaneous articles of base metal	10.1	1.5	1.66

Two digit harmonised trade category	Description	Tariff elasticity	t value of tariff elasticity	Elasticity of substitution parameter
84	Nuclear reactors, boilers, machinery and mechanical appliances; parts thereof	-5.0	-0.5	5.81
85	Electrical machinery and equipment and parts thereof; sound recorders	-13.8	-1.8	5.89
86	Railway or tramway locomotives, rolling stock, track fixtures and fittings	0.0	0.0	-3.26
87	Vehicles, other than railway or tramway rolling stock, and parts and accessories thereof	9.0	0.8	3.9
88	Aircraft, spacecraft and parts thereof	0.0	0.0	6.56
89	Ships, boats and floating structures	-30.4	-1.2	5.24
90	Optical, photographic, cinematographic, measuring, checking, precision, medical	-17.4	-3.7	4.55
91	Clocks and watches and parts thereof	12.0	1.4	6.72
92	Musical instruments; parts and accessories thereof	5.7	1.0	-1.39
93	Arms and ammunition; parts and accessories thereof	0.0	0.0	5.6
94	Furniture; bedding, cushions etc.; lamps and lighting fittings nesoi	0.5	0.1	1.84
95	Toys, games and sports equipment; parts and accessories thereof	-6.5	-1.8	5.47
96	Miscellaneous manufactured articles	0.0	0.0	1.7
97	Works of art, collectors' pieces and antiques	n.a	n.a.	5.99

Note: n.a. = not available.

3.3 United States average tariffs

From Table 3.2, the average rate of United States tariff on Australian imports is 3.0 per cent. This includes within quota duties. Relatively high rates of duty apply in the metals, fabricated metals and the TCF industry sectors. However, for many industries, as far as the data is reliable, the table indicates that many products are admitted duty free.

3.4 The AUSFTA: Increase in Australian exports

The last column of Table 3.2 shows the increase in Australian exports to the United States expected from the AUSFTA. Overall the results are for a US\$546 million increase in exports, which includes the discounted value of beef and dairy exports to the end of the 17 year phase-in. Thus, the \$546 million can be related to the current level of Australian exports and gross domestic product.

Table 3.2 Australian merchandise exports into United States by 4-digit ANZSIC industries – 2003

ANZSIC industry	Description	Total Australian imports into US					
		Total US imports (US\$m)	(US\$m)	Share (%)	Average tariff paid on dutiable imports (%)	Imports duty free (%)	Change from AUSFTA (2003 \$m)
111	Plant Nurseries	541.0	0.4	0.1	4.4	17.4	0.1
112	Cut Flower & Flower Seed Growing	654.3	1.4	0.2	6.1	0.0	0.4
113	Vegetable Growing	3291.7	1.0	0.0	0.2	12.1	0.0
114	Grape Growing	689.2	0.0	0.0	0.0	100.0	0.0
115	Apple & Pear Growing	207.6	0.1	0.0	0.0	100.0	0.0
116	Stone Fruit Growing	98.7	0.0	0.0	0.0	100.0	0.0
117	Kiwi Fruit Growing	32.5	0.0	0.0	0.0	100.0	0.0
119	Fruit Growing, nec	2498.7	27.2	1.1	1.6	0.0	2.4
121	Grain Growing	789.8	2.8	0.4	0.1	1.5	0.0
124	Sheep Farming	26.5	11.5	43.5	2.5	2.6	1.7
125	Beef Cattle Farming	867.2	0.0	0.0	0.0	100.0	0.0
142	Poultry Farming (Eggs)	12.0	0.3	2.4	0.1	0.0	0.0
151	Pig Farming	391.3	0.0	0.0	0.0	100.0	0.0
152	Horse Farming	246.0	5.2	2.1	0.0	100.0	0.0
159	Livestock Farming, nec	294.7	1.0	0.3	1.0	0.0	0.1
169	Crop & Plant Growing, nec	3955.3	40.1	1.0	1.6	91.6	0.3
211	Cotton Ginning	32.2	3.8	11.8	0.6	0.0	0.2
219	Services to Agriculture, nec	15.7	0.1	0.8	0.0	100.0	0.0
220	Hunting & Trapping	60.1	0.6	1.0	1.8	98.9	0.0
302	Logging	387.3	0.8	0.2	0.0	100.0	0.0
411	Rock Lobster Fishing	294.3	0.8	0.3	0.0	100.0	0.0
415	Line Fishing	80.2	0.2	0.2	0.0	100.0	0.0
419	Marine Fishing, nec	791.4	12.6	1.6	3.0	99.9	0.0
420	Aquaculture	436.1	5.4	1.2	0.0	100.0	0.0
1101	Black Coal Mining	780.2	11.2	1.4	0.0	100.0	0.0
1102	Brown Coal Mining	156.7	0.0	0.0	0.0	100.0	0.0
1200	Oil & Gas Extraction	124830.7	400.1	0.3	0.3	33.2	5.1
1311	Iron Ore Mining	328.0	1.1	0.3	0.0	100.0	0.0
1312	Bauxite Mining	283.3	8.0	2.8	0.0	100.0	0.0
1313	Copper Ore Mining	18.0	0.0	0.0	0.0	100.0	0.0
1314	Gold Ore Mining	87.4	0.3	0.3	0.0	100.0	0.0
1315	Mineral Sand Mining	223.2	128.6	57.6	0.0	100.0	0.0
1316	Nickel Ore Mining	0.4	0.0	0.0	0.0	100.0	0.0
1317	Silver-Lead-Zinc Ore Mining	60.0	15.3	25.5	0.0	100.0	0.0
1319	Metal Ore Mining, nec	209.6	60.0	28.6	0.0	100.0	0.0
1411	Gravel & Sand Quarrying	114.5	1.5	1.3	0.0	100.0	0.0
1419	Constructn Material Mining, nec	128.9	0.0	0.0	3.0	83.0	0.0
1420	Mining, nec	1455.4	28.8	2.0	4.0	99.8	0.0
2111	Meat Processing	4366.7	1162.0	26.6	1.6	5.4	181.0
2112	Poultry Processing	251.6	0.0	0.0	0.0	100.0	0.0

Table 3.2 Australian merchandise exports into United States by 4-digit ANZSIC industries – 2003 (continued)

ANZSIC industry	Description	Total Australian imports into US					
		Total US imports (US\$m)	(US\$m)	Share (%)	Average tariff paid on dutiable imports (%)	Imports duty free (%)	Change from AUSFTA (2003 \$m)
2113	Bacon, Ham & Smallgood Mfg	379.5	0.0	0.0	0.0	100.0	0.0
2121	Milk & Cream Processing	19.5	0.6	2.8	1.8	0.0	0.1
2129	Dairy Product Manufacturing,	2726.4	82.0	3.0	8.1	42.7	51.0
2130	Fruit & Vegetable Processing	5504.9	21.2	0.4	2.5	3.2	2.6
2140	Oil & Fat Manufacturing	1680.6	5.2	0.3	4.4	4.4	1.2
2151	Flour Mill Product Manufacturing	357.2	31.1	8.7	6.4	0.0	10.2
2152	Cereal Food & Baking Mix Mfg	1092.5	0.9	0.1	6.1	88.8	0.0
2163	Biscuit Manufacturing	648.6	1.0	0.1	0.0	100.0	0.0
2171	Sugar Manufacturing	783.5	40.5	5.2	2.8	0.0	6.1
2172	Confectionery Manufacturing	3537.0	5.1	0.1	5.5	0.2	1.5
2173	Seafood Processing	9186.9	76.2	0.8	5.2	100.0	0.0
2174	Prepared Animal & Bird Feed Mfg	223.8	1.9	0.9	1.4	95.3	0.0
2179	Food Manufacturing, nec	1698.1	19.7	1.2	10.4	12.5	8.9
2181	Soft Drink, Cordial & Syrup Mfg	1937.9	0.3	0.0	0.1	1.1	0.0
2182	Beer & Malt Manufacturing	2756.2	0.7	0.0	0.0	100.0	0.0
2183	Wine Manufacturing	3883.5	626.7	16.1	1.7	0.2	56.9
2184	Spirit Manufacturing	3147.4	0.4	0.0	2.0	83.1	0.0
2190	Tobacco Product Manufacturing	609.7	0.0	0.0	0.0	100.0	0.0
2211	Wool Scouring	50.4	5.7	11.4	3.2	6.7	1.8
2212	Synthetic Fibre Textile Mfg	6036.0	2.8	0.0	9.5	0.7	2.3
2213	Cotton Textile Manufacturing	4476.7	4.2	0.1	8.3	0.0	1.9
2214	Wool Textile Manufacturing	283.1	0.7	0.2	4.7	0.6	0.3
2215	Textile Finishing	254.5	0.0	0.0	5.3	0.0	0.0
2221	Made-Up Textile Product Mfg	2811.3	1.4	0.1	3.3	0.0	0.0
2222	Textile Floor Covering Mfg	2020.1	8.7	0.4	5.7	0.0	12.8
2223	Rope, Cordage & Twine Mfg	381.4	0.5	0.1	4.2	20.3	0.0
2229	Textile Product Mfg, nec	1716.0	6.0	0.4	4.2	45.1	0.1
2231	Hosiery Manufacturing	1090.8	1.0	0.1	13.1	0.1	0.4
2232	Cardigan & Pullover Mfg	13386.3	0.5	0.0	18.4	0.0	15.4
2239	Knitting Mill Prod Mfg, nec	2233.3	9.0	0.4	11.3	0.1	5.2
2241	Men's & Boys' Wear Mfg	19771.1	2.3	0.0	17.9	0.5	1.3
2242	Women's & Girls' Wear Mfg	20050.3	7.9	0.0	16.2	0.0	4.1
2243	Sleepwr Undwr & Infant Clthg	6461.5	0.6	0.0	13.9	0.0	0.2
2249	Clothing Manufacturing, nec	5185.9	3.5	0.1	9.1	19.8	1.1
2250	Footwear Manufacturing	15538.0	8.0	0.1	9.1	3.6	2.1
2261	Leather Tanning & Fur Dressing	781.5	7.6	1.0	2.7	2.4	0.2
2262	Leather & Lthr Substit Prod Mfg	4919.3	2.9	0.1	7.5	60.4	0.1
2311	Log Sawmilling	6007.1	1.7	0.0	0.0	100.0	0.0
2312	Wood Chipping	113.5	0.0	0.0	0.0	100.0	0.0

Table 3.2 Australian merchandise exports into United States by 4-digit ANZSIC industries – 2003 (continued)

ANZSIC industry	Description	Total Australian imports into US					
		Total US imports (US\$m)	(US\$m)	Share (%)	Average tariff paid on dutiable imports (%)	Imports duty free (%)	Change from AUSFTA (2003 \$m)
2313	Timber Resawing & Dressing	1254.2	2.6	0.2	3.2	98.2	0.1
2321	Plywood & Veneer Manufacturing	1576.4	0.2	0.0	8.0	43.4	0.3
2322	Fabricated Wood Manufacturing	3116.5	6.0	0.2	6.0	56.7	7.1
2323	Wooden Structural Component Mfg	655.5	0.1	0.0	4.8	0.0	0.1
2329	Wood Product Manufacturing, nec	4182.0	7.0	0.2	3.2	21.4	8.2
2331	Pulp, Paper & Paperboard Mfg	14690.2	25.7	0.2	0.3	38.7	0.1
2332	Solid Paperboard Container Mfg	650.9	0.0	0.0	0.4	0.0	0.0
2333	Corrugated Paperboard Container Mfg	188.9	0.0	0.0	0.3	0.0	0.0
2334	Paper Bag & Sack Manufacturing	394.1	0.0	0.0	0.5	0.0	0.0
2339	Paper Product Manufacturing, nec	1643.5	0.6	0.0	0.5	84.4	0.0
2411	Paper Stationery Manufacturing	1483.8	5.9	0.4	0.2	5.3	0.2
2412	Printing	1088.3	2.6	0.2	0.3	57.9	0.7
2413	Services to Printing	8.5	0.1	1.1	0.0	100.0	0.0
2421	Newspaper Printing or Publishing	309.5	0.0	0.0	0.0	100.0	0.0
2422	Other Periodical Publishing	1725.3	2.3	0.1	0.0	100.0	0.0
2423	Book & Other Publishing	5687.4	9.4	0.2	0.0	100.0	0.0
2430	Recorded Media Mfg & Publishing	3875.4	23.4	0.6	2.6	80.0	1.8
2510	Petroleum Refining	27511.8	0.1	0.0	0.3	0.0	0.4
2520	Petroleum, Coal Product Mfg,	1809.1	0.0	0.0	0.0	100.0	0.0
2531	Fertiliser Manufacturing	2189.9	0.8	0.0	0.0	100.0	0.0
2532	Industrial Gas Manufacturing	60.5	0.0	0.0	3.7	0.0	0.0
2533	Synthetic Resin Manufacturing	8293.6	2.3	0.0	5.9	31.9	0.7
2534	Organic Indust Chemical Mfg nec	34863.1	49.0	0.1	5.5	58.3	4.6
2535	Inorganic Industl Cheml Mfg nec	7896.4	166.2	2.1	4.6	68.9	12.4
2541	Explosive Manufacturing	352.7	4.5	1.3	6.5	0.0	0.3
2542	Paint Manufacturing	706.7	2.1	0.3	4.7	3.9	0.1
2543	Medicinal, Pharmactl Prodt Mfg	32032.1	168.9	0.5	0.0	100.0	0.0
2544	Pesticide Manufacturing	614.8	4.0	0.6	6.4	0.0	3.0
2545	Soap & Other Detergent Mfg	1312.9	3.6	0.3	1.7	59.7	0.0
2546	Cosmetic, Toiletry Prep Mfg	2517.2	20.0	0.8	5.3	81.5	0.2
2547	Ink Manufacturing	291.2	0.1	0.0	1.8	0.0	0.0
2549	Chemical Product Mfg, nec	4284.7	7.8	0.2	4.4	61.7	1.2
2551	Rubber Tyre Manufacturing	5260.1	3.1	0.1	3.9	7.3	0.2

2559	Rubber Product Mfg, nec	4686.8	9.9	0.2	3.2	8.0	0.5
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Table 3.2 Australian merchandise exports into United States by 4-digit ANZSIC industries – 2003 (continued)

ANZSIC industry	Description	Total Australian imports into US					
		Total US imports (US\$m)	(US\$m)	Share (%)	Average tariff paid on dutiable imports (%)	Imports duty free (%)	Change from AUSFTA (2003 \$m)
2561	Plastic Blow Moulded Product	384.8	0.9	0.2	3.0	0.0	0.2
2562	Plastic Extruded Prdct Mfg	2906.5	5.3	0.2	3.6	1.3	1.5
2563	Plastic Bag & Film Manufacturing	3197.4	4.3	0.1	3.3	4.1	1.1
2564	Plastic Prd Rigid Fbr Reinfrcd	12.5	0.0	0.2	6.3	0.0	0.0
2566	Plastic Injctn Moulded Prod Mfg	9818.6	13.9	0.1	4.5	1.0	4.7
2610	Glass, Glass Product Mfg	4413.9	2.2	0.1	5.5	10.4	0.5
2622	Ceramic Product Manufacturing	578.0	2.0	0.3	4.2	82.2	0.1
2623	Ceramic Tile & Pipe Mfg	1460.3	0.3	0.0	10.1	6.4	0.1
2629	Ceramic Product Mfg, nec	2484.6	1.2	0.0	6.4	2.9	0.5
2631	Cement & Lime Manufacturing	940.2	0.0	0.0	0.0	100.0	0.0
2632	Plaster Product Manufacturing	134.5	0.1	0.0	0.0	100.0	0.0
2635	Concrete Product Mfg, nec	1259.5	0.6	0.0	7.5	16.0	0.5
2640	Non-Metalic Minl Prod Mfg, nec	2870.0	1.7	0.1	3.4	77.5	0.1
2711	Basic Iron & Steel Mfg	11939.0	180.3	1.5	1.2	0.2	2.2
2712	Iron, Steel Casting, Forging	3558.5	0.1	0.0	6.2	63.3	0.0
2713	Steel Pipe, Tube Manufacturing	2807.4	2.6	0.1	1.8	18.3	0.1
2721	Alumina Production	465.4	158.8	34.1	0.0	100.0	0.0
2722	Aluminium Smelting	4453.0	70.3	1.6	2.6	100.0	0.0
2723	Copper, Silver, Lead, Zinc Smelting Refng	3394.7	21.6	0.6	1.5	46.5	1.1
2729	Basic Non-Ferrous Metal Mfg, nec	2350.9	101.2	4.3	7.0	100.0	0.0
2731	Aluminium Rllng, Drwng, Extruding	3152.7	2.4	0.1	4.5	13.6	0.1
2732	Non-Frs Mtl Rlmg Drw Extrdng	7356.2	13.8	0.2	2.3	53.0	1.2
2733	Non-Ferrous Metal Casting	39.9	0.0	0.0	0.0	100.0	0.0
2741	Structural Steel Fabricating	1019.5	0.1	0.0	0.6	0.0	0.0
2742	Archtectral Aluminium Prod Mfg	401.0	0.5	0.1	5.7	30.0	0.0
2749	Structural Metal Prod Mfg, nec	284.6	3.2	1.1	0.4	0.0	0.0
2751	Metal Container Mfg	861.2	1.8	0.2	5.3	88.4	0.0
2759	Sheet Metal Product Mfg, nec	2470.0	2.8	0.1	3.4	6.0	0.3
2761	Hand Tool, General Hardware Mfg	2786.6	2.1	0.1	4.8	49.5	0.3
2762	Spring & Wire Product Mfg	2982.8	9.1	0.3	2.5	7.5	0.6
2763	Nut, Bolt, Screw, Rivet Mfg	2198.5	4.4	0.2	5.9	53.3	0.4
2764	Metal Coating & Finishing	14.5	0.0	0.3	0.0	100.0	0.0
2765	Non-Ferrous Pipe Fitting Mfg	2406.2	5.3	0.2	2.7	75.7	0.1
2769	Fabricated Metal Prods Mfg, nec	7062.6	46.0	0.7	3.3	51.9	1.8
2811	Motor Vehicle Manufacturing	161435.2	145.1	0.1	2.5	4.5	3.8

Table 3.2 Australian merchandise exports into United States by 4-digit ANZSIC industries – 2003 (continued)

ANZSIC industry	Description	Total Australian imports into US					
		Total US imports (US\$m)	(US\$m)	Share (%)	Average tariff paid on dutiable imports (%)	Imports duty free (%)	Change from AUSFTA (2003 \$m)
2812	Motor Vehicle Body Manufacturing	1234.9	0.7	0.1	2.5	31.6	0.0
2813	Automotive Elctrcl, Instrmnt Mfg	16383.0	9.9	0.1	2.6	46.6	2.0
2819	Automotive Component Mfg, nec	22387.1	87.2	0.4	3.1	0.0	12.8
2821	Shipbuilding	1530.6	0.4	0.0	0.0	100.0	0.0
2822	Boatbuilding	n.a	48.7	n.a	1.5	11.9	20.8
2823	Railway Equipment Manufacturing	916.0	1.6	0.2	2.7	7.0	0.0
2824	Aircraft Manufacturing	24045.3	113.9	0.5	0.0	100.0	0.0
2829	Transport Equipment Mfg, nec	5334.9	45.0	0.8	6.5	89.4	0.3
2831	Photographic, Optical Good Mfg	10054.2	27.3	0.3	2.7	61.4	5.3
2832	Medical, Surgical Equip Mfg	16144.7	171.8	1.1	2.5	98.3	1.4
2839	Profsnl, Scientfc Equip Mfg nec	15001.4	96.7	0.6	1.9	61.6	13.5
2841	Computer, Business Machine Mfg	84638.7	36.7	0.0	1.8	95.0	0.2
2842	Telecmn Brdcstng Trnscvg Eqp	37793.0	35.6	0.1	1.8	95.7	0.4
2849	Electronic Equipment Mfg nec	67588.2	39.2	0.1	2.6	66.6	5.1
2851	Household Appliance Mfg	13862.4	37.0	0.3	3.5	28.6	10.8
2852	Electric Cable & Wire Mfg	3356.3	7.7	0.2	2.9	28.2	2.3
2853	Battery Manufacturing	2015.7	0.2	0.0	3.0	4.7	0.1
2854	Electric Light & Sign Mfg	6108.7	2.9	0.0	4.3	0.9	0.3
2859	Electrical Equipment Mfg nec	21047.5	47.5	0.2	2.9	17.5	11.6
2861	Agricultural Machinery Mfg	3487.1	134.8	3.9	2.5	15.2	3.1
2862	Mining, Constrtn Machinery Mfg	6560.8	44.5	0.7	3.7	99.5	0.0
2863	Food Processing Machinery Mfg	2920.1	29.1	1.0	2.8	89.3	0.5
2864	Machine Tool & Part Mfg	15213.3	29.1	0.2	3.9	21.1	4.7
2865	Lftng, Matral Hndlng Equip Mfg	6257.5	15.2	0.2	0.0	100.0	0.0
2866	Pump & Compressor Mfg	1664.4	20.6	1.2	2.9	96.1	0.1
2867	Comcl Spce Heating Cooling Equip Mfg	1459.0	2.9	0.2	1.4	15.3	0.2
2869	Industl Machnry, Equip Mfg nec	21069.4	81.5	0.4	3.0	54.6	5.8
2911	Prefabricted Metal Building Mfg	0.0	0.5	0.0	0.0	0.0	0.0
2921	Wdn Frntre, Upholstrd Seat Mfg	17470.8	9.1	0.1	0.0	100.0	0.0
2922	Sheet Metal Furniture Mfg	2646.3	2.8	0.1	0.0	100.0	0.0
2923	Mattress Mfg (Except Rubber)	48.9	0.4	0.8	7.6	0.0	0.0
2929	Furniture Manufacturing, nec	3370.6	6.6	0.2	0.0	100.0	0.0
2941	Jewellery & Silverware Mfg	20637.4	71.0	0.3	6.0	96.7	0.1
2942	Toy & Sporting Good Mfg	10560.8	10.0	0.1	4.7	56.7	1.4
2949	Manufacturing, nec	7830.0	50.9	0.6	4.4	96.6	0.2

Total	1205484.0	5571.6	0.5	3.0	43.7	545.7
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The export results were assessed at the 6-digit HS level and aggregated to the 4-digit ANZSIC level. The drivers of outcomes are:

- the tariff elasticity in Table 3.1;
- the average tariff rate on dutiable imports in column 4 of Table 3.2; and
- the level of imports admitted duty free from column 5 of Table 3.2.

Some commodities where the duty is high have a low export response to the AUSFTA, either because exports to the United States are low and/or because most exports from Australia are admitted duty free.

The export response is consistent with an average tariff elasticity of between 4 and 5, given the weighted average United States duty on all Australian imports of 1.7 per cent. These tariff elasticities would be regarded as high compared to what has been traditionally assumed to be plausible ranges, specialty since the estimates exclude beef and dairy where much of export growth is due to quota expansion.

From Table 3.3, exports to the United States contribute 2.6 per cent towards Australia's manufacturing output. This excludes distribution margins from factory gate. The second column in Table 3.3 indicates that the increase in manufacturing exports to the United States will add 0.2 per cent to Australia's manufacturing output.

The export results of this study reflect the most likely case. However, in order to meet the core objectives of this study, in terms of any one element, it is necessary to generate a probability distribution for the export outcomes. How this will be done is explained in Sections 5 and 6, after the consideration of the likely merchandise import outcomes.

Table 3.3 Australian manufacturing: Exports to United States as per cent of turnover – 2002-03

ANZSIC industry	Description	Per cent	AUSFTA increase in exports as per cent of output
2111	Meat Processing	20.0	2.6
2112	Poultry Processing	0.0	0.0
2113	Bacon, Ham & Smallgood Mfg	0.0	0.0
2121	Milk & Cream Processing	0.0	0.0
2129	Dairy Product Manufacturing,	2.6	1.2
2130	Fruit & Vegetable Processing	0.6	0.1
2140	Oil & Fat Manufacturing	0.2	0.1
2151	Flour Mill Product Manufacturing	1.2	0.7
2152	Cereal Food & Baking Mix Mfg	0.1	0.0
2163	Biscuit Manufacturing	0.3	0.0
2171	Sugar Manufacturing	0.4	0.4
2172	Confectionery Manufacturing	0.4	0.1
2173	Seafood Processing	9.9	0.0
2174	Prepared Animal & Bird Feed Mfg	0.1	0.0
2179	Food Manufacturing, nec	0.2	0.2
2181	Soft Drink, Cordial & Syrup Mfg	0.0	0.0
2182	Beer & Malt Manufacturing	0.0	0.0
2183	Wine Manufacturing	15.8	1.3
2184	Spirit Manufacturing	0.8	0.0
2190	Tobacco Product Manufacturing	0.0	0.0
2211	Wool Scouring	1.2	0.3
2212	Synthetic Fibre Textile Mfg	0.9	0.5
2213	Cotton Textile Manufacturing	1.9	0.7
2214	Wool Textile Manufacturing	0.6	0.2
2215	Textile Finishing	0.1	0.0
2221	Made-Up Textile Product Mfg	0.3	0.0
2222	Textile Floor Covering Mfg	1.8	2.3
2223	Rope, Cordage & Twine Mfg	0.2	0.1
2229	Textile Product Mfg, nec	8.1	0.0
2231	Hosiery Manufacturing	1.4	0.4
2232	Cardigan & Pullover Mfg	0.6	14.5
2239	Knitting Mill Prod Mfg, nec	1.8	1.7
2241	Men's & Boys' Wear Mfg	0.6	0.3
2242	Women's & Girls' Wear Mfg	0.7	0.7
2243	Sleepwr Undwr & Infant Clthg	0.3	0.2
2249	Clothing Manufacturing, nec	1.2	0.3
2250	Footwear Manufacturing	2.2	0.5
2261	Leather Tanning & Fur Dressing	9.2	0.0
2262	Leather & Lthr Substit Prod Mfg	8.8	0.3
2311	Log Sawmilling	0.5	0.0

2312	Wood Chipping	0.0	0.0
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Table 3.3 Australian manufacturing: Exports to United States as per cent of turnover – 2002-03 (continued)

ANZSIC industry	Description	Per cent	AUSFTA increase in exports as per cent of output
2313	Timber Resawing & Dressing	0.5	0.0
2321	Plywood & Veneer Manufacturing	0.2	0.2
2322	Fabricated Wood Manufacturing	0.5	0.7
2323	Wooden Structural Component Mfg	0.0	0.0
2329	Wood Product Manufacturing, nec	0.6	1.4
2331	Pulp, Paper & Paperboard Mfg	1.8	0.0
2332	Solid Paperboard Container Mfg	0.0	0.0
2333	Corrugated Paperbrd Container Mfg	0.0	0.0
2334	Paper Bag & Sack Manufacturing	0.0	0.0
2339	Paper Product Manufacturing,	0.1	0.0
2411	Paper Stationery Manufacturing	0.6	0.0
2412	Printing	0.1	0.0
2413	Services to Printing	0.0	0.0
2421	Newspaper Printing or Publishing	0.0	0.0
2422	Other Periodical Publishing	0.2	0.0
2423	Book & Other Publishing	1.4	0.0
2430	Recorded Media Mfg & Publishing	5.0	0.3
2510	Petroleum Refining	0.4	0.0
2520	Petroleum, Coal Product Mfg,	0.0	0.0
2531	Fertiliser Manufacturing	0.1	0.0
2532	Industrial Gas Manufacturing	0.5	0.0
2533	Synthetic Resin Manufacturing	0.1	0.0
2534	Organic Indust Chemical Mfg nec	2.7	0.7
2535	Inorganic Industl Cheml Mfg nec	3.5	0.5
2541	Explosive Manufacturing	0.7	0.0
2542	Paint Manufacturing	0.2	0.0
2543	Medicinal, Pharmactl Prodt Mfg	4.6	0.0
2544	Pesticide Manufacturing	0.9	0.4
2545	Soap & Other Detergent Mfg	0.2	0.0
2546	Cosmetic, Toiletry Prep Mfg	2.0	0.0
2547	Ink Manufacturing	0.2	0.0
2549	Chemical Product Mfg, nec	1.1	0.1
2551	Rubber Tyre Manufacturing	0.3	0.0
2559	Rubber Product Mfg, nec	1.3	0.1
2561	Plastic Blow Moulded Product	0.6	0.0
2562	Plastic Extruded Prdct Mfg	0.6	0.2
2563	Plastic Bag & Film Manufacturing	0.2	0.1
2564	Plastc Prd Rigd Fbr Reinfrcd	0.0	0.0
2566	Plastic Injctn Moulded Prod Mfg	1.0	0.2
2610	Glass, Glass Product Mfg	0.2	0.0

2622	Ceramic Product Manufacturing	0.3	0.1
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Table 3.3 Australian manufacturing: Exports to United States as per cent of turnover – 2002-03 (continued)

ANZSIC industry	Description	Per cent	AUSFTA increase in exports as per cent of output
2623	Ceramic Tile & Pipe Mfg	0.8	0.2
2629	Ceramic Product Mfg, nec	1.7	0.2
2631	Cement & Lime Manufacturing	0.0	0.0
2632	Plaster Product Manufacturing	0.0	0.0
2635	Concrete Product Mfg, nec	0.1	0.1
2640	Non-Metalic Minl Prod Mfg, nec	0.1	0.0
2711	Basic Iron & Steel Mfg	1.3	0.0
2712	Iron, Steel Casting, Forging	0.1	0.0
2713	Steel Pipe, Tube Manufacturing	0.2	0.0
2721	Alumina Production	0.0	0.0
2722	Aluminium Smelting	2.7	0.0
2723	Copper, Silver, Lead, Zinc Smelting Refng	2.0	0.1
2729	Basic Non-Ferrous Metal Mfg, nec	0.4	0.0
2731	Aluminium Rllng, Drwng, Extruding	0.6	0.0
2732	Non-Frs Mtl Rlng Drw Extrdng	4.5	0.1
2733	Non-Ferrous Metal Casting	0.0	0.0
2741	Structural Steel Fabricating	0.0	0.0
2742	Archtectral Aluminium Prod Mfg	0.1	0.0
2749	Structural Metal Prod Mfg, nec	0.3	0.0
2751	Metal Container Mfg	0.3	0.0
2759	Sheet Metal Product Mfg, nec	0.1	0.0
2761	Hand Tool, General Hardware Mfg	1.7	0.1
2762	Spring & Wire Product Mfg	1.3	0.1
2763	Nut, Bolt, Screw, Rivet Mfg	1.2	0.1
2764	Metal Coating & Finishing	0.0	0.0
2765	Non-Ferrous Pipe Fitting Mfg	2.6	0.0
2769	Fabricated Metal Prods Mfg, nec	1.7	0.1
2811	Motor Vehicle Manufacturing	2.7	0.0
2812	Motor Vehicle Body Manufacturing	0.2	0.0
2813	Automotive Elctrcl, Instrmnt Mfg	0.9	0.2
2819	Automotive Component Mfg, nec	3.6	0.3
2821	Shipbuilding	3.6	0.0
2822	Boatbuilding	9.8	3.8
2823	Railway Equipment Manufacturing	0.3	0.0
2824	Aircraft Manufacturing	21.2	0.0
2829	Transport Equipment Mfg, nec	221.8	0.9
2831	Photographic, Optical Good Mfg	5.3	0.6
2832	Medical, Surgical Equip Mfg	17.3	0.2
2839	Profsnl, Scientfc Equip Mfg nec	13.6	1.7
2841	Computer, Business Machine Mfg	2.9	0.0

2842	Telecmn Brdcstng Trnscvg Eqp	1.0	0.0
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Table 3.3 Australian manufacturing: Exports to United States as per cent of turnover – 2002-03 (continued)

ANZSIC industry	Description	Per cent	AUSFTA increase in exports as per cent of output
2849	Electronic Equipment Mfg nec	4.0	0.3
2851	Household Appliance Mfg	2.5	0.5
2852	Electric Cable & Wire Mfg	3.1	0.3
2853	Battery Manufacturing	0.3	0.1
2854	Electric Light & Sign Mfg	0.7	0.1
2859	Electrical Equipment Mfg nec	2.9	0.6
2861	Agricultural Machinery Mfg	27.6	0.5
2862	Mining, Constrtn Machinery Mfg	2.5	0.0
2863	Food Processing Machinery Mfg	6.8	0.1
2864	Machine Tool & Part Mfg	6.4	0.7
2865	Lftng, Matral Hndlng Equip Mfg	1.1	0.0
2866	Pump & Compressor Mfg	2.7	0.0
2867	Comcl Spce Heating Cooling Equipment Mfg	0.6	0.0
2869	Industl Machnry, Equip Mfg nec	7.0	0.3
2911	Prefabrtctd Metal Building Mfg	0.0	0.0
2921	Wdn Frntre, Upholstrd Seat Mfg	0.5	0.0
2922	Sheet Metal Furniture Mfg	0.2	0.0
2923	Mattress Mfg (Except Rubber)	0.0	0.0
2929	Furniture Manufacturing, nec	0.6	0.0
2941	Jewellery & Silverware Mfg	13.6	0.0
2942	Toy & Sporting Good Mfg	3.7	0.4
2949	Manufacturing, nec	7.7	0.0
	Total	2.6	0.2

4. The AUSFTA: The increase in merchandise imports into Australia

The analysis in this section mirrors the analysis of the previous section. It requires estimation of two effects of the AUSFTA:

- the trade diversion impact, or the increase in the United States share of total Australian imports; and
- the net trade creation impact, or the overall increase in net Australian imports because of AUSFTA.

4.1 The trade diversion impact

To undertake a trade diversion impact what is required is elasticity of substitution estimates between imports from different countries for given industries. The Australian data is generally too unstable to obtain plausible estimates. However, there is no reason to believe that the elasticity of substitution between countries into Australia will be too different from that prevailing in the United States economy. Hence, the elasticity of substitution estimates for United States imports in Table 3.1 are adopted for the analysis here.

The second column of Table 4.1 shows the average scheduled tariff rate on United States imports, while the next table shows the share of imports in total imports. From the information in the first three columns of the table, the increase in the United States import share is shown in the next column. Given 2003 total supply (output plus imports), the increase in United States imports into Australia is given in column 5. The increase in total imports from the United States is \$516 million.

4.2 The net increase in Australian imports

In order to calculate the net increase in Australian imports, what is required is the net increase in the United States export share and the own price elasticity of imports with respect to the import price. The import own price elasticity used in the analysis is given in the table. These elasticities are the long-run econometrically-estimated own price elasticities used in the NIEIR IMP model, unless the implied elasticity of substitution between home and imported products for an industry is less than unity. If it is less than unity, the default value is set at unity. This adjustment is justified on the basis that the tariff elasticities are likely to be greater than those implied by the elasticity of substitution parameters, as indicated by the United States responsiveness to tariff changes in the previous section.

As a result of using these elasticities, the overall net increase in imports is \$468.6 million. Thus net trade diversion amounts to \$48 million.

4.3 Import risk security

In Section 6, a probability distribution of import impacts will be derived for the change in Australian net imports from AUSFTA. Key inputs into generating this distribution will be the upper and lower bound estimates shown in the last two columns of Table 4.1. They are derived by following the CIE methodology of halving and doubling parameters. Thus, the lower bound estimates are derived by halving the import price elasticities of demand, while the upper bound estimates are derived by doubling the import price elasticities of demand.

This produces a lower and upper bound range of between \$243 and \$937.3 million, in terms of net increases in Australian import penetration, as a result of the AUSFTA based on the economic structure of 2003.

Table 4.1 AUSFTA: Trade creation and diversion – 2003

ANZSIC industry	Description	Elasticity of substitution between importers	Average tariffs on US imports (%)	US share in total imports (%)	Increase in US import share of supply (%)	Increase in US imports into Australia (2003 \$m)	Aggregate import price elasticity of demand (no.)	Net increase in imports (2003 \$m)	Trade diversion	Net increase in imports – maximum (2003 \$m)	Net increase in imports – minimum (2003 \$m)
111	Plant Nurseries	0.1	0.0	0.5	0.0	0.0	0.20	0.0	0.0	0.0	0.0
112	Cut Flower and Flower Seed Growing	0.1	0.0	19.5	0.0	0.0	0.20	0.0	0.0	0.0	0.0
113	Vegetable Growing	1.2	0.0	24.5	0.0	0.0	0.20	0.0	0.0	0.0	0.0
114	Grape Growing	0.4	5.0	23.2	0.5	0.0	0.20	0.1	0.0	0.1	0.0
115	Apple and Pear Growing	0.4	0.0	2.6	0.0	0.0	0.20	0.0	0.0	0.0	0.0
116	Stone Fruit Growing	0.4	0.0	78.2	0.0	0.0	0.20	0.0	0.0	0.0	0.0
117	Kiwi Fruit Growing	0.4	0.0	0.0	0.0	0.0	0.20	0.0	0.0	0.0	0.0
119	Fruit Growing n.e.c.	0.4	0.0	33.5	0.0	0.0	0.20	0.0	0.0	0.0	0.0
121	Grain Growing	0.6	0.0	29.3	0.0	0.0	0.20	0.0	0.0	0.0	0.0
124	Sheep Farming	5.6	0.0	0.0	0.0	0.0	0.20	0.0	0.0	0.0	0.0
125	Beef Cattle Farming	1.3	0.0	100.0	0.0	0.0	0.20	0.0	0.0	0.0	0.0
141	Poultry Farming (Meat)	2.1	0.0	0.0	0.0	0.0	0.20	0.0	0.0	0.0	0.0
142	Poultry Farming (Eggs)	2.1	0.0	12.1	0.0	0.0	0.20	0.0	0.0	0.0	0.0
151	Pig Farming	1.3	0.0	0.0	0.0	0.0	0.20	0.0	0.0	0.0	0.0
152	Horse Farming	1.3	0.0	17.7	0.0	0.0	0.20	0.0	0.0	0.0	0.0
159	Livestock Farming n.e.c.	5.1	0.0	0.4	0.0	0.0	0.20	0.0	0.0	0.0	0.0
161	Sugar Cane Growing	1.4	0.0	0.0	0.0	0.0	0.20	0.0	0.0	0.0	0.0
169	Crop and Plant Growing n.e.c.	1.4	0.2	22.1	0.1	0.1	0.20	0.0	0.0	0.1	0.0
211	Cotton Ginning	4.5	0.0	7.6	0.0	0.0	0.02	0.0	0.0	0.0	0.0
219	Services to Agriculture n.e.c.	1.9	0.0	35.5	0.0	0.0	0.01	0.0	0.0	0.0	0.0
220	Hunting and Trapping	2.4	0.0	2.0	0.0	0.0	0.19	0.0	0.0	0.0	0.0
302	Logging	0.7	0.0	4.2	0.0	0.0	0.07	0.0	0.0	0.0	0.0
411	Rock Lobster Fishing	3.4	0.0	0.0	0.0	0.0	0.00	0.0	0.0	0.0	0.0
412	Prawn Fishing	3.4	0.0	0.0	0.0	0.0	0.05	0.0	0.0	0.0	0.0
413	Finfish Trawling	3.4	0.0	0.0	0.0	0.0	0.13	0.0	0.0	0.0	0.0
415	Line Fishing	3.4	0.0	0.3	0.0	0.0	0.52	0.0	0.0	0.0	0.0
419	Marine Fishing n.e.c.	3.5	0.0	12.1	0.0	0.0	0.18	0.0	0.0	0.0	0.0

Table 4.1 AUSFTA: Trade creation and diversion – 2003 (continued)

ANZSIC industry	Description	Elasticity of substitution between importers	Average tariffs on US imports (%)	US share in total imports (%)	Increase in US import share of supply (%)	Increase in US imports into Australia (2003 \$m)	Aggregate import price elasticity of demand (no.)	Net increase in imports (2003 \$m)	Trade diversion	Net increase in imports – maximum (2003 \$m)	Net increase in imports – minimum (2003 \$m)
420	Aquaculture	3.7	0.0	0.5	0.0	0.0	0.01	0.0	0.0	0.0	0.0
1101	Black Coal Mining	0.1	0.0	0.2	0.0	0.0	0.00	0.0	0.0	0.0	0.0
1102	Brown Coal Mining	0.1	0.0	0.5	0.0	0.0	0.00	0.0	0.0	0.0	0.0
1200	Oil and Gas Extraction	0.1	0.0	0.0	0.0	0.0	0.00	0.0	0.0	0.0	0.0
1311	Iron Ore Mining	0.1	0.0	0.0	0.0	0.0	0.00	0.0	0.0	0.0	0.0
1312	Bauxite Mining	0.1	0.0	0.1	0.0	0.0	0.11	0.0	0.0	0.0	0.0
1313	Copper Ore Mining	0.1	0.0	0.0	0.0	0.0	0.02	0.0	0.0	0.0	0.0
1314	Gold Ore Mining	0.1	0.0	0.0	0.0	0.0	0.00	0.0	0.0	0.0	0.0
1315	Mineral Sand Mining	0.1	0.0	2.9	0.0	0.0	0.25	0.0	0.0	0.0	0.0
1316	Nickel Ore Mining	0.1	0.0	1.0	0.0	0.0	0.00	0.0	0.0	0.0	0.0
1317	Silver-Lead-Zinc Ore Mining	0.1	0.0	37.2	0.0	0.0	0.00	0.0	0.0	0.0	0.0
1318	EXPORTS ONLY – With effect from 1 July 1990, sum of 'No Details' confidential items in HS Chapter 26	0.1	0.0	0.0	0.0	0.0	1.00	0.0	0.0	0.0	0.0
1319	Metal Ore Mining n.e.c.	0.1	0.0	2.5	0.0	0.0	0.02	0.0	0.0	0.0	0.0
1411	Gravel and Sand Quarrying	0.1	0.0	2.4	0.0	0.0	0.00	0.0	0.0	0.0	0.0
1419	Construction Material Mining n.e.c.	0.1	0.1	27.5	0.0	0.0	0.00	0.0	0.0	0.0	0.0
1420	Other Mining	0.2	0.1	9.4	0.0	0.0	0.00	0.0	0.0	0.0	0.0
2111	Meat Processing	0.2	0.5	5.2	0.0	0.0	1.09	0.1	-0.1	0.1	0.0
2112	Poultry Processing	1.1	0.0	11.8	0.0	0.0	1.09	0.0	0.0	0.0	0.0
2113	Bacon, Ham and Smallgood Manufacturing	1.1	5.0	4.7	0.3	0.0	1.09	0.0	0.0	0.1	0.0
2121	Milk and Cream Processing	2.7	0.0	4.1	0.0	0.0	1.40	0.0	0.0	0.0	0.0
2122	Ice Cream Manufacturing	11.3	5.0	2.6	1.4	0.0	0.50	0.0	0.0	0.0	0.0
2129	Dairy Product Manufacturing n.e.c.	1.9	0.1	1.8	0.0	0.0	0.60	0.0	0.0	0.0	0.0
2130	Fruit and Vegetable Processing	8.5	5.0	10.0	4.1	4.0	0.50	3.3	0.7	6.6	1.7
2140	Oil and Fat Manufacturing	2.1	0.1	26.8	0.0	0.0	0.50	0.0	0.0	0.1	0.0

Table 4.1 AUSFTA: Trade creation and diversion – 2003 (continued)

ANZSIC industry	Description	Elasticity of substitution between importers	Average tariffs on US imports (%)	US share in total imports (%)	Increase in US import share of supply (%)	Increase in US imports into Australia (2003 \$m)	Aggregate import price elasticity of demand (no.)	Net increase in imports (2003 \$m)	Trade diversion	Net increase in imports – maximum (2003 \$m)	Net increase in imports – minimum (2003 \$m)
2151	Flour Mill Product Manufacturing	2.4	0.1	25.1	0.0	0.0	0.50	0.0	0.0	0.0	0.0
2152	Cereal Food and Baking Mix Manufacturing	2.4	5.0	3.0	0.3	0.0	0.50	0.1	-0.1	0.3	0.1
2161	Bread Manufacturing	1.3	0.0	0.0	0.0	0.0	0.50	0.0	0.0	0.0	0.0
2162	Cake and Pastry Manufacturing	3.4	5.0	8.0	1.3	0.1	0.50	0.2	-0.1	0.5	0.1
2163	Biscuit Manufacturing	0.6	5.0	1.2	0.0	0.0	0.50	0.0	0.0	0.0	0.0
2171	Sugar Manufacturing	1.8	5.0	12.0	1.0	0.0	0.50	0.1	0.0	0.2	0.0
2172	Confectionery Manufacturing	1.8	5.0	4.0	0.3	0.1	0.50	0.5	-0.4	0.9	0.2
2173	Seafood Processing	3.7	0.0	3.8	0.0	0.0	0.50	0.0	0.0	0.0	0.0
2174	Prepared Animal and Bird Feed Manufacturing	3.7	0.0	22.4	0.0	0.0	0.50	0.0	0.0	0.0	0.0
2179	Food Manufacturing n.e.c.	1.5	5.0	12.3	0.9	0.7	0.50	2.2	-1.4	4.3	1.1
2181	Soft Drink, Cordial and Syrup Manufacturing	1.8	5.0	6.1	0.5	0.1	0.14	0.2	-0.1	0.4	0.1
2182	Beer and Malt Manufacturing	4.5	64.7	3.0	5.4	0.1	0.53	1.3	-1.2	2.7	0.7
2183	Wine Manufacturing	2.8	6.8	0.6	0.1	0.0	0.00	0.0	0.0	0.0	0.0
2184	Spirit Manufacturing	1.3	306.6	29.4	28.4	27.1	0.52	73.7	-46.7	147.4	36.9
2190	Tobacco Product Manufacturing	0.6	414.8	36.2	17.8	6.1	0.50	20.6	-14.5	41.2	10.3
2211	Wool Scouring	0.4	0.0	0.2	0.0	0.0	0.29	0.0	0.0	0.0	0.0
2212	Synthetic Fibre Textile Manufacturing	0.6	5.0	8.0	0.2	0.2	1.76	6.3	-6.2	12.6	3.2
2213	Cotton Textile Manufacturing	1.3	5.0	3.3	0.2	0.0	1.76	1.8	-1.7	3.6	0.9
2214	Wool Textile Manufacturing	3.0	7.6	0.1	0.0	0.0	1.76	0.0	0.0	0.1	0.0
2215	Textile Finishing	6.7	5.0	21.3	6.8	0.3	1.76	0.4	-0.2	0.8	0.2
2221	Made-Up Textile Product Manufacturing	9.5	2.0	5.1	1.0	0.1	1.76	0.4	-0.3	0.7	0.2
2222	Textile Floor Covering Manufacturing	8.4	5.1	4.0	1.7	0.2	1.76	1.3	-1.1	2.6	0.6
2223	Rope, Cordage and Twine Manufacturing	7.6	5.0	4.7	1.7	0.0	1.76	0.3	-0.2	0.6	0.1

Table 4.1 AUSFTA: Trade creation and diversion – 2003 (continued)

ANZSIC industry	Description	Elasticity of substitution between importers	Average tariffs on US imports (%)	US share in total imports (%)	Increase in US import share of supply (%)	Increase in US imports into Australia (2003 \$m)	Aggregate import price elasticity of demand (no.)	Net increase in imports (2003 \$m)	Trade diversion	Net increase in imports – maximum (2003 \$m)	Net increase in imports – minimum (2003 \$m)
2229	Textile Product Manufacturing n.e.c.	4.6	5.0	15.8	3.4	2.5	1.76	7.3	-4.8	14.6	3.6
2231	Hosiery Manufacturing	6.7	14.0	3.3	2.7	0.1	1.50	0.8	-0.7	1.5	0.4
2232	Cardigan and Pullover Manufacturing	7.7	14.8	0.4	0.4	0.0	1.50	0.4	-0.4	0.9	0.2
2239	Knitting Mill Product Manufacturing n.e.c.	6.4	7.9	1.4	0.7	0.0	1.50	0.6	-0.6	1.2	0.3
2241	Men's and Boys' Wear Manufacturing	6.0	13.7	1.1	0.8	0.1	1.50	2.9	-2.9	5.9	1.5
2242	Women's and Girls' Wear Manufacturing	6.8	14.0	0.6	0.5	0.0	1.50	2.1	-2.0	4.2	1.0
2243	Sleepwear, Underwear and Infant Clothing Manufacturing	6.8	14.7	0.6	0.5	0.0	1.50	1.0	-1.0	2.0	0.5
2249	Clothing Manufacturing n.e.c.	7.5	2.0	6.3	0.9	0.3	1.50	1.0	-0.7	1.9	0.5
2250	Footwear Manufacturing	6.4	8.0	1.2	0.5	0.1	1.50	1.9	-1.8	3.8	1.0
2261	Leather Tanning and Fur Dressing	6.5	2.0	1.9	0.2	0.0	1.50	0.1	-0.1	0.2	0.0
2262	Leather and Leather Substitute Product Manufacturing	6.5	5.0	2.9	0.9	0.1	1.50	1.3	-1.2	2.7	0.7
2311	Log Sawmilling	5.2	5.0	6.0	1.5	0.3	0.54	0.6	-0.3	1.2	0.3
2312	Wood Chipping	4.1	5.0	72.2	14.2	0.2	0.71	0.1	0.1	0.1	0.0
2313	Timber Resawing and Dressing	10.5	5.0	1.6	0.8	0.0	0.53	0.2	-0.1	0.3	0.1
2321	Plywood and Veneer Manufacturing	2.8	5.0	0.4	0.1	0.0	0.53	0.0	0.0	0.0	0.0
2322	Fabricated Wood Manufacturing	0.7	5.0	2.7	0.1	0.0	0.53	0.1	-0.1	0.1	0.0
2323	Wooden Structural Component Manufacturing	0.7	5.0	2.1	0.1	0.0	0.53	0.0	0.0	0.1	0.0
2329	Wood Product Manufacturing n.e.c.	0.7	5.0	4.9	0.2	0.0	0.53	0.6	-0.5	1.2	0.3
2331	Pulp, Paper and Paperboard Manufacturing	0.7	5.0	9.8	0.3	0.7	0.29	2.7	-2.1	5.5	1.4
2332	Solid Paperboard Container Manufacturing	0.9	5.0	10.0	0.4	0.0	0.29	0.0	0.0	0.1	0.0
2333	Corrugated Paperboard Container Manufacturing	0.7	5.0	6.8	0.2	0.0	0.29	0.0	0.0	0.0	0.0

Table 4.1 AUSFTA: Trade creation and diversion – 2003 (continued)

ANZSIC industry	Description	Elasticity of substitution between importers	Average tariffs on US imports (%)	US share in total imports (%)	Increase in US import share of supply (%)	Increase in US imports into Australia (2003 \$m)	Aggregate import price elasticity of demand (no.)	Net increase in imports (2003 \$m)	Trade diversion	Net increase in imports – maximum (2003 \$m)	Net increase in imports – minimum (2003 \$m)
2334	Paper Bag and Sack Manufacturing	4.6	5.0	8.6	1.9	0.1	0.48	0.1	0.0	0.2	0.0
2339	Paper Product Manufacturing n.e.c.	3.1	5.0	17.0	2.5	1.8	0.30	1.2	0.6	2.4	0.6
2411	Paper Stationery Manufacturing	3.0	5.0	13.8	2.0	0.5	0.37	0.5	0.0	1.1	0.3
2412	Printing	3.0	5.0	23.4	3.3	0.8	0.45	0.6	0.2	1.2	0.3
2413	Services to Printing	3.0	0.0	35.2	0.0	0.0	0.45	0.0	0.0	0.0	0.0
2421	Newspaper Printing or Publishing	3.0	0.0	6.1	0.0	0.0	0.45	0.0	0.0	0.0	0.0
2422	Other Periodical Publishing	3.1	0.0	33.9	0.0	0.0	0.45	0.0	0.0	0.0	0.0
2423	Book and Other Publishing	2.7	0.0	31.1	0.0	0.0	0.45	0.0	0.0	0.0	0.0
2430	Recorded Media Manufacturing and Publishing	2.7	0.0	12.7	0.0	0.0	0.45	0.0	0.0	0.0	0.0
2510	Petroleum Refining	2.7	0.3	9.5	0.1	0.2	0.00	0.0	0.2	0.0	0.0
2520	Petroleum and Coal Product Manufacturing n.e.c.	2.7	2.0	7.6	0.4	0.0	0.53	0.0	0.0	0.0	0.0
2531	Fertiliser Manufacturing	2.7	0.0	44.2	0.0	0.0	0.22	0.0	0.0	0.0	0.0
2532	Industrial Gas Manufacturing	5.9	0.0	83.2	0.0	0.0	0.22	0.0	0.0	0.0	0.0
2533	Synthetic Resin Manufacturing	0.1	5.0	17.8	0.1	0.2	0.22	2.9	-2.6	5.7	1.4
2534	Organic Industrial Chemical Manufacturing n.e.c.	0.1	2.0	16.0	0.0	0.1	0.37	3.2	-3.0	6.4	1.6
2535	Inorganic Industrial Chemical Manufacturing n.e.c.	0.3	0.7	13.9	0.0	0.0	0.42	0.3	-0.3	0.6	0.1
2541	Explosive Manufacturing	3.6	2.0	41.7	3.0	1.2	0.22	0.2	1.0	0.4	0.1
2542	Paint Manufacturing	3.6	5.0	23.0	3.9	1.8	0.22	0.6	1.2	1.1	0.3
2543	Medicinal and Pharmaceutical Product Manufacturing	5.7	0.4	18.1	0.5	4.8	0.22	1.1	3.7	2.1	0.5
2544	Pesticide Manufacturing	3.7	5.0	22.3	3.9	2.6	0.33	1.2	1.4	2.5	0.6
2545	Soap and Other Detergent Manufacturing	5.6	5.0	18.6	4.9	2.8	0.22	0.8	2.0	1.5	0.4

Table 4.1 AUSFTA: Trade creation and diversion – 2003 (continued)

ANZSIC industry	Description	Elasticity of substitution between importers	Average tariffs on US imports (%)	US share in total imports (%)	Increase in US import share of supply (%)	Increase in US imports into Australia (2003 \$m)	Aggregate import price elasticity of demand (no.)	Net increase in imports (2003 \$m)	Trade diversion	Net increase in imports – maximum (2003 \$m)	Net increase in imports – minimum (2003 \$m)
2546	Cosmetic and Toiletry Preparation Manufacturing	4.5	5.0	28.3	6.1	9.3	0.22	2.0	7.3	3.9	1.0
2547	Ink Manufacturing	7.8	5.0	23.8	8.9	2.6	0.22	0.4	2.2	0.9	0.2
2549	Chemical Product Manufacturing n.e.c.	5.2	2.0	36.0	3.7	11.5	0.22	1.5	10.0	3.0	0.8
2551	Rubber Tyre Manufacturing	2.2	5.0	8.3	0.9	0.8	0.22	1.1	-0.3	2.3	0.6
2559	Rubber Product Manufacturing n.e.c.	4.8	5.0	23.4	5.3	9.1	0.43	4.3	4.8	8.6	2.1
2561	Plastic Blow Moulded Product Manufacturing	4.5	5.0	16.6	3.5	0.2	0.56	0.1	0.0	0.3	0.1
2562	Plastic Extruded Product Manufacturing	3.9	5.0	17.5	3.2	1.4	0.71	1.8	-0.3	3.6	0.9
2563	Plastic Bag and Film Manufacturing	3.8	5.0	20.3	3.7	8.6	0.22	2.9	5.7	5.9	1.5
2564	Plastic Product Rigid Fibre Reinforced Manufacturing	3.9	5.0	7.5	1.4	0.0	0.57	0.0	0.0	0.0	0.0
2566	Plastic Injection Moulded Product Manufacturing	3.6	5.0	17.1	2.9	5.8	0.22	2.5	3.3	4.9	1.2
2610	Glass and Glass Product Manufacturing	3.6	5.0	9.0	1.5	0.7	0.50	1.2	-0.6	2.5	0.6
2621	Clay Brick Manufacturing	3.3	0.0	4.4	0.0	0.0	0.76	0.0	0.0	0.0	0.0
2622	Ceramic Product Manufacturing	3.6	5.0	10.2	1.7	0.2	0.77	0.5	-0.3	0.9	0.2
2623	Ceramic Tile and Pipe Manufacturing	3.8	5.0	0.2	0.0	0.0	0.55	0.0	0.0	0.0	0.0
2629	Ceramic Product Manufacturing n.e.c.	1.2	5.0	1.6	0.1	0.0	0.50	0.1	-0.1	0.2	0.1
2631	Cement and Lime Manufacturing	2.5	2.0	0.4	0.0	0.0	0.80	0.0	0.0	0.0	0.0
2632	Plaster Product Manufacturing	2.5	2.0	9.7	0.5	0.0	0.50	0.0	0.0	0.0	0.0
2634	Concrete Pipe and Box Culvert Manufacturing	2.2	0.0	0.0	0.0	0.0	0.69	0.0	0.0	0.0	0.0
2635	Concrete Product Manufacturing n.e.c.	2.9	5.0	1.8	0.2	0.0	0.50	0.0	0.0	0.0	0.0
2640	Non-Metallic Mineral Product Manufacturing n.e.c.	1.1	5.0	11.1	0.6	0.2	0.50	0.9	-0.7	1.9	0.5
2711	Basic Iron and Steel Manufacturing	2.1	2.0	1.5	0.1	0.0	0.25	0.1	-0.1	0.2	0.0

Table 4.1 AUSFTA: Trade creation and diversion – 2003 (continued)

ANZSIC industry	Description	Elasticity of substitution between importers	Average tariffs on US imports (%)	US share in total imports (%)	Increase in US import share of supply (%)	Increase in US imports into Australia (2003 \$m)	Aggregate import price elasticity of demand (no.)	Net increase in imports (2003 \$m)	Trade diversion	Net increase in imports – maximum (2003 \$m)	Net increase in imports – minimum (2003 \$m)
2712	Iron and Steel Casting and Forging	2.1	5.0	16.3	1.6	0.1	0.52	0.2	-0.1	0.4	0.1
2713	Steel Pipe and Tube Manufacturing	2.1	5.0	9.2	0.9	0.5	0.39	1.2	-0.7	2.5	0.6
2721	Alumina Production	2.9	0.0	12.5	0.0	0.0	0.25	0.0	0.0	0.0	0.0
2722	Aluminium Smelting	0.2	0.0	4.0	0.0	0.0	0.25	0.0	0.0	0.0	0.0
2723	Copper, Silver, Lead and Zinc Smelting, Refining	0.9	0.0	9.4	0.0	0.0	0.33	0.0	0.0	0.0	0.0
2729	Basic Non-Ferrous Metal Manufacturing n.e.c.	1.2	0.0	11.8	0.0	0.0	0.67	0.0	0.0	0.0	0.0
2731	Aluminium Rolling, Drawing, Extruding	3.6	5.0	4.9	0.8	0.2	0.67	0.9	-0.7	1.9	0.5
2732	Non-Ferrous Metal Rolling, Drawing, Extruding n.e.c.	3.3	0.1	2.7	0.0	0.0	0.67	0.1	-0.1	0.1	0.0
2733	Non-Ferrous Metal Casting	3.6	5.0	8.2	1.4	0.0	0.67	0.0	0.0	0.0	0.0
2741	Structural Steel Fabricating	6.8	5.0	5.6	1.8	0.1	0.52	0.2	-0.1	0.4	0.1
2742	Architectural Aluminium Product Manufacturing	3.3	5.0	9.1	1.4	0.0	0.52	0.1	0.0	0.2	0.0
2749	Structural Metal Product Manufacturing n.e.c.	5.1	5.0	17.9	4.4	0.1	0.52	0.1	0.0	0.2	0.0
2751	Metal Container Manufacturing	2.9	5.0	15.5	2.2	0.5	0.52	0.7	-0.2	1.4	0.3
2759	Sheet Metal Product Manufacturing n.e.c.	1.2	5.0	3.3	0.2	0.0	0.52	0.2	-0.2	0.5	0.1
2761	Hand Tool and General Hardware Manufacturing	3.3	2.0	22.9	1.5	1.6	0.52	1.2	0.4	2.4	0.6
2762	Spring and Wire Product Manufacturing	1.2	5.0	14.0	0.8	0.4	0.52	1.4	-1.0	2.9	0.7
2763	Nut, Bolt, Screw and Rivet Manufacturing	2.5	5.0	20.6	2.5	1.6	0.52	1.8	-0.2	3.5	0.9
2764	Metal Coating and Finishing	1.8	0.0	2.4	0.0	0.0	0.55	0.0	0.0	0.0	0.0
2765	Non-Ferrous Pipe Fitting Manufacturing	4.7	5.0	24.9	5.6	6.0	0.52	3.3	2.7	6.6	1.7

Table 4.1 AUSFTA: Trade creation and diversion – 2003 (continued)

ANZSIC industry	Description	Elasticity of substitution between importers	Average tariffs on US imports (%)	US share in total imports (%)	Increase in US import share of supply (%)	Increase in US imports into Australia (2003 \$m)	Aggregate import price elasticity of demand (no.)	Net increase in imports (2003 \$m)	Trade diversion	Net increase in imports – maximum (2003 \$m)	Net increase in imports – minimum (2003 \$m)
2769	Fabricated Metal Product Manufacturing n.e.c.	1.7	5.0	23.4	1.8	7.4	0.52	10.8	-3.4	21.7	5.4
2811	Motor Vehicle Manufacturing	1.5	7.5	4.2	0.5	2.6	0.78	33.7	-31.2	67.4	16.9
2812	Motor Vehicle Body Manufacturing	5.0	7.5	27.6	9.7	3.5	0.78	2.6	0.8	5.2	1.3
2813	Automotive Electrical and Instrument Manufacturing	4.7	7.5	15.2	5.0	4.8	0.78	6.9	-2.1	13.8	3.5
2819	Automotive Component Manufacturing n.e.c.	3.4	7.5	32.5	7.8	84.5	0.78	73.3	11.1	146.7	36.7
2821	Shipbuilding	4.3	5.0	1.3	0.3	0.0	0.30	0.1	-0.1	0.2	0.1
2822	Boatbuilding	3.9	5.0	30.2	5.6	2.3	0.84	1.9	0.4	3.8	1.0
2823	Railway Equipment Manufacturing	5.9	5.0	8.2	2.3	0.6	0.30	0.4	0.1	0.9	0.2
2824	Aircraft Manufacturing	3.8	0.0	75.3	0.0	0.0	0.30	0.0	0.0	0.0	0.0
2829	Transport Equipment Manufacturing n.e.c.	5.2	0.6	18.0	0.6	1.0	0.44	0.5	0.5	0.9	0.2
2831	Photographic and Optical Good Manufacturing	5.2	5.0	24.1	6.0	19.1	0.64	12.1	7.1	24.1	6.0
2832	Medical and Surgical Equipment Manufacturing	0.1	0.0	44.6	0.0	0.0	0.64	0.3	-0.2	0.5	0.1
2839	Professional and Scientific Equipment Manufacturing n.e.c.	6.2	0.1	36.4	0.3	2.4	0.64	0.7	1.7	1.3	0.3
2841	Computer and Business Machine Manufacturing	3.9	0.0	14.1	0.0	0.0	0.64	0.0	0.0	0.0	0.0
2842	Telecommunication, Broadcasting and Transceiving Equipment Manuf	4.7	0.1	11.8	0.0	0.2	0.64	0.3	0.0	0.5	0.1
2849	Electronic Equipment Manufacturing n.e.c.	4.8	0.6	10.3	0.3	1.4	0.64	1.9	-0.5	3.7	0.9
2851	Household Appliance Manufacturing	5.3	5.0	5.9	1.5	2.1	0.64	5.3	-3.2	10.6	2.6
2852	Electric Cable and Wire Manufacturing	5.6	5.0	16.3	4.4	2.8	0.64	2.4	0.3	4.9	1.2
2853	Battery Manufacturing	5.9	5.0	18.8	5.3	3.3	0.91	3.4	-0.2	6.9	1.7

Table 4.1 AUSFTA: Trade creation and diversion – 2003 (continued)

ANZSIC industry	Description	Elasticity of substitution between importers	Average tariffs on US imports (%)	US share in total imports (%)	Increase in US import share of supply (%)	Increase in US imports into Australia (2003 \$m)	Aggregate import price elasticity of demand (no.)	Net increase in imports (2003 \$m)	Trade diversion	Net increase in imports – maximum (2003 \$m)	Net increase in imports – minimum (2003 \$m)
2854	Electric Light and Sign Manufacturing	5.9	5.0	9.2	2.6	1.2	0.96	2.8	-1.6	5.6	1.4
2859	Electrical Equipment Manufacturing n.e.c.	5.1	2.0	20.8	2.1	11.6	0.64	7.6	4.0	15.3	3.8
2861	Agricultural Machinery Manufacturing	5.9	2.0	45.0	5.2	28.3	0.64	7.6	20.7	15.2	3.8
2862	Mining and Construction Machinery Manufacturing	5.9	5.0	38.3	10.7	91.8	0.65	33.8	58.0	67.6	16.9
2863	Food Processing Machinery Mfg.	4.3	5.0	13.6	2.8	2.2	0.64	2.9	-0.7	5.8	1.4
2864	Machine Tool and Part Manufacturing	5.7	2.0	12.2	1.4	2.7	0.64	2.8	-0.1	5.5	1.4
2865	Lifting and Material Handling Equipment Manufacturing	5.3	5.0	27.4	6.9	24.4	0.64	13.4	11.0	26.7	6.7
2866	Pump and Compressor Manufacturing	5.6	5.0	26.6	7.0	14.4	0.89	10.9	3.5	21.9	5.5
2867	Commercial Space Heating and Cooling Equipment Manufacturing	5.8	5.0	6.7	1.8	0.7	0.66	1.6	-0.8	3.1	0.8
2869	Industrial Machinery and Equipment Manufacturing n.e.c.	5.6	5.0	25.9	6.9	77.6	0.64	43.1	34.5	86.2	21.5
2911	Prefabricated Metal Building Mfg.	5.6	0.0	0.0	0.0	0.0	0.76	0.0	0.0	0.0	0.0
2919	Prefabricated Building Manufacturing n.e.c.	5.8	0.0	0.0	0.0	0.0	0.95	0.0	0.0	0.0	0.0
2921	Wooden Furniture and Upholstered Seat Manufacturing	5.8	5.0	3.3	0.9	0.3	0.68	1.3	-1.0	2.5	0.6
2922	Sheet Metal Furniture Manufacturing	5.8	5.0	4.8	1.3	0.1	0.87	0.5	-0.4	1.0	0.2
2923	Mattress Manufacturing (Except Rubber)	1.8	5.0	5.0	0.4	0.0	0.91	0.2	-0.2	0.3	0.1
2929	Furniture Manufacturing n.e.c.	1.8	5.0	9.0	0.8	0.2	0.67	0.9	-0.7	1.9	0.5
2941	Jewellery and Silverware Manufacturing	1.8	5.0	4.3	0.4	0.1	0.50	1.0	-0.8	1.9	0.5
2942	Toy and Sporting Good Manufacturing	1.8	2.0	12.7	0.5	0.7	0.50	1.5	-0.8	3.0	0.8
2949	Manufacturing n.e.c.	1.8	0.0	0.0	0.0	0.0	0.50	0.0	0.0	0.0	0.0
	Total		3.4	16.8		516.6		468.6	48.0	937.3	234.3

5. The core methodology: the generation of probability distributions for motor vehicle industry outcomes

The conventional economic framework for policy analysis concentrates on the most likely outcome. For any quantified outcome a point estimate is given. Because it is very seldom highlighted that what is being given is the mean or mode of a range of possible outcomes, the results are generally interpreted as certain. The range of other possible outcomes is ignored.

This interpretation is wrong and can seriously distort the policy debate. The reality is that all policy analysis looks into the future which, by necessity, is an exercise surrounded with high levels of uncertainty. If the degree of uncertainty is not taken into account, along with the mode or mean estimate of the outcome, very often the wrong decision will be made.

5.1 Uncertainty, risk and policy decision making

This concept is best further explored by using an example. Suppose the government is faced with the choice of giving a tax concession in return for an investment response in a given industry, which will bring a net additional benefit to the economy. Suppose further that the investment response is evaluated, as shown in Figure 5.1, and it is calculated that the mean benefit is \$1,050 million in a net present value discounted basis. If the government took no account of uncertainty it may decide that the tax concession should be given.

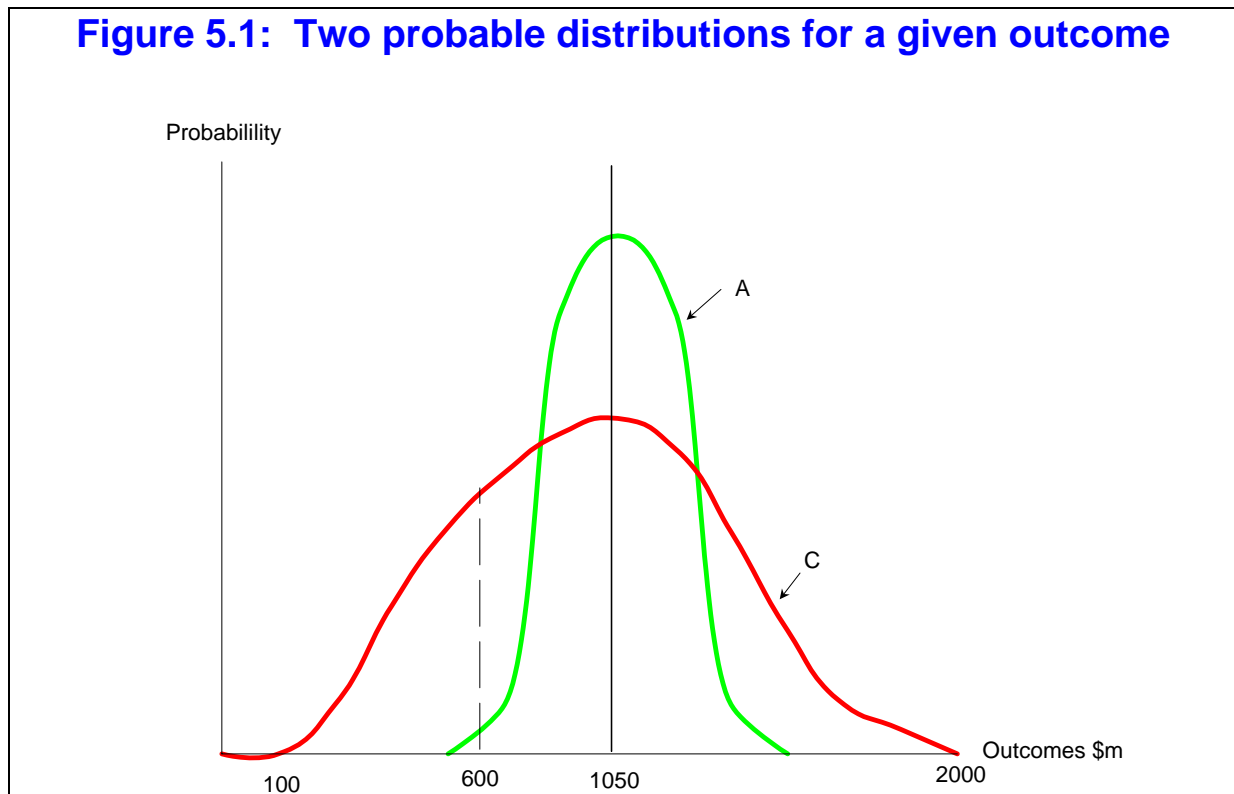
Next assume that an uncertainty assessment is made by generating a probability distribution around the expected outcome. If the A distribution, as in Figure 5.1, were generated, it would mean that there is no chance that the actual outcome would be below \$600 million. This is because under distribution A the project would be judged as fairly certain. The project would still go ahead.

If, however, the outcomes from the investment were judged to have a high degree of uncertainty, a distribution such as B would be generated. The project would be judged to have a minimum outcome of \$100 million and a maximum outcome of \$2,000 million. However, from the shape of the distribution it may be calculated that there is a 40 per cent chance that the return from the project will be below \$600 million. In this case it would be rational for governments to conclude that the risk of failure is too great and, therefore, decide the project should not proceed. Taking uncertainty into account would change the decision.

The AUSFTA has a great deal of uncertainty and if a realistic attempt to quantify the uncertainty is not made, the wrong decision may well be made.

The methodology used to quantify uncertainty in this study will be illustrated using the example of the motor vehicle industry. The industry is one where the range of possibilities can be discussed in a concise and realistic manner.

Figure 5.1: Two probable distributions for a given outcome



5.2 The potential outcomes for the Australian motor vehicle industry

Except perhaps for agriculture, there is a considerable degree of uncertainty surrounding the results of Sections 3 and 4 of this report. Perhaps the greatest level of uncertainty surrounds the outcomes for the motor vehicle industry. From Section 3, Australian exports into the United States will increase by \$27 million, while from Section 4, the increase in net imports into Australia is estimated at \$116 million, giving a net trade loss of \$90 million per annum based on the 2003 economic structure.

The uncertainty surrounding the outcomes, however, is so great that the results can be discarded. Firstly, the Australian export effect is constrained by the current level of exports which is low because of prohibitive tariffs. Secondly, it would only take two or three swing decisions by Australian companies to multiply or divide the estimated import outcome by four.

Any realistic assessment of the outcome for the motor vehicle industry requires a different approach that explicitly explores the range of possible outcomes. There is a range of possibilities. We take as our starting-point, the traditional modelling approach which indicates that there is, approximately, a zero net gain. That is, the increased exports to the United States balance the increase in imports from the United States. In the absence of any better single point, this may be designated the most likely estimate.

There is considerable room, however, for upside and downside around the zero most likely estimate. On the upside case, the 25 per cent tariff reduction on utilities gives upside opportunities. It could be argued that this has zero probability because:

- (i) there is currently no additional capacity available in Australia to produce the vehicles and there is little chance of Australia obtaining another greenfields motor vehicle capacity expansion. This is likely to go to China, Thailand, India, etc; and
- (ii) the unions and companies in the United States would not allow this outcome.

However, it would be too harsh to totally rule out this possibility. The AUSFTA may well change corporate attitudes in America. Thus, if an opportunity arose such as the closure of Mitsubishi in Australia (provided this has nothing to do with the AUSFTA), then it is possible that the capacity could be converted to manufacture products for sale in the United States. Assume 50,000 units are exported at an \$A value of \$25,000, giving a total of \$1,250 million which is reduced to \$875 million in the assumption of 70 per cent local content.

There is little chance that the maximum benefits will go above this. Little chance means about a 4 per cent probability.

On the downside, there is a reasonable probability that the Americans will start to import high value added components into Australia. These components could include:

- instruments;
- brake or clutch systems;
- transmission systems; and
- engines and components.

It is highly possible that the next model Ford, for example, could have an imported United States transmission, at an import cost of approximately \$200 to \$300 million. The United States Office of the Trade Representative, *Foreign Trade Business Report, Australia, 2003*, estimates that the removal of barriers to trade on PMV and other components will result in an increase in United States exports to Australia of between US\$100 and US\$500 million. This would give a lower level of A\$720 million. Some of this would involve trade diversion. Therefore, a lower local estimate of A\$500 million would be reasonable.

The last question to be answered is, what is the probability that the estimate could be lower? For this to occur built-up vehicles would have to be imported. At this stage there is a low degree of substitutability between Australian vehicles and United States manufactured vehicles. However, this may not always be the case. There is a possibility of greater than 5 per cent that at some point in the future completely built-up vehicles will displace vehicles of Ford or Holden. This can be expressed in terms of a 20 per cent probability that the downside would be greater than A\$500 million.

What would be ideal would be the availability of probability distribution functions where the characteristics of the distribution function can be set in terms of easy-to-understand and easy-to-derive parameters. Ideally, the parameters would be:

- practical minimum;
- the most likely value;
- practical maximum value;

- the probability that the parameter value could be below the practical minimum value;
- the probability that the parameter value could be above the practical minimum value.

Such a distribution is available and is called the Trigen distribution.

Parameter	Unit	
Practical minimum	A\$m	-500
Most likely value	A\$m	0
Practical maximum value	A\$m	875
Probability the maximum value will be above practical maximum	Per cent	5
Probability that the outcome will be above practical minimum	Per cent	20

Accordingly, the core modelling methodology adopted for this study is the application of the Trigen distribution to each of the elements of the AUSFTA that have been assessed from the national economic welfare perspective. Each element has a high degree of uncertainty attached to outcomes.

The Trigen probability distribution generated from the parameters in Table 5.1 are given in Figure 5.2.

The main outcome is for a net trade decline of \$17 million per year. As specified, there is a 75 per cent probability that the actual net trade outcome will be between -\$500 and \$875 million. However, the generated distribution indicates that the minimum outcome is a net trade decline of \$1,350 million which is balanced by a maximum outcome of \$1,300 million. The minimum is the value below which there is negligible probability of actual outcome, while the maximum is the value with a negligible probability of being exceeded.

The more valuable distribution, in terms of direct relevance to decision making, is the cumulative descending probability distribution derived from Figure 5.2. This is shown in Figure 5.3. If the decision maker is risk averse, then a 25 per cent benchmark might be set. The AUSFTA would be regarded as being satisfactory if it was judged to produce an impact where there was a 25 per cent probability that the outcome would be greater than -\$200 million. In Figure 5.3, there is a 25 per cent probability that the actual outcome will fall below -\$410 million per annum.

The distribution functions in Figures 5.2 and 5.3 were generated using Monte Carlo simulation techniques, involving the use of 500 sample draws. The software to do this is the Pallisade Corporation's off the shelf @RISK software package.

5.3 The distribution of net present value

The distributions in Figures 5.2 and 5.3 only apply to one year but obviously refer to longer run possible outcomes after a phase-in. An evaluation of this is required to 2025. Therefore, to meet the objectives of the study what is required is the probability distribution of the net present value of motor vehicles net trade benefits to Australia to 2025, after allowing for a phase-in period. Following the CIE a 5 per cent discount rate will be used for all cases.

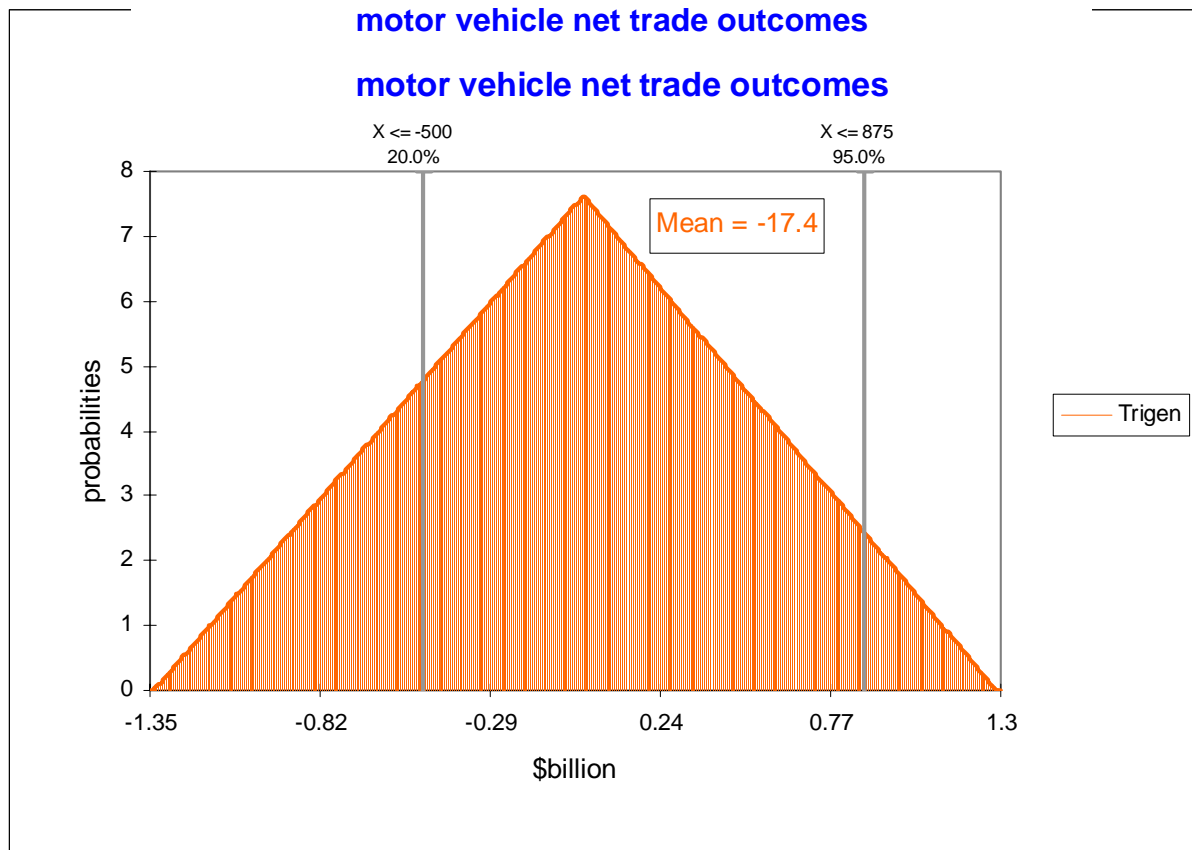
This distribution is given in Figure 5.4 and is based on the assumption that the practical upper and lower bounds are reached in 2010. After that, they grow with general trade growth.

The results from Figure 5.4 are the following. The minimum value is -\$4.4 billion, meaning that over the period from 2005 to 2025 there is no possibility that the net present value of motor vehicle trade outcomes will fall below -\$4.4 billion. Correspondingly the maximum value is \$4.5 billion. The mean value is -\$0.2 billion.

Perhaps the most interesting results are for the 25/75 per cent probability benchmarks. Figure 5.4 indicates that there is a 25 per cent probability that the net benefits of motor vehicle trade to Australia because of the AUSFTA will fall below -\$1.3 billion. Correspondingly, there is a 25 per cent probability that the benefits will exceed \$0.8 billion. The other way to look at this outcome is that there is a 75 per cent probability that the motor vehicle trade benefits under AUSFTA will be below \$0.8 billion, or a 75 per cent probability that they will be above -\$1.3 billion.

The next step will be to apply this methodology to the general trade flows.

Figure 5.2: AUSFTA – Probability distribution Australian motor vehicle net trade outcomes



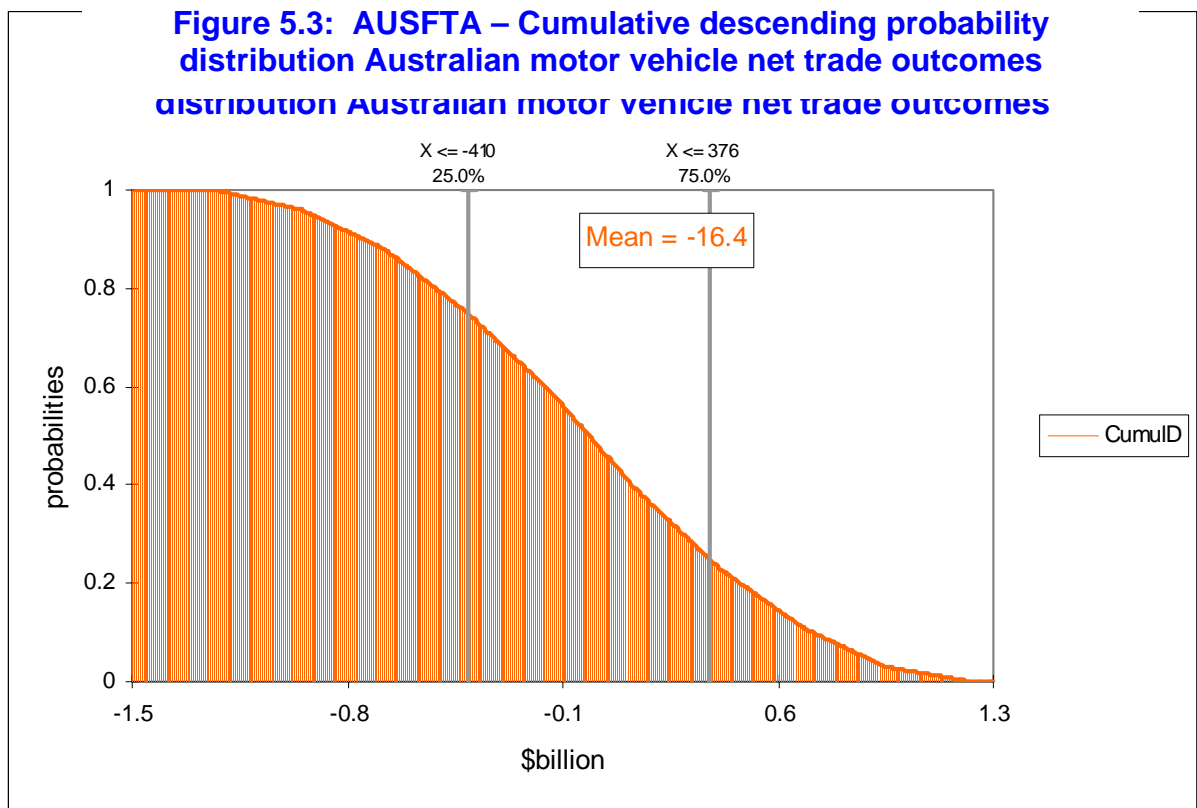
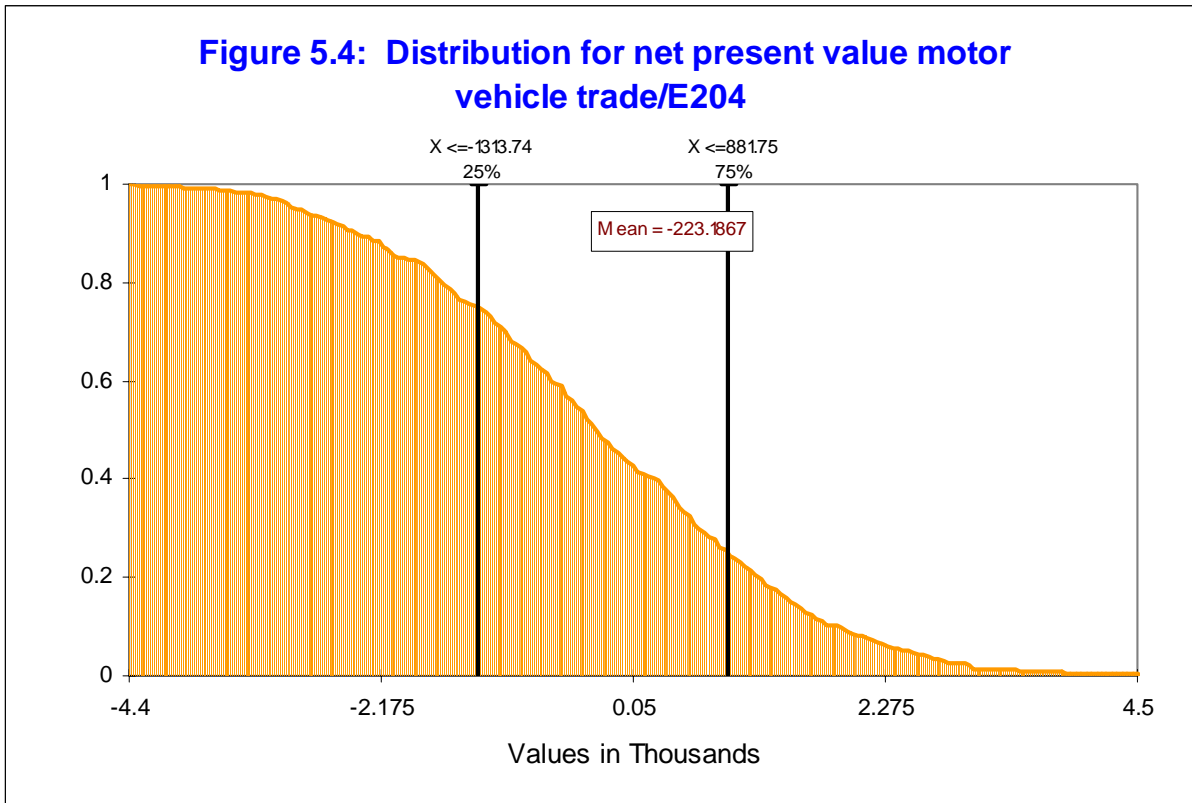


Figure 5.4: Distribution for net present value motor vehicle trade

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\$ billion



6. AUSFTA: A risk assessment of merchandise trade effects

The key task of this section will be to apply the risk assessment methodology developed for the motor vehicle industry in Section 5 to the trade outcomes of Sections 3 and 4. The major task which must be completed in order to do this is an assessment of the practical maximum benefits of growth in exports to the United States.

Firstly, however, the net trade outcomes by ANZSIC industry will be discussed.

6.1 The merchandise net trade outcomes

Table 6.1 shows the net merchandise export and import impacts in Australian dollars. To convert the Australian export increase into Australian dollars, a \$0.7 exchange rate is used. Not surprisingly, the traditional Australian machinery industries are the biggest losers in net terms. The overall net gain in trade is \$311 million. For agricultural based exports, the trade outcomes are in discounted terms to obtain comparability with a 2003 economic structure.

6.2 The practical maximum benefit of increased merchandise exports to the United States

The approach to deriving a practical maximum benefit for exports to the United States will be to:

- (i) explore the Canadian experience under the Canada-United States Free Trade Agreement;
- (ii) estimate Australia's loss of export share with the United States over the 1990s as a result of the development of the North American Trade Bloc.

The Canada-United States Free Trade Agreement (CUSFTA) came into effect on 1 January 1989. The agreement provided for a steady reduction in tariffs to the point of full elimination. The CUSFTA was incorporated into NAFTA on 1 January 1994. On 1 January 1998 all tariffs on Canadian goods imports into the United States and on United States exports to Canada were eliminated, apart from over-quota tariffs on several hundred agricultural products (mainly sugar, dairy, poultry, peanuts and cotton) which were retained.

The CUSFTA phase-down schedule was incorporated into NAFTA and was unaffected by NAFTA. NAFTA provides that all tariffs on goods originating in the United States, Canada and Mexico will be eliminated by 1 January 2008.

6.2.1 The AUSFTA: Australian exports to the United States – a back of the envelope assessment

By examining Canada's experience under the Canada-United States Free Trade Agreement, it is possible to carry out a useful "back of the envelope" assessment of the benefits of the AUSFTA to Australia. This assessment will provide preliminary estimates against which the results of more detailed analysis can be compared.

The first step is to set out the key features of the Canadian Free Trade Agreement.

**Table 6.1 AUSFTA: Increased exports and imports by ANZSIC industries – 2003
(A\$2003 million)**

ANZSIC industry	Description	Exports	Imports	Direct net trade
111	Plant Nurseries	0.1	0.0	0.1
112	Cut Flower & Flower Seed Growing	0.6	0.0	0.6
113	Vegetable Growing	0.0	0.0	0.0
114	Grape Growing	0.0	0.1	-0.1
115	Apple & Pear Growing	0.0	0.0	0.0
116	Stone Fruit Growing	0.0	0.0	0.0
117	Kiwi Fruit Growing	0.0	0.0	0.0
119	Fruit Growing, nec	3.4	0.0	3.4
121	Grain Growing	0.0	0.0	0.0
124	Sheep Farming	2.4	0.0	2.4
125	Beef Cattle Farming	0.0	0.0	0.0
142	Poultry Farming (Eggs)	0.0	0.0	0.0
151	Pig Farming	0.0	0.0	0.0
152	Horse Farming	0.0	0.0	0.0
159	Livestock Farming, nec	0.1	0.0	0.1
169	Crop & Plant Growing, nec	0.4	0.0	0.4
211	Cotton Ginning	0.3	0.0	0.3
219	Services to Agriculture, nec	0.0	0.0	0.0
220	Hunting & Trapping	0.0	0.0	0.0
302	Logging	0.0	0.0	0.0
411	Rock Lobster Fishing	0.0	0.0	0.0
415	Line Fishing	0.0	0.0	0.0
419	Marine Fishing, nec	0.0	0.0	0.0
420	Aquaculture	0.0	0.0	0.0
1101	Black Coal Mining	0.0	0.0	0.0
1102	Brown Coal Mining	0.0	0.0	0.0
1200	Oil & Gas Extraction	7.3	0.0	7.3
1311	Iron Ore Mining	0.0	0.0	0.0
1312	Bauxite Mining	0.0	0.0	0.0
1313	Copper Ore Mining	0.0	0.0	0.0
1314	Gold Ore Mining	0.0	0.0	0.0
1315	Mineral Sand Mining	0.0	0.0	0.0
1316	Nickel Ore Mining	0.0	0.0	0.0
1317	Silver-Lead-Zinc Ore Mining	0.0	0.0	0.0
1319	Metal Ore Mining, nec	0.0	0.0	0.0
1411	Gravel & Sand Quarrying	0.0	0.0	0.0
1419	Constrctn Material Mining, nec	0.0	0.0	0.0
1420	Mining, nec	0.0	0.0	0.0
2111	Meat Processing	258.5	0.1	258.5
2112	Poultry Processing	0.0	0.0	0.0
2113	Bacon, Ham & Smallgood Mfg	0.0	0.0	0.0
2121	Milk & Cream Processing	0.1	0.0	0.1
2129	Dairy Product Manufacturing,	72.8	0.0	72.8

**Table 6.1 AUSFTA: Increased exports and imports by ANZSIC industries – 2003
(A\$2003 million) – continued**

ANZSIC industry	Description	Exports	Imports	Direct net trade
2130	Fruit & Vegetable Processing	3.7	3.3	0.4
2140	Oil & Fat Manufacturing	1.6	0.0	1.6
2151	Flour Mill Product Manufacturing	14.6	0.0	14.6
2152	Cereal Food & Baking Mix Mfg	0.0	0.1	-0.1
2163	Biscuit Manufacturing	0.0	0.0	0.0
2171	Sugar Manufacturing	8.8	0.1	8.7
2172	Confectionery Manufacturing	2.1	0.5	1.6
2173	Seafood Processing	0.0	0.0	0.0
2174	Prepared Animal & Bird Feed Mfg	0.0	0.0	0.0
2179	Food Manufacturing, nec	12.7	2.2	10.5
2181	Soft Drink, Cordial & Syrup Mfg	0.0	0.2	-0.2
2182	Beer & Malt Manufacturing	0.0	1.3	-1.3
2183	Wine Manufacturing	81.3	0.0	81.3
2184	Spirit Manufacturing	0.0	73.7	-73.7
2190	Tobacco Product Manufacturing	0.0	20.6	-20.6
2211	Wool Scouring	2.6	0.0	2.6
2212	Synthetic Fibre Textile Mfg	3.2	6.3	-3.1
2213	Cotton Textile Manufacturing	2.8	1.8	1.0
2214	Wool Textile Manufacturing	0.4	0.0	0.4
2215	Textile Finishing	0.0	0.4	-0.4
2221	Made-Up Textile Product Mfg	0.0	0.4	-0.3
2222	Textile Floor Covering Mfg	18.3	1.3	17.0
2223	Rope, Cordage & Twine Mfg	0.1	0.3	-0.2
2229	Textile Product Mfg, nec	0.1	7.3	-7.2
2231	Hosiery Manufacturing	0.5	0.8	-0.3
2232	Cardigan & Pullover Mfg	22.0	0.4	21.6
2239	Knitting Mill Prod Mfg, nec	7.5	0.6	6.8
2241	Men's & Boys' Wear Mfg	1.8	2.9	-1.1
2242	Women's & Girls' Wear Mfg	5.9	2.1	3.8
2243	Sleepwr Undwr & Infant Clthg	0.3	1.0	-0.7
2249	Clothing Manufacturing, nec	1.6	1.0	0.6
2250	Footwear Manufacturing	2.9	1.9	1.0
2261	Leather Tanning & Fur Dressing	0.3	0.1	0.2
2262	Leather & Lthr Substit Prod Mfg	0.1	1.3	-1.2
2311	Log Sawmilling	0.0	0.6	-0.6
2312	Wood Chipping	0.0	0.1	-0.1
2313	Timber Resawing & Dressing	0.1	0.2	-0.1
2321	Plywood & Veneer Manufacturing	0.4	0.0	0.4
2322	Fabricated Wood Manufacturing	10.2	0.1	10.1
2323	Wooden Structural Component Mfg	0.2	0.0	0.1
2329	Wood Product Manufacturing, nec	11.8	0.6	11.2
2331	Pulp, Paper & Paperboard Mfg	0.1	2.7	-2.7
2332	Solid Paperboard Container Mfg	0.0	0.0	0.0

**Table 6.1 AUSFTA: Increased exports and imports by ANZSIC industries – 2003
(A\$2003 million) – continued**

ANZSIC industry	Description	Exports	Imports	Direct net trade
2333	Corrugated Paperbrd Container Mfg	0.0	0.0	0.0
2334	Paper Bag & Sack Manufacturing	0.0	0.1	-0.1
2339	Paper Product Manufacturing,	0.0	1.2	-1.2
2411	Paper Stationery Manufacturing	0.3	0.5	-0.2
2412	Printing	1.0	0.6	0.4
2413	Services to Printing	0.0	0.0	0.0
2421	Newspaper Printing or Publishing	0.0	0.0	0.0
2422	Other Periodical Publishing	0.0	0.0	0.0
2423	Book & Other Publishing	0.0	0.0	0.0
2430	Recorded Media Mfg & Publishing	2.6	0.0	2.6
2510	Petroleum Refining	0.6	0.0	0.6
2520	Petroleum, Coal Product Mfg,	0.0	0.0	0.0
2531	Fertiliser Manufacturing	0.0	0.0	0.0
2532	Industrial Gas Manufacturing	0.0	0.0	0.0
2533	Synthetic Resin Manufacturing	1.0	2.9	-1.8
2534	Organic Indust Chemical Mfg nec	6.6	3.2	3.4
2535	Inorganic Industl Cheml Mfg nec	17.7	0.3	17.4
2541	Explosive Manufacturing	0.4	0.2	0.2
2542	Paint Manufacturing	0.2	0.6	-0.4
2543	Medicinal, Pharmactl Prodt Mfg	0.0	1.1	-1.1
2544	Pesticide Manufacturing	4.2	1.2	3.0
2545	Soap & Other Detergent Mfg	0.1	0.8	-0.7
2546	Cosmetic, Toiletry Prep Mfg	0.3	2.0	-1.7
2547	Ink Manufacturing	0.0	0.4	-0.4
2549	Chemical Product Mfg, nec	1.7	1.5	0.2
2551	Rubber Tyre Manufacturing	0.3	1.1	-0.9
2559	Rubber Product Mfg, nec	0.7	4.3	-3.6
2561	Plastic Blow Moulded Product	0.3	0.1	0.2
2562	Plastic Extruded Prdct Mfg	2.1	1.8	0.3
2563	Plastic Bag & Film Manufacturing	1.5	2.9	-1.4
2564	Plastc Prd Rigid Fbr Reinfrcd	0.0	0.0	0.0
2566	Plastic Injctn Moulded Prod Mfg	6.8	2.5	4.3
2610	Glass, Glass Product Mfg	0.7	1.2	-0.5
2622	Ceramic Product Manufacturing	0.1	0.5	-0.3
2623	Ceramic Tile & Pipe Mfg	0.2	0.0	0.2
2629	Ceramic Product Mfg, nec	0.7	0.1	0.6
2631	Cement & Lime Manufacturing	0.0	0.0	0.0
2632	Plaster Product Manufacturing	0.0	0.0	0.0
2635	Concrete Product Mfg, nec	0.7	0.0	0.6
2640	Non-Metalic Minl Prod Mfg, nec	0.1	0.9	-0.8
2711	Basic Iron & Steel Mfg	3.1	0.1	3.1
2712	Iron, Steel Casting, Forging	0.0	0.2	-0.2
2713	Steel Pipe, Tube Manufacturing	0.2	1.2	-1.1

**Table 6.1 AUSFTA: Increased exports and imports by ANZSIC industries – 2003
(A\$2003 million) – continued**

ANZSIC industry	Description	Exports	Imports	Direct net trade
2721	Alumina Production	0.0	0.0	0.0
2722	Aluminium Smelting	0.0	0.0	0.0
2723	Copper, Silver, Lead, Zinc Smelting Refng	1.6	0.0	1.6
2729	Basic Non-Ferrous Metal Mfg, nec	0.0	0.0	0.0
2731	Aluminium Rllng, Drwng, Extruding	0.1	0.9	-0.8
2732	Non-Frs Mtl Rlng Drw Extrdng	1.7	0.1	1.6
2733	Non-Ferrous Metal Casting	0.0	0.0	0.0
2741	Structural Steel Fabricating	0.0	0.2	-0.2
2742	Archtectral Aluminium Prod Mfg	0.0	0.1	-0.1
2749	Structural Metal Prod Mfg, nec	0.1	0.1	0.0
2751	Metal Container Mfg	0.0	0.7	-0.7
2759	Sheet Metal Product Mfg, nec	0.4	0.2	0.1
2761	Hand Tool, General Hardware Mfg	0.4	1.2	-0.8
2762	Spring & Wire Product Mfg	0.9	1.4	-0.5
2763	Nut, Bolt, Screw, Rivet Mfg	0.5	1.8	-1.3
2764	Metal Coating & Finishing	0.0	0.0	0.0
2765	Non-Ferrous Pipe Fitting Mfg	0.2	3.3	-3.1
2769	Fabricated Metal Prods Mfg, nec	2.6	10.8	-8.3
2811	Motor Vehicle Manufacturing	5.4	33.7	-28.3
2812	Motor Vehicle Body Manufacturing	0.0	2.6	-2.6
2813	Automotive Elctrcl, Instrmnt Mfg	2.9	6.9	-4.0
2819	Automotive Component Mfg, nec	18.3	73.3	-55.0
2821	Shipbuilding	0.0	0.1	-0.1
2822	Boatbuilding	29.8	1.9	27.8
2823	Railway Equipment Manufacturing	0.1	0.4	-0.4
2824	Aircraft Manufacturing	0.0	0.0	0.0
2829	Transport Equipment Mfg, nec	0.5	0.5	0.0
2831	Photographic, Optical Good Mfg	7.6	12.1	-4.5
2832	Medical, Surgical Equip Mfg	2.0	0.3	1.7
2839	Profsnl, Scientfc Equip Mfg nec	19.3	0.7	18.7
2841	Computer, Business Machine Mfg	0.3	0.0	0.2
2842	Telecmn Brdcstng Trnscvg Eqp	0.6	0.3	0.3
2849	Electronic Equipment Mfg nec	7.2	1.9	5.4
2851	Household Appliance Mfg	15.4	5.3	10.2
2852	Electric Cable & Wire Mfg	3.3	2.4	0.9
2853	Battery Manufacturing	0.1	3.4	-3.3
2854	Electric Light & Sign Mfg	0.5	2.8	-2.3
2859	Electrical Equipment Mfg nec	16.5	7.6	8.9
2861	Agricultural Machinery Mfg	4.4	7.6	-3.2
2862	Mining, Constrtn Machinery Mfg	0.1	33.8	-33.7
2863	Food Processing Machinery Mfg	0.7	2.9	-2.2
2864	Machine Tool & Part Mfg	6.7	2.8	3.9
2865	Lftng, Matral Hndlng Equip Mfg	0.0	13.4	-13.4

Table 6.1 AUSFTA: Increased exports and imports by ANZSIC industries – 2003 (A\$2003 million) – continued

ANZSIC industry	Description	Exports	Imports	Direct net trade
2866	Pump & Compressor Mfg	0.2	10.9	-10.8
2867	Comcl Space Heating Cooling Equip Mfg	0.3	1.6	-1.3
2869	Industl Machnry, Equip Mfg nec	8.3	43.1	-34.8
2911	Prefabricated Metal Building Mfg	0.0	0.0	0.0
2921	Wdn Frntre, Upholstrd Seat Mfg	0.0	1.3	-1.3
2922	Sheet Metal Furniture Mfg	0.0	0.5	-0.5
2923	Mattress Mfg (Except Rubber)	0.0	0.2	-0.1
2929	Furniture Manufacturing, nec	0.0	0.9	-0.9
2941	Jewellery & Silverware Mfg	0.2	1.0	-0.8
2942	Toy & Sporting Good Mfg	1.9	1.5	0.4
2949	Manufacturing, nec	0.3	0.0	0.3
	Total	779.5	468.4	311.2

6.2.2 CUSFTA: the outcomes 1989-2000

Figure 6.1 profiles Canada's share of United States imports since 1980. It shows that in the four years before 1989 the share of Canadian exports in United States imports stabilised. The average share over the period was around 20 per cent. The earlier decline was due to the severity of the United States recession in the early 1980s and the peaking of energy prices in 1980. The inference from Figure 6.1 is that the CUSFTA significantly increased the share of Canadian exports in United States imports.

A more compelling justification that the CUSTFA did in fact improve Canada's export share is to be found in Figure 6.2. This divides Canadian exports into three categories. The first category comprises commodities for which no tariff advantage, that is preference, was gained as a result of the CUSFTA. The second group is commodities where a greater than zero but less than 10 per cent advantage was gained from the CUSFTA. The third group is Canadian exports where a tariff advantage equal to or greater than 10 per cent was gained by Canada.

A reasonable hypothesis from the comparison of the three lines in Figure 6.2 is that in the absence of the CUSFTA Canada's share of United States imports would have remained constant from 1989 to 2000. With this counter-factual hypothesis, the effect of the CUSFTA was to:

- (i) double the share of Canadian imports in United States imports where the tariff preference is equal to or greater than 10 per cent prevails; and
- (ii) increase by one third the import share of Canadian exports where competitors' tariffs are greater than zero but less than 10 per cent.

A simple "back of the envelope" estimate of the response of Australian exports into the United States (at 2003 export levels) can be derived by grouping Australian exports into the tariff ranges of Figure 6.2 and applying the Canadian export percentage share changes which resulted from the CUSFTA.

Table 6.2 indicates that 45 per cent of Australian exports into the United States are tariff free. Four per cent of imports have tariffs of 10 per cent or greater. Just over half of Australian exports have tariffs greater than zero and less than 10 per cent. Applying the Canadian rules would suggest a long run “back of the envelope” benefit of US\$1.25 billion, or an increase in Australia’s import share into the United States of 19 per cent.

Table 6.2 Australian exports into United States by tariff structure – 2003			
	US\$ million	Per cent of total	AUSFTA export increase US\$ million
Zero tariffs	2 854.0	44.5	0.0
Tariffs greater than zero less than 10 per cent	259.0	4.0	260.0
Tariffs 10 per cent or greater	3 301.0	51.5	990.0
Total	6 414.0	100.0	1 250.0

Adopting this methodology gives a practical maximum benefit of \$1.8 billion in Australian dollars.

6.2.3 CUSFTA and AUSFTA: a macroeconomic approach

The hypothesis that Australia’s share of United States imports could increase by 20 per cent in the longer run if the AUSFTA was adopted can be tested using an independent approach. Australia’s share of United States imports steadily declined over the 1990s. We can estimate the contribution of the CUSFTA to this decline, and then argue that the AUSFTA would reverse the decline. This approach models the total share of Australia’s trade with the United States over the 1980s and 1990s with a variable representing the introduction of the CUSFTA to indicate whether or not Australia lost export share as a result of the introduction of the CUSFTA. If any loss of export share is identified, the adoption of the AUSFTA could potentially neutralise the CUSFTA. Put another way, any loss of export share of the 1990s as a result of the CUSFTA would provide an indication of the longer run gain in export share that the AUSFTA may generate for Australian merchandise trade exporters.

To test this a translog cost function model of United States imports was applied. The model envisaged three sources of United States import supply, namely:

- Australia;
- Canada; and
- rest of the world.

The long run share functions were given by:

$$S_a = \alpha_a^1 + \alpha_a^2 \cdot \ln(P_a/Pr) + \alpha_a^3 \ln(P_c/Pr) + \alpha_a^4 Dum$$

$$S_c = \alpha_c^1 + \alpha_c^2 \cdot \ln(P_a/Pr) + \alpha_c^3 \ln(P_c/Pr) + \alpha_c^4 Dum$$

$$S_r = \alpha_r^1 + \alpha_r^2 \cdot \ln(P_a/Pr) + \alpha_r^3 \ln(P_c/Pr) + \alpha_r^4 Dum$$

Where:

S_i = share of country/region i in United States imports where a denotes Australia, c denotes Canada and r the rest of the world;

P_i = export price index in United States dollars of country/region i ;

Dum = variable representing the phase-in of the CUSFTA.

All trade data was measured in United States dollars.

Of key significance is the specification of the Dum variable, or the variable reflecting the phase-in of the CUSFTA. Dum has the value zero to the fourth quarter 1988. It has the value 1 from the first quarter 1999. Between the first quarter 1989 and the fourth quarter 1998, Dum builds from 0 to 1 at an increment of 0.025 per quarter. That is, Dum represents a uniform phase-in of CUSFTA over 40 quarters.

The estimated model allowed distributed lag effects for the relative price variables.

The estimated values using a database from the first quarter 1980 to the third quarter 2002 are given in Table 6.3. Both Dum variables in the estimated equations are well determined and strongly significant. Further, the estimated values of the coefficients are insensitive to changes in the specification.

For Canada the estimated coefficient indicates that overall Canada increased its share of United States imports by 1.7 per cent per quarter as a result of the CUSFTA. Given current Canadian trade per quarter with the United States of US\$60 billion, this translates into a merchandise export gain of US\$4 billion. In the absence of the CUSFTA, Canada's import share of United States imports would have been 17.2 per cent on average over the 2000 to 2003 period, instead of the actual outcome of 18.9 per cent.

Over the same period, Australia's share of United States imports was 0.5 per cent. The Dum coefficient indicates that in the absence of the CUSFTA, Australia's share of United States imports would have been 0.17 percentage points higher, or 0.66 per cent. Given the current level of Australian imports into the United States the loss of trade to Australia because of the CUSFTA (and other trading preferences associated with the CUSFTA, including the NAFTA) is, therefore, in the order of US\$0.5 billion a quarter, or US\$2 billion a year.

The US\$ 2 billion a year estimate of Australia's trade loss because of the CUSFTA (and NAFTA) would then represent a working estimate of the potential Australian merchandise trade gain from the AUSFTA, excluding significant quota items (in particular beef) if Australia had joined the CUSFTA in 1988.

The implication of this result, by comparison with the simple trend analysis reported in Section 6.2.2, is that in the absence of trade diversion under the CUSFTA, Canada's share of United States imports would have continued to decline during the 1990s.

Table 6.3 Australia and Canada: share of United States imports – estimated equation coefficients

	Australia		Canada	
	Coefficient	(t value)	Coefficient	(t value)
Constant	0.613	24.0	17.888	41.5
CUSFTA (DUM)	-0.169	6.5	1.690	3.9
RPAUS	-0.133	1.1	-1.690	0.8
RPAUS (-1)	-0.026	0.4	-0.275	0.3
RPAUS (-2)	0.053	1.9	0.751	1.6
RPAUS (-3)	0.101	2.7	1.384	2.2
RPAUS (-4)	0.120	2.4	1.625	1.9
RPAUS (-5)	0.109	2.3	1.475	1.8
RPAUS (-6)	0.069	2.2	0.933	1.7
RPCAN	0.591	2.7	0.282	0.1
RPCAN (-1)	0.429	3.7	-0.523	0.3
RPCAN (-2)	0.294	4.2	-1.073	0.9
RPCAN (-3)	0.184	2.2	-1.369	1.0
RPCAN (-4)	0.100	1.0	-1.409	0.9
RPCAN (-5)	0.041	0.4	-1.194	0.8
RPCAN (-6)	0.008	0.1	-0.725	0.7
R ²		0.77		0.3
DW		1.1		1.7

Note: RPAUS = Pa/Pr (Australia/rest of world price ratio).
 RPCAN = Pc/Pr (Canada/rest of world price ratio).
 Price ratio variables enter with up to six quarters of lag effects.
 All data taken directly from IMF Statistics. The equations are estimated from 1980.1 to 2002.2.

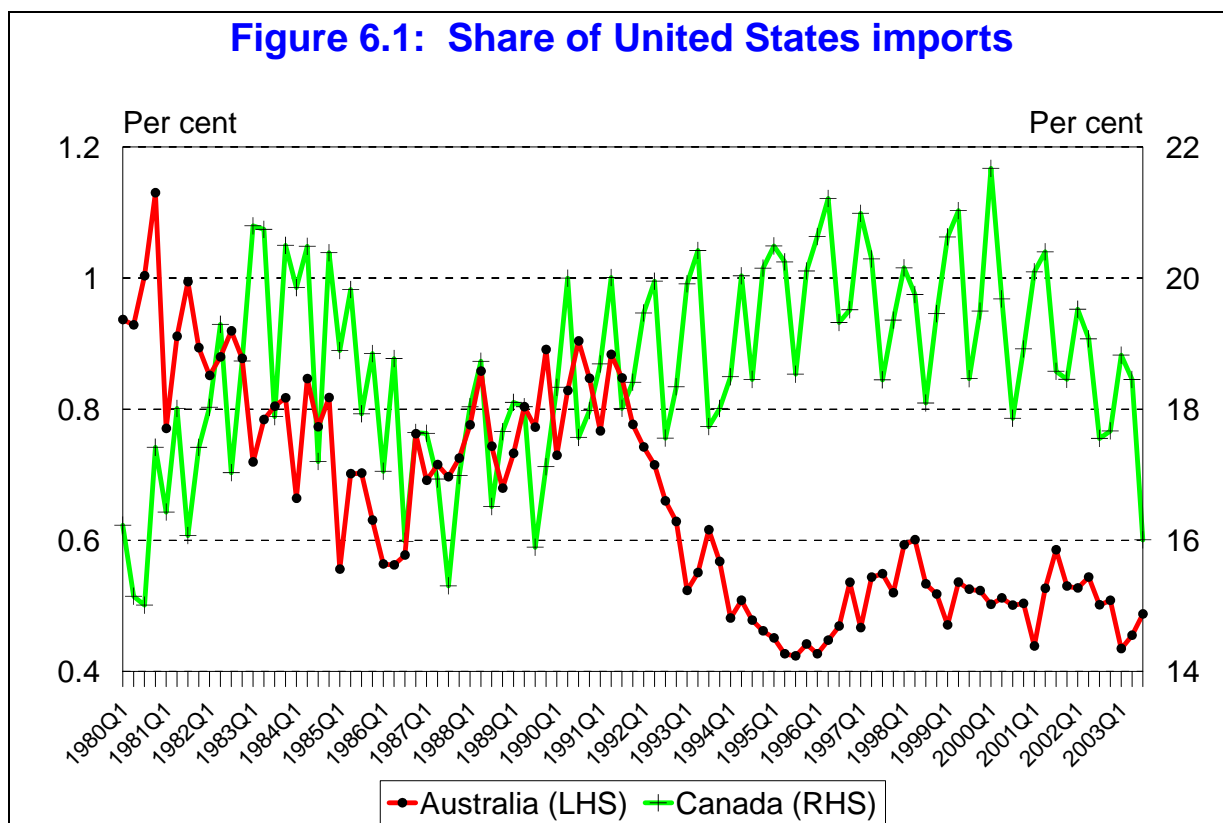
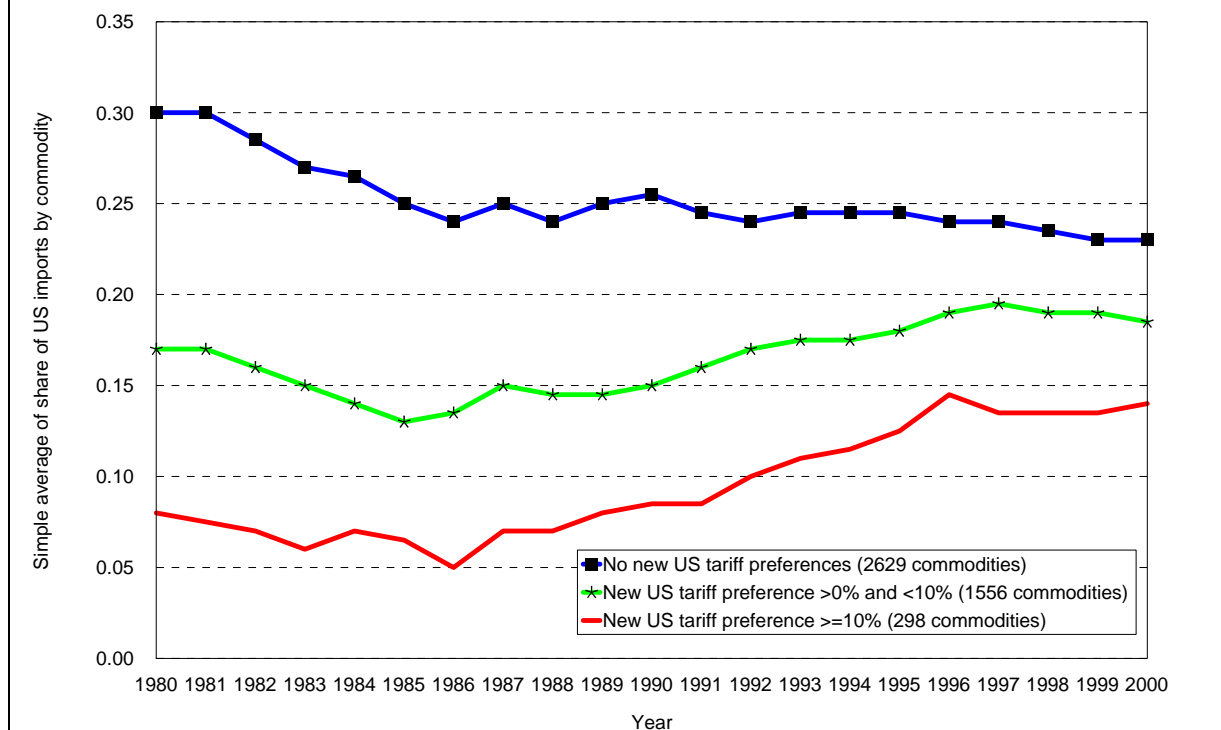


Figure 6.2: CUSFTA's impact on Canada's share of US imports

Source: J. Romalis, "NAFTA's and CUSFTA's Impact on North American Trade", University of Chicago, February 2001.

6.2.4 AUSFTA and Australian merchandise exports – the setting of the maximum practical benefit

The US\$2 billion export gain translates into an estimate of AUD2.8 billion annually in Australian trade losses from the CUSFTA. It can thus be argued that, if Australia had gone into the CUSFTA at the same time as Canada, its exports to the United States would now be \$2.8 billion higher. However, it does not follow that the expected benefits from the AUSFTA will be an export gain of \$2.8 billion. The reasons are as follows.

- (i) Canada has obtained first mover advantage and will be able to block any attempt by Australia to regain the United States market share that it took from Australia over the 1990s relatively easily. (See M.T. Yeung and W.A. Kerr, *Canada and the Australia-US Free Trade Agreement: Enhanced Opportunities or Loss of Special Status?*, Estey Centre for Law and Economics in International Trade, November 2003).
- (ii) Because of the failure to join the CUSFTA much of the production capacity that Australia now needs to drive increased market share into the United States has disappeared.

Nevertheless, the estimate represents a potential outcome. Starting from where Australia is now, it has little probability of being exceeded.

6.2.5 AUSFTA: The export enhancement probability distribution

The \$2.8 billion is a total estimate and, therefore, includes agriculture and motor vehicles. No deduction will be made for agriculture since the provisions of the AUSFTA for Australian agricultural products were not included in the CUSFTA. However, motor vehicles are excluded. Hence, from Table 6.4, the practical maximum benefit for 2005 excluding agriculture and motor vehicles, is set at \$2.3 billion. After 2005 this benefit grows with the projected growth in United States imports. A 10 per cent probability is assigned to the possibility that the practical maximum will be exceeded.

The technical minimum benefit is zero with a zero probability that it will be exceeded. Conditions under which the AUSFTA will be of little benefit to Australian merchandise exporters include the following.

- The United States enhances preferences to imports from Mexico and Canada, so preventing any claw-back of Australia's trade diversion losses under NAFTA.
- The United States concludes similar free trade agreements with Australia's competitors in the United States market, so nullifying any trade diversion effects in Australia's favour.
- The increase in Australian exports to the United States is offset by consequent reductions in other exports. These could be due to supply limitations in Australia, but would be more likely to result from retaliation against the Australia-United States connection in other Australian export markets. As discussed elsewhere in this report, Australia could find itself left out of the developing network of intra-Asian supply chains.

Given the possibility of retaliation, the assessment of a zero benefit worst case is fairly generous.

A further case of low benefits would arise if the United States entered a slump. In this case Australia could find itself with an increased share of a diminished market. However, a different base case would now be relevant, a base case with declining Australian exports due to the slump. By comparison with this base case, there would still be benefits from the Agreement. Even so, a highly unfavourable case can be envisaged in which there is a slump in the United States but not in markets which are retaliating against Australia for its association with the United States. Fortunately this case is very unlikely, at least in the short run, if only because a slump in the United States is likely to be generalised to most countries.

Having estimated the practical minimum and maximum benefits, we are in a position to develop the probability distribution of benefits. The cumulative declining probability distribution generated from simulation techniques based on the Trigen distribution and the parameters in Table 6.4 is given in Figure 6.2. The expected NPV to 2025 is \$23.7 billion with a 25/75 per cent probability range of \$21.7 billion to \$25.8 billion NPV of export benefit.

The total export benefits will include the motor vehicle trade NPV and the NPV of additional agricultural exports. The NPV for motor vehicles was calculated in Section 5. The NPV of additional agricultural exports is \$1.4 billion to 2025. This is fixed with no downside or upside risk since the increase in exports is due to quota expansion. No allowance is made for price risks.

6.3 AUSFTA: Import probability distribution

In Table 6.5 the practical minimum benefit for 2005 is taken from the lower bound import penetration case (Table 4.1), while the practical upper band case is taken from the upper bound case in Table 4.1.

The probability of these bounds being exceeded is set at 10 per cent. From Figure 6.3 and Table 6.5, the expected benefit is -\$13.7 billion within the range -\$14.6 to -\$12.7 billion based on the 25/75 per cent probability benchmarks.

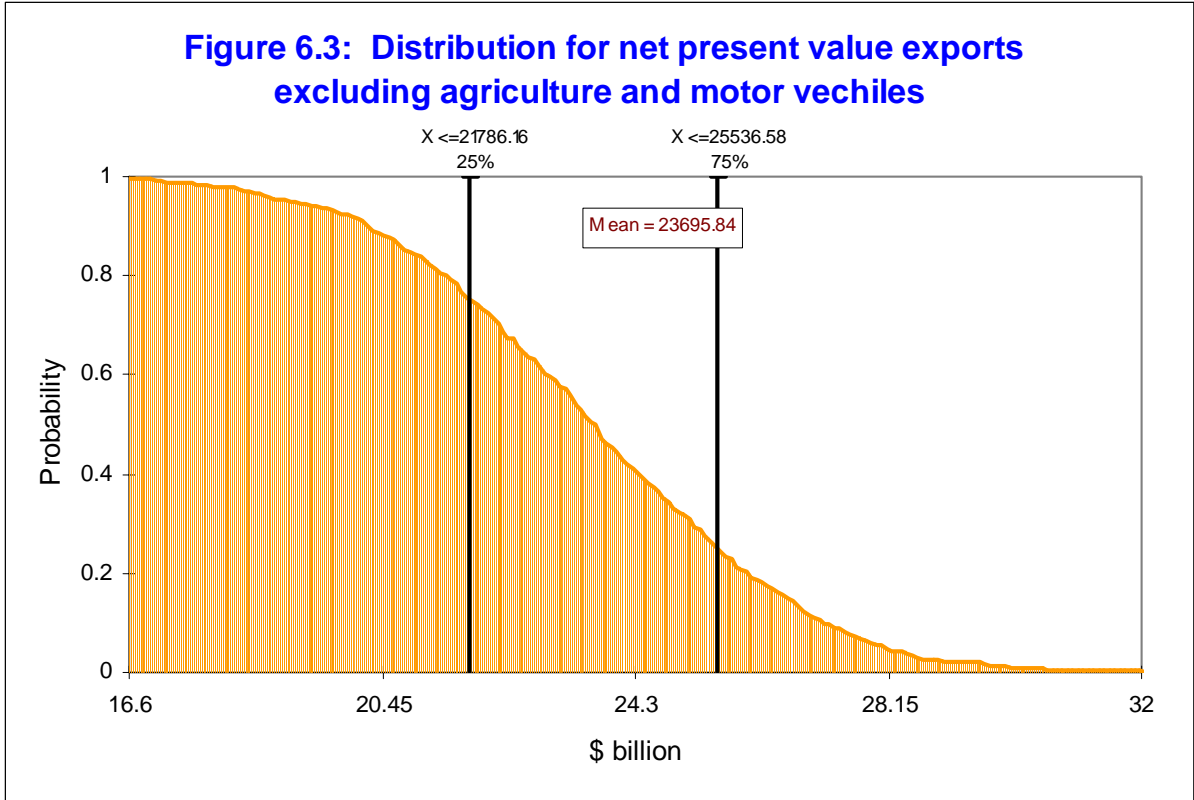
	Unit	Year	Value
Practical minimum^(a)	2003 \$b	2005	0
Probability that practical minimum will be less	Per cent	2005-2025	0
Practical maximum	2003 \$b	2005	2.3
Probability that practical maximum will be exceeded	Per cent	2005-2025	10
Most likely	2003 \$b	2005	0.7
Simulation results			
Mean NPV	2003 \$b	2005-2025	23.7
Minimum NPV	2003 \$b	2005-2025	16.5
Maximum NPV	2003 \$b	2005-2025	32.2
NPV with			
25 per cent chance of being smaller	2003 \$b	2005-2025	21.7
25 per cent chance of being greater	2003 \$b	2005-2025	25.8

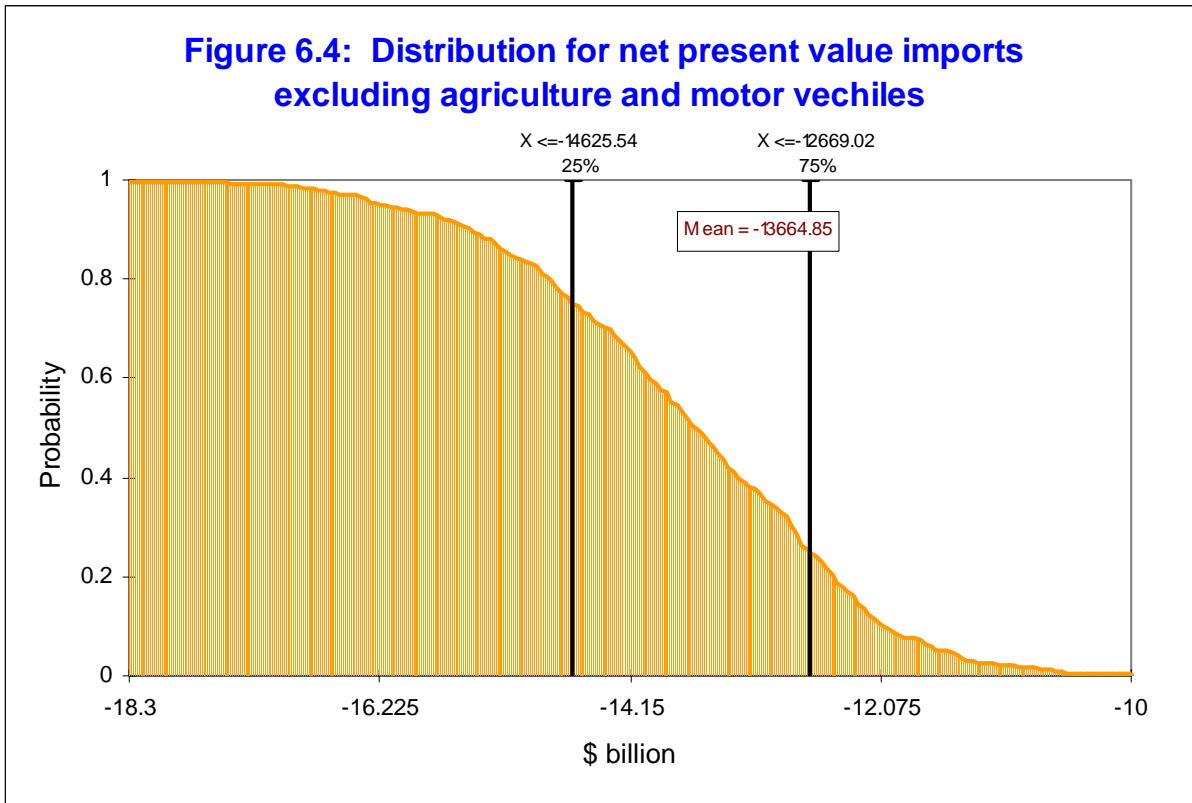
Notes: (a) Technical minimum of zero.

	Unit	Year	Value
Practical minimum	2003 \$b	2005	-0.3
Probability that practical minimum will be less	Per cent	2005-2025	10
Practical maximum	2003 \$b	2005	-1.2
Probability that practical maximum will be exceeded	Per cent	2005-2025	10
Most likely	2003 \$b	2005	-0.6
Simulation results			
Mean NPV	2003 \$b	2005-2025	-13.7
Minimum NPV	2003 \$b	2005-2025	-18.4
Maximum NPV	2003 \$b	2005-2025	-9.8

NPV with

25 per cent chance of being smaller	2003 \$b	2005-2025	-14.6
25 per cent chance of being greater	2003 \$b	2005-2025	-12.7





7. The current drivers of growth in industrial economies

In order to evaluate the impact of the other provisions of the AUSFTA, including the procurement and investment provisions, it is necessary to consider in some detail the drivers of growth in modern industrial economies.

The following is a summary of the framework developed for the NIEIR report, “*Drivers of Growth in Victorian Gross State Product Per Capita Growth*” (Victorian Department of Innovation, Industry and Regional Development, 2003). A number of principles were developed from explaining and interpreting the drivers of growth of modern economies. For the purposes of this study five of the principles need be considered.

7.1 The five principles governing drivers of growth in high income industrial economies

PRINCIPLE ONE: The capacity for realised sustained innovation is for most high-income economies without a unique and extensive natural resource base now the core longer term driver of economic growth.

Background

The capacity to innovate has been important for competitive success since the industrial revolution. However, when the optimum size of plants was less than that required to service national markets development policy could focus on securing technology transfer to support capacity establishment. The innovation required to maintain the competitiveness of production facilities was, for countries like Australia, generally carried out elsewhere. Today the situation is the reverse. Plants to be successful must now have a significant share of the world market. The reasons for this are:

- (i) increasing size of the optimum plant;
- (ii) the ever finer and finer market segmentations for previously unique products expressed in terms of diverse functionality and specific applications, which has acted to reduce the world production requirements for specific products; and
- (iii) the information revolution, which has allowed the rapid development of world standards for components and products based on the available best practice component/product. This creates (for brief periods at least) world or regional (country group) market dominance in product niches.

In this environment the responsibility for innovation has tended to be devolved to the locality of specialised production facilities. For inter-country multi-national supply chains, production and services have become increasingly specialised. In turn the probability of successful innovation is maximised when innovation resources are located in close proximity to production facilities and exploit the linkages between production and marketing personnel and customers.

At the same time the rate of innovation required for sustained competitive success in a given product line has increased. This is because product life cycles have shortened. This has been partly driven by competitors explicitly targeting innovation as the core competitive instrument, and partly reflects accelerating rates of innovation in customer and component supply markets for competitive and/or technological reasons. Technological reasons include accelerating growth in basic knowledge, driving innovation in material and process technologies.

Corollary one **The increasing importance of innovation as the driver of sustained competitiveness has not changed the fact that commercial success in innovation requires the complementary impact of quality capital and skilled labour inputs.**

What has changed is that knowledge creation (the enabler of innovation) is now a necessary input along with capital and labour. Previously knowledge creation was relatively independent of production and was carried out elsewhere, for example in other countries or in institutions (universities, etc.) that were completely independent of business supply chains.

Policy implications

The effectiveness of traditional economic development policy instruments (investment incentives such as tax reductions, subsidies or capital grants or skilled labour supply strategies) now depends on the knowledge creation/innovation capacity of the jurisdiction applying the policies. In more popular jargon, the effectiveness of these policies now depends on the degree to which the economy has become a knowledge economy. The greater the strength of the knowledge economy, the more effective the traditional policies and vice versa. This has led to policies which directly strengthen the knowledge economy having a high weight or priority.

The role of a high rate of innovation capacity in determining competitiveness no longer applies only to so-called 'high technology industries'. It applies to all goods and services industries which use knowledge as an input. For example, those agricultural industries which do not increase their rate of innovation to add value to products from the application of biotechnologies, or reduce costs by targeting process technology innovation, will either contract or remain low-growth low-profit industries.

PRINCIPLE TWO: **The innovation/knowledge capacity of an economy is now largely determined at the regional level. Those regions which are now the most successful at innovation have the characteristics of so-called 'global cities'.**

Background

The region (defined by geographical areas of up to approximately 100 kilometres in diameter) has become the driver of an economy's innovation capacity. There are a number of reasons for this, but the two principle reasons are the role of tacit knowledge and the importance of micro communities based on social networks as determinants of successful innovation.

Codified versus tacit knowledge

Part of the reason for the rise in importance of the regional context is that knowledge creation requires both codified knowledge (or information) and tacit knowledge. Tacit knowledge:

- is generally specific to a local physical attribute, especially skill set, or to the unique experience of individuals;

- cannot be easily codified; and therefore
- is most effectively converted to wealth creation when the wealth creation occurs in the region.

An efficient knowledge economy combines codified knowledge and tacit knowledge (defining the regional competitive edge) to create new knowledge which leads to innovation and wealth creation.

In recent years tacit knowledge, which in the main can only be exploited at the regional level for effective wealth creation, has become by far the most important input. This is because codified knowledge is now largely available to all (provided the appropriate global knowledge workers are available in the region) thanks to the information technology revolution of recent years. Although codified knowledge is still a necessity for competitive success, it is tacit knowledge which is a necessity for a competitive edge in both innovation and commercialisation.

It has to be kept in mind that knowledge creation only leads to competitive success if the region has the attributes required to translate knowledge into commercially successful goods and services.

Tacit knowledge and 'micro-communities'

It is the way tacit knowledge works that makes the regional dimension so important.

Enabling knowledge creation requires mobilising (and intensifying) tacit knowledge. It requires:

- (i) having skilled workers who can access and efficiently use global codified knowledge; and
- (ii) forming relationships (that is, increasing the degree of socialisation) between persons with individual tacit knowledge.

Breakthroughs in knowledge creation generally occur when individuals come together and share tacit knowledge and insights into interpretations of codified knowledge. By themselves, the individuals could not achieve breakthroughs. These individuals form teams or micro-communities with an optimal size of between five and seven persons.

These micro-communities are characterised by:

- face to face interactions;
- an increasing degree of socialisation between members; and
- common fields of interest and personal agendas.

A high degree of proximity is required for knowledge creation/innovation micro-communities to be formed, both at work and in terms of out of work socialisation and they may be characterised as learning communities.

It is for this reason that studies have found that knowledge spillovers from knowledge creation are generally restricted to a radius of 100 kilometres.

The evidence

The evidence for the importance of the knowledge-based regional economy is strong. Studies in Western Europe and North America have repeatedly shown high correlations between highly productive regions (as measured by gross regional product per person employed) and the region's innovation capacity (as measured by patents issued per capita or R and D expenditure). Figure 7.1 shows that the high overseas correlations apply to Australia. Figure 7.1 is the result for 60 regions in Australia. Figure 7.2 shows that for Victoria there is also a strong correlation between regional wealth and R and D expenditure.

Growth dynamics

Once a strong regional knowledge economy is established, strong internal self-generating drivers of growth emerge, which have the effect of at least maintaining and, most probably, increasing the region's competitiveness. These growth dynamics are outlined in Figure 7.3. The growth dynamics in Figure 7.3 explain the drivers of growth for the current most successful regions in the world economy. These regions are the so-called 'global cities'.

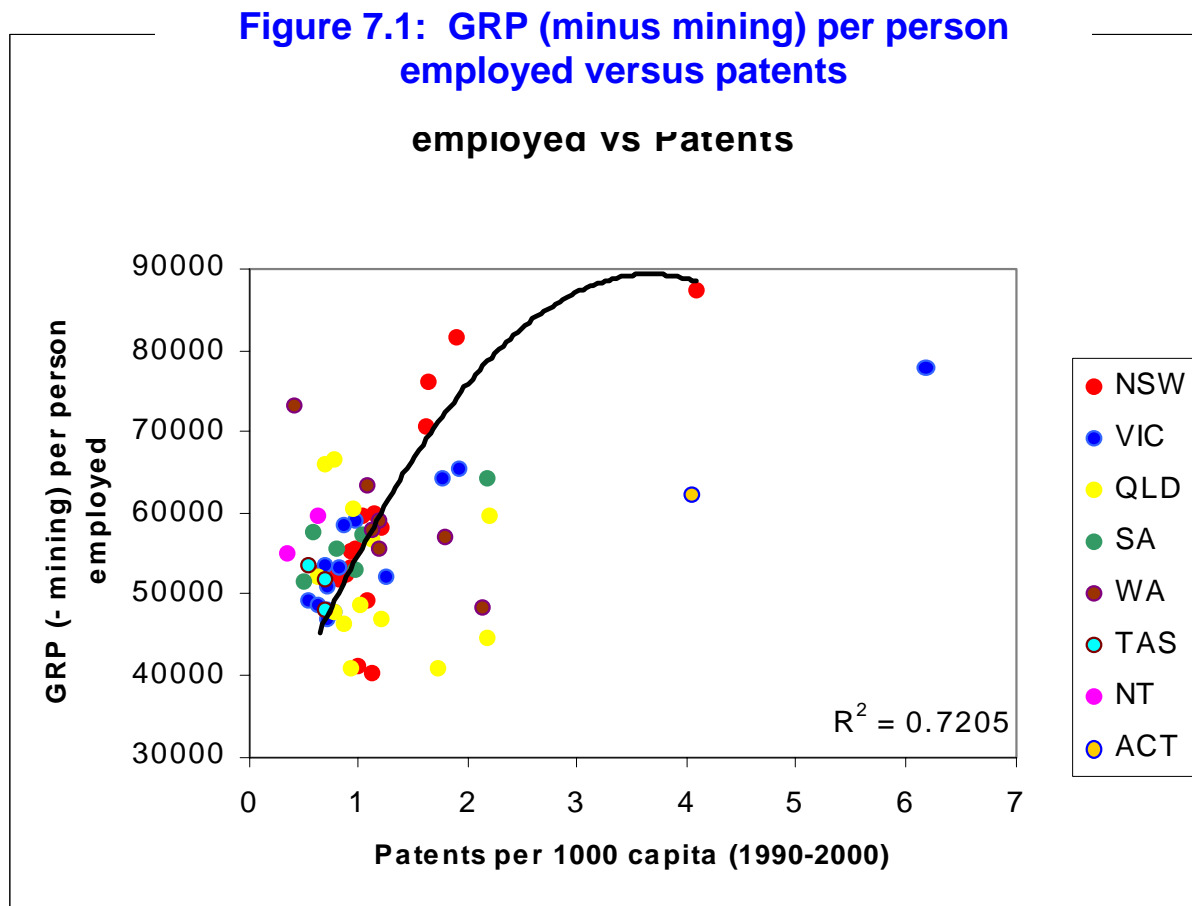
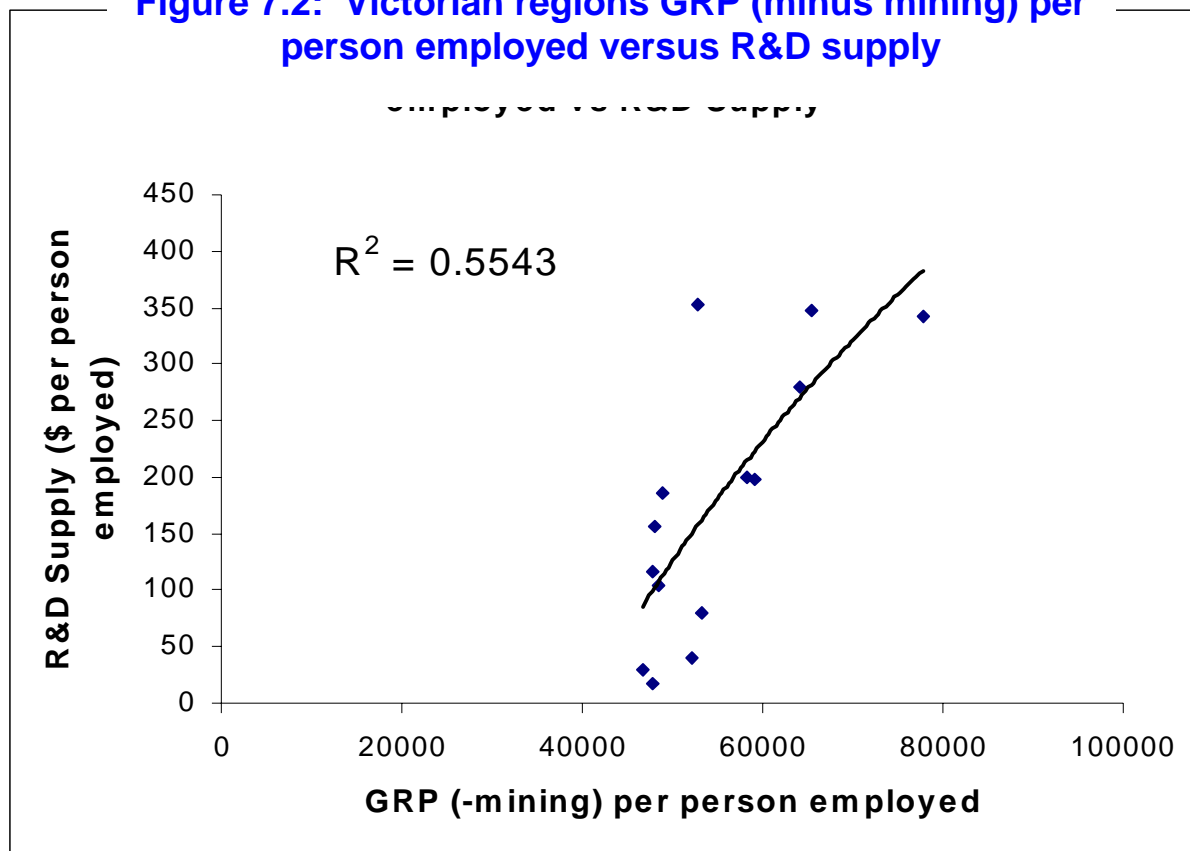


Figure 7.2: Victorian regions GRP (minus mining) per person employed versus R&D supply



Policy implications

In its most simple form the policy objectives for establishing a strong innovation economy become those of establishing regional conditions which unlock the self-generating growth dynamics of knowledge-based regional economies. In broad terms, this requires establishing the quality and scale of:

- (i) industry clusters;
- (ii) dense and diverse labour markets for appropriate skills;
- (iii) knowledge generating institutions (universities, research and development facilities/enterprises); and
- (iv) business services support capacity.

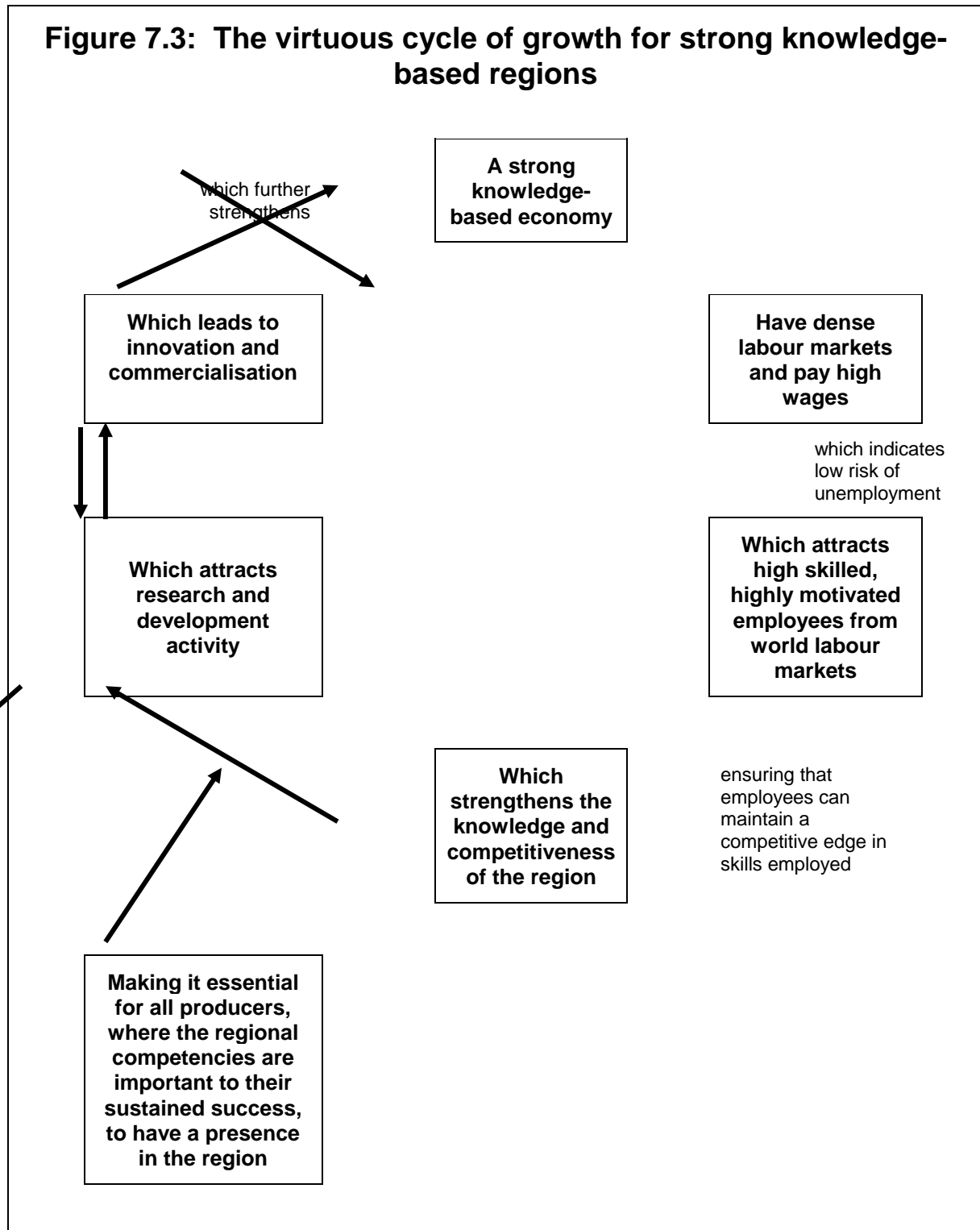
In the right conditions these combine to achieve 'global city' growth dynamics.

Context

There are few global cities but many successful knowledge-based regions are emerging. Global cities have complex industry cluster structures. Successful knowledge-based regions emulate global cities by linking global city structures in a niche around the region's strengths in tacit knowledge. Their scale is restricted to their current stock of tacit knowledge and the capacity of the region to expand and diversify its stock of tacit knowledge.

For those regions without tacit knowledge advantages the appropriate strategy would be to informally integrate with that region (wherever in the world) which possesses the tacit knowledge which can best be applied to economic advantage of the region.

Figure 7.3: The virtuous cycle of growth for strong knowledge-based regions



PRINCIPLE THREE: Policies to establish a successful knowledge-based regional economy require complex policy strategies involving a whole of government approach. An important component are policies designed to strengthen the networks which link the institutions, organisations, enterprises and key personnel within regions.

Background

The discussion of Principle Two.

Policy implications

The establishment of a successful knowledge-based regional economy requires a number of necessary conditions. These necessary conditions cover the scale and quality of physical infrastructure, connectivity to other regions, the quality of human capital, diversity of specific industry clusters and diversity of the associated skilled labour markets, the quality and structure of regional governance, the scale and quality of knowledge-generating institutions and the quality of regional networks. Policies which focus on one, or a small number of these factors, will fail if the necessary conditions for success in the other factors have not been established. A policy strategy which is not designed to establish all the necessary conditions for a knowledge-based regional economy will fail.

The structure and content of policy strategies

Along with the traditional instruments of transport infrastructure, broad land use planning, education and training policies, the best practice policy strategies used by Western European governments to establish and strengthen the regional knowledge-based economy currently include a wide range of other policy instruments. These policy instruments include the following.

1. Network support

Policies should support networks rather than individual firms. The networks targeted are those which link large firms, small and medium enterprises (SMEs), research organisations, universities and other public institutions. The objective of public policy is to improve each network as a whole with policies to assist individual organisations link the organisation into the overall network. The important point here is that the policies target specific networks, not the general innovation capacity of a region. The focus is on strategic direct drivers, not on indirect drivers of growth.

2. Sector targeting

A strong regional innovation system requires one or more compatible industry clusters. Each industry cluster will consist of one or more industry sectors (that is, product groupings) sharing a common technological base and innovation synergies, together with their supporting industry supply chains and their regional customer base. Sector targeting involves nominating the industry groupings which have the best chance of assisting in the establishment of a competitive regional innovation system and using policy wherever possible to realise such an outcome. This is a form of the much maligned (in Australia and New Zealand only) policy of “picking winners”. The focus on specific networks necessarily entails a specific cluster target approach.

3. *Public/private sector partnerships*

The policies developed have been well anchored in the framework of public/private sector partnerships. Like the flexible supply chain, maximum effectiveness is achieved by each agent contributing towards policy design and implementation. The public sector can best do some things and the private sector can best do others. This requires that private sector agents participate directly in policy design and implementation.

4. *Policy priorities and policy flexibility*

Network development policies must be flexible. At any time there will be a number of necessary conditions for the establishment of a strong regional innovation system that will not have been met. At any time policy must focus on the targeted set of necessary conditions. In relation to any targeted network, policy must be continually monitored and then changed as intermediate objectives are met.

Partial policies to assist in the development of specific networks include:

- (i) incentives for R and D cooperation and technology transfer;
- (ii) incentives to attract direct investment, including foreign investment, to introduce new agents to strengthen the regional targeted cluster;
- (iii) the use of technology parks to create or strengthen clusters by restricting park membership to firms which have developed, or are likely to develop, synergies; and
- (iv) the provision of consumer resources with business support services to firms aimed at mobilising and increasing the level of tacit knowledge available in the region. Consumer services provided include business information, physical business infrastructure (business parks), technology transfer, tailored skills training and finance (including venture capital) provision.

Like transport infrastructure, the role of direct foreign investment (DFI) has increased in importance with the rise of the regional knowledge economy. It should be noted that specific network target policies are seen as a method of maximising the benefits of DFI, and indeed attracting DFI in the first place, by building around the DFI a network of public institutions and small and medium enterprises (SMEs) whose role is to extract as much knowledge, technology and skill transfer from the narrower DFI activity as possible. This is a core element driving Chinese growth and it is a response Australia generally failed to achieve when, in the past, the task in attracting levels of DFI was easier.

In this context the rise of network enhancement policies has:

- (i) shifted the focus from specific investments to how maximum leverage or multiplier outcomes can be achieved for specific investments for the region as a whole;
- (ii) shifted the focus from individual learning to organisation learning. That is, the policy focus is now on what makes enterprises more innovative and what collective arrangements within and across supply chains facilitate the learning process; and
- (iii) shifted the focus and responsibility from national policy authorities to regional/State and local government policy authorities.

Corollary two: Without the full application of Principle Three, policies to stimulate research and development will be ineffective.

The mantra of all Governments is that Australia must build a knowledge-based economy. Governments of a non-interventionist persuasion believe this will be done by simply skilling the population and spending on education, training and research. The reality is that these policies, without the full complexity of policies required by Principle Three, will be ineffective.

A report by Prime Ministers' Science, Engineering and Innovation Council, "*Commercialisation of Public Sector Research*", June 2001, has clearly identified the problems in Australia. Australia has only a handful of genuine high technology companies that have any scale. The report notes that while the United States universities average of licences and spin-off companies of 1 to 2 per \$100 million of research expenditure is similar to the Australian average, it is clear that the Australian start-ups fail to make an impression. Besides, as the report notes, the best practice for United States universities is around 10 to 27 start-ups per \$100 million of research. This is well above the performance of the better Australian universities.

The report explains the poor Australian performance in terms of Australia's failure to develop the diverse networks between public institutions (governments, research institutions, universities) and private enterprises and institutions that exist in North America and Western Europe. This blocks both innovation and commercialisation. This is a clear application of Principle Three.

The lack of networks and high technology industry clusters makes it very difficult to successfully commercialise innovation. The risks are too high for even venture capital companies to take an interest.

When companies go to venture capital with a patent or prototype it may well be a good commercial prospect. However, product cycles are of two to three years and there is a need for the development of:

- company commercial infrastructure;
- foreign distribution networks; and
- fabrication and assembly relationships.

Consequently, returns on the initial capital will most likely only be achieved if the product is successfully put through a number of product cycle upgrades. The venture capitalists focus on the difficulties of doing this in Australia, because of:

- lack of skilled and experienced labour or the costs of securing labour from overseas;
- remoteness from major markets; and
- the difficulties of maintaining sustained innovation in an environment that is devoid of the resources available to competitors operating in regions with the sufficient conditions for sustained industry growth.

The venture capitalists conclude, probably quite rightly, that although the first product cycle may be successful, competitors operating in more conducive environments will be better

placed to gain second mover success. This is particularly likely if the competitors are operating in countries where they are able to rely on strong government support.

It is the lack in Australia of many of the necessary conditions for sustained growth in innovation-intensive industry, as per Principle Three, that is the cause of lack of venture capital interest. Lack of venture capital interest is a symptom, not the cause, of the difficulties.

As a result, even when the commercial potential of innovation is proven, foreign venture capitalists may not consider assisting Australian companies unless they have the option of shifting activity to the most appropriate foreign knowledge-based region.

Corollary three: In the current Australian environment foreign investment in domestic high-technology firms is likely to be economically destructive rather than economically enhancing.

The drivers of economic growth require that both production and research and development be located in knowledge-based regions. The reason for this is simple. These regions have the best probabilities of successful innovation and best probabilities of sustained production because they offer the best prospects for successful changes through a succession of product life cycles.

There is a natural pull and push feature for successful potential innovation to be transferred to the most appropriate knowledge-based regions. These features operate both for new start-ups, only a short way along their life span, and for more mature companies after five or ten year's development. Investors from the knowledge-based parts of the world acquire promising start-ups and young companies to secure their intellectual property for use in research and development and production outside Australia. This is the main reason why Australia has and will continue to have such a poor record in commercialisation of innovation.

To take one example, Australia does not have a microelectronics production industry of any significance. Microelectronics is quickly becoming the key value added component of almost all electronic and communications equipment.

There was one company in recent years that looked like it could become the foundation on which Australia could build an indigenous microelectronics industry. This company was Radiata. The company had its origins in Macquarie University and CSIRO's work on radio physics and semi-conductor technology. In 1997 the company was formed with a licensing agreement from these institutions to commence manufacturing chips for high speed wireless networks which was then a rapidly growing market. In 1999 the company was incorporated in the United States and in 2000 the company was taken over by Cisco Systems for \$570 million. The production potential was lost to Australia and no doubt the research and development capacity of the company will be effectively fully transferred from Australia. With it probably went Australia's best hope for establishing a vibrant microelectronics production industry. The failure to develop the industry will be one of the factors leading to the contraction of the electronics and telecommunication industries.

Over the past decade, countries such as Ireland, Sweden, the Netherlands, Singapore, etc. have been very successful in attracting direct capital inflow to establish high technology industries. This has driven their growth. However, they have succeeded because they have spent billions upon billions to establish the high technology regions and precincts which have pulled in the capital inflow. In other words, they created the regions when technology based enterprises need a presence if they are to establish or sustain competitiveness.

Corollary four: Some industries are more important than other industries as drivers of economic growth.

Over the last decade Australian national policy has been based on the implicit assumption that a given dollar value of potato chips, wood chips and computer chips is all the same, in terms of its value as a contributor to economic growth. While this is true in terms of the direct effect on GDP, it is not true in terms of the flow-on consequences. Industries have different impacts depending on:

- inter-industry linkages;
- balance of payments effects; and
- technology spillovers.

Outside New Zealand, there is no other government of significance which refuses to focus on the different potentials for industries to contribute to economic growth.

Inter-industry linkages

Manufacturing is acknowledged by most governments as an important and strategic industry because of its strong inter-industry linkages.

The ratio of value added generated by manufacturing industry to total manufacturing industry output is relatively low. Some service sector industries have a value added to total output ratio of 70 per cent. The difference between output and value added represents the purchases of goods and services from other industries in order to complete production.

This means that such measures as the share of manufacturing value added in gross domestic product (GDP) significantly under-estimates the importance of the manufacturing sector. Relative to other industries, the fact that manufacturing purchases a relatively high proportion of goods and services from other industries means that it is relatively more important in strengthening the economic base of the economy compared to other industries. Manufacturing is an important strategic sector because of its strong backward and forward linkages with other industries in the economy.

Exporting industries and strategies

When a country is faced with a balance of payments constraint to growth, a “super” multiplier, or the Kaldor-Harrod trade multiplier, is relevant. The super multiplier is between 2 and 2.5 times the value of the traditional demand multiplier.

The super multiplier comes about because increases in exports not only lead to increases in economic activity, but to improvement in the trade balance and reduction of the current account deficit. When a country is faced with a balance of payments constraint this provides an opportunity to expand economic activity. The policy authorities may reduce interest rates and/or use expansionary fiscal policy to neutralise the impact on the current account. This will lead to additional increases in economic activity over and above the direct impact. That is, it will lead to a “super multiplier” effect.

In technical terms the super multiplier is the reciprocal of the marginal propensity of an economy to import. The super multiplier only applies to an export expansion. For a country subject to a balance of payments constraint to growth, the expansion in GDP for a given

export expansion, will be the export expansion times the super multiplier. For Australia the super multiplier is approximately three.

The failure of Australia to consider the balance of payments impacts of industries is the key reason for the endless build-up of foreign debt. By deferring the cost of balance of payments adjustment in this way Australia is greatly reducing the options of future generations.

While in theory a strong balance of payments may result equally from agriculture, mining, manufacturing and services exports, the reality is that natural-resource resource-constrained industries, in particular agriculture, are much more supply constrained in the long run than other industries. This is because the availability and productivity of the land is such an important factor of production in agriculture. For the last century most Governments have encouraged the shift out of agriculture.

The technological multiplier

For the strategic industries there is not only a balance of payments super multiplier, but there is also a technology multiplier which, when combined, produces a high flow-on multiplier value for these industries, and a gross total multiplier in excess of 4.

The technological component of the super multiplier only applies to the strategic manufacturing industries. These industries are:

- the biotechnology – pharmaceutical – chemical industries;
- multi-media and information technology industries;
- transport equipment industries;
- advanced material industries (part of the structural metal industries);
- the electronic equipment and communications equipment industries; and
- the other equipment industries.

The high multiplier values reflect, in part, that these industries, through their strong backward and forward linkages, strengthen the industrial base of the economy. They create the pre-conditions for the establishment of related activities. The additional technology multiplier arises in the form of spill-over effects generated by expansion in the above industries. The spill over effects include, *inter alia*:

1. new skills which, through employment churning, spread out to improve the competitiveness of traditional industries;
2. new production technologies which are eventually adopted by established firms, thereby strengthening their production base;
3. role model entrepreneurship, supply chain integration and supply chain management, which is initiated elsewhere; and
4. spill-over effects associated with R and D intensive industries, coming from:
 - (i) enhanced competition associated with the R and D effect itself;
 - (ii) innovation and initiation in more firms in response to successful R and D efforts; and
 - (iii) cooperation among firms in R and D which maximise the wealth creation from knowledge generation.

The empirical importance of the technological multiplier has been verified by cross section country studies which explore the link between R and D expenditure, investment, the income

gap (with the dominant economy) and economic growth. (For example, see V. Meliciani, *Technology Trade and Goods in OECD Countries*, Routledge, London, 2001, p.418.)

PRINCIPLE FOUR: Liveability, as expressed by the scale and diversity of social and cultural capital and by breadth of lifestyle choice, is an important determinant in establishing and maintaining a strong knowledge-based regional economy.

Knowledge-based regions require knowledge-intensive workers. The evidence from overseas and Australia is that those regions which have captured a disproportionate share of new technology industries, (including attracting them away from the regions where they were initially established, such as Silicon Valley), are regions with diverse but inclusive communities, with good social capital, lifestyle choice, and strong clusters of artistic and cultural-industry workers. Knowledge-intensive workers want to live in such regions and business location decisions have to respect this preference. (See NIEIR's *State of the Regions 2002*.)

To the extent that the AUSFTA limits Australia's long run ability to form strong clusters of artistic/cultural industries using the latest technologies, there will be negative effects on its economic development. This aspect, however, is not quantified in this study.

PRINCIPLE FIVE: Developments in communication technology have allowed knowledge-based regions to add service industry exports to their merchandise trade base.

The bulk of Australia's service exports, excluding tourism, education and health services, is embedded in Australia's merchandise trade or capital flows. Modern communication technology has allowed knowledge-based regions exporting high-technology products to capture the value added that would, in the past, have accrued to service firms in the importing country. The retail/wholesale margin is now captured by the international on-line seller and servicing and support revenue is captured by the exporter from anywhere in the world.

The main way to grow general service exports is by having a diverse range of domestic production across most of the emerging technologies. Countries which do not move up the value-added chain by establishing production from the emerging technologies, will see their share of world service trade decline. This is because the domestic business services sector will lose its competitive advantage compared to its competitors in superior knowledge-based regions.

7.2 The cost of deindustrialisation

The remaining issue to be considered here is the cost of deindustrialisation, or what in the Australian case may be called the policy of pastoralisation – a policy of a return to John Macarthur's original discovery of pastoral industry (and by extension agriculture and mining) as the appropriate source of staple export products for Australia. The AUSFTA did not initiate this policy, but is its crowning statement, and locks it in indefinitely. The cost of this return to a vision two centuries old has so far been obscured by the mechanics by which aggregate GDP growth falls below desired levels when the share of the manufacturing sector in GDP declines below optimal levels.

The first thing to note is that long lags can exist between deindustrialisation and poor aggregate growth performance. The lags will be longer:

- (i) the greater the unexploited debt service capital of households and companies; and

- (ii) the greater the unexploited debt service capacity of the economy in terms of additional international debt.

The greater the degree of deindustrialisation, the more likely the economy will generate high current account deficits. The balance of payments constraints to growth will not come into effect until the economy reaches debt saturation levels in terms of international borrowing capacity and when it no longer has any assets foreigners wish to buy. Until this point is reached economies can continue high rates of aggregate growth by borrowing internationally to finance imports.

International borrowing can only be used to finance aggregate growth in the context of deindustrialisation if governments, businesses and consumers are willing to borrow to spend, converting unexploited debt service capacity to new borrowing. As long as this is the case relatively high economic growth can continue. However, eventually continued deindustrialisation will exhaust unexploited debt service carrying capacity, either in terms of foreign willingness to lend, or domestic borrowers willingness to absorb the additional debt, or both. When this occurs aggregate GDP growth will decline sharply and settle into a long term trend which will be dictated by the performance of the manufacturing sector.

A second structural deterioration also undermines growth potential. When an economy is deindustrialising it applies rather than generates new technologies. In general the application of new technologies destroys full-time employment positions, although it may create part-time and casual employment. Economies need to be continually creating new technologies to maintain the supply of reasonably-paid full-time employment positions. Deindustrialisation results in:

- (i) a decline in the share of full-time employment in total employment;
- (ii) the creation of low paid employment;
- (iii) increases in the inequality of the distribution of income; and
- (iv) imbalanced demand formation.

These effects further weaken the growth potential of the economy. Knowledge-based expansion is a strategic instrument to nullify these effects.

The current situation in Australia is already marked by the results of deindustrialisation. The main route to reversing these problems is to seriously embark on building a knowledge-based economy.

The following three sections cover three main areas in which the AUSFTA extends beyond provisions for free trade. Each chapter describes the basic provisions, then gives a critique of the cost-benefit assessment of the provisions prepared by the Centre for International Economics for the Department of Foreign Affairs and Trade. Finally, in each section the analysis of this section is applied to develop NIEIR's assessment of costs and benefits.

8. Government procurement

The procurement provisions of the Agreement apply to all government purchases above a threshold (Article 15.1.2), with various exceptions including the following, among others.

- Grants, loans, subsidies and the like.
- Contracts between government entities (including between entities at Commonwealth, state and local level).
- Procurement for overseas aid.
- Procurement of R&D services (these four in Article 15.1.3).
- Procurement for law enforcement or social services or from indigenous persons (both Parties include these in their lists of non-conforming measures, Annex II)
- Procurement of the goods and services produced by handicapped persons, philanthropic or not for profit institutions or prison labour (Article 15.12).
- Purchases from small/medium businesses are also protected (for Australia this is covered in the general notes to Annex 15/G).

A memorandum of understanding on reciprocal defence procurement already exists. This is not affected by the Agreement (Article 15.3.4), which therefore does not apply to defence trade.

8.1 Procedures

The Agreement imposes restrictive procedural requirements for procurement, including:

- a general requirement that procurement shall be by tender (Article 15.2.3);
- publication of procurement laws, regulations and judicial and administrative decisions (Article 15.3);
- publication of notice of intended procurement (Article 15.4);
- time limits to the tendering process (Article 15.5);
- tender documentation and technical specification (Article 15.6);
- conditions for the acceptance of tenders (Article 15.7);
- a condition that each tendered contract must be awarded to that supplier which 'satisfies the conditions for participation and is fully capable of undertaking the contract and whose tender is determined to be the lowest price or the best value or the most advantageous in accordance with the essential requirements and evaluation criteria specified in the notices and tender documentation' (Article 15.9.6);
- a procuring entity may decide to conclude a tender process without award of a tender if this is in the public interest (Article 15.9.6) but not so as to circumvent the requirements of the Agreement (Article 15.9.7);
- publication of information on contracts awarded (Article 15.9.8 and 15.9.9);
- on request, provision of information to allow the government which did not award the tender (i.e. the US for Australian tenders, and vice versa) to satisfy itself that the tender was fairly awarded (Article 15.9.10);
- punishment for corrupt officials involved in the award of tenders (Article 15.10);

- domestic review of supplier challenges (Article 15.11); and
- beyond domestic review, the Agreement provides for joint dispute settlement procedures (Article 21).

Most of these procedural requirements (but not the publication of information on award, provision of information to the other government, anti-corruption or domestic review requirements) may be waived in limited circumstances, including repeat orders, purchases on commodity markets, purchases of prototypes, purchase of works of art or purchases from the winner of a design contest. The general principles still apply. (Article 15.8).

This list looks like a litigation paradise, with purchasing agencies having to tick off on a multitude of provisos, conditions and documentations so that their work is not open to challenge by unsuccessful bidders. The CIE assessment makes no allowance for the additional administrative and judicial workload. It also fails to allow for the more subtle cost of the prioritisation of procedure over whole-of-government purpose in the award of contracts.

8.2 General principles

The general principle is that United States procuring agencies should treat tenders from Australian businesses as though they came from United States businesses, and vice versa. The bite, however, is in the following provision: 'a procuring entity may not seek, take account of, impose or enforce offsets in the qualification and selection of suppliers, goods or services, in the evaluation of tenders or in the award of contracts, prior to or in the course of a procurement process' where offsets mean 'any conditions or undertakings that require use of domestic content, domestic suppliers, the licensing of technology, technology transfer, investment, counter-trade or similar actions to encourage local development or improve [the purchasing country's] balance-of-payments accounts' (Article 15.2.5 and Article 15.15.7).

Given that a major purpose of much government procurement (especially after the social services have been excluded) is economic development, these conditions seem potentially very restrictive indeed, and amount to the prohibition of the pursuit of important government purposes. The actual extent of the restriction is extremely hard to determine, since the restriction on offsets is entrenched in the legal minefield of the rest of the procurement chapter. Consideration of employment generation is not specifically mentioned, but might be prohibited since it has to do with local development. Another example on the borderline of uncertainty might be where tenders are called for an infrastructure investment which specifically require the attainment of economic development targets.

An important area where the Agreement may cast its dead hand is financial innovation in public-private partnerships. Governments commonly participate in investment, and procure to this end, in the expectation of economic and social benefits to their populations. In the past this was mostly done by direct government investment. Unless litigation produces a broad definition of purpose which overcomes the definition of offsets, the Agreement will require procurement without regard for the purpose of the investment. The Agreement therefore strikes at the heart of the traditional Australian developmental state.

With self-imposed constraints to government borrowing, similar purposes are now served by government financial participation in public-private partnerships. The Agreement makes it plain that these are covered by the procurement provisions (Article 15.1.2 includes build, operate and transfer contracts). Negotiation of such partnerships is already a difficult undertaking, without the additional procedural requirements and offset restrictions of the Agreement, which would appear to require that negotiation should take place without reference to the fundamental purpose of the investment. Whatever the case, such arrangements in the future under AUSFTA will limit any possibility of governments adopting 'Buy Australia' principles.

An alternative to present arrangements would be financial instruments by which investors are subsidised according to the extent to which the investment yields increases in employment, value-added or other regional targets. Such financial instruments are likely to be very attractive to investors, such as industry superannuation funds, which are interested in promoting Australian economic development in addition to purely financial returns. (R. Shiller, *The New Financial Order*, Australian edition, Melbourne, Scribe, 2004.) The Agreement casts doubt on the legality of such new financial instruments, with much depending on the definitions developed by the courts in the inevitable litigation. While it might be possible to shield such innovative financial instruments from the Agreement, for example by promoting the financial instruments through changes in tax provisions rather than as direct purchasing requirements, the Agreement presents a hurdle to financial innovation.

8.3 The CIE's estimate of benefits

8.3.1 Additional Australian sales in the US procurement market

Australia currently has no general procurement agreement with the US, and is accordingly largely excluded from the US procurement market (except for defence). The Agreement would allow Australian firms to tender in this market. The CIE estimates the size of the market at AUD 200 billion a year. The CIE also notes that some US states will also sign the Agreement, adding to the market, but in view of the uncertainties as to how many states will sign does not include this potential in their assessment.

The CIE notes that the Canadian Commercial Corporation has fostered annual sales of AUD 650 million a year into the US government procurement market (the calculation is based on market share of 0.3 per cent). It argues that, since Australian GDP is 55 per cent of Canada's, Australia might expect 55 per cent of Canada's sales, that is, AUD 350 million. However, the CIE concedes that this is optimistic. Australia is a long way from the US, while Canada is very close indeed. Australia's current trade with the US is 5 per cent of Canada's, and 5 per cent of Canada's procurement market share would be AUD 33 million a year, less than current estimated Australian sales of AUD 50 million. The CIE splits the difference between AUD 37.5 and AUD 360 million, and plumps for AUD 200 million a year additional export sales. In support of this estimate, it instances a market opportunity in the supply of sleep apnea treatment devices to the US Department of Veteran's Affairs worth AUD 6.5 million a year.

The main reason that the CIE concludes that the trade pro-rated Canadian estimate of AUD 33 million a year is too low is that it is less than the reported existing trade of AUD 50 million. However, the AUD 50 million appears to include defence trade and subcontracting, and is accordingly not comparable.

Using its own methodology, the CIE could have taken two additional steps.

- Add an allowance for additional sales opportunities in those US states which sign the Agreement. Current indications are that 27 of the 50 states are likely to sign. In 1994, Deloitte, Touche Tohmatsu estimated that inclusion in the offer by the United States of procurement by half of all American states and utilities to join the WTO GPA would add 40 per cent to the US Federal procurement offer. An addition of 40 per cent to the CIE's estimated market of AUD 200 billion would add AUD 80 billion. This AUD 280 billion brings the AUD 33 million up to AUD 45 million.

- Add an allowance for the under-estimation of Canadian sales by the Canadian Commercial Corporation. Unfortunately there is no data here. However, to get from AUD 45 million to AUD 200 million assumes that the Corporation is very much a minority affair rather than a mainstream conduit.

If nothing else, these calculations serve to illustrate the extent of the uncertainty imposed by lack of data. An alternative approach makes use of the limited data published by the US on foreign participation in US procurement.

- Start from the CIE estimate that the US Federal procurement market is worth AUD 200 billion a year.
- Add 40 per cent to allow for state markets, bringing the total to AUD 280 million a year. This may be compared with a total US federal/state procurement market, including defence, estimated by the WTO at more than AUD 500 million a year.
- Divide the market into goods and services. Based on US federal procurement data, this split may be roughly estimated at 60 per cent goods and 40 per cent services/construction.
- Estimate the import share of the non-defence US procurement market. The Canadian Commerce Corporation has estimated a minimum of two per cent for the whole US procurement market, including defence. It indicates that the import share of defence procurement is higher than for non-defence, since the latter includes a high proportion of services. (One wonders whether the CIE's USD 200 billion excludes procurement for social services. It should do this, since such purchases are excluded from the Agreement. We may even find that sleep apnea treatment devices are excluded.) On the other hand, the BIE has reported estimates of 8 per cent import penetration for the whole US procurement market. The Canadian estimate is reasonably current, whereas the estimate quoted by the BIE relates to the early 1990s. It may be that the difference reflects the passage of time, and impact of current American concerns about the loss of manufacturing jobs offshore. However, there are grounds for believing the Canadian estimate to be too low. The equivalent figure for Canada is estimated by the WTO to be 14 per cent, which, if adjusted by the import share of GDP yields a US estimate of 5 per cent – assuming that US government procurers exercise around the same degree of economic nationalism as their Canadian counterparts. A generous assumption would be import share of 2 per cent for non-defence services and 5 per cent for non-defence goods.
- Estimate the likely Australian market share of these US imports. Australia's share of the US goods import market as a whole is 0.5 per cent and its share of the commercial services import market is 1 per cent. These percentages are at the upper bound of likely Australian penetration of the US procurement market, since (as the CIE accedes) it will take time for Australian business to learn US procurement procedures. It may also be necessary to wait for a fall in the exchange rate before Australian suppliers are competitive – after all, the market shares quoted above were established under lower real exchange rates than currently prevail.

These calculations suggest additional exports of less than \$65 million a year, an estimate that is broadly compatible with the extended CIE calculation reported above.

8.3.2 Additional US sales in the Australian procurement market

The CIE argues that procurement by the Australian Commonwealth already conforms, near enough, to the Agreement, which will not, therefore, result in any increase in import penetration of the Commonwealth procurement market. As regards changes to procedure, the CIE concedes that the more legalistic process will exact costs, but argues that these will be offset by greater transparency.

Three comments are in order.

1. The openness and current lack of offsets in Commonwealth procurement reflects the ideological preferences of the current Commonwealth administration. It can be argued that, by signing the Agreement, the current administration is attempting to bind its successors.
2. The CIE has made no attempt to estimate the costs of signing the Agreement at the State level. State governments are much more concerned about economic development than the current Commonwealth administration and many are attempting to implement the agenda outlined in Section 7 of this report. The costs of hindering them in this endeavour could be considerable.
3. The CIE's assertion that increased legal and administrative costs will be balanced by greater transparency is open to challenge. It has been argued above that the Agreement is vague in important respects, which will introduce a major element of uncertainty into procurement, not to speak of legal costs until the position has been clarified. The cost of cultural change is also potentially large: it is no less than the replacement of the development orientation of Australian governments with the mindset of American legalism.

8.4 Government procurement policies and related industry development policies

In the issues surrounding government procurement, the components which are relevant to an evaluation of the AUSFTA are:

- (i) the increase in foreign import content of goods and services purchased by Australian Governments as a result of the abolition of local content preferences;
- (ii) the increase in exports of goods and services to the United States as a result of the opening up of the United States Federal Government procurement market and the United States state procurement market for those states which sign up to AUSFTA; and
- (iii) the prohibition of any link between Government procurement policies and industry development programs.

8.4.1 Local content preferences

The AUSFTA will require the Australian Government who sign up to the AUSFTA to place foreign tenders on the same basis as domestic tenderers. Australian government (both State and federal) will not, for large tenders at least, be able to explicitly or implicitly exercise any favouritism towards tenderers which have a high local content.

A common current practice is for Governments to impose a loading on the whole or part of a tender that represents overseas suppliers of goods and service. Thus, to obtain a comparable benchmark with domestic sourced contracts, the costs of the imported goods and services are inflated by a margin. The adjusted total contract price is then compared to the contract price from local suppliers. Where Governments have explicitly declared the margin it is generally either 10 or 20 per cent.

The CIE argues that the loadings are not very often applied. This is a naïve interpretation of the tender process. The reality is that significant protection is given to local industry because:

- (i) potential foreign tenders know that if they did tender for a contract which would relocate a significant proportion of goods and services provisions to overseas, they would trigger the application of the loading and therefore they do not tender;
- (ii) secondly, Governments have large scope to contend that an unsuccessful tender with the lowest price (even with loading) was not successful because of a failure to “meet all the contract requirement specifications”.

By itself the AUSFTA, by forcing a transparent tendering process, will remove a good deal of effective protection for Australian industry. In this case Governments may well want to rely on margin loadings for formal protection of domestic industry. Unfortunately, just when Governments will want to make more use of them the margin loadings will be removed for foreign bidders. In practice this is likely to apply to all foreign bidders, not just American bidders.

Local content preferences: the practical lower based estimates

In order to explore the practical minimum response to the withdrawal of local content preferences, what is needed is estimates of effective tariff equivalents given to industries by discriminatory Australian Government purchasing policies. Estimates were prepared by the former Bureau of Industry Economics in 1996 for 1990-91. These are given in Table 8.1.

For some of the tradable goods industries the effective protection rate appears high. However, it is consistent with the fact that what is left of the domestic demand component of the machinery industry in Australia is heavily dependent on the public sector. An example of this would be the railway equipment industry.

Some of the tertiary sector’s effective protection rates also appear high and, as a result, are adjusted down, though not by as much as might first be thought. The non-residential construction effective protection rate was adjusted down from 39 per cent to 35 per cent. The relative small change is justified on the grounds that 50 per cent of construction goods and services are tradable. As a result the AUSFTA will increase the presence of major foreign project developers in the Australian Government procurement market. The companies will have their own foreign-based supply chains and as a result there will be a flow of work in design, financing and initial inputs to overseas suppliers. The AUSFTA over the longer term will, therefore, weaken domestic construction industry supply chains.

The education effective protection rate appears high and for the analysis of this study is reduced to 20 per cent. However, a high effective protection rate is justified in the current era of sophisticated communication technologies. Australian universities are large employers and many courses could just as well be sourced from Harvard or Stanford. Off-site and remote learning courses would be particularly vulnerable to import competition.

Table 8.1 Estimated tariff equivalents in place by discriminatory Australian Governments purchasing policies by sector, 1990-91

	Effective protection	Imports excluded (2003 \$m)
Joinery and wood products	41	1.0
Publishing and printing	20	14.0
Paper stationery	50	3.0
Sheet metal products	5	3.1
Motor vehicles	4	19.0
Other transport	114	27.0
Electronic equipment	12	129.0
Refrigerators, household appliances and other electrical	25	50.0
Agricultural equipment	191	19.5
Construction machinery and material handling equipment	93	19.0
Other manufacturing	23	35.6
Water, sewerage and drainage	12	–
Non-residential construction	39	379.0
Air transport	2	2.3
Services to transport	9	–
Communication	42	1.0
Insurance and investment services	50	–
Education and library services	38	267.0
Welfare and religious institutions	1	–
Entertainment and recreational services	49	–
Total	–	968

Source: Bureau of Industry Economics, "WTO Agreement in Government Procurement", Potential Implications for Australia of Accession", December 1996, page 71.

Table 8.1 also shows the estimated increase in imports in 2003 if all Australian Governments sign up to the AUSFTA. This is estimated at \$968 million. This of course will only be achieved with phase-in over a number of years. The estimates are obtained by:

- estimating the import content of Government assets and investment expenditures by industry, updated to 2003, direct and indirect ABS input-output tables for 1996-97; and
- applying the effective tariff rates in the first column of Table 8.1 together with an import price elasticity of demand by unit.

This methodology could well under-estimate the increase in import penetration. Construction import content could be higher if an explicit analysis of the construction industry supply chain was taken into account. A number of key industries, e.g. hospital-based health services and transport services are not affected because import penetration is insignificant. This could rapidly change under the AUSFTA. In addition, as e-commerce takes greater hold in the years to come the advantage the United States has could significantly increase the service import content of the government procurement market.

However, this estimate also over-estimates the impact given the need to take account of the products and government agencies which are specifically excluded from the procurement agreement (at this time). As there is not sufficient information to guide us, we have assumed that the over and under estimates cancel out.

For this reason a relatively high probability is set for outcomes greater than the 92-product minimum of \$968 million. The downside probability is set at 20 per cent.

The -\$1.1 billion estimate in Table 8.2 for the minimum practical level assumes that the full increase in import penetration is not achieved to that date and allows for expected increases in the size of the domestic market over the period.

A study of the dependency of the Australian machinery production sector on public sector procurement shows the modesty of the assumption in Table 8.2, compared to the downside risk.

The dependency of the Australian metals and machinery industry on public sector procurement

The key to assessing the risks of the opening up of the public sector procurement market is an understanding of the dependency of the current Australian processed metals and other machinery production for domestic sales on public sector expenditure. In order to test the dependency, the following equation was estimated.

$$\begin{aligned}
 DSALES &= 3342.0 + 5.649 \text{ time} \\
 &\quad (3.8) \quad (0.8) \\
 &+ 0.561 * PUB \\
 &\quad (3.1) \\
 &+ 0.125 * PRI \\
 &\quad (3.26)
 \end{aligned}$$

R2 = 50.68

Where:

DSALES = quarterly real domestic sales from domestic production of the fabricated metals and non-transport machinery industries, \$m;

PUB = real public investment (excluding asset sales), \$m;

PRI = real private plant and construction investment (excluding asset sales and housing), \$m.

The equation was estimated using Australian Bureau of Statistics' data from 1986'2 to 2002'4.

What the equation says is that 56 cents in the dollar of public sector investment goes into orders for Australian fabricated metals and non-transport machinery production, while only 13 cents in the dollar for private investment does so. The balance represents the higher import content of private investment.

What the AUSFTA will do is reduce the 0.56 coefficient downwards toward the 0.125 private sector value. It is uncertain how far the coefficient will fall. It will not fall the whole way, if only because government purchases from the fabricated metals and machinery industries include purchases for defence and various other purposes not covered in the Agreement. However, the fall is likely to be significant. To give an indication of the lost domestic production, assume that as a result of the AUSFTA:

- (i) 20 per cent of the gap between the current public investment coefficient and the private investment coefficient is closed; and
- (ii) there is a 25 per cent domestic embedded tertiary services (business, design, finance) contribution that is reallocated overseas for every dollar of lost fabricated metals and machinery orders.

Current public sector investment is of the order of \$27 billion. A 20 per cent coefficient closure would result in the public sector coefficient being reduced to 0.47. This would result in \$2.3 billion in orders being relocated overseas, plus \$0.6 billion in services that would now be imported, giving a total of \$2.9 billion in annual lost domestic activity.

The \$968 million estimate in Table 8.1 represents only a third of this estimate and, therefore, implies a 7 per cent closure of the gap between the 0.561 coefficient and the 0.125 coefficient. This is a very modest result compared to the potential.

Practical upper limit

The technical maximum upper limit for this case will be zero with a zero probability that the technical upper limit will be exceeded. Hence, the practical maximum value will be interpreted from the simulation probability distribution.

The most likely case

The most likely case is taken from the AMWU discussion paper, "*The Implications of the AUSFTA for Government Procurement: What Will Australia Win or Lose*". In this paper an estimate is put forward of between \$150 and \$750 million reduction in domestic demand. However, the estimate includes industry development offsets which will be analysed separately in this study. Excluding this, a value of \$0.40 billion is specified for 2010 for the most likely case as the direct loss in GNP from the elimination of Governments' ability to use local production content as a criterion for tender selection. In terms of the above discussion, this specification is favourable to the AUSFTA since in reality the most likely loss will be considerably greater and much closer to the practical minimum level.

Simulated probability outcomes: local content preferences

The simulated probability distribution outcomes for the stand-alone case for the cost of the abolition of local content preferences is given in Figures 8.1(a) and 8.1(b) with the key summary statistic outcomes given in Table 8.2. The discounted mean expected total increase in imports is \$8.8 billion, with the 25 and 75 per cent probability benchmarks being \$9.5 and \$8.1 billion respectively. That is, there is a 25 per cent probability that the increase in imports will be less than \$8.1 billion on a NPV basis.

Table 8.2 AUSFTA probability modelling: local content preferences – increased imports

	Unit	Year	Value
Practical minimum	2003 \$b	2010	-1.1
Probability that practical minimum will be less	Per cent	2003-2025	0.2
Practical maximum^(a)	2003 \$b	2003	0.0
Probability that practical maximum will be exceeded	Per cent	2003-2025	0.0
Most likely	2003 \$b	2010	0.40
Simulation results			
Mean NPV	2003 \$b	2003-2025	-8.8
Minimum NPV ^(b)	2003 \$b	2003-2025	-12.5
Maximum NPV ^(b)	2003 \$b	2003-2025	-6.4
NPV with			
25 per cent chance of being smaller	2003 \$b	2003-2025	-9.5
25 per cent chance of being greater	2003 \$b	2003-2025	-8.1

Notes: (a) Technical maximum. That is, where there is no increase in import penetration for the Australian Government procurement market as a result of AUSFTA.
(b) Minimum and maximum of 5 and 95 per cent probability levels respectively.

8.4.2 AUSFTA and Government procurement: Australia's increased penetration of the United States market

The CIE estimates of the benefits of additional goods and services exports to the United States for the removal of discriminatory measures against Australian tenderers are crude and unsophisticated.

The logic is as follows:

- Australian industry wins approximately \$50 million of the United States procurement market;
- Canada's current share is 0.3 per cent;
- it is reasonable to conclude that Australia will win one third of the Canadian level; therefore
- Australia will benefit by \$150 million (from \$50 to \$200 million) annually.

The AMWU discussion paper counters that this conclusion is not reasonable because:

- Canada's economy-wide share of the United States goods and services market is 16.7 per cent and Australia's share is 0.7 per cent; therefore
- why would Australia win one third of the Canadian level when economy-wide Australia produces only 4 per cent of the Canadian outcome?

After assessing:

- the likely size of the United States procurement market opened to Australian exporters by the AUSFTA;
- the overall share of imports in this market; and
- Canada's share of the non-defence United States procurement (put at only 0.1 per cent),

the most plausible estimate for Australia's additional gain from the United States procurement market is around \$65 million (see Section 8.3.1 above).

Practical minimum and maximum

For the same reasons as those for the possibility of relatively high import penetration into the Australian Government procurement market, Australian based suppliers might capture a share of the United States procurement market above expectations. To give the Agreement the benefit of the doubt, the CIE estimates are accepted as the most likely and the AMWU estimates are accepted as the practical minimum. To allow for the fact that there is more downside than upside risk, the practical maximum is set at 20 per cent above the CIE estimate with only 5 per cent chance of being exceeded. The practical minimum is assigned a 10 per cent chance of the actual outcome falling below the minimum benchmark.

Table 8.3 gives the probability distribution parameters adjusted to 2010, after the phase-in has been completed.

Table 8.3 AUSFTA probability modelling: Australian export benefits from United States procurement market			
	Unit	Year	Value
Practical minimum	2003 \$b	2010	0.08
Probability that practical minimum will be less	Per cent	2005-2025	10.0
Practical maximum^(a)	2003 \$b	2010	0.17
Probability that practical maximum will be exceeded	Per cent	2005-2025	5.0
Most likely	2003 \$b	2010	0.17
Simulation results			
Mean NPV	2003 \$b	2005-2025	2.1
Minimum NPV ^(b)	2003 \$b	2005-2025	1.5
Maximum NPV ^(b)	2003 \$b	2005-2025	2.6
NPV with			
25 per cent chance of being smaller	2003 \$b	2005-2025	2.0
25 per cent chance of being greater	2003 \$b	2005-2025	2.2

Notes: (a) Technical maximum. That is, where there is no increase in import penetration for the Australian Government procurement market as a result of AUSFTA.
 (b) Minimum and maximum of 5 and 95 per cent probability levels respectively.

Probability distribution outcomes

The stand-alone probability distribution for procurement exports is given in Figure 8.2, with the key statistics given in Table 8.3. The range of outcomes between the 25 and 75 per cent probability benchmarks is small with the outcome range being \$0.2 billion in NPV terms. In outcome terms the NPV values for 25 and 75 per cent probability are \$2.0 and \$2.2 billion respectively.

8.4.3 Government procurement: offset schemes for industry development

In the application of the three principle drivers of knowledge-intensive growth, Governments around the world use preferences in access to Government contracts to induce companies to strengthen the high technology base of the economy. In exchange for commitments by companies to undertake offset activities Governments:

- restrict access to tender for specific contracts to those agreeing to government conditions for access;
- increase the benefits that offset companies gain from Government contracts relative to companies who are not willing to participate in offset arrangements; and
- apply a cost discount to the tender price of those companies who offer offsets.

The offset commitments offered by companies can be one or all of the following:

- increased exports;
- increased local production (that is, import replacement);
- increased research and development;
- increased investment, etc.

One of the better known offset programs applied by Australian Governments of the past is the Partnership for Development (PFD) Scheme.

The Partnership for Development Scheme

The Partnership for Development Scheme was introduced in the mid-1980s. The PFD scheme applied to foreign and domestic firms that supplied over \$40 million in information technology and communication equipment a year to the Government. Firms entering the PFD agreed to undertake agreed levels of strategic activities in Australia. These strategic activities included:

- research and development;
- training;
- technology transfer;
- capital investment;
- increased exports; and
- facilitating exports for other Australian companies.

In exchange, Governments would grant firms joining the PFD the following benefits:

- increased Government expenditures on areas of the firm's interest;
- promote the companies as good corporate citizens and reliable suppliers of goods and services to Government purchasing authorities; and
- giving the firms endorsed supplier status which was a pre-requisite for firms to be eligible for common use contracts (CUCs).

CUCs were contracts (worth about \$420 million in today's dollars) for goods and services that were supplied on an on-going day to day basis.

Offset policies

In terms of the specific mechanics of the applications of the PFD, the following guidelines applied:

- partners agreed to implement within seven years strategic plans to commercialise Australia's competitive strengths in the information, technologies and communication industries;
- the basic plan was expected to have the following characteristics:
 - 5 per cent of annual turnover on R and D in Australia;
 - achieved exports equivalent to 50 per cent of imports for hardware companies and 20 per cent for software companies; and
 - achieve 70 per cent local value across all exports by the seventh year.

By June 1993, 24 companies had entered the program with commitments of annual export sales of \$1.7 billion and average R and D expenditure of \$60 million. (P.J. Sheean, N. Pappas and E. Cheny, *"The Rebirth of Australian Manufacturing"*, Centre for Strategic Economic Studies, Victorian University, 1994, page 89.)

The success of the Scheme can be gauged from the responses of companies to a questionnaire administered by the BIE in 1996. The results are given in Table 8.4. Although the questionnaire considers all enhanced supplier arrangements, the PFD Scheme would have been well represented. A clear majority of respondents claimed that such schemes were either effective or very effective in increasing domestic economic activity across a range of activity segments. They were particularly effective in increasing value adding activity in Australia, investment and research and development.

More importantly, 90 per cent of survey respondents said that they did not invoke higher prices for goods and services to Governments in terms of the impact on tender prices.

Table 8.4 Survey responses: firms' views on the effectiveness of the endorsed supplier arrangements for industry development

	Ineffective	Effective ^(a)	Very effective
Increasing value added activity – Australia	23	58	19
Increasing industry investment	28	59	13
Increasing R and D	33	58	9
Enhancing access to Government markets by SMEs	28	52	20
Increasing exports	45	48	7
Increasing innovation	46	48	6
Improving product/service quality	25	56	19

Note: (a) Including quite effective.

Source: BIE (1996) p.65. Percentages adjusted to exclude don't know or not relevant.

Pharmaceuticals

The Factor (f) Scheme introduced in late 1988 is a classic case of using purchasing power to acquire offsets. Basically the Scheme allowed pharmaceutical manufacturers to receive higher prices for products listed on the Pharmaceutical Benefits Scheme in return for significant commitment to local manufacture.

For a company to be eligible for the Scheme two requirements had to be met, namely:

- an export/import target of 50 per cent had to be achieved within three years; and
- research and development spending equal to 3 per cent of turnover to be achieved in three years.

These requirements had to continue to be met if the company was to continue to receive increased prices under the Scheme.

By 1994, at a cost of \$109 million to the taxpayer, companies in the Scheme had delivered:

- \$416 million in export value added;
- \$419 million in domestic value added and import replacement; and
- \$152 million in research and development (Sheean, *op. cit.*, p.87)

The practical maximum

The technical maximum benefit for the loss of offset policies under the AUSFTA is zero. This would be the case if Australian Governments abandoned offset programs irrespective of the AUSFTA. The probability of this benefit being raised is zero.

The practical minimum

The estimation of the practical minimum benefit for the allocation of offset programs under the AUSFTA will be based on the PFD and Factor (f) Schemes. The assumption is that Governments will want to at least repeat some variation of such schemes in the future. However, it would take a change in attitude of the current Federal Government, or a change in the Federal Government for this to occur. Hence, nothing is assumed to happen until 2007. Policy strategy is assumed to achieve the same results as the two schemes did previously and reach a net annual contribution of \$1,500 million in 2003 prices by 2015. The \$1,500 million is:

- (i) net of Government costs of 15 per cent; and
- (ii) net of import content of 20 per cent of direct exports.

After 2015 the Scheme grows with high technology expenditure in the general economy.

To this must, of course, be added the cost of State Government offset policies that would be foregone. Using the AMWU Discussion Paper estimates this is placed at \$300 million by 2015.

From Table 8.5, by 2025 the annual loss in direct value added is \$3.7 billion.

The industries that would be encouraged by the offsets programs would, in general, fall under those industries which generated high spill-overs, that is high technological multipliers. Hence, the second column in Table 8.5 allows for a phase-in technological multiplier reaching 2 by 2020. The technology multiplier also incorporates the cumulative benefits of the R and D expenditure component that is part of the programs.

Table 8.5 AUSFTA probability modelling: offset elimination (technological multiplier)			
	Unit	Year	Under no technology multiplier
Practical minimum	2003 \$b	2015	-2.9
Probability that practical minimum will be less	Per cent	2015	20
Practical maximum^(a)	2003 \$b	2015	0
Probability that practical maximum will be exceeded	Per cent	2005-2025	0
Most likely	2003 \$b	2015	-0.6
Simulation results			
Mean NPV	2003 \$b	2005-2025	-14.0
Minimum NPV ^(b)	2003 \$b	2005-2025	-20.0
Maximum NPV ^(b)	2003 \$b	2005-2025	-8.4
NPV with			
25 per cent chance of being smaller	2003 \$b	2005-2025	-15.3
25 per cent chance of being greater	2003 \$b	2005-2025	-12.6

- Notes:
- (a) Technical maximum. That is, where there is no loss of offsets because of AUSFTA. This would only be the case if all Australian Governments would abandon offsets in the absence of the AUSFTA. The probability of this is zero.
 - (b) Minimum and maximum of 5 and 95 per cent probability levels respectively.

The probability of the outcomes being below the practical minimum, as can be seen from Table 8.5, increases with time. The current low probability reflects the current general lack of interest in these types of programs, compared to 20 years ago. However, when the debt binge which is currently driving overall growth has run its course, Governments will be considerably keener to exploit the potential of offset policies. Accordingly, the probability that the actual outcome will be below the practical minimum outcome steadily increases, until it reaches a maximum value of 50 per cent.

The most likely case

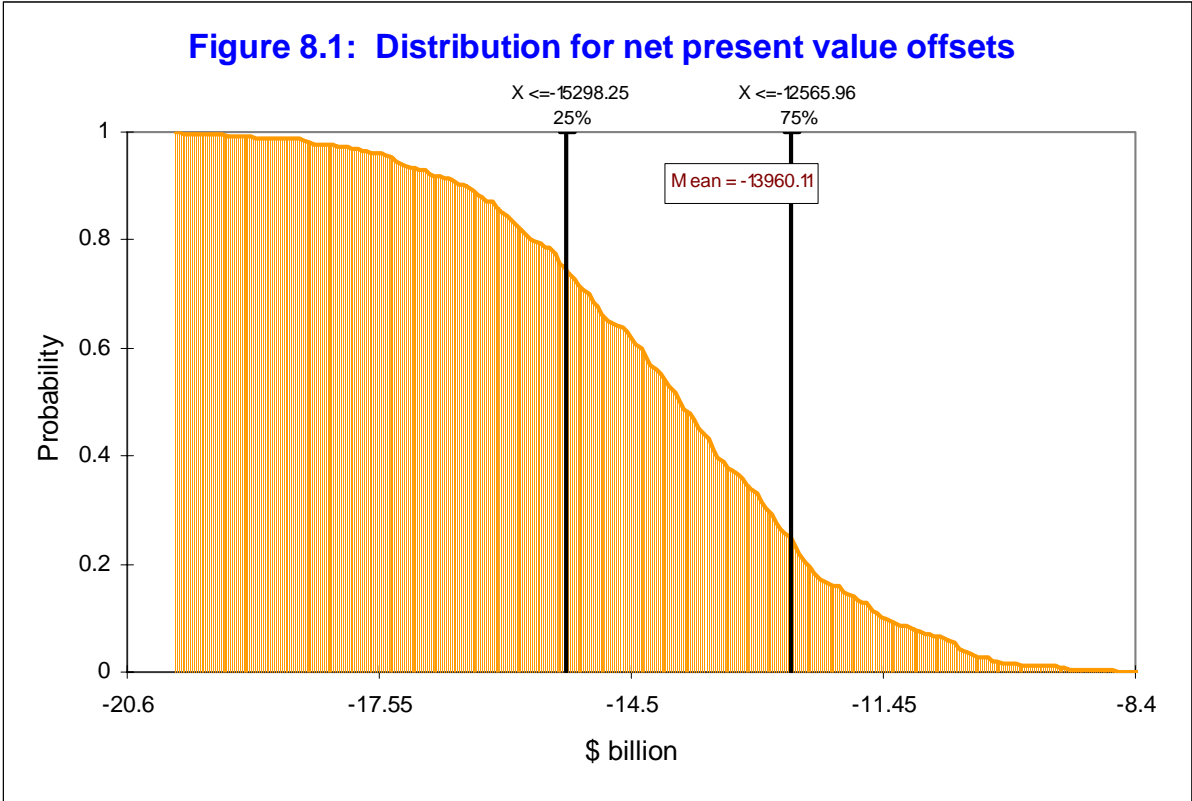
The most likely case will be related to the practical minimum. In this case it is conservatively (that is, from the perspective of minimising the cost) estimated that the most likely case represents 30 per cent of the practical minimum.

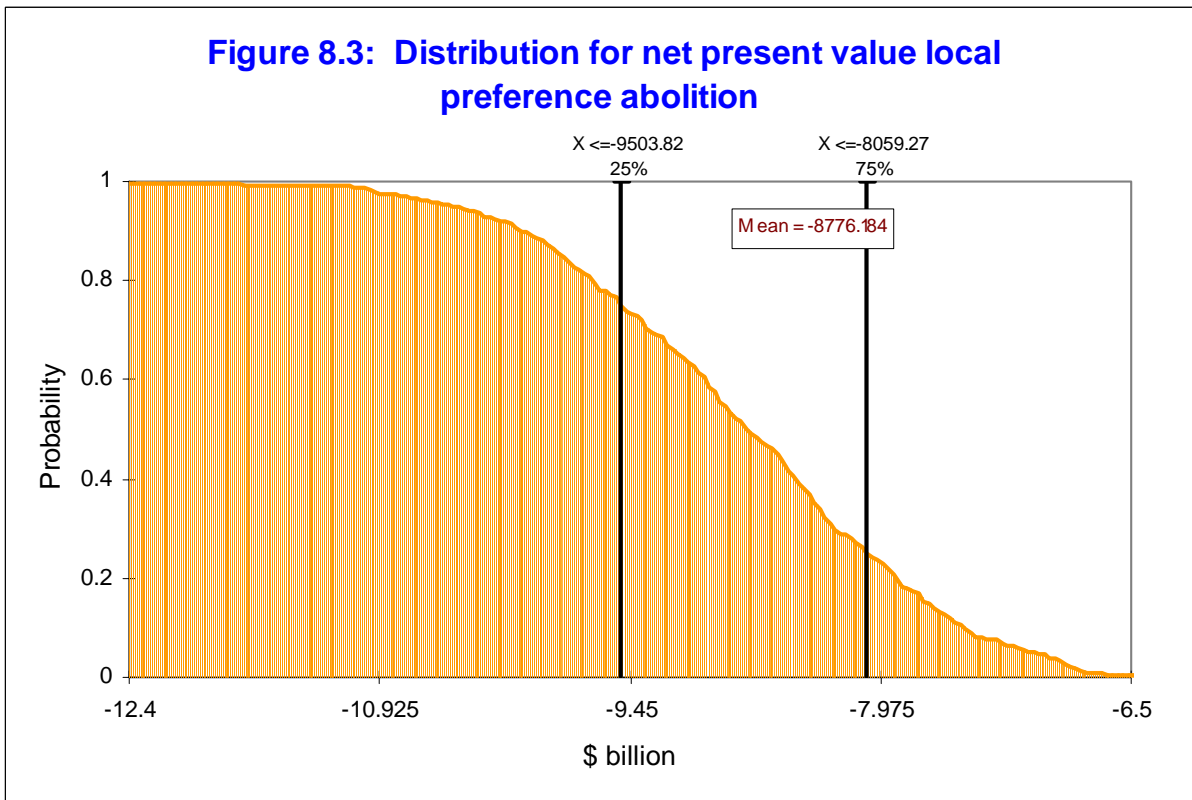
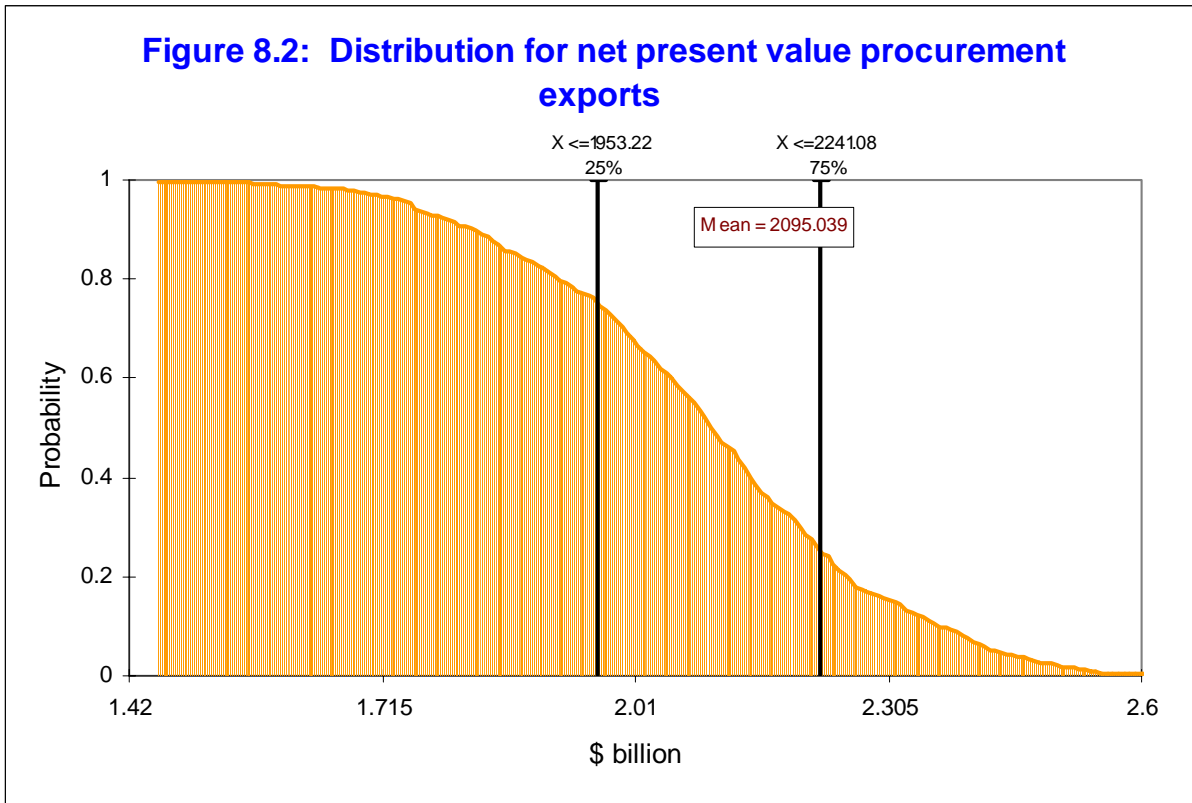
The probability distribution outcomes

Figure 8.1 specifies the simulated probability distribution. The range of outcomes for the 25 / 75 per cent probability range in NPV is between -\$15.3 and -\$12.6 billion. The mean is -\$14.0 billion.

Table 8.6 AUSFTA: Benefits from elimination of offsets

	Practical minimum direct income flows	Practical minimum with phase-in technological multiplier direct income flows	Practical maximum direct income flows	Most likely	Probability of outcomes below practical minimum
2005	0	0	0	0	10
2006	0	0	0	-63	10
2007	-225	-225	0	-68	10
2008	-450	-475	0	-142	15
2009	-675	-751	0	-225	15
2010	-900	-1056	0	-317	15
2011	-1125	-1392	0	-418	20
2012	-1350	-1762	0	-529	20
2013	-1575	-2169	0	-651	20
2014	-1800	-2614	0	-784	20
2015	-1924	-2947	0	-884	20
2016	-2056	-3323	0	-997	30
2017	-2198	-3746	0	-1124	30
2018	-2350	-4224	0	-1267	30
2019	-2511	-4762	0	-1429	30
2020	-2684	-5369	0	-1611	30
2021	-2869	-5738	0	-1721	30
2022	-3067	-6134	0	-1840	30
2023	-3278	-6556	0	-1967	30
2024	-3504	-7008	0	-2102	30
2025	-3745	-7490	0	-2247	30





9. Foreign investment and knowledge spill-overs

Investment is covered in Chapter 11 of the AUSFTA. The basic provision of the Chapter is that Australia shall treat US investors no less favourably than domestic investors, and reciprocally for US treatment of Australian investors (Article 11.3); this treatment being no worse than treatment of most favoured nation investors (Article 11.4). It is difficult to see how this changes the current position. However, several substantive changes are to take place.

9.1 Exchange controls

The Agreement prohibits the application of exchange controls to any cash flow generated by US investment in Australia or Australian investment in the US (Article 11.8). This is no change from current practice, but might become effective in times of financial crisis. From the Australian point of view, the Agreement prohibits the application of exchange controls to stem a run on the Australian dollar, at least as regards US investors. The people most likely to take notice of these prohibitions are hot-money investors with short-term time horizons. These investors are likely to be aware of the possibility of monetary panic – they have, after all, experienced several regional panics within the past two decades. As traders in liquid assets, they also value a guarantee that they can cut their losses. Individually, they probably over-estimate their ability to get out ahead of the pack.

It could be argued that, during a financial panic, governments will forget the niceties of treaties and will not hesitate to impose exchange controls if they deem them to be in the national interest. This may indeed be the case if a world financial panic originates in the US, but is less likely in the case of a regional financial panic. It will be remembered that the Malaysian government incurred considerable opprobrium from the US when it imposed exchange controls during the Asian financial crisis, even though it was under no treaty obligation to maintain free flows of short-term capital. Should a divergence of interest occur between the US and Australia concerning Australian exchange controls, the US is likely to invoke the Agreement very strongly indeed.

The prohibition on exchange controls is not of much use to long-term investors in illiquid assets, since in time of financial crisis such investors cannot easily convert their assets into the liquid form required for repatriation. Indeed, under conditions of financial panic the interests of long-term overseas investors (not to speak of the host country) may be better served by exchange controls which help to stabilise the exchange rate. For this reason, long-term investors are more likely to be interested in guarantees of financial stability and convertibility which apply in normal times. Australia has an entrenched policy of convertibility, and it is difficult to see how the Agreement adds to this.

The verdict on this provision is that it adds to the attractions of Australia as a destination for US speculative funds. This is likely to reduce the cost of investment funds during booms, but may considerably increase it during busts, and may add to the difficulty of controlling financial panics. It is not likely to have much effect on long-term investment.

Under the base case of a continuous boom, it is possible that this provision would benefit Australia. It would seem that this is the base case contemplated by the CIE in its assessment. However, the probability of significant financial crisis within the next decade or so is distinctly more than zero. It is arguable that in such a case the provision would impose considerable costs.

9.2 Performance requirements

The Agreement prohibits the imposition of export, domestic content or technology transfer requirements as a condition for investment, whether by Australian, US or other overseas interests (Article 11.9.1). The Agreement also prohibits export or domestic content (but not technology transfer) requirements as conditions for any investment advantage offered by a government to Australian, US or other foreign investors (Article 11.9.2). Explicitly, governments may continue to provide investment advantages, and may impose conditions on the receipt of investment advantages such as that the recipient locates production in a specific place, or trains or employs personnel, or conducts R&D (Article 11.9.3). Other exemptions apply to export promotion and foreign aid. However, by Article 15, investment advantages must not be provided in the course of government procurement.

The treatment of technology transfer requirements is of particular interest to Australia, given its technological underdevelopment compared to the US. The general prohibition of technology transfer conditions is unambiguous, and due to the technology imbalance imposes considerably stronger potential restrictions on Australia than on the US. The wording of the Agreement with respect to technology transfer conditions imposed in relation to investment advantages is ambiguous: such conditions are neither expressly permitted nor prohibited. The Agreement appears to invite litigation, not only with respect to technology transfer requirements balanced by investment advantages, but with respect to training and R&D requirements attached to investment advantages. At what point do such requirements amount to technology transfer requirements, and how far are they justified by the investment advantages provided?

These provisions directly affect a limited number of current Commonwealth programs, and a wider range of current state and local government programs. They also prohibit a wide range of potential economic development programs. A particular concern is the status of anti-competitive conditions included in technology licences, which in turn may be used as alternatives to technology transfer.

The cost to Australia of these investment regulations is whatever loss is occasioned by the restrictions on freedom of government action, including the costs of the restrictions on economic development incentives applied to foreign investment which is already on site, to say nothing of domestic investment. The net effect of the provisions depends on the balance between these costs and whatever benefits Australia will derive from investments which are currently not made due to the existence of performance requirements.

A neoclassical assessment of these provisions starts from the theoretical proposition that performance requirements are always a net cost to the imposing economy. The general proposition is that 'governments can't pick winners'; they always pick losers and end up spending more on incentives than the economy gains in additional production. Under this assumption, there is an automatic net benefit from prohibiting performance requirements, in addition to the gain from any addition to investment due to the absence of the requirements. This appears to be the CIE's position. The alternative view, expounded in Chapter 7, is that the curtailment of industry-specific performance requirements has considerable potential cost in terms of product lines not developed and product niches not occupied.

The prohibition of export and domestic content requirements for investments where governments provide no investment advantage does not change current Australian law. The prohibition of technology transfer requirements has potential to limit the scope for Australian regulation of licensing agreements, but may encourage an increase in US technology licensing to Australian firms (as distinct from US investment). However, there is scope for argument as to whether the terms of the additional licences will be so restrictive that there is any real benefit to Australia.

The prohibition on export or domestic content requirements as conditions of investment advantage does not prevent governments from providing investor advantages without quid pro quo, or with non-prohibited quid pro quo. However, the prohibition is likely to result in the withdrawal of at least some investor advantages. In determining the effect on capital inflow, it is therefore reasonable to compare a base case in which there are no investment advantages and no conditions, versus an AUSFTA case in which there are investment advantages balanced by conditions prohibited under the AUSFTA. Since the latter case does not preclude investment which is not responding to investment advantage, it is likely that capital inflow will be greater in the investment-advantage case. In other words, this aspect of the Agreement is likely to result in a reduction in capital inflow to Australia.

Suffice to say that the CIE report does not address these issues.

9.3 The Foreign Investment Review Board threshold

An important Australian mechanism for imposing conditions on overseas investment is the Foreign Investment Review Board. Annex 1 of the Agreement raises the threshold for notification of a potential US-based investment to the FIRB from AUD 50 million (AUD 10 million for new businesses) to AUD 800 million, save in media, telecommunications, transport, military goods, encryption technologies, uranium, urban land, financial services and for companies owned by foreign governments (collectively, sensitive industries). Unlike the prohibition on performance requirements, the Agreement limits the change to US investment, though it is possible that the Commonwealth may extend it to all overseas investment.

Much FIRB activity is currently directed towards channelling overseas investment in Australian housing into increasing the supply of housing and limiting the excess demand for existing dwellings. The Agreement will not affect this activity. Similarly the Agreement will not affect the assessment of investment proposals in the financial services sector, where prudential requirements are prominent. For investments other than those in the listed sensitive industries, the FIRB indicates that it normally does not object to proposals valued at less than AUD 100 million, but subjects proposals greater than this amount to scrutiny. This involves assessment of the following:

- compliance with government policy (for example, environmental and competition policy);
- national security effects; and
- economic development effects.

Information is sought from the applicant, the take-over target (if any) and Commonwealth and State agencies. Third parties are encouraged to make submissions. On the basis of its analysis, the FIRB makes a recommendation to the Treasurer, who may approve or disallow the proposed investment.

This raising of the threshold may attract additional US investment of two types:

- compliant investment which would be approved by the FIRB but is currently deterred by compliance costs; and
- currently non-compliant investment.

It is difficult to estimate how much currently compliant investment is deterred by compliance costs. Deterrence does not apply to portfolio investment. Much US investment in Australia is re-investment of profits earned locally, and it is difficult to imagine the local managers in charge of these re-investments being frightened of the FIRB. There may be some deterrence of incoming firms, but the compliance burden is likely to be light compared with the other costs of market entry.

The FIRB is not known for frequent rejection of applications. However, it reserves the right to recommend to the Treasurer against investment propositions. Possible reasons may include the following.

- The purpose of the investment is a reduction in competition in the Australian market. Under the Agreement, such investments can be regulated by the ACCC, but less neatly.
- The purpose of the investment is a reduction in competition in international markets. For example, in mining, deposits may be acquired and 'warehoused', though state mining tenement conditions try to discourage this. Another case is the acquisition of intellectual capital which is then silenced or exploited in the US. The Agreement gives US investors a right to acquire any Australian firm which looks like becoming competitive with them in international markets, provided the cost is less than AUD 800 million and the firm is not operating in a 'sensitive' sector. The only, and theoretical, limit to this right is US anti-trust legislation.
- The purpose of the investment is to run down the Australian capital stock for short-term financial gain. This is a particular threat in industries with long-lived assets.
- The purpose of the investment is to join in an overheated market, such as additional building construction at a time when macroeconomic policy is attempting to curb the boom.

The Agreement allows US investments of these kinds, up to AUD 800 million, subject to whatever regulation applies in the Australian market as a whole. It may be questioned whether such investments are worth any addition to capital flow they may occasion.

It will be noted that this assessment is not unlike the assessment applying to the prohibition of exchange controls: i.e. the Agreement may lead to a net increase in investment, but the investment encouraged may not be of high quality and may, in some circumstances, impose serious costs.

9.4 Sundry provisions

The Agreement requires that no restrictions be placed on the nationality of management appointees, but they can be applied to Boards of Directors.

There are various transition provisions.

9.5 The CIE's estimate of benefits

To estimate the impact of the investment provisions of the Agreement, the CIE makes creative and highly abstract use of the G-cubed model. The basic premise is that investment is homogeneous, and all overseas investments are equally beneficial to Australia. This gets rid of the possibilities, canvassed above, of negative returns to particular foreign investments.

The G-cubed model is a computable general equilibrium model sensitive to rates of return on capital. The CIE argues that the Agreements listed above, particularly the prohibition of exchange controls and the lifting of the FIRB threshold, will lower the cost of equity capital in Australia by five basis points. The basic assumption is that the cost of equity capital in Australia exceeds the Australian bond rate by 120 basis points more than the equivalent excess in the US. The CIE concedes that this is a long-term estimate, and in view of recent liberalisations of Australian foreign investment regulation it cuts the current differential to 60 basis points. It then allows that the Agreement applies only to US investment, which is 27 per cent of the current stock of overseas investment in Australia. It also allows that the deregulation does not apply to sensitive sectors, regarded as about a third of the total. The calculation $60 \times 0.27 \times 0.66$ yields 10 basis points, which the CIE halves, to be conservative. This is then input into the G-cubed model to generate an increase in investment and GNP. (The increase in GDP is greater, but the CIE concedes that some of the benefit will accrue to the US in increased investment returns.)

Even if one agrees with the underlying logic, the take-off point for this calculation is of doubtful relevance. The 120 basis point estimate on which it all depends is an approximate average for the whole of the 20th century, which includes lengthy periods when the AUD was far less convertible than it is now. In so far as the equity return differential is affected by freedom of capital flows, it is arguable that most of the 120 basis points differential should already have disappeared. If this is the case, the CIE's calculation collapses.

An additional argument is that differential equity premiums are to be expected in the US and Australia due to differences in industry mix. In so far as the US specialises in low-risk high-profit industries (especially pharmaceuticals) its equity premium may be expected to be higher than in Australia. However, a countervailing factor is Australian specialisation in industries exposed to commodity price fluctuations, which are likely to require additional long-term returns to compensate for this risk. Whatever the position, the important point is that differentials in equity returns occurring for any of these reasons will not be changed by changes in investment regulations. Even if Australian equity returns are now 60 basis points above the American equivalent, this may be due to industry mix and not to factors addressed in the Agreement.

The CIE calculation assumes that US investment is important to the Australian economy in proportion to its stake in the current overseas-owned capital stock. In view of the current US balance of payments deficit and low national savings rate, in the medium term this is likely to over-estimate the importance of the US as a source of new incoming foreign investment. This is despite the fact that in 2002-03 the US proportion of applications to the FIRB, by value, exceeded the US proportion of the overseas-owned capital stock. The US achieved this position due to the willingness of balance-of-payments surplus governments (particularly China and Japan) to hold short-term US securities, allowing the US to continue with direct foreign investment. Should this willingness decline one might be looking at a case in which the main effect of the Agreement on capital flows is to aid US disinvestment in Australia – in which case the guarantee of freedom from exchange controls increases in significance.

One also wonders about the capacity of the Agreement to effect a reduction in US assessments of Australian investment risk. Given that the prohibition of exchange controls does not change current conditions and that Australia does not currently impose performance requirements (except in exchange for investment advantages), the only trigger for changed perceptions is the increase in the threshold for FIRB notification. Compared with the barriers posed by widespread US ignorance of Australian investment opportunities, the current FIRB requirements would seem a rather minor barrier. To put the same point a different way, the calculated increase in investment is out of kilter with the assumed fall in the cost of equity capital. This fall is so small as to be imperceptible in the noise and fluctuations of equity markets.

In other words, the CIE's estimate of the benefit from the change in investment barriers involves an exaggerated response to a cost-change calculated as half of two thirds of a quarter of half of God only knows what.

9.6 The probability schedules: direct foreign investment

The liberalisation of foreign investment under the AUSFTA has the capacity to undermine Government visions to develop a knowledge-intensive innovation-driven economy. Under the Agreement, just as firms reach the "take-off" phase of successful commercialisation, the reduced ability of Australian Governments to protect them from overseas take-over could result in Australia losing intellectual property and production capacity. Any benefit from enhanced inflow of overseas investment funds must then be balanced against long-term failures in industry development.

To assess this cost two aspects need to be considered, namely:

- (i) feasible growth rates for knowledge-intensive companies vulnerable to take-over; and
- (ii) the visions of Australian governments for developing a knowledge-intensive economy.

9.6.1 Cochlear: at least one Australian high technology success story

The role model of the expansion path for high technology companies is Cochlear, the manufacturer of implant systems. The history of the company is:

- it was started off with a \$10 million venture capital injection in 1985;
- by 1995 the company had world-wide sales in excess of \$50 million and listed on the Australian Stock Exchange at \$125 million; and
- it now has total sales world-wide of nearly \$300 million and a market capitalisation of \$1.1 billion, with half the company's employment of 600 in Australia. Ninety five per cent of sales are exports.

9.6.2 The Federal Government's vision for innovation driven growth

A core aspect of the Government's knowledge-intensive economic development strategy was outlined several years ago in its statement *Backing Australia's Ability*. This was a comprehensive and integrated package of initiatives worth \$2.9 billion over five years. The core area of strategy was, inter alia, to manage intellectual property better so as to improve the commercialisation of Australia's publicly funded research and gain greater economic benefits from it.

Prior to the May 2004 Budget the Prime Minister launched the extension of *Backing Australia's Ability*. This appears to involve an even stronger emphasis on R&D, technology access and commercialisation of intellectual property (through the Commercial Ready Program) to help more Australian firms win international business opportunities. The question, of course, is how much additional economic benefit will be generated by this initiative. The intention is to improve the links between:

- an idea;
- the recognition that an idea will lead to a commercial opportunity;

- the development of the practical steps needed for success;
- the application of a development plan;
- product launch; and
- market growth.

An important dimension of these linkages was considered by the Prime Minister's Science, Engineering and Innovation Council in a report *Commercialisation of Public Sector Research* (June 2001). The Council concluded that if Australia closed the gap between ideas and commercialisation, based on the United States best practice standards, this would lead to a range of new start-ups with the potential to grow. Over 10 to 15 years it should be possible to create 200 to 250 companies each earning export income of \$100 million and employing 500 people. This is translated into a 20 year \$20 billion export target.

The task here is to convert the effects of the AUSFTA on innovation-driven growth into quantitative parameters for the foreign investment benefit probability distribution.

9.6.3 Direct foreign investment benefits: the practical minimum

Consideration of the practical minimum for the probability distribution for direct foreign investment will focus on the scope for damage to the economy through the sale of Australian intellectual property to foreign interests as a result of lifting the \$50 million FIRB threshold to \$800 million.

A conservative approach would be to assume the following. Suppose the 250 company target outlined above represents the current intention of all industry development policies of all Australian Governments. Certainly all Governments have stated their wish to foster the growth of such firms.

Many of these firms will die before they reach the \$50 million. Some will be taken over despite the existing \$50 million threshold. However, it is realistic to assume that an average of one firm per year will reach a capital value greater than \$50 million, and will in the future pass into overseas ownership as a result of a take-over that would have been prevented if the \$50 million threshold had been retained. Because there will be no restrictions it will be assumed that all production and research and development is transferred overseas after a one year lag.

The following assumptions will be made:

- the average capitalisation value on take-over is \$70 million;
- average domestic sales on take-over are \$20 million; and
- if the firm had remained in Australia its rate of sales growth would have been the same as in its industry as a whole.

This is a conservative assumption because it implies that only about 8 to 10 per cent of the 200 to 250 target companies will have their control and intellectual property transferred to foreign interests.

This does not take account of existing enterprises in the \$50 to \$800 million range which would be subject to take-over that are now protected by FIRB restrictions. What is important is not the whole range of companies in the capitalisation range, but companies with an intellectual property base where the operations of the enterprise would be more profitable if transferred to a relevant knowledge-based region in North America or Western Europe. To

represent this effect, one case will be taken, namely Cochlear. It will be assumed that Cochlear's current problem in the United States leads to its capitalisation value next year temporarily dropping below \$800 million. It is then taken over for \$800 million and over a six year phase-in period the production and research and development capacity is transferred overseas.

In terms of future growth rates, it is assumed that in the absence of take-over the growth rate of the new start-up firms transferred overseas would have been 15 per cent per annum. This is well below the Cochlear growth rate over the past 15 years. If Cochlear had stayed in Australia it is assumed that its growth rate would have been 7 per cent per annum. This lower rate reflects its relative maturity.

The direct and practical minimum direct income flows are shown in Table 9.1. In 2005 one firm is sold for \$70 million with no production loss. In 2006 Cochlear is sold plus another \$70 million valued company. The loss of production and R and D of the enterprise sold in 2005 also occurs. The net gain to Australia is \$850 million. After this the direct income flow turns negative. In the earlier years this is dominated by the Cochlear phase down.

In latter years the cumulative loss of production from the increasing number of enterprises that would have remained in Australia begins to take effect. By the end of the period in 2025, this and the loss of export income (net of capital transfer) is \$4.1 billion, compared to what would have been the case if the AUSFTA had not been implemented.

In reality, there is currently limited Government interest in creating all the factors required for principle three so that there is little genuine prospect of success in driving knowledge-intensive industry development. Hence, we set a low probability of the actual outcome being below the minimum practical outcome. This is 15 per cent to 2008 with this downside probability mainly capturing the impact on State Government knowledge-intensive industry development policies.

However, when the current growth paradigm ends, as is inevitable when the household sector cannot absorb any more debt, Governments will be searching for new growth drivers. This is reflected in the table by the increases in the probability that the actual outcome will be worse than the minimum practical outcome, reaching 30 per cent by 2025.

9.6.4 The practical maximum

The CIE estimates of the benefits of foreign investment under AUSFTA are a possibility, albeit a possibility with little probability of being exceeded.

Hence, Table 9.1 gives the interpolated estimates of the direct benefits of direct foreign investment by applying the calculations in Appendix C of the CIE report.

These estimates, however, are given only a 5 per cent probability of being exceeded.

9.6.5 Most likely case

The most likely case is based on two factors. Firstly, it is assumed that the most likely case is for the loss of intellectual property to the extent of 35 per cent of the practical minimum case. Secondly, it is assumed that Australia does indeed attract additional capital inflow as estimated by the CIE, except that this capital inflow is used to change established asset ownership. The cost will be a diversion of dividends and undistributed profits from local companies and households to foreign companies and households. From Table 9.1 this will impose a cost of \$1.2 billion on the economy by 2025.

	Practical minimum direct income flows	Practical maximum direct income flows	Most likely
2005	70	0	0
2006	850	18	-23
2007	-37	516	-47
2008	-137	794	-78
2009	-250	1088	-129
2010	-458	1396	-214
2011	-610	1721	-279
2012	-872	2062	-384
2013	-1168	2420	-501
2014	-1297	2796	-561
2015	-1439	3191	-626
2016	-1597	3605	-697
2017	-1773	3702	-762
2018	-1968	3802	-834
2019	-2186	3904	-914
2020	-2429	4010	-1003
2021	-2700	4118	-1102
2022	-3003	4229	-1213
2023	-3342	4344	-1336
2024	-3722	4461	-1473
2025	-4149	4581	-1627

	Unit	Year	Value
Practical minimum	2003 \$b	2025	-4.1
Probability that practical minimum will be less	Per cent	2005-2008	15
	Per cent	2009-2015	25
	Per cent	2016-2025	30
Practical maximum	2003 \$b	2025	4.6
Probability that practical maximum will be exceeded	Per cent	2005-2025	5
Most likely	2003 \$b	2025	-1.2
Simulation results			
Mean NPV	2003 \$b	2005-2025	-3.8
Minimum NPV	2003 \$b	2005-2025	-16.6
Maximum NPV	2003 \$b	2005-2025	11.5
NPV with			
25 per cent chance of being smaller	2003 \$b	2005-2025	-7.3
25 per cent chance of being greater	2003 \$b	2005-2025	-0.9

Notes: Mean and lower band have been adjusted to account for sale of Cochlear.

Source: Text Table 9.1 and Figure 9.1.

9.6.6 AUSFTA and foreign investment benefits – the probability distribution

The simulated probability distribution of benefits to Australia from the impact of the AUSFTA on foreign investment is given in Table 9.2 and Figure 9.1. The mean expected NPV benefit is -\$3.8 billion. The range for the 25/75 per cent probability benchmark is -\$7.3 to -\$0.9 billion.

In considering this outcome it may be argued that FIRB intervention is so rare that even the existing guidelines would result in the loss of economic benefits outlined here. However, as the CIE argues, the deterrence effect of just having national interest compliance arrangements may be important. The fact that it is not used is in effect a strong argument for its effectiveness. One important test case (as occurred in the case of the proposed takeover of Woodside) in preventing the takeover of a rapidly expanding Australian technology business (in the \$50 to \$80 million range) may be all that is required for the “deterrence effect” to become operative. This will not be possible under the AUSFTA.

In addition Australia, under the AUSFTA, would not be in a position to change its national interest FIRB guidelines to deal with emerging issues. For example, consider the case of the most knowledge-intensive industries of the future (such as biotechnology, nanotechnology, etc.). A situation develops where Australian firms capitalised at less than \$50 million (either publicly listed or private) are being taken over by American firms, their intellectual property commercialised offshore, and government determines that this is not in the national interest. The provisions of the AUSFTA would effectively prevent changes in the FIRB national interest guidelines to deal with this situation. The loss of sovereignty to protect Australia's national interest in the future, in relation to issues that are not foreseeable today, suggests that NIEIR's assessment of the likely negative consequences may be very conservative indeed.

9.7 The technological multiplier and knowledge spill-overs

This is not the end of the foreign investment story. A further effect concerns spill-over benefits, or more accurately the cost of the foregone spill-overs of not developing knowledge-intensive industries. The relevant general issues have been considered in Section 7 above, but no allowance has so far been made in this section.

Some may doubt the empirical relevance of this aspect. However, the Prime Minister's Science, Engineering and Innovation Council Working Group gives a definitive statement as to its relevance. The conclusion of the Working Group is that the main reason for Australia's relatively poor performance in the commercialisation of public sector funded research is lack of strength in the links between public and private institutions. That is, there are no strong clusters of integrated research and high technology production capacity in Australia.

The loss of high technology production and research from both the loss of offset policies and foreign investment liberalisation can only weaken an already weak structure. This will lead to loss of growth potential for the commercialisation of innovations that would not otherwise be affected by the AUSFTA. A reasonable estimate of these costs is the technological multiplier, since the spill-over effect will apply a multiplier to the direct offset and foreign investment impacts. The multiplier, however, phases in slowly, reaching a value of two by 2020. By 2025 the spill-over effect losses will equal the direct losses from the two aspects of the AUSFTA which impact on the prospects for knowledge-intensive innovation-driven industries.

The inference here is that, because Australian governments are not being guided by principles one to five outlined in Section 7, much of Australia's current direct expenditures to build a knowledge-intensive nation will be ineffective. The benefits will either be stillborn or will be harvested by other nations. In terms of the domestic taxpayer, a significant portion of the expenditures will return the same economic benefit as paying labourers to dig and fill in holes.

9.7.1 Technology spillovers: the probability distribution

Figure 9.2 shows the simulated probability distribution for technological spill-overs.

The minimum value is -\$14.8 billion and the maximum value is -\$5.5 billion. The mean value is -\$10.1 billion.

9.8 Dynamic effects from trade liberalisation

NIEIR's work has found that there can be strong productivity gains from trade. The productivity effects of firms gaining export markets can have flow-on effects in terms of efficiency, profitability and productivity which are very large indeed, especially for import replacement industries which are restructured towards export expansion. (See *Drivers of Growth in Victorian Gross State Product per Capita Growth*.)

Unfortunately these gains are particularly important in the high technology industries which are unlikely to be favoured under the AUSFTA. The majority of industries that will benefit are industries already exposed to international trade with more limited prospects for flow-on productivity gains.

Nevertheless, the potential dynamic gains from trade cannot be ignored. Hence, the assumption made is that, as for the technological multiplier, there is a 1.5 dynamic trade liberalisation multiplier which phases-in in the same way as the technological multiplier. The multiplier is applied to all exports, excluding agriculture.

From Figure 9.3 the expected NPV value is \$6 billion for the dynamic trade liberalisation effects.

Figure 9.1: Distribution for net present value foreign investment

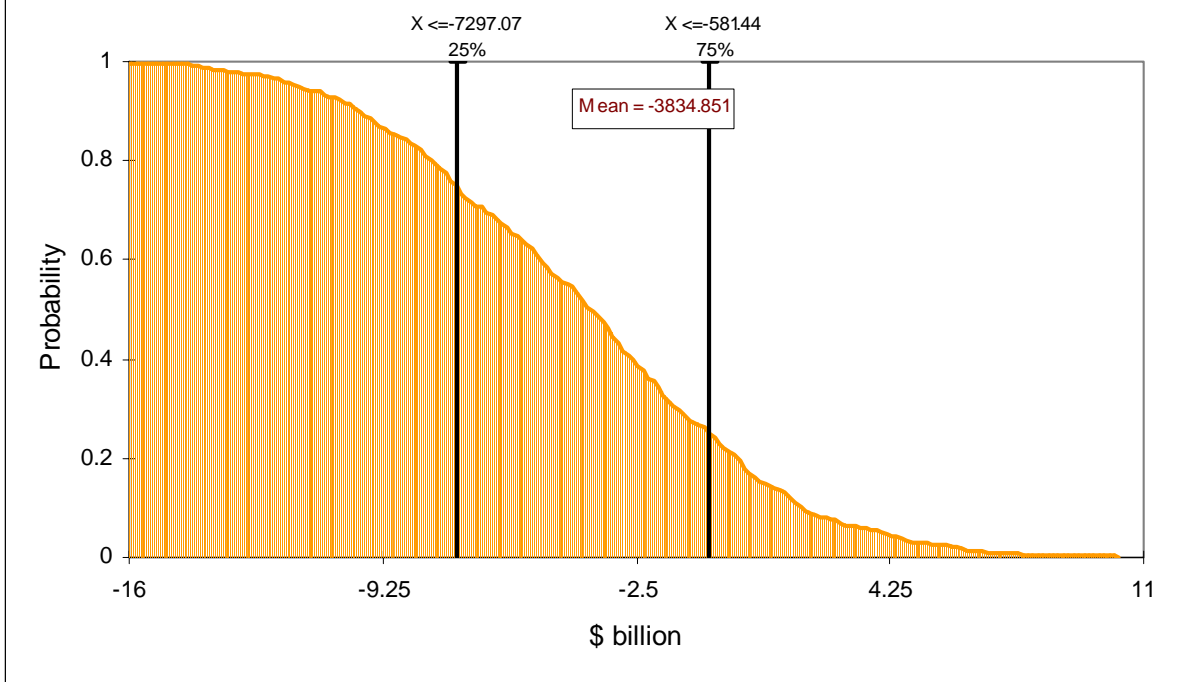
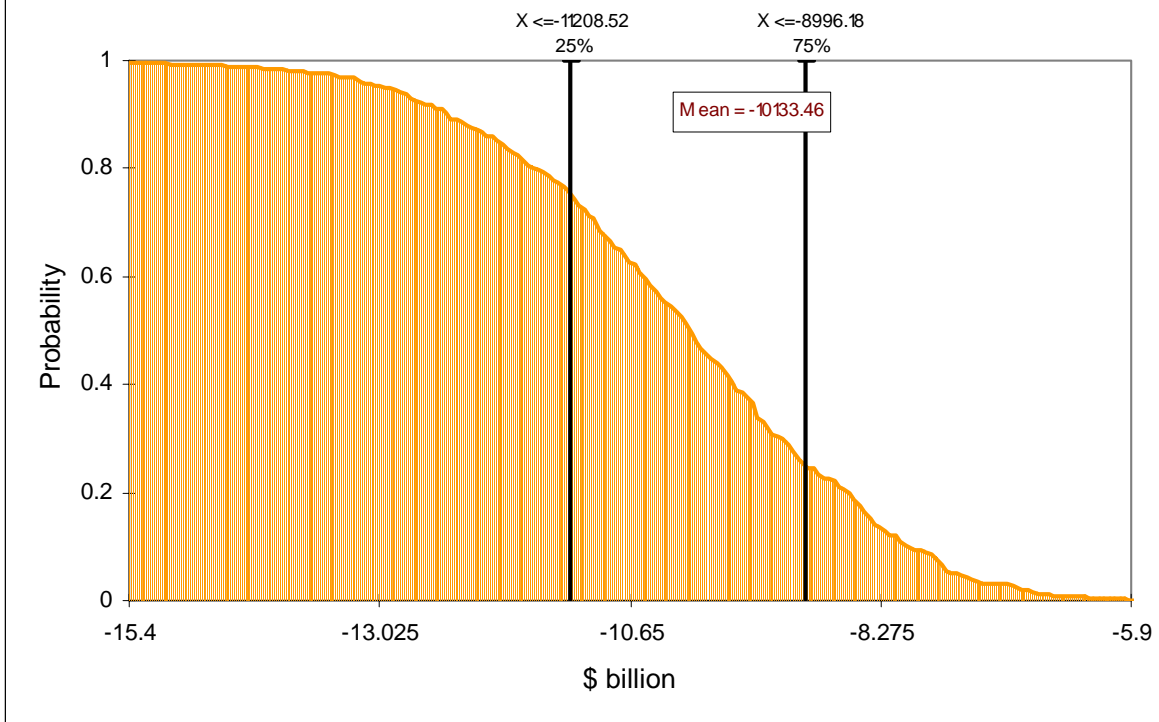
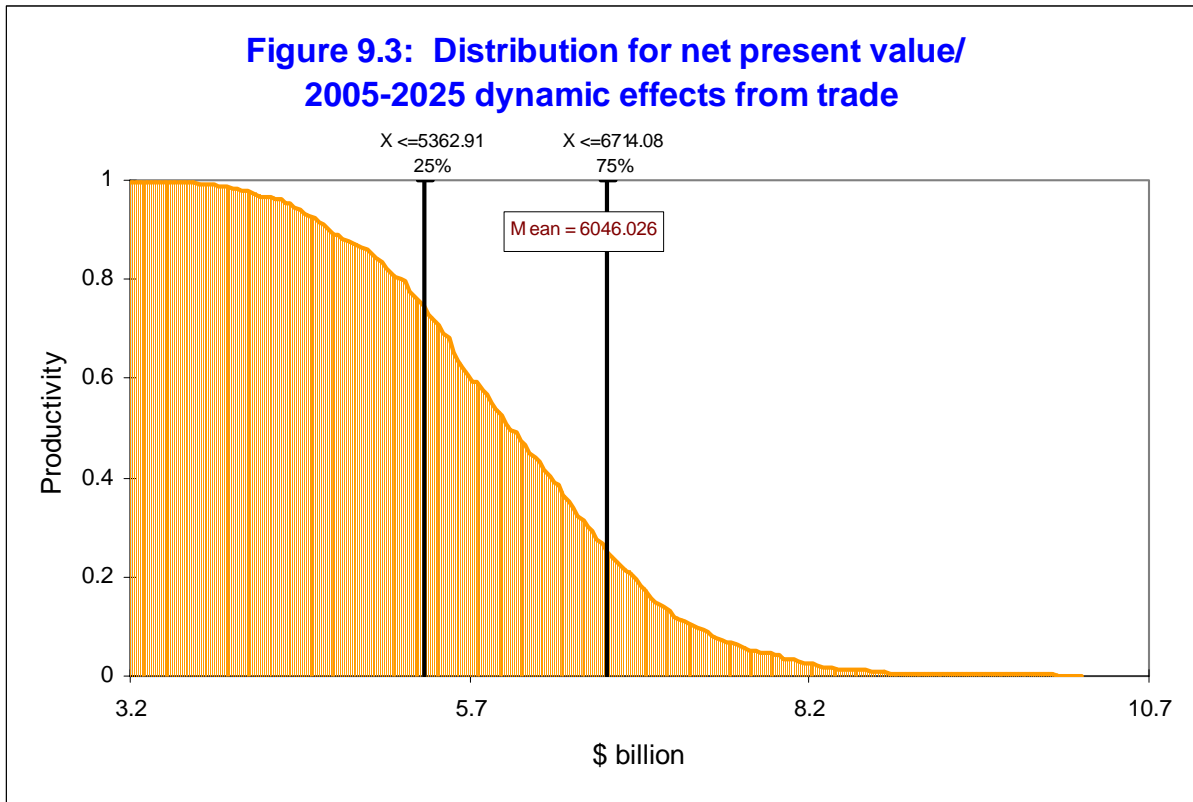


Figure 9.2: Distribution for net present value/spillovers





10. Intellectual property and pharmaceuticals

The AUSFTA provisions on intellectual property rights are covered in Chapter 17, while the closely-related matter of trade in pharmaceuticals is covered in Annex 2-C.

Intellectual property rights are restrictions on the circulation of ideas and knowledge. They are hence contrary to the spirit of free trade, even if they increase the cash flows between nations. The justification for intellectual property rights is that they allow private creators of knowledge, works of art and the like to reap a reward for their efforts. Intellectual property rights are thus defended as essential incentives to innovation, research and creativity. However, they do this by restricting access to knowledge, and to this extent hinder further research and creativity, to say nothing of restricting the benefits of access to knowledge. The whole regime of intellectual property rights is therefore, at best, a matter of balance between incentives to create and the freedom to know. At worst it restricts access to basic scientific knowledge. It is no wonder that the permissible range of intellectual property has been constantly debated, with proponents of corporate research arguing for extensive privatisation, and their opponents arguing for public sector knowledge-creation followed by immediate publication for the general benefit. This, indeed, was the traditional *modus vivendi* for universities, but the drawing-together of research and application, as described in Section 7 of this report, has increased pressure for privatisation. Future generations may or may not thank us for this trend.

In the view of the *Australian Intellectual Property Law Bulletin* (May 2004), 'Broadly speaking the [AUS]FTA seeks to align Australian and US intellectual property laws and practices, principally through the adoption by Australia of US legislative standards in a number of key areas. International agreements relating to intellectual property invariably strengthen the position of intellectual property rights holders, and the FTA is no exception. What remains to be seen is whether the FTA (and the subsequent domestic legislation required to implement its terms) will maintain a balance between the interests of rights holders on the one hand, and the interests of users, consumers, educators and researchers on the other.'

The provisions of Chapter 17 are complex. *The Australian Intellectual Property Law Bulletin* gives most space to effects on the effects on internet usage, but NIEIR has not been able to interpret these effects so as to determine the balance of benefits. Instead we will confine our discussion to three areas:

- technology transfers;
- copyright; and
- pharmaceuticals.

10.1 Technology transfers

The US has been concerned that a number of Latin American and Asian countries have been imposing conditions on the transfer of technology. By Decision 24 of the Andean Group, made in 1987, member countries refuse to accept technology transfers which:

- oblige the purchaser of the technology (including patents and trademarks) to source particular inputs;
- limit price flexibility or production;
- prohibit the use of rival technologies; or
- bind the purchaser to transfer to the supplier of the technology any improvements made to it. (Article 20).

In other words, the Andean countries are unwilling to accept technology transfer which involves conditions in restraint of trade.

Australia does not currently prohibit such transfers, but in so far as they take place as part of an overseas investment they could currently be rejected by the FIRB. Prohibitions of this kind are not specifically addressed in the Agreement, save through the provision that Australia shall accord US owners of intellectual property treatment no less favourable than the treatment it accords to its own nationals with regard to the protection and enjoyment of intellectual property rights and any benefits derived from them (Article 17.1.6). However, in some circumstances it could turn out that the Agreement sets up a lawyer's field day. Consider, for example, an Australian objection to the inclusion of the sorts of conditions prohibited by the Andean group, not in a technology transfer, but in a licensing agreement. A possible interpretation of the prohibition of technology transfer requirements (Article 11.9.1) in conjunction with protection of intellectual property rights (Article 17.1.6) is that there should be no limits to the conditions which may be included in licensing agreements. If this is the case, the Agreement provides potential shelter for agreements in restraint of trade. This is some achievement for a Free Trade Agreement. The CIE does not consider this possibility.

10.2 Copyright

While the effect of the Agreement on technology transfer is uncertain, and at the margin will not be known until there has been a lot of expensive litigation, the extension of duration of copyright is straightforward. Under the Agreement Australia agrees to extend copyright from 50 to 70 years after the year of publication, or 70 years after the author's death in cases where copyright was originally held by an individual (Article 17.4.4).

The CIE analyses the theoretical impact of this provision quite carefully, and concludes that its effect as an incentive to artistic production is likely to be negligible. Its main effect is likely to be a windfall capital gain to the owners of copyrights which are about to expire at fifty years. At this point the CIE analysis ends, and no assessment is made of any net cost or benefit to Australia. We may, however, continue in the same vein. If ownership of copyrights which are about to expire were equally distributed between the US and Australia, per capita, and if the Australian copyrights had equal market penetration in the US as the US copyrights in Australia, the effect would be a transfer of wealth from the general population in each country to the relevant copyright owners. This in itself could be seen as undesirable on distributional grounds, but would not affect the distribution of wealth between the countries.

However, it is difficult to argue that these conditions are met. So far as is known, the Australian copyrights which are about to expire are of little market value, particularly in the US. However, there are important copyrights in the US entertainment industry, on which revenue is earned in Australia, which are about to expire. The provision, accordingly, is for a windfall wealth transfer from the Australian public to the US entertainment sector.

A rough order-of-magnitude calculation of this impost is as follows. Assume that all relevant copyrights are held by the Disney Corporation. This disregards copyrights held by other US entertainment industry corporations. A current take-over bid values Disney Corporation at USD 66 billion. Assume that a 20-year extension of copyrights world-wide would raise the value of the corporation by 10 per cent. The value of the extension is then approximately AUD 9 billion. Under the Agreement, Australia will contribute to this capital gain in proportion to its consumption of products which come under the extended copyright. The Australian proportion of the total population of the major English-speaking countries is 10 per cent, but its proportion of the capital value of American-owned entertainment copyrights is likely to be rather less, to allow for value generated outside the major English-speaking countries and for higher market penetration in the United States. Taking an estimate of 5 per cent, the Agreement should be debited with a once-only capital transfer from the Australian public to

the US of AUD 450 million for Disney Corporation alone. Disney is not the sole benefiting copyright owner, so this estimate could easily be doubled.

10.3 The AUSFTA and the cost of pharmaceuticals

In 1996 the Industry Commission completed a report which provides valuable background to the pharmaceutical industry. The report notes that the international industry has consistently been highly profitable, turning in average rates of profit (whether assessed in relation to assets employed or sales) around double the rates achieved in other industries. The industry has defended its high profit rates as a return on the high risks it shoulders, which include the risks of product development and the risks of financial loss in the event that a product turns out to be unsafe. (Various firms in the industry have been successfully sued for damages involving high-cost payouts, though so far without serious damage to the industry's overall profit record.) Another factor enhancing risk is the fact that profits tend to derive from a few 'star' drugs in each manufacturer's portfolio.

The Industry Commission also notes that the industry is highly dependent on public sector support, in three ways.

- Patent legislation allows the industry to recoup research and development costs from the sale of patent medicines. Though patents expire, so does the utility of many patent medicines, since the target microbes tend to develop immunity to the medicine. Pharmaceutical practice is thus based on pursuit of an ever-receding target, and industry sales are generated from serial patents.
- The industry's own research and development is undergirded by public sector research. As outlined in Section 9 of this report, this in all probability includes Australian research obtained by take-over of Australian attempts to commercialise research findings.
- The industry would not be at all profitable without public subsidies to finance the purchase of patent medicines. Sick people tend to be poor people, who cannot afford costly drugs. However, in most Western democracies, with the partial exception of the US, there are public schemes which assist with payments for prescription pharmaceuticals.

As evidenced by their profit rates, the companies are nothing if not profit-maximisers, hence they avoid development and production of drugs for the treatment of third-world diseases. They instead concentrate on

- Patent medicines which wealthy individuals can buy (witness the recent heavy advertising for improved erections) and
- Patent medicines subsidised by the governments of wealthy countries.

If 'lifestyle' drugs under the first heading can be brought under the second, so much the better.

Critics of the industry argue that, particularly as regards infective disease, the drug-intensive approach to therapy is taking government resources from the older 'public health' approach. The public health approach concentrates on control of the spread of infection. Since it is a matter of community organisation, public health cannot be privatised. It has the advantage of low cost, and it is not for ever trying to keep up with the developing immunities of bacteria and viruses. Public health infrastructure is also vital to the control of biological terrorism. Provided public health infrastructure is in good order, it is complementary with the

pharmacological approach to disease control, but returns to pharmacology diminish if the public health system deteriorates. Even from a rich-country point of view, this includes poor public health systems in third-world countries, since these countries are the probable sources of first-world epidemics (as has already happened with HIV/AIDS). It is argued that, at least in the US, the diversion of public funds into drug purchases has squeezed the public health services (Garrett, *Betrayal of Trust*, Oxford, 2001). Such diversion is unfortunately likely where private vendors with ample advertising and lobbying budgets are competing for public funds with the salaried medicos who provide public health services.

Against this background, it is important for treasuries to be vigilant that they do not overspend on patent medicines. Australia exercises this vigilance through the Pharmaceutical Benefits Scheme (PBS). The CIE report concludes that measures outlined in the AUSFTA are likely to have minimal impact on the PBS. This is because the measures mainly relate to the broad aspects of the Scheme, such as:

- agreeing on common principles;
- improving administrative processes;
- enhancing transparency; and
- putting in place review mechanisms.

This is not the view of Professor Peter Drakos, *et. al.*, *The FTA and the PBS*, a submission to the Senate Select Committee on the United States-Australia Free Trade Agreement. The argument put in this submission is that there is a range of aspects in the AUSFTA which will contribute to an overall significant increase in PBS costs.

Firstly, the argument is that the AUSFTA will increase the bargaining power of United States companies for new drugs, if not for existing drugs. Thus, as new drugs are phased in over the next five years, drug prices will rise compared to the prices that would have been paid in the absence of the AUSFTA.

The authors argue that the effect of the measures will be to reduce the existing cost differential between the prices of drugs in the United States market and the prices for drugs in Australia. The authors cite a Productivity Commission study which estimated that prescription drug prices in the United States are around three times the comparable Australian price. On the assumption that this cost differential is halved over the next five to ten years, the authors estimate that the cost of the PBS could conservatively increase by \$1.6 billion, with no additional benefits. This cost increase excludes the flow-on cost increases for hospitals.

The authors also argue that the intellectual property right (IPR) measures of the AUSFTA will increase the costs of the PBS. The AUSFTA concedes to the United States and other overseas countries standards on IPR which intellectual property owners have not been able to obtain through the WTO process. This will limit the ability of Australian Governments to define standards of IPR regulation that optimise the benefits to Australia. By doing this Australia is "throwing away substantial export opportunities".

Further, the authors argue that the measures in the AUSFTA extending the originator company's rights to data protection will substantially lesson competition in the drug market. This is because generic drug manufacturers, that is companies which make their own version of a drug once it comes out of patent, will have to wait an average of three years longer before they can conduct the clinical studies required for drug development. The authors estimate that just for five drugs studied the cost will add \$0.26 billion a year to the PBS cost for the 2006 to 2009 period.

Further, these measures will make it much harder for Australia to develop a biotechnology industry.

Overall the conclusions of the authors is that the potential costs post 2010 are very large, especially given the penalties on Australia for non-compliance.

10.3.1 The practical maximum benefit

The practical and technical maximum pharmaceutical benefit is the CIE assessment of zero cost with a zero probability of the maximum being exceeded.

10.3.2 The most likely

The most likely case is set at the conservative cost estimates of the Senate Submission. This is -\$2.0 billion which allows for market growth to 2012.

10.3.3 The practical minimum benefit

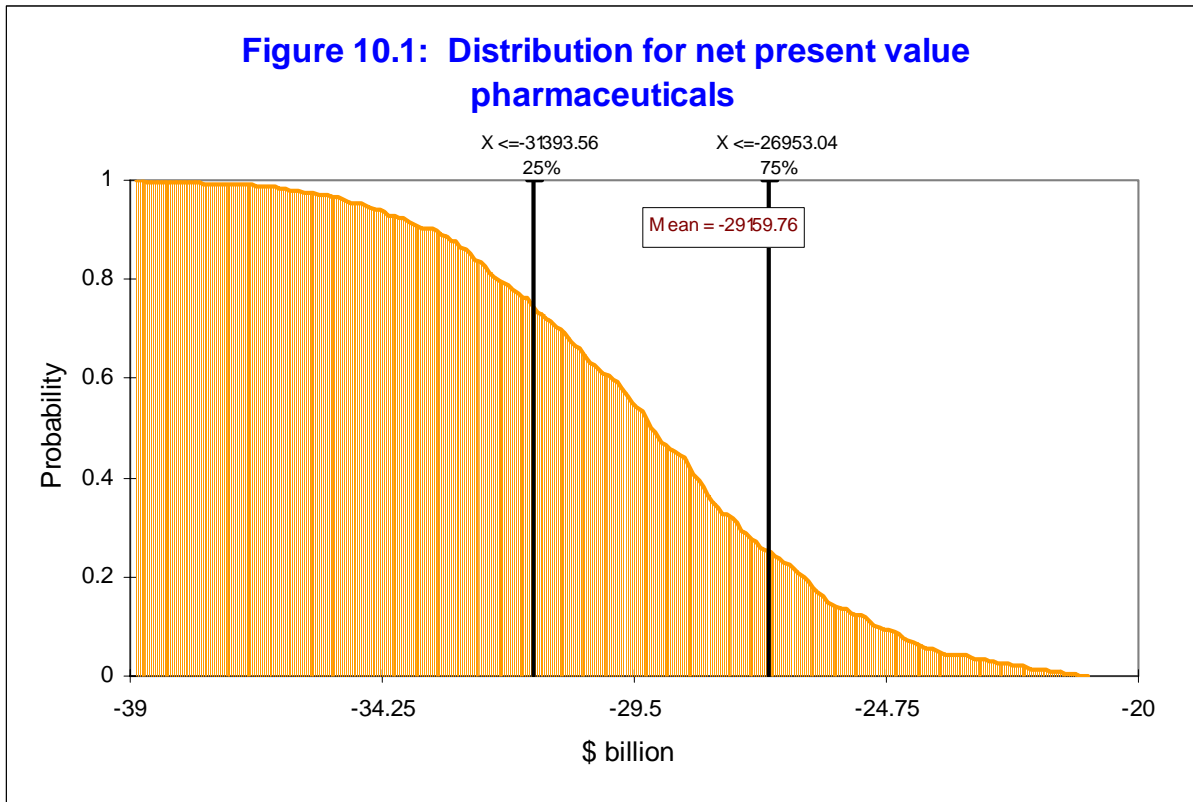
The practical minimum benefit is set at -\$3.2 billion in 2012. However, to allow for the high level of uncertainty, the probability of this benchmark being exceeded rises rapidly after 2012.

10.3.4 The probability distribution

Figure 10.1 and Table 10.1 show the key factors of the probability distribution. The mean NPV of -\$29.2 billion falls within a relatively narrow band between the 25/75 per cent probability benchmarks.

Table 10.1 AUSFTA probability modelling: the cost of pharmaceuticals			
	Unit	Year	Value
Practical minimum	2003 \$b	2012	-3.4
Probability that practical minimum will be less	Per cent		5 ^(a)
Practical maximum	2003 \$b	2012	0
Probability that practical maximum will be exceeded	Per cent		0
Most likely	2003 \$b	2012	-2.0
Simulation results			
Mean NPV	2003 \$b	2005-2025	-29.2
Minimum NPV	2003 \$b	2005-2025	-38.4
Maximum NPV	2003 \$b	2005-2025	-19.4
NPV with			
25 per cent chance of being smaller	2003 \$b	2005-2025	-31.4
25 per cent chance of being greater	2003 \$b	2005-2025	-27.0

Note: (a) Increases to 30 per cent by 2025 to reflect the high level of downside risk.



11. AUSFTA: total expected benefits, downside and upside risks

The previous section has indicated the characteristics of each component of the AUSFTA in terms of the outputs of logically constructed probability functions. The probability distribution of total NPV is found by generating the distribution from the sum of output across all relevant AUSFTA components.

The technique for deriving the total distribution is the same as for the components. Repeated Monte Carlo simulation of the components considered simultaneously is used to derive combinations of the components that are associated with a given total NPV. A given total NPV may be due to high trade benefits and low foreign investment benefits, zero offset loss, etc. or it may be due to high offset loss, zero trade benefits and high foreign investment benefits. Repeating the combinations across the range of possible total NPV outcomes allows the probability distribution to be derived.

In terms of the total indicators, the probability distribution was derived for:

- (i) total net present value 2005-2025, \$ billion;
- (ii) direct GNP impacts in 2025, \$ billion;
- (iii) total present value impact as a percentage of GNP;
- (iv) average employment impact 2005-2025; and
- (v) total employment impact in 2025.

11.1 Flow-on effects are ignored

With the objective of keeping the results very conservative, no attempt was made to calculate flow-on effects. If this had been done using NIEIR's IMP model the results would have been increased by between 30 and 60 per cent in terms of the standard demand multipliers and between 100 and 200 per cent for balance of payments multipliers. The technological or knowledge spill-over multipliers have, however, been taken into account. Simulation results based on fiscal public sector borrowing requirements would produce results between these extremes.

The direct results here are consistent with those from a CGE type model with a full employment assumption imposed. They represent the direct increase in economic welfare defined in terms of potential consumption per capita, if not GNP per capita. These direct effects are accordingly expressed in terms of changes in productivity and real incomes. The results can be more or less directly compared to the CIE results.

The loss of customs duty taxation revenue is ignored and likewise the assumption that other taxes are raised to compensate for the lost revenue. This is because businesses and households will benefit from the lower costs from tariff abolition which neutralise the impact of any increased taxes.

11.2 AUSFTA: The bottom line outcomes

The bottom line probability distributions for the selected indicators are given in Figures 11.1 to 11.6. The outcomes are summarised in Table 11.1. The net expected direct impact on GNP is -\$46.9 billion, which compares with the \$53 billion finding of the CIE study. The 25/75 per cent benchmarks for the average annual employment change over the period vary between -64,500 to -51,200. In terms of the employment change for 2025 the range is between -195,400 and -81,400. The maximum level for 2025 employment change is 374,000 with a minimum value of 58,400 change from what would otherwise have been the case in 2025.

	Indicators				
	Gross national product (GNP) NPV (2003 \$m)	Change in GNP as a per cent of underlying NPV/GNP	Change in undiscounted GNP – 2025	Average annual employment ('000)	Employment – 2025 ('000)
Mean	-46.9	-0.39	-28.2	-57.7	-138.7
Maximum	-75.6	-0.61	7.3	-29.8	58.4
Minimum	-75.6	-0.16	-28.2	-91.8	-374.0
Indicator outcomes:					
25 per cent chance of being smaller	-52.5	-0.44	-16.1	-64.5	-195.4
25 per cent chance of being greater	-42.0	-0.34	-6.5	-51.2	-81.4

11.3 AUSFTA: A comparison with the CIE results

An apples with apples comparison with the CIE results involves the probability distribution for net merchandise trade outcomes plus increased Australian exports into the United States procurement market. To this should be added dynamic trade liberalisation effects. The other factors considered here were not effectively considered in the CIE report.

The results are given in Figure 11.7. The expected benefit of \$19.4 billion is similar to the CIE finding. The maximum upper bound benefit is \$35.5 billion. We conclude, therefore, that the main difference between the present study and the CIE report lies in the failure of the latter to consider areas with negative potential, particularly the negatives flowing from loss of sovereignty.

Figure 11.1: Distribution for total/total NPV

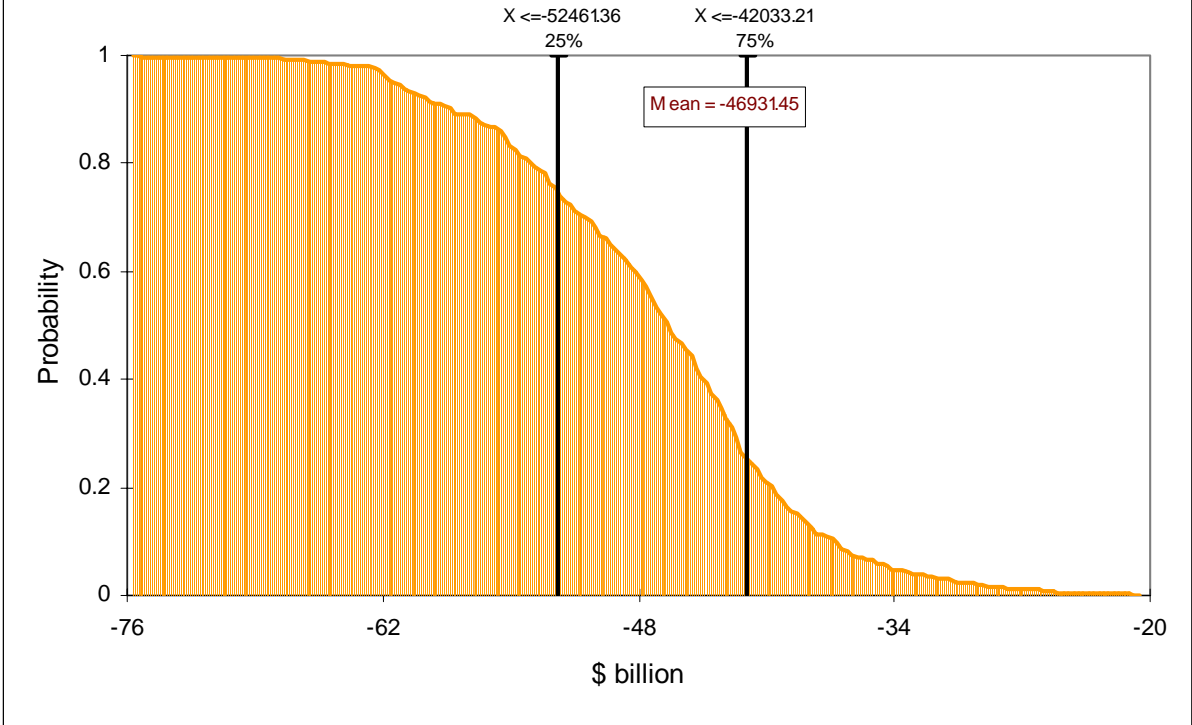
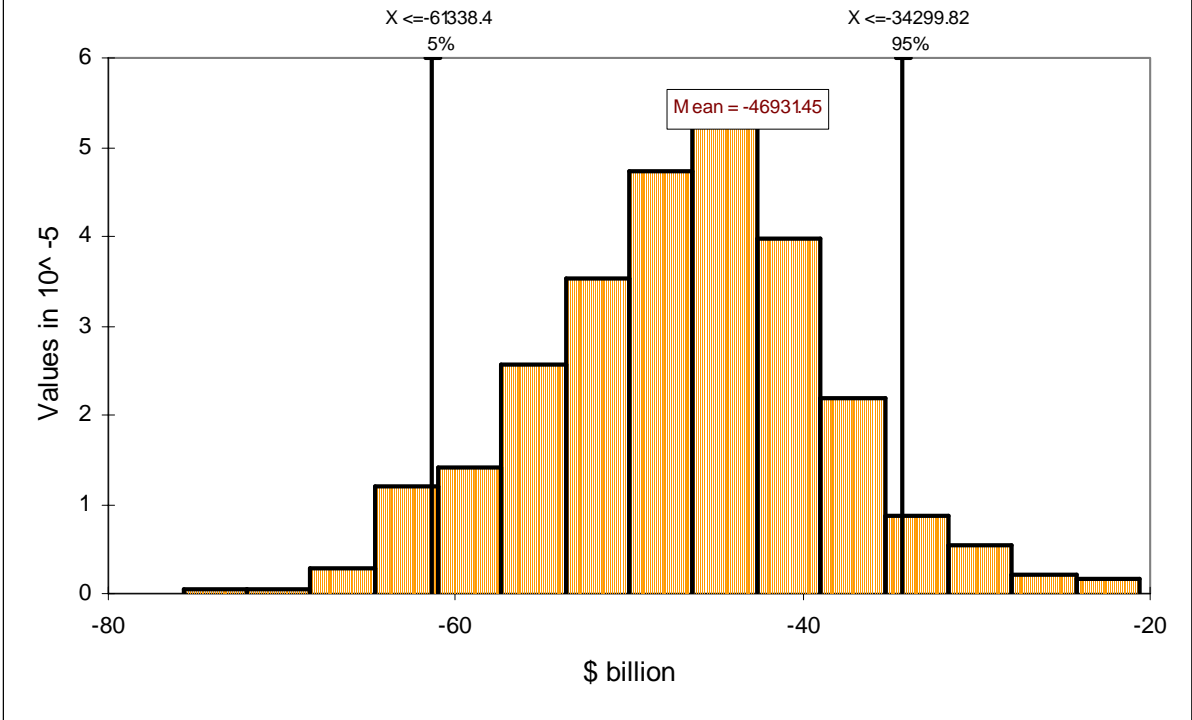
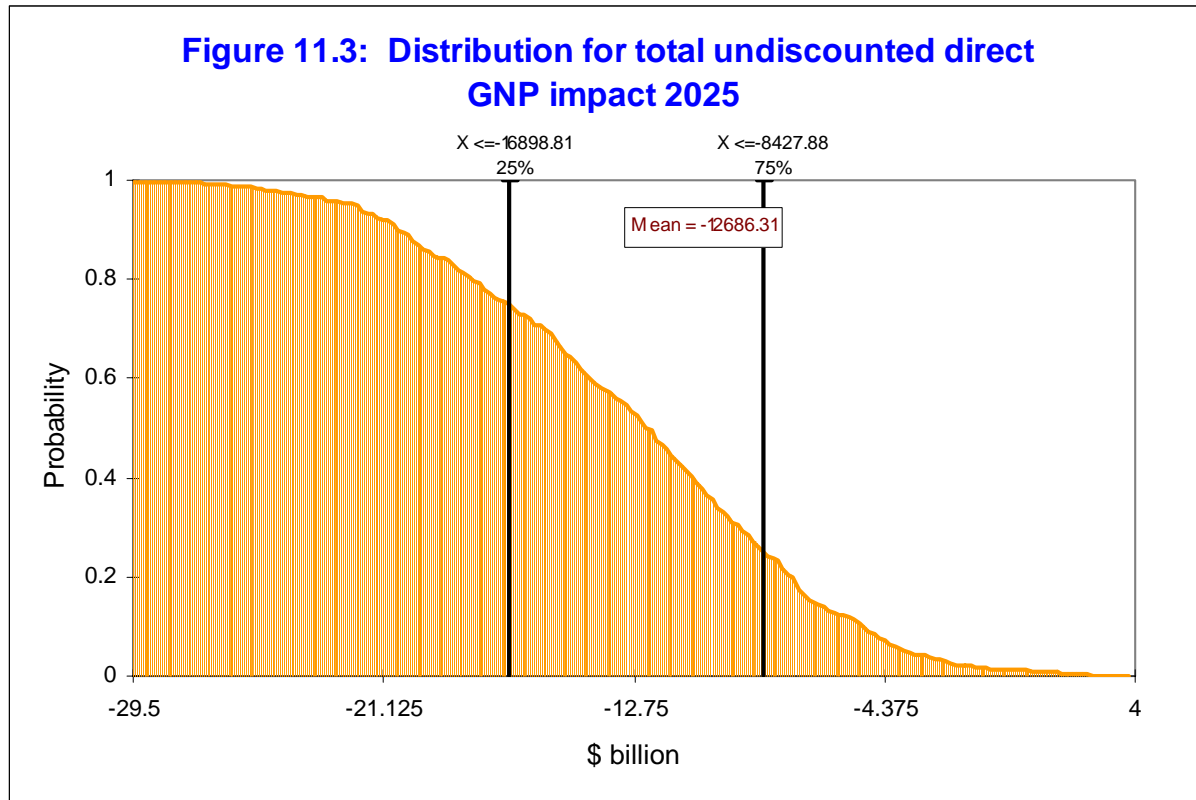
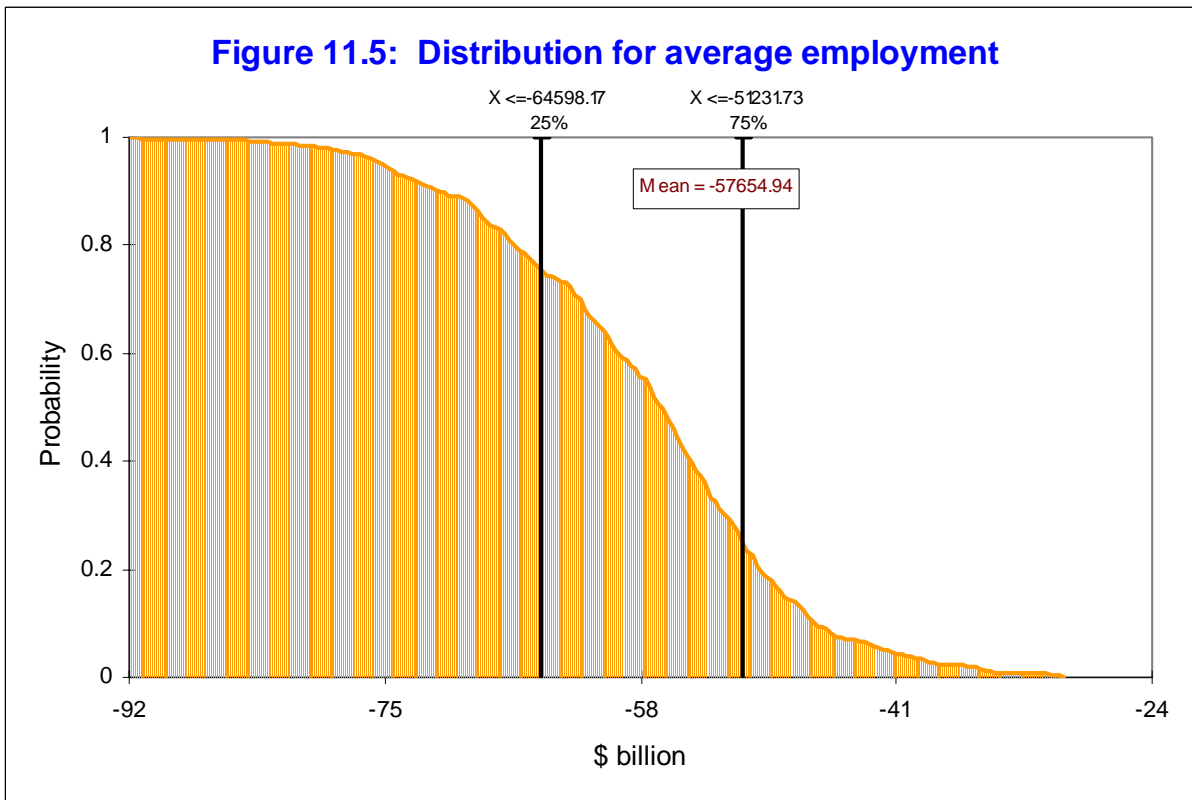
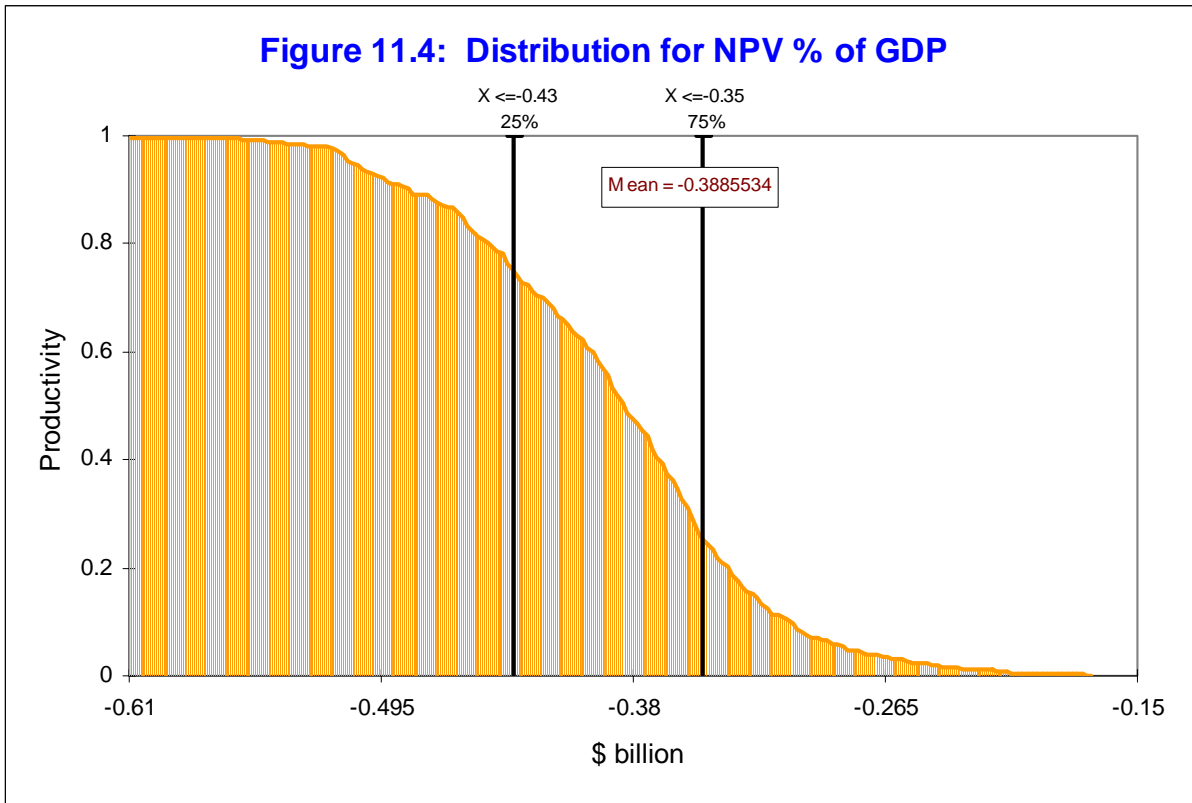
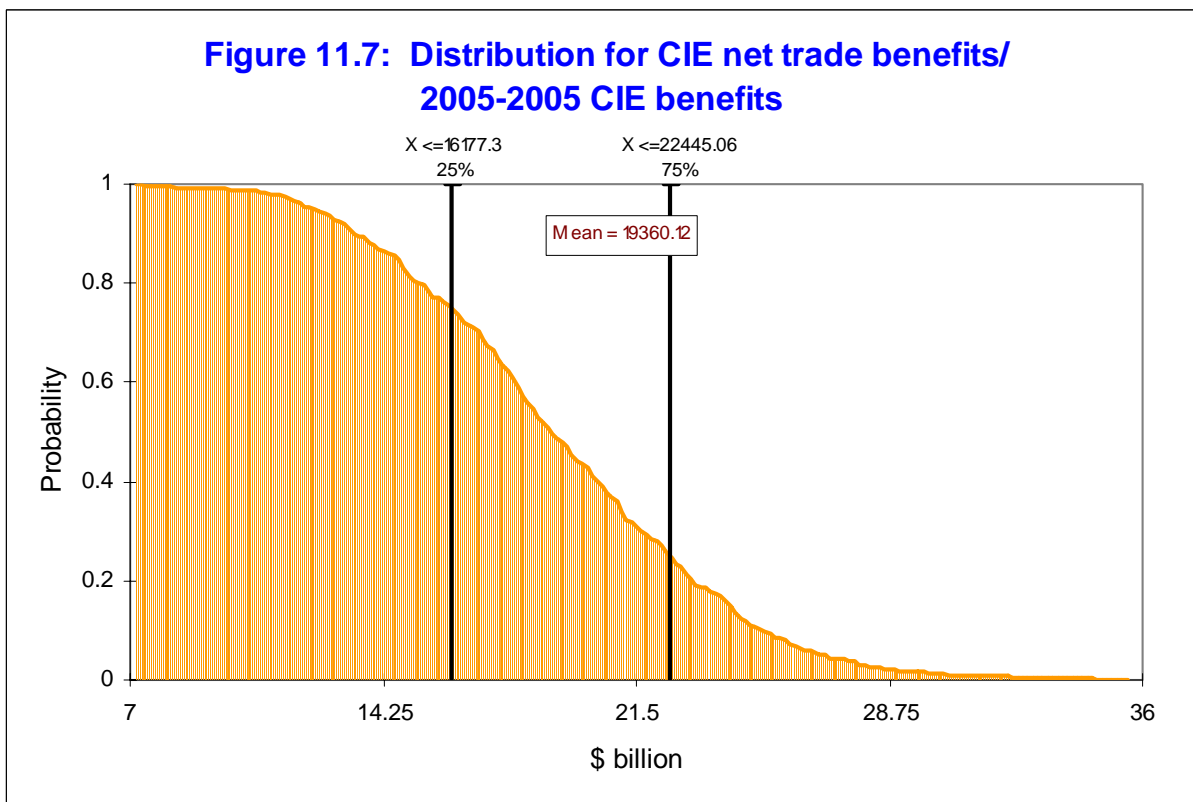
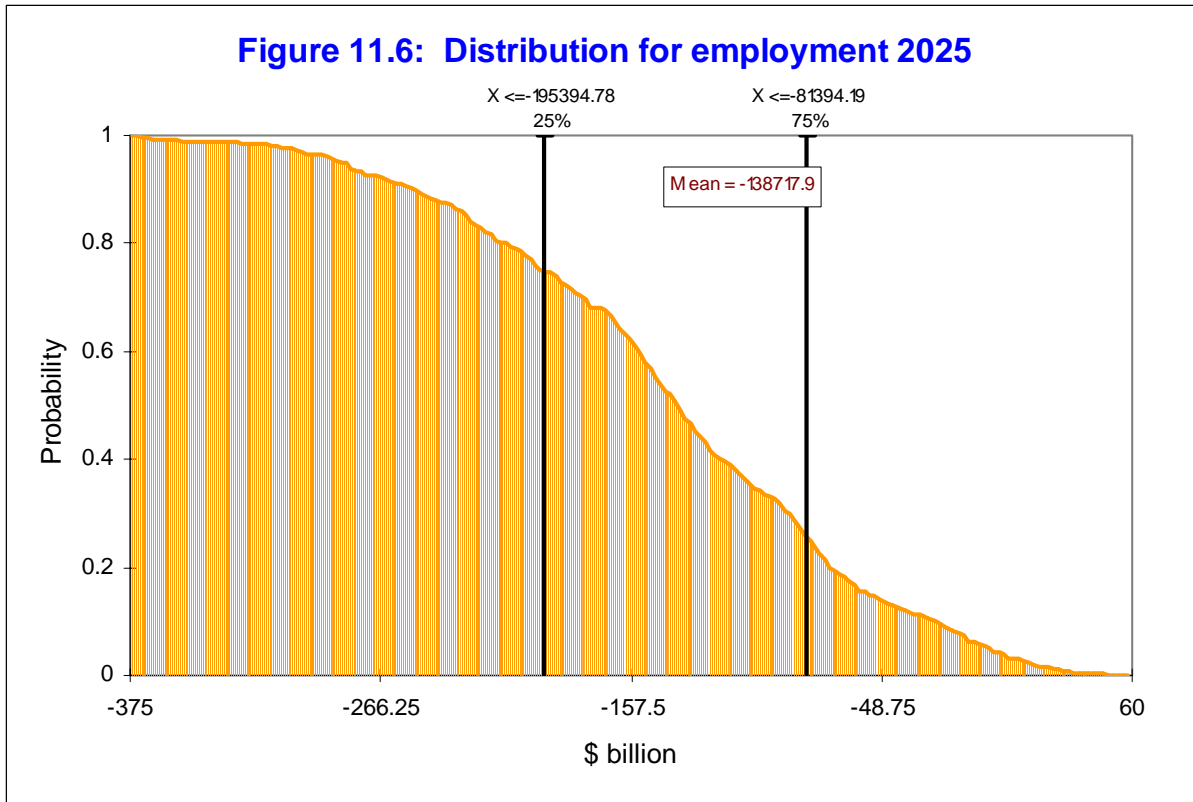


Figure 11.2: Distribution for total/total NPV









12. For further thought

The risk of high economic cost from the AUSFTA stems directly from the loss of national sovereignty associated with the Treaty, reinforced with the fact that the AUSFTA is a partnership of unequals. This is likely to be expressed in terms of the senior partner being highly litigious towards anything Australia wants to do and highly arbitrary in terms of what it wants to do. Given the risks involved with the Agreement, the Government's acceptance of the Treaty is probably on the grounds that the loss of national sovereignty is worth its price in terms of buying military security for a generation or two. Another factor may be the desire to lock-in present policies, and impose them on the states.

12.1 Additional risk assessment considerations

Several arguments may be brought against NIEIR's conclusion that the Commonwealth government is poised to sign an Agreement which has a 90 per cent chance of imposing net costs on the Australian economy. Possible arguments include the following.

- As noted in Section 1, variations to the base case may generate a more favourable estimate. However, as also discussed in that Section, equally plausible variations in the base case would generate more negative outcomes.
- The present study covers services trade indirectly, as spin-off and dynamic benefits from the liberalisation of commodity trade. It could be argued that there are additional benefits not so covered. However, before any attempt is made to track down such benefits, it should be remembered that America has a considerable advantage over Australia in e-commerce. Indeed, losses to Australia from this advantage may be sufficient to negate the services trade benefits included in the NIEIR analysis.
- It could be argued that the administration of the Pharmaceutical Benefit Scheme will find ways to avoid the losses estimated in Section 10. However, it should be noted that caps to PBS expenditure which deflect pharmaceutical costs to individual users and/or insurers, or which deny Australians the use of particular drugs because they are no longer affordable, are as much a loss to Australia as additional costs for the Scheme itself. The fundamental point is that any increased role for vendor representatives in what is essentially a procurement process threatens the integrity of that process.
- It could also be argued that Australian governments, and particularly the states, will be able to avoid the curtailment of economic development policy threatened by the procurement provisions as analysed in Section 8. This could be through greater use of economic development policies not proscribed by the Agreement, or through creative use of the small and medium business exemption in the Agreement, or even through resort to the labour standards provisions of Chapter 18 of the Agreement. However, as will be considered below, NIEIR did not take all of the sovereignty risks inherent in the procurement provisions into account.
- It could be claimed that the dynamic effects of foreign investment liberalisation will encourage sufficient additional productive investment to outweigh the negative effects analysed in Section 9. However, Section 9.8 includes generous provision for such benefits.

As against these arguments, there are several areas in which NIEIR has deliberately adopted assumptions which bias the analysis upwards. There are two general considerations.

- NIEIR's analysis does not go beyond 2025 and therefore does not capture the potential longer-term costs of such issues as extended copyright.
- NIEIR's coverage of areas of potential cost is not exhaustive. Areas not covered in this report include internet-related intellectual property rights and environmental costs.
- No cost has been attributed to potential exit costs whether from the whole or part of the Agreement. From a state point of view, these are likely to arise should a state, or all the states, wish to follow those of their American counterparts which have withdrawn from the procurement provisions. From a Commonwealth point of view, possible circumstances of withdrawal are conflict between the AUSFTA and an advantageous bilateral agreement on offer from a third party; or withdrawal from the AUSFTA in order to pursue advantageous multilateral agreements. The costs of extrication from the AUSFTA in order to substitute multilateral arrangements could be very high because of the complexity of the administrative and legal constraints included in the Agreement.

A more negative outcome from the government procurement provisions could easily arise for the following reasons.

- As noted in Section 8 and also in the AMWU paper, the changes are likely to change the culture of government procurement agencies, making them more legalistic and less development-oriented. This may diminish the potential, which is still available under the Agreement, to continue with economic development policies oriented to small and medium enterprises. The legalistic approach may also spill over into agencies and products not currently covered in Annex 15 of the agreement, thus extending the potential for import penetration. In addition there is a risk that, over time, the currently open-ended definition of small and medium enterprises may be tightened.
- As also noted in Section 8, the Agreement is vague in a number of important respects, and will doubtless lead to litigation, if only from tender challenges. No allowance has been made for these costs.
- The strong protectionist sentiment of many American procurement agencies, expressed as a desire to Buy American, may limit effective Australian access to the American procurement market. Canadian experience shows that this is not an easy market to access. Further, there has been little Australian budget support for programs to get potential Australian exporters 'FTA ready'. The AUD 19 million export support provided in the 2004-05 Budget is spread across all FTA agreements (not just the US procurement market) and only AUD 6 million is new money; the rest comes from cuts to services that support existing exporters. It is hard to believe that this expenditure will be sufficient to launch more than a handful of Australian exporters into the US procurement market. It will also be remembered that, to give the Agreement 'the benefit of the doubt', the CIE estimate of \$150 million per annum additional sales in the American procurement market was accepted as the central value, with the more likely estimate of \$65 million per annum relegated to a practical minimum.
- The procurement provisions explicitly apply to public-private partnerships for economic and social infrastructure investment. To the extent that the Agreement prohibits 'buy Australian' policies, investment in such partnerships will become less attractive to those Australian superannuation funds which have economic development as well as private-return aims. In the absence of financial instruments by which such funds can

invest in Australia, they are likely to divert funds to investment in overseas infrastructure.

- Finally, no risk premium has been added for the curtailment of future governments' procurement rights in the event of major technological changes where government purchasing could really make a difference to developing new clusters of knowledge-intensive activities here rather than overseas. After 2010 this could be a substantial cost, particularly if the possibilities inherent in biotechnology, nanotechnology and other nascent technologies multiply and if competing countries use these measures to the full.

It can also be argued that NIEIR's estimate of the gains from trade liberalisation over-estimate the benefits. In part this is a question of base case: the trade benefits would diminish markedly if compared with a successful round of multilateral trade liberalisation rather than with the status quo. Proponents of multilateral negotiation would argue that NIEIR has over-stated trade-creation effects, under-stated trade-diversion effects and omitted second-round effects due to reduced prosperity in third countries. They would also argue that Australian participation in bilateral deals is reducing the momentum towards the greater good of improved multilateral arrangements. NIEIR concedes that the trade benefits it has estimated would be reduced as against this alternative base case.

Leaving the eirenic world of idealised multilateral trade, the Agreement could have adverse effects in the form of retaliation by countries adversely affected by trade diversion due to the Agreement. More subtly, it would signal Australian membership of a trade bloc centred on the US, which may entail exclusion from the intra-Asian supply chains which are developing. Once again, NIEIR has made no estimate of these potential threats and costs.

Two more areas in which NIEIR has taken a favourable view of the potential for trade gains are as follows.

- NIEIR assumes that Australian exporters are able to claw back US market share lost under the CUSFTA. Canadian sources consider this unlikely.
- Groups associated with manufacturing industry, including the AMWU (NIEIR's client in this report) argue that the losses in the motor vehicle industry will be greater than estimated. They put forward the following scenario. One of the current four car manufacturers closes and its capacity is scrapped. Products of the three remaining manufacturers take the other's current share of the Australian market, so absorbing any spare capacity they may have. Australia is therefore unable to enter the American 'ute' market, in the manner assumed for the purpose of determining the maximum benefit in Chapter 5. In addition, groups such as the AMWU argue that NIEIR underestimates the opportunities for American-owned component manufacturers to close their operations in Australia completely and supply the market through imports. This could create gaps in Australia's manufacturing structure to which downward technology and balance of payments multipliers would apply.

Taking the balance of these upside and downside considerations into account, NIEIR's assessment that Australia can enter into the AUSFTA at small cost in relation to GDP begins to look optimistic.

While acknowledging both upside and downside risks, and acknowledging the need for further debate on these issues, there are two other areas that warrant discussion. These concern the differences between the spirit of Australian participation in a free trade agreement and the spirit which motivates Asian countries, and the long-term policy directions implied for Australia by participation in the AUSFTA.

12.2 Free Trade Agreements, sovereignty and Asian countries

Decision makers in Australia have probably not understood that there is a fundamental difference between the unwritten rules of governance and national ideology in Australia and in Asian economies. Therefore, they may misunderstand why Asian countries could sign an Agreement like AUSFTA with the United States and expect to reap large positive benefits for their economies.

The difference is that Asian countries understand that Governments have a central role to play in governing their economies and keeping direct control over the levers of policy that enable them to translate vision into reality. East and South-East Asian countries are largely corporatist states where the relationships between Governments and industry are strong but informal, allowing these Governments to ensure a high degree of protection of national economic interests, irrespective of whatever the codified legal requirements may be in terms of statutes or international Agreements. This informal governance structure builds in political, institutional and social linkages and is not only ideally suited for the network requirements to grow knowledge-based economies, but beats any legalistic attack that may curtail actions in the national interest.

Thus, Singapore could sign a AUSFTA-type Agreement with Australia with little effective reduction in sovereignty. The Singapore Government owns many of Singapore's enterprises and directly controls their strategies for the future. AUSFTA-type Agreements do not prescribe the actions of those enterprises, which can benefit by unfettered right to key Australian intellectual property for use in Singapore's national interest. For example, recently a Singapore Government enterprise bought into the Australian hospital system, no doubt with one objective being to gain access to Australian medical technology for transfer to Singapore, or other jurisdiction that country decides to invest in.

When free trade agreements are concluded between the United States and Asian countries, the strong corporatist state links of the Asian partners puts obstacles in the way of United States enterprises buying strategic enterprises. If people do not want to sell assets, no matter what the price, nothing can be done about it. If private interests do make decisions that were perceived to be against the national interest, then unless they could transfer all interests out of the country they would quickly find that the power of the corporatist state will be used to exert severe economic penalties.

The Americans would no doubt quickly find that appeals to the local legal system would be futile.

Australia has none of these protective mechanisms and, therefore, will suffer the full consequences of the loss of legal sovereignty.

It is also worth noting in this context that the major thrust of the European Union's economic development policies over the last decade has been to build an informal social network economy so as to give European regions a higher capacity, both defensive and offensive, to compete effectively against the Asian Corporatist States. (See, NIEIR/ALGA, "*State of the Regions 2002*")

12.3 Australia: the future

The ASFTA is a long-term policy, since it locks in current Commonwealth policies indefinitely. Cost-benefit analysis based on the current economic structure is therefore not enough. The following discussion attempts to begin a discussion of the Agreement in terms of long-term strategy.

At the end of World War II, some elements close to the Australian Government wanted a policy towards the defeated Japanese that encouraged pastoralisation. The idea was to remove all Japanese industrial assets and turn the economy back to one based on agriculture and mining industries. Such an economy was viewed as necessary to ensure that Japan would not have the capacity to militarily threaten other countries again.

This is to some extent the policy that Australia has embarked upon for itself over the past decade. This policy will reach its zenith with the AUSFTA, although the contribution of the AUSFTA itself will be marginal. In all probability it will lock in the downward spiral of the share of knowledge-based goods production and return the economy towards where it came from in the 19th century. Australia will be an economy based on natural resources including tourism. Whatever embryonic tendencies Australia was developing for the growth of knowledge-based industries before 1996 were seriously diminished with the non-intervention approach of the current Government. Australia now has a knowledge-based goods deficit of 10 per cent of GDP.

The full cost impact of this has been masked by a debt-driven consumer boom, which in effect has been paid for by transferring part of the inheritances of generation X and Y to foreign lenders. The consumer boom has been largely funded by banks borrowing from overseas. This debt-driven growth is now coming to an end. The question is, what will be the future source of employment growth?

One potential response would have been to use Australia's strong public sector balance sheets to get serious about building a knowledge-based economy based on a foundation of public infrastructure. The AUSFTA risks blocking this response.

Countries which do not develop balanced economies with a good presence of new technologies tend to generate high inequalities of income. Their labour markets are characterised by relatively high levels of casual and part-time employment. Their quality of employment is poor. Despite the power of the consumer debt boom of the last eight years, these trends have been very much in evidence in Australia. The share of working age families who are reliant on some form of social security for a significant part of their income has remained little changed from the level reached in the 1990 recession. Quality full-time employment opportunities have remained stagnant apart from the transitory effect of the current construction boom.

With the ending of the consumer debt boom the policy of pastoralisation will encourage or reinforce the following trends.

- The share of working age households dependent on social welfare as a significant source of income could reach at least a third of households by 2025. Most of these people will be officially classified as employed. In most cases the hours of work will be limited but many will be full-time working poor.

- Quality full-time employment opportunities will at best grow only slowly.
- The best and brightest young workers will increasingly emigrate to secure long term employment.

Under pastoralisation, it is likely that GDP growth will still be acceptable, but GNP growth less so. To maintain growth Australia will:

- increase net immigration;
- be a destination for high wealth migrants from Asia and for returning expatriates;
- become reliant on emigrant remittances; and
- increase its reliance on primary industries. Unfortunately these are industries with very low technological multipliers and low supply-chain linkages.

To overcome the balance of payments deficit, the exchange rate will fall to unprecedented low levels in trade weighted terms if not US\$ terms. The United States has also seemingly intractable long term economic problems, including a structural balance of payments deficit.

The income benefits for Australians from a low exchange rate via the mining sector will be limited by the fact that the sector will be predominantly foreign owned. Even in agriculture much value added will be lost to overseas-owned trading enterprises.

By 2025 whatever security benefits there are from the AUSFTA will have been significantly reduced by the contraction of the United States military dominance in Asia accompanied by the rise in China and India. Australia will then have to face a powerful Asia from a position of weakness. A plausible security response will be to accelerate the internationalisation of the society and to place as many strategic assets as possible under the control of foreign interests.

As a result, underneath a satisfactory macroeconomic outlook, the country may well suffer from a descent into ungovernability.

- Increasingly education and innovation programs may be seen as policies to equip the elite young with skills and knowledge to gain high income employment elsewhere. As time goes on such policies will be seen as providing exit strategies for the children of the elite.
- The high growth of the working poor will place resource demands on the national budget at the same time as the rapid growth in retired households increases demands for income support and health resources.
- The upward pressure on taxes will be intense. However, Government's ability to raise taxes will be limited because increased taxes could increase the emigration rate of skilled workers as well as increase capital flight of asset holders.
- An upstairs-downstairs society will quickly take shape with the added social tension of the rapidly increasing share of Asians in the upstairs class.
- The number of radically discontented rebels among the well-educated population of working age will rise rapidly. These citizens will feel that their choices are limited and their skills under-utilised in the workplace, while their inheritance has been transferred to foreign banks with a low exchange rate and capital inflow placing asset accumulation out of their reach. From this group will come the leaders for disruptive political forces.

These factors could well combine to place Australia on the path of ungovernability. These trends, of course, are there now and have a good probability of being realised in the absence of the AUSFTA. At worst the AUSFTA will modestly intensify the trends. Most importantly, however, the AUSFTA will limit the ability of Governments to reverse the trends. The economic cost of this in terms of adverse long-run expectations for the country could well be devastating. This will be amplified at the regional level since governments will be constrained in their ability to support regions in economic adversity. This will result in some regions imploding.

An outcome in which the nation is ungovernable is, of course, totally consistent with the policy of pastoralisation. Self-pastoralisation will come about because of a philosophy of, in effect, non-government, a philosophy that the AUSFTA enshrines.

To negate this outcome the Australian States should not sign up to the AUSFTA unless compelled and as much as possible of the sovereignty transfer aspects of the agreement should be blocked by the Senate. At the very least the full operation of the provisions of the AUSFTA should be delayed until Australia is free-trade and free-investment ready, both in terms of the governance and culture required to build knowledge-based regions and in terms of institution design and conduct. Reform in these areas has the potential to dramatically increase the probability of long run benefits from the AUSFTA.

The alternative laissez faire approach to AUSFTA will mean that Australia will more and more resemble the Iowa-Alberta region in North America. It is alright for regions of a nation to resemble this region. It is not alright for a nation as a whole to do so. It is completely wrong for Australia to deny those of its regions which are dependent on declining primary industries the opportunity to emulate Portland, Oregon, and transform themselves into vibrant participants in the world knowledge economy.

It may be appropriate to end these further thoughts with a brief comparison of the AUSFTA with the Empire Preference schemes of the inter-war period. Like the AUSFTA, Empire Preference was a scheme of trade diversion by which Australia hoped to secure its markets for agricultural products, in this case in Britain. The quid pro quo was preference for imports of British manufactured goods. To this extent, Empire Preference, like the AUSFTA, was a pastoralisation policy. However, there were two important differences.

- In supplying agricultural commodities to the UK, Australia was not competing with a subsidised domestic industry, nor was it attempting to sell additional food to a people already obese.
- Under Empire Preference, Australia retained sovereign access to the complete range of economic development policies then in use.

The main effect of Empire Preference, therefore, was trade diversion, particularly away from Britain's main competitors, the United States, Germany and Japan. Like the AUSFTA, Empire Preference also had a defence aspect: Britain undertook to defend the Empire. However, when Australia found itself at war with two of the three principle countries discriminated against by Empire Preference, Britain could no longer guarantee its defence. It is ironic that Australia then turned for assistance to the third of those countries.

