Submission to the

Review of Export Policies and Programmes

May 2008

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Introduction and Executive Summary

The Australian Manufacturing Workers Union welcomes the opportunity to make submissions to the Department of Foreign Affairs and Trade review of export policies and programmes.

The AMWU represents 140,000 workers in a broad range of sectors and occupations within Australia's manufacturing industry. The union has members in each of Australia's states and territories.

We note that the issues paper exclusively uses the term "*free trade agreements*" when discussing the bilateral agreements negotiated by the previous government. For the purpose of this submission we will use the term however we use it in the context of the true nature of the agreements that is bilateral preferential trade agreements which do not, and will not, bring about a condition of free trade between the parties.

It is the AMWU's view that a continuation of the Howard governments approach to trade agreements will increase the imbalance in the Australian economy and exacerbate our over reliance on minerals and agriculture. Australia cannot continue to predominantly rely on minerals and agriculture to generate export growth. This approach will result in a continued decline in the country's manufacturing base with serious long-term negative economic and social consequences. In order to address this issue trade policy must effectively balance the development and trade promotion of agriculture, mining and the manufacturing industry.

Australia will lose its economic independence if we fail to develop a diversified economy with a strong and continued role for high value added manufacturing. Manufacturing generates much of the nation's research and development and innovation, fundamental factors in wealth creation. Integrated and compatible industry and trade policy designed to improve the productive performance and international competitiveness of Australian manufacturing is fundamental to the long-term economic and social well being of the nation.

The key issue is to ensure that the review of export policies and programmes promote the widening of Australia's economic base and facilitates the long-term development of Australia's high value manufacturing industry by assisting industry to access the existing and emerging international global value chains and international production networks.

The Issues Paper recognises a number of matters that are at the heart of the AMWU's concerns about Australia's current international trade situation:

- No growth in international trade
- A narrowing of the export base
- Over-dependence on resource exports

The AMWU argues that the risks associated with this situation are:

- Over-exposure to resources (and dependence on the ever-growing power of the Chinese economy and interventionist political elite);

- Over-exposure to tourism (and the risks of peak oil and global warming impacting international travel);

- Failure of agriculture export to recover (and continue to decline as global warming impacts farm productivity and key commodities);

- A de-skilled workforce dependent on imports of sophisticated industrial and communications equipment, household goods and transport equipment.

This submission will argue that the nature of the global economy has changed fundamentally since Labor last held office in Australia and that the pace of that change continues to accelerate. There is an imperative for the Labor government to implement its trade and industry development policies in a manner which provides the manufacturing industry with increased opportunity to compete in the domestic and global market.

Despite neo liberal assertions to the contrary, Government interventions to protect and promote strategic industries continues to be a feature of the global economy. Given the restrictions on intervention imposed by WTO rules and self-imposed restrictions in bilateral agreements it is important that intervention is carefully considered, effective and well targeted. It must be based on a shift in thinking:

- From Product Export Strategies to Global Capability Strategies

- From Industries to Clusters and Networks

- From Destinations to Integration

Australia will lose its economic strength and influence if we fail to maintain leadership in research, development and innovation. Austria must develop a broad based and sophisticated economy capable of producing high value added goods and services. Failure to meet this challenge will reduce the opportunities for most future generations of Australians to waiters, housemaids, marketers and repairers of other people's goods.

Our submission and econometric modelling by NIEIR demonstrates that the existing free-trade agreements resulted in a net production loss by Australian manufacturing industry of between $2.6 and $2.9 billion. The largest import penetration is from the Thailand FTA. This demonstrates the failure of the existing FTA approach and the need for trade policy which operates in the national interest.

A continuation of trade policy which relies on unproven trade theory is not in the national interest. Trade policy based on reducing all barriers to competition including industry assistance and allowing the full force of market forces to allegedly unleash innovation, cultural change, and productivity improvements is wrongheaded and will result in substantial social and economic cost to the economy.

NIEIR Report- Summary

The AMWU has commissioned the National Institute of Economics and Industry Research (NIEIR) to analyse the most recent trade figures available in relation to the current effects of the Singapore, US and Thai free-trade agreements.

The NIEIR report which forms part of this submission raises significant economic and social questions in relation to past, present, and future trade and industry policy.

Recommendation - The review of trade policy must acknowledge and adopt the findings of the NIEIR report including:

- **In the main exports have been positively conducted with the level of industry assistance given to Australian industry. Reductions in assistance have been associated with a loss of export markets**
- **The existing free-trade agreements resulted in a net production loss by Australian manufacturing industry of between $2.6 and $2.9 billion.**
- **Manufacturing is central to the over all benefit of FTA's. The mining industry is supplied constrained and the agricultural industry is resource constrained.**
- **If Australia is to achieve a net benefit from Singapore/Thailand/United States free-trade agreements then, from the tradeable goods perspective, the impact on manufacturing will have to be the main driver.**
- **The AUSFTA has not resulted in increased market penetration by the United States due to the competitiveness of China and Thailand**
- **The main cause of Australia's low manufacturing productivity is largely structural, that is, mainly caused by, low scale and poor export performance;**
- **The main driver of productivity growth is output growth and, therefore, the main route to accelerating productivity growth is via creating market conditions where the manufacturing industry is willing to expand;**
- **A true level playing field approach to the economy realises that manufacturing must be singled out for industry development assistance because it is inherently more risky than other industries. Equalising risk between industries is the only appropriate way to generate efficient resource allocation based on a level playing field principle;**
- **Manufacturing has high strategic value in its own right, this requires manufacturing to play its part as a growth driver; and**
- **Industry development policies for manufacturing are particularly effective, not only because it can be efficiently designed to unlock productivity growth, but also because of the dynamics of cumulative causation, which means the initial advances in productivity (driven by industry development policies) create the predictions for flow on endogenous productivity growth. That is, there is a strong productivity multiplier effect.**

- **The solution to increasing the productivity of manufacturing lies in targeting selected Manufacturing industries, or more appropriately in modern globalised economies, clusters of manufacturing activity for demand expansion stimulus, export expansion and, where possible import replacement.**

- **Australia's approach to the manufacturing industry has been built on an error, namely the fallacy of composition. This occurs when one attempts to generalise from a relationship that is true for an individual or firm, but is not necessarily true for a group or in this case an industry.**

- **The nature of the drivers of expansion in the mining industry is inherently different from the drivers of expansion in the manufacturing sector. Manufacturing has higher risks.**

- **Policy initiatives are necessary because the manufacturing sector is doing about as well as can be expected, given its risks, current activity levels, and obstacles to growth given its small size, distance from major innovation centres and export capability. If any net benefit is to be achieved from FTA's in the long run, complimentary industry development policies are a necessary condition.**

The Prime Minister has publicly stated that he is a "long-term believer" in industry policy. Consistent with the views of the Prime Minister, this review should develop a range of recommendations, plans and strategies which ensure a more sophisticated approach to industry policy and trade and which creates a more economically sustainable and balanced economy.

The ALP platform contains a range of principles on trade, core labour standards, environmental protection, Export Market Development Grants, the financing of the Export Finance Insurance Corporation, and anti-dumping measures that should inform and shape the recommendations of the review.

The "twin pillars" approach enunciated by the Minister for Trade, the Hon Simon Crean MP must be supported by domestic, "behind the border" reforms designed to improve productivity through the implementation of sophisticated industry policy initiatives.

The changing nature of international trade demands that Australia's trade policy is designed in such a way as to facilitate increased Australian manufacturing access to International Production Networks and Global Value Chains. Research by NIEIR demonstrates that Revealed Comparative Advantage (RCA measures a goods share in the country's total exports relative to that goods share world trade) has increased for motor vehicles due to positive government intervention and has declined in communication, and insurance services and other service sectors. The research demonstrates that Australia is struggling to maintain relevance in key Global Supply Chains and is missing out on the massive growth in services trade, including service enhanced manufacturing.

The proliferation of "spaghetti bowl" free trade agreements work against a reformed and sophisticated multilateral approach to trade based on WTO leadership. There is a need to refocus Australia's trade policy to pursue, as a priority, a restructured WTO framework which ensures core labour standards and environmental protection are fundamental aspects of the multilateral trade framework. Research conducted by Dr Christopher M Dent demonstrates

the general consensus that the net benefits of Australia's FTA policy for the country and Asia-Pacific region would be relatively small.

Econometric modelling used by the previous Howard administration to justify bilateral free-trade agreements is fundamentally flawed, based on unrealistic assumptions are politically biased, hypothetical and misleading.

Transposing the outcomes of Australia's three free trade agreements to a China/Australia free trade agreement indicates job losses in manufacturing of over 170,000 positions.

The Australia/Thai free-trade agreement, particularly zero tariffs, combined with low costs has been used by Fisher and Paykel's chief executive John Borger to justify closing Australian production facilities and moving production to Thailand.

False expectations based on econometric modelling using the computer general equilibrium (CGE) model must be addressed to ensure that proper independent and dependable modelling is available to advise government and the community on the implications of proposed free trade agreements.

Negotiations for future free-trade agreements must ensure that there is a net benefit to the Australian community and economy. Consideration such as the consolidation of security alliances and other geopolitical goals of strengthening diplomatic relationships with key partners must not drive Australia's trade negotiations.

The "Washington Consensus" and the views espoused that countries should simply get their macro economic house in order and be open to international trade and investment to advance the global economy is an anachronistic and flawed approach.

As a matter of urgency, a joint review by the Department of Trade and the Department of Industry in conjunction with industry and unions must be undertaken to examine the key drivers required to ensure Australian manufacturing can access International Production Networks and Global Value Chains.

In order for Australian trade policy to bring about long-term economic and social benefits, the government must commit $1 billion annually on measures outlined in this report. The government should implement an Enterprise Australia Action Plan designed to increase Australian exporters' access to International Production Networks and Global Value Chains.

In addition to the financial package, the recommendations of the National Manufacturing Forum should be implemented.

All proposed free-trade agreements should be subject to a national interest test and debated openly in the Federal Parliament.

The review should recommend the adoption of policies and programmes proposed by Professor Danny Rodrik, of Harvard University. Specifically:

- Subsidising costs of self-discovery
- Developing mechanisms for higher risk finance
- Internalising coordination externalities
- Increasing public research and development
- Subsidising general technical training
- Taking advantage of nationals abroad.

The review should acknowledge the violations of trade union rights by Australia's free trade partners against the trade union movement and its members. This review must acknowledge that violation of human and trade union rights are being used to provide an unsustainable and unfair and unprincipled competitive advantage to our trading partners. This review must recommend that trade union rights and core labour standards should be included in all Australian free-trade agreements.

The review should acknowledge that in addition to the exploitation and denial of core labour standards to workers, the manipulation of currency, and substantial nontariff barriers, along with the degradation of the environment in the name of trade must be addressed.

Future trade agreements should rank trading partners consistent with the The Centre for Environmental Law and Policy, Environmental Performance Index and ensure that trade agreements work towards reducing environmental stresses on human health and promoting eco system vitality and natural resource management.

Background

The Labor Government

The Prime Minister, Kevin Rudd has consistently argued that the government will implement policies presented to the electorate in the 2007 election. In an article by Shaun Carney in the Age on April 12, 2008 the journalist quotes the Prime Minister on his public position on the manufacturing industry and the key question of industry development:

"At his first press conference as leader, Kevin Rudd uttered two words that, when conjoined, strike fear and loathing into the hearts of economic commentators, business school economist and econocrats. Ever since Rudd, unprompted said those words -- industry policy -- a whole lot of people have been trying to find ways to convince themselves that even though he said them, they carry no meaning".

What the Prime Minister said on December 4, 2006 was:

"What I'm concerned about in the long-term is whether Australian manufacturing ends up so shelled out and hollowed out that there is nothing left. I am actually a long-term believer in industry policy. That may be heretical in certain quarters, I come from a long background in State government and I know what it takes to get key industrial projects going. Let me tell you, it doesn't happen just by government standing over there with arms folded waiting for some magic to occur. Government has to have its sleeves rolled up and that goes to getting under way major infrastructure and industrial projects across the country."

This review of export policies and programmes should facilitate the stated objective of the Prime Minister.

ALP National Platform 2007

The Australian Labor Party (ALP) has included in its policy platform a range of principles in the chapter -- Engaging with the Global Economy1.

In this policy declaration the governing body of the ALP commits that:

"Labor will give priority to a new export strategy to ensure that Australia has diverse and value-added markets that can sustain the economy beyond the mining boom"

The platform contains 34 principles that guide ALP policy. The following are edited extracts from the platform:

- "Labor will ensure that the benefits of global economic growth are available to all Australians through better education and training programs, industry development policies, fostering new, knowledge intensive enterprises and a particular focus on those industries and regions which are adversely affected by trade liberalisation" (Principle 2)

- "The directions pursued in the 1980s and 1990s of internationalising the economy and reducing protection complemented by a long-term commitments to strategic industry development cannot and should not be reversed" (Principle 3)

- "Labor will integrate innovation, industry and trade policies to take Australia along the road of high skill and high wages. Labor will adopt administrative arrangements within the Commonwealth public service that facilitate this integration" (Principle 6)

- " Labor will play an active role to ensure the activities of the WTO respect core International Labour Organisation (ILO) labour standards and multilateral environmental agreements Labor recognises that economic growth and prosperity arising from increased international trade brings with it the responsibility for higher labour and environmental standards for Australia and internationally" (Principal 9)

- "APEC can also serve a valuable function by mobilising support for a further round of WTO negotiations, facilitating trade between APEC members and widening dialogue in the region on the issue of core labour standards." (Principle 12)

[1] National Platform and Constitution 2007

- "Where appropriate Labor will pursue bilateral market access initiatives provided they deliver real benefits to the Australian economy and increased employment opportunities. The pursuit of multilateral agreements will take precedence over bilateral negotiations in the allocation of resources to trade negotiation. Bilateral initiatives must contribute to, and not detract from multilateral trade liberalisation." (Principal 15)

- "Labor is only prepared to support bilateral free-trade agreements that are compatible with WTO rules and which advanced the overall national economic interest in Australia including the manufacturing, services and agricultural sectors. Labor does not support FTA's being pursued for geo political reasons." (Principle 16)

- "Labor believes it is an obligation in all trade arrangements to respect core labour standards. Consequently, and consistent with the Singapore Declaration, we support the establishment of a formal permanent WTO working group or similar body with the following terms of reference." (Principle 18)

- "Labor believes a rules-based system underpinned by core labour standards provide a framework for fairness and equity and is the most effective means to ensure governments do not resort to unsustainable protectionism. Labor believes that their is a need to analyse the strengths and weaknesses of the WTO, ILO, International Monetary Fund (IMF) international framework with a view to introducing a reform agenda. Reflecting this, Labor will work towards the development of a global trading system for the 21st century which is underpinned by equity and transparency." (Principle 19)

- "In this context, Labor will support calls for a meeting between the WTO, ILO, World Bank, IMF and other relevant bodies as may be decided, on the subjects of development and labour standards." (Principle 20)

- "Labor recognises the role of the ADB and Australia's unique position in the regional bank. Labor will work with the ADB, officers' directors and governors to ensure compliance with core Labor (sic) standards community consultation on the establishment of a labour desk at the ADB, to advise project officers and consultants in ensuring core labour standards and related issues." (Principle 21)

- "Labor notes that the WTO (through its preamble) and APEC (two successive leaders' statements) are committed to furthering the goal of sustainable development. A Labor government will play an active role in WTO and APEC negotiations to promote sustainable development. In particular, Labor will work towards the removal of environmentally damaging subsidies, and promote mechanisms which can reconcile the interests of environmental protection and trade liberalisation. Labor government will also ensure all major trade agreements to which Australia enters, bilateral and multilateral, are assessed to ensure that they are consistent with the principles of sustainable development and environmental protection for all regions of Australia." (Principle 22)

- "Governments have a responsibility to make trade policy as transparent and publicly accessible as possible." (Principle 25)

- "Labor recognises that bilateral free-trade agreements offer an avenue for the opening of new markets for Australia's export community to complement market access gains derived from regional and multilateral trade negotiations. Labor considers that bilateral trade initiatives should only proceed on the basis of full community consultation. In the interests of openness and accountability a new mechanism should be established to enhance Parliamentary scrutiny of free trade agreements." (Principle 26)

    - Prior to commencing negotiations for bilateral free-trade agreements, a document will be tabled in both Houses setting out the Labor government's priorities and objectives, including independent assessments of the costs and benefits of any proposals that may be negotiated. This assessment should consider the economic, regional, social, cultural, regulatory and environmental impacts which are expected to arise; and

    - Once the negotiation proposal is complete, a package will be tabled including the proposed treaty together with any legislation required to implement the treaty domestically. (Principle 26)

- "Labor maintains its commitment to the promotion of Australian exports. Austrade should be structured so that it can respond promptly to the needs of individual firms, as well as developing particular export markets. This may involve forming consortia, holding conferences and educating Australians about the current contribution that trade and investment make to our living standards. Austrade should focus particularly on knowledge intensive industries such as elaborately transformed manufactures and the service economy. The promotion of manufactured goods and service exports is a fundamental goal designed to create high skill high wage employment and diversify Australia's economic base. The Export Market Developments Grants scheme provides grants to small and medium enterprises (SMEs) to assist their export promotion activities. In accordance with the legislated timetable, Labor will assess the operation of the scheme to ensure that it is efficient and effective." (Principle 27)

- Australia needs a new export strategy that rebuilds the skills of our nation - the skills demanded by Australian export industry;

    - Lifts innovation, research and development;

    - Plans properly for our national infrastructure needs - and rather than standing passively by while infrastructure bottlenecks are;

    - Improves export promotion and better coordinates Federal and State government resources in the area; and

    - Rebuilds Australia's export culture. (Principle 29)

- Labor recognises the growing importance of China and India as markets for Australian exports, in particular services exports, and service enhance manufacturing. Labor believes we must diversify our export base to China and India and develop appropriate export policies to effectively compete. Labor will ensure that Austrade and DFAT devote appropriate resources to developing further access to these markets for Australian exporters. (Principle 30)

- The Export Finance Insurance Corporation (EFIC) should operate on commercial lines. In so doing, however, it must carefully assess the environmental and social implications of projects to ensure that they are sustainable in the long term. EFIC should retain the ability to refer non-commercial projects issues to the Minister for support, where those projects are in the national interest. (Principle 32)

- Labor supports the means of anti-dumping measures. Anti-dumping legislation ensures over seas exports do not for our industry by selling their products in Australia a lower price than the charge on their home markets. Where there is an allegation of dumping, it should be independently and urgently investigated by the Australian Customs Service (Principle 34)

In addition to preceding platform commitments, the ALP has outlined its support for manufacturing industries in chapter 5 of the 44th National Conference Policy under the heading "The Future for Manufacturing Industries". All of the policy recommendations from recommendation 102 to 113 demonstrate ALP support for a strong manufacturing sector. Particular emphasis is given to ensuring that trading partners honour their trade liberalisation obligations and that the established timeframe is adhered to by all. Labor will also seek to ensure that future tariff reductions are matched by our competitors and there are programs in place which encourage continued growth in net value added exports. In addition Labour commits to strengthening anti-dumping measures to ensure that Australian industry is not disadvantaged by unfairly priced imports.

<u>Recommendation</u> -- The Prime Minister's public support for industry policy and the principles contained in the ALP 2007 Platform should underpin proposals by the review panel.

The Twin Pillars Approach

In a recent public address the Minister for Trade, the Hon Simon Crean MP, outlined Australia's trade performance and focused on three issues including; the twin pillars approach to trade policy for sustainable economic growth -- that is, trade liberalisation at the border will be complemented by trade and economic reform behind the border.[2]

The Minister contended that there was not much point making progress on the tough fight to secure improved market access opportunities if we are not productive and competitive enough to take them up. It is the AMWU's view that the proposals outlined in the party's platform are the starting point for ensuring domestic and international behind the border "reforms". The AMWU uses the word "reform" in the context of making things better.

The stated policy positions of the government will be unachievable unless Australian industry can access the global value chains and international production networks that dictate the source, quality, quantity and type of goods produced in the global economy.

Ensuring access to global value chains will require a decisive and effective government strategy to deal with the current market failure and assist companies and industries build the modern fundamentals of a competent and successful export economy.

Recommendation -- Behind the border trade and economic reform must include environmental, trade, and human rights issues. In the domestic context development and adoption of sophisticated industry development policies must underpin Australia's trade negotiations at the bilateral, regional, and multilateral levels.

[2] Australia and the Multilateral Trade System -- Seizing the Opportunities address by the Minister for Trade to the Lowy Institute 28 February 2008 Sydney

Changing Nature of International Trade

The Chairman of the US Federal Reserve Board, Ben S Bernanke, remarked in 2006 that: "The pace of global economic change in recent decades has been breathtaking indeed ...The shrinking globe has been a major source of the powerful wave of economic integration. … Dramatic improvements in supply-chain management, made possible by advances in communication and computer technologies have significantly reduced costs of coordinating production among globally distributed suppliers." (Bernanke 2006)

Global Economic Integration and the improved communication technologies that are facilitating it are changing the nature of the world economy; how production processes are organised, what is traded and what are not, distinctions between goods and services, market boundaries and the nature of competitive advantage between countries. These changes present both an opportunity and a threat to Australia. Demands of global supply chains mean that local producers are competing on price, quality and reliability with the best in the world as distance, and the natural protection it afforded Australian industry in the past, is diminishing as a barrier to trade.

The impact of these changes are being felt by local manufacturers who are unable to compete with global producers on cost; by industries that have been established to serve domestic markets finding themselves to be sub-scale, and; by overseas businesses supplying goods and services to the Australian market in areas that would not have been imagined only a decade earlier. It is true that one of the perceived benefits of this globalisation has been that the price of plasma television sets has fallen to a point where the volume of sales has been a major issue for Australia's balance of trade. The downside is that Australia's electronics industry has been retreating toward becoming a network of retailers and repair shops.

Capitalising on the opportunities of globalisation while managing the challenges will require new policy settings based on an understanding of the nature of competitive advantage in the global economy (It will also require careful consideration of social problems that are created through income redistribution in the global economy).

Vertical Production and Supply Chains

In his speech Bernanke noted that: "In some cases, international production chains are managed almost entirely within a single multinational corporation (roughly 40 percent of US merchandise trade is classified as intra-firm) and in others they are built through arm's length transactions among unrelated firms."

This differs from the multinational model of the immediate post war period that was focused on locating production facilities within markets such as Australia in order to serve principally those local/regional markets. Production of goods today is dominated by distributed production networks that produce components in different places and quite often assemble those components in different places again based on serving a single global market. The needs of these global supply chains or often dictated by global distribution and retailing companies selling through massive networks that are themselves driven by scale and low margins. While these systems are often referred to as 'Global Supply Chains' they often work on the simple principles of scale and specialisation with small centralised teams providing integration of the final product and offer to customers.

Yeats (2001) documents evidence of this change in his observation that trade in inputs has grown much faster than trade in final goods. He estimates that intermediaries now account for 30 percent of world trade in manufactures. Hummels, Ishii and Yi (2001) identify vertical specialization – production arrangements in which firms make final goods via multiple stages located in multiple countries – as being responsible for one third of world export growth from 1970 to 1990. Hanson, Mataloni and Slaughter (2005) have examined vertical production networks as a form of vertical foreign direct investment through which multinationals spread across different locations the different activities that they perform such as R&D, input production and input processing. By studying US multinationals and their affiliates they found:

- Affiliate demand for imported inputs is higher in host countries with lower trade costs, lower wages for less-skilled labour (in absolute terms and relative to wages for more skilled labour), and lower corporate income tax rates;

- Multinationals tailor their foreign operations to local market conditions. They appear to focus affiliates on processing imported inputs in countries where wages and trade costs are lower and markets are smaller; and they appear to focus affiliates on production for local consumers in countries where wages and trade costs are higher and markets larger;

- Lower tax rates on corporate income are associated with greater affiliate input processing (although there has been little work on whether taxes affect how multinationals organise their foreign operations).

Rapidly shrinking distances means that multinationals are constantly reviewing operations from an integrated global perspective. Operations must either serve major domestic markets or offer wage and trade cost advantages to produce inputs to global vertical production networks.

Growth of trade in services

Bernanke notes the continued broadening of the range of products that are viewed as tradeable. "Particularly striking however, is the extent to which information and communication technologies now facilitate active international trade in a wide range of services ..." (call centres, financial, legal, medical and engineering services)

From 1980 to 2005, world trade in service grew from 15 to 19 percent of total merchandise and services exports, driven by increased trade in computer and information services, finance and insurance services. At the same time, services now account for an increasing proportion of value added in developed economies

A limited number of countries have been driving this growth in service trade with the top 20 service exporters accounting for 75 percent of world trade. The US accounts for 15 percent of world trade. Major exporters of commercial services (WTO 2004) were the US, UK, Germany, Japan, France followed by Ireland, Netherlands, Italy, India and Belgium. Ireland and Luxembourg had the strongest growth. The first four exporters were also the largest importers while China had by far the strongest growth as an importer of commercial services.

In countries that are major participants in the international services trade, (such as the US, UK and Ireland) 'other business services' has been the main driver of growth in exports. In the US, this sector accounted for 52 percent of service exports in 2005 compared to 40 percent in 1995. In Ireland it accounted for 87 percent in 2005 compared to 32 percent in 1995. While the potential for trade in services has grown substantially the trade to value added ratio of the services sector remains quite low compared to that of the goods-producing sectors and services trade accounts for only about 20 percent of total OECD trade. (OECD 2005)

It is argued (Blinder 2005) the current global trade in services is only 'the tip of the iceberg' and that over time it will grow to include any service that can be delivered via an electronic interchange (voice, data, and video). "In the future, and to a great extent already in the present, the key distinction for international trade will no longer be between things that can be put in a box and things that cannot [goods]. It will, instead, be between services that can be delivered electronically over long distances with little or no degradation of quality, and those that cannot. And there is little doubt that the things that can be delivered electronically will grow."

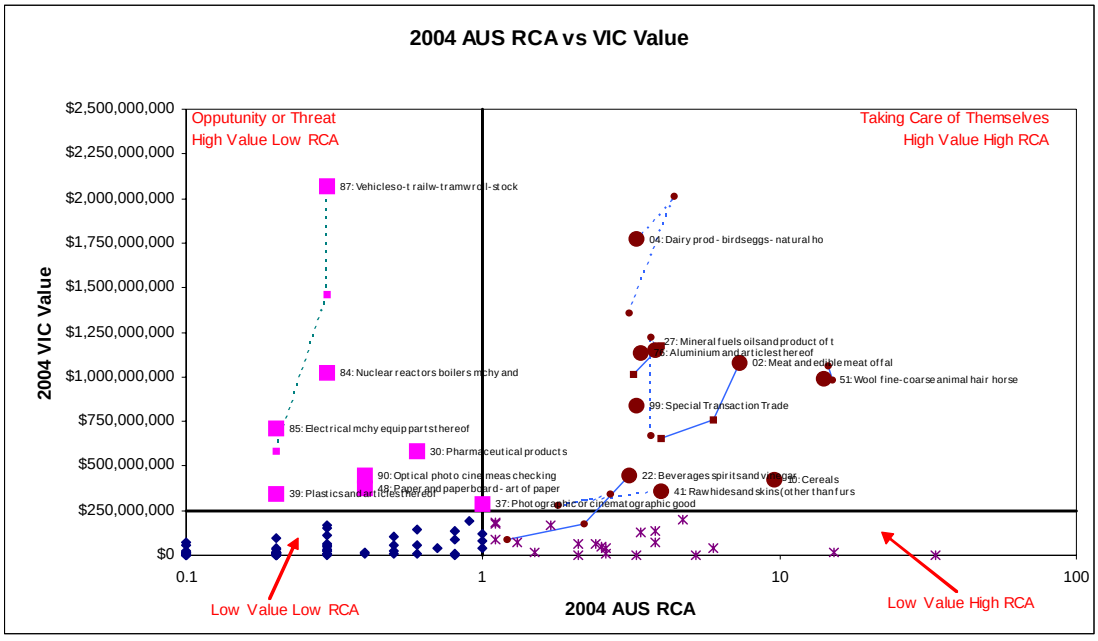
Australia and the Changing International Trading Environment

In this scenario, many Australian manufacturing businesses *fall between two stools* because Australia is neither a large market by international standards nor a low wage/low cost market. Industries that have survived thus far appear to be of two types which can be characterised as 'Worker Bees' and 'Innovators':

1. Worker Bees: Industries established during the 20th century that use their connections (largely) through multinational parents to find a position in global supply chains that build on established capabilities (for example motor vehicles or chemicals and plastics), and

2. Innovators: Australian industries that have their origin in some form of breakthrough that provided a temporary competitive advantage in the global economy (for example; Cochlear implants or scientific instruments).

The challenge facing Australian industry is revealed in the following table prepared by NIEIR as part of an earlier study on Victorian export performance. The table uses the concept of Revealed Comparative Advantage[3] to track performance of key trade exposed industries in Victoria.



The table shows that goods for which Australia has a high RCA (one or greater) and which are of high value to Victoria in terms of export income tend to be goods based on primary

[3] RCA measures a good's share in a country's total exports relative to that good's share in world trade. Balassa's (1965) defined it as a country's share of world exports of a good divided by its share of total world exports. The index for country i good j is RCA ij = 100(X ij /X wj)/(X it /X wt) where X ab is exports by country a (w=world) of good b (t=total for all goods).

production or simply transformed manufactures (STMs). On the other hand, goods regarded as elaborately transformed manufactures (ETMs), which are of high value to the state, tend to have lower RCAs. The table also tracks movement of selected commodities over an eight year period showing movement in value and RCA over time. For those products where movement is tracked the first point is 1998 and the second point is 2002. It shows the strong growth in motor vehicles over this period with other commodities that showed growth being primary production.

RCA for motor vehicles rose as total exports from Australia grew from the early 1990s. It is said that the Australia passenger vehicle market is now one of the most competitive in the world with more makes and models competing than the United States. Vehicles are exported to the Middle East, the Pacific, Asia and South Africa. Engines and components are exported to Asia.

Australia today occupies a niche in the global motor industry and decisions are made on that basis. Ford and Holden both have international engineering and design responsibilities while Toyota has specific international responsibilities for the supply of Camry. A major market for Toyota has been the Middle East but this market is vulnerable to competition from alternative plants in the US. Holden exports to diverse markets including the Pacific and Middle East. Decisions on new markets for Australian producers are made globally based on the best model to compete in that market. Australian producers compete with other models from other parts of the supply chain. Apart from better trade access to existing markets, local producers benefit most from initiatives that could improve their cost competitiveness within the global supply chain. Taxes and infrastructure are consistent themes.

Services

In the context of strong global growth in services trade Australia's performance has been undistinguished. In terms of ranking, Australia is the 24th largest exporter of commercial services (12th if inter-EU trade is excluded) and 23rd largest importer (13th if inter-EU trade is excluded)4. Australia represents 1.17 percent of total world services exports and 1.19 percent of total world imports of commercial services. Internationally, services trade grew by 10 percent between 2000 and 2006 while in Australia services trade grew by 9 percent over the same period.

Globally, 'other commercial services' is by far the largest and fastest growing category of traded services5. Exports doubled in value between 2000 and 2006 reaching US$1380 billion accounting for half of total commercial services exported in the world. Australia does not rank in the top 15 exporters and over the same period exports rose just 6 percent to $10 billion. Only 25 percent of Australia's services exports are in this category while 27 percent of imports are in this category. More than half of Australia's services exports and a third of services imports are travel services while 20 percent of exports and 36 percent of imports are

[4] *Trade Profiles 2007*, WTO

[5] *World Trade Report 2007*, WTO, page 10

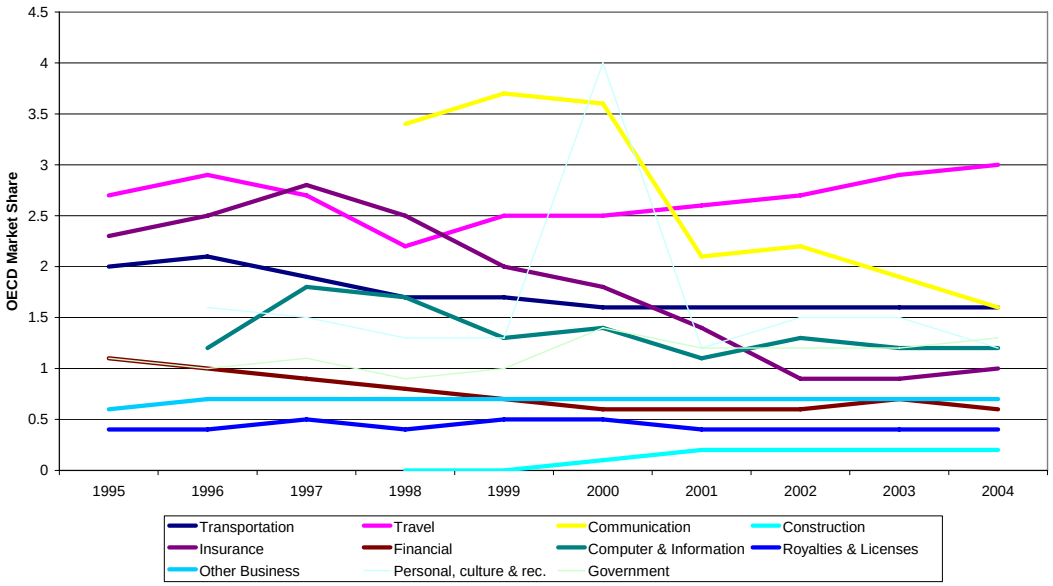
transportation services. A recent discussion paper by the Business Council of Australia[6] noted that:

"Australia's relatively poor services exports performance has come against the backdrop of remarkably strong global growth, rising demand for services around the world, and exceptional performance of some of our economic peers in capturing market share in global services."[7]

The paper went on to point out that Australia's share of the global services market has been shrinking at a time when Ireland's services exports, for example, grew by 23 percent per year between 2000 and 2005.

The following charts show the performance of Australia in relation to the rest of the OECD using the measures of market share and Revealed Comparative Advantage (RCA). They show that in all sectors except travel Australian service industries have lost market share in internationally.

Chart 4 – OECD Market Share – Services Australia[8]

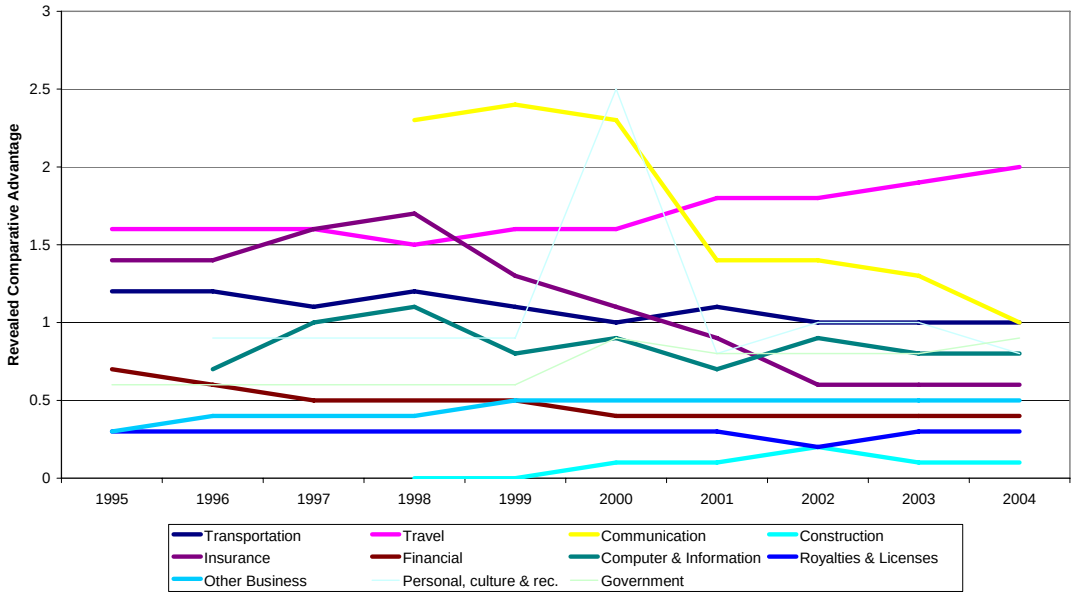


[6] *Underserviced: Why Australia's Services Economy Deserves More Attention*, Business Council of Australia, July 2007

[7] Ibid page 1

[8] Source: OECD

Chart 5[9] – Revealed Comparative Advantage – Services Australia



The graph above shows that Australia has a comparative advantage in travel and has lost its comparative advantage in Communication and Insurance Services. Other service sectors have not enjoyed a comparative advantage over the past 10 years and have maintained a relatively steady position.

<u>Recommendation</u> -- Recognising that Australia is struggling to maintain relevance in key global supply chains and missing out on the massive growth in services trade. The changing nature of international trade and the Bernanke and NIEIR analysis reinforces the need for new thinking on trade and industry policy consistent with the stated objectives of the Prime Minister and ALP policy.

Developing new service enhanced manufacturing opportunities within Australian manufacturing is a key challenge that must be met. In addition, identifying areas of manufacturing which lend themselves to the development of clusters and international hub status is another important challenge. Sectors, including but not limited to, defence manufacturing, shipbuilding and ship repair, environmental engineering, vehicle building and component manufacturing are examples of sectors which lend themselves to sophisticated, government supported industry development policies. Developmental policies in Singapore have ensured that Singapore has maintained its historic hub status within Asia, Australia should learn the lessons from Singapore's successful developmental approach and use a combination of industry development and trade policy to promote Australian manufacturing.

[9] Source: OECD

Bilateral "Free" Trade Agreements

There has been a growing critique of the proliferation of free trade agreements in East Asia and the Pacific. Writing in the Financial Times on Monday, November 30, 2006, Alan Beattie provided a critique of free trade agreements and quoted academic papers describing the situation as *"spaghetti bowls as building blocks"* and *"a patchwork of bilateral hub and spoke FTA's in a noodle bowl*[10]*"*

The complexity, and spaghetti bowl outcome, is demonstrated by graphs found in the publication *"East Asian Regionalism"* by Christopher M. Dent[11]

In another graph, in the same publication, *Asia -- Pacific FTA projects (by June 2007*). Dr Christopher Dent, who lectures on the international political economy of East Asia at the University of Leeds, demonstrates what Richard W. Baldwin of the graduate Institute of International studies, Geneva described as *"fractals -- fuzzy, leaky trade blocs made up of fuzzy, leaky sub blocs"*.

The graph, *Main Regional Organisations and Framework Involving East Asia* shows the regional organisations that are superimposed on top of the regional free trade agreement networks.

Another graph in the same publication -- *Toyota Asia International production* network 2006 demonstrates the corporate level networking in Asia which further demonstrates the complexity of the trading system in Asia.

In this context the AMWU welcomes the trade minister's public preference for multilateral trade agreements within a reformed WTO. Increasing access for Australian manufacturing companies to the existing "spaghetti bowl" (as described by Bhagwati) of free trade agreements and international value chains will be complex and require a sophisticated multifaceted approach.

The AMWU's views on the existing and proposed bilateral agreements are well documented. We have made numerous submissions on free trade agreements including:

1. A submission to the Senate foreign affairs, defence and trade committee on the proposed Australia - United States free-trade agreement and General Agreement on Trade in Services - April 2003.

2. A discussion paper - the implications of the Austfa for government procurement, what will Australia win and lose?

3. Submission to the Senate Select Committee on the Free-Trade Agreement between Australia and the United States of America - May 2004

[10] Financial Times (Asia) Monday, November 15, 2006 -- a Complex Cost: East Asia Exposes the Limits of the Regional

[11] East Asian Regionalism -- Christopher M. Dent, Routledge Press 2008.

4. Submission to the Joint Standing Committee on Treaties the proposed Australia - Thailand Free-Trade Agreement - June 2004

5. Submission to the Senate Foreign Affairs, Defence and Trade References Committee concerning Australia's relationship with China - March 2005

6. Submission to the Department of Foreign Affairs and Trade feasibility study into the Australia - India Free Trade Agreement - March 2008

In addition to these submissions the union conducted research into the potential employment impacts of an Australia -- China Free-Trade Agreement. This research was conducted by Pat Conroy the former AMWU economist and Jim Stanford an economist with the Canadian Auto Workers Union and a well-known Canadian economic commentator.12

The Research shows in each of the three free trade agreements negotiated by the former Federal government, (Singapore, United States, and Thailand), imports from the FTA partner have grown much more quickly than Australia's export to the FTA partner. Since implementing these FTA's, Australia's bilateral merchandise trade deficit has widened by a combined annual total of over $11 billion. Were it not for the deterioration in bilateral trade balances under each of these the FTA's, Australia's trade would have been roughly balanced last year instead of mired deeply in deficit.

The Howard government funded economic studies purporting to show the benefits of these FTA's (including the proposed agreement with China) are based on highly unrealistic assumptions and cannot be trusted.

Some of the assumptions include full employment; all jobs pay the same wage; equal distribution of country's entire wealth and income; companies cannot flee the country in search of lower production costs; no trade deficit; and Australia is the only place in the world that can produce unique Australian varieties of goods and services that are demanded by consumers all over the world. The authors correctly point to the fact that econometric modelling unrealistic assumptions are politically based, hypothetical and misleading, and can in no way be interpreted as proof that free trade will be so mutually beneficial.

The authors more realistic effort to simulate the economic and employment impacts of a comprehensive FTA with China indicate that it would have a negative and potentially very large impact on a wide range of manufacturing industries. In the best case scenario in which Chinese tariffs and tariff equivalent barriers are eliminated in all areas (including the sensitive agricultural sector), and Chinese imports from Australia respond fully and transparently to tariff elimination (something that has been demonstrated not to occur in East Asian economies, in which the impact of proactive industrial and trade policy levers continues to be strongly felt -- even in a free-trade setting).

[12] The Potential Employment Impacts of an Australia-China Free Trade Agreement By Pat Conroy and Jim Stanford ,April 2007

Imagine furthermore that there is no exodus of capital to China and that the impact of tariff elimination is limited only to incremental and relatively modest shift in consumer spending patterns (following the typical methodology of conventional economic models).

Even in the best case scenario, Australia would still suffer net job loss of over 7000 jobs (including 22,000 lost jobs in manufacturing).

In reality, however, the impact on Australia -- China FTA (ACFTA) will not be so benign. The experience of Australia's three other FTA's has shown conclusively that aggregate trade flows grow much more quickly than expected in standard economic models and Australia's imports have consistently grown much faster than it exports. If we apply the actual historical experience of Australia's existing FTA's, extrapolated over a five year adjustment period, then the net job losses from Australia are far worse. The authors' simulations indicate a job loss of over 170,000 positions in manufacturing, offset only partly by limited new employment creation in agriculture and mining. Entire sectors of manufacturing, including textiles and apparel, would be virtually wiped out. The overall net employment impact in Australia would be a job loss of 158,500 positions.

Recommendation -- Australia should not enter into further bilateral free-trade agreements until an inquiry is conducted into the failure of econometric modelling used by the previous Howard government to justify Australia's commitment to bilateral agreements. The government should commit to developing a genuinely independent econometric model to assess the economic implications of trade agreements. The Australian government must genuinely commit to a strategy of reforming the WTO and pursue multilateral agreements under a reformed WTO instead of the failed bilateral approach which is widely recognised as impeding multilateralism. A reformed WTO approach must allow for domestic industry policies to promote industry development, capacity in global supply chains, and respect for environmental costs and balanced social and economic development in local communities. It must also allow for enforceable social labour and environmental standards.

Thai Free-Trade Agreement

As this submission is being prepared, Fisher& Paykel's chief executive John Borger announced the closure of its Brisbane, New Zealand and Cleveland US plant arguing that consumers have no choice but to buy appliances made over seas. As a result of this decision, 360 skilled, well-paid Australian jobs have been exported to Thailand. Mr Borger cited the high New Zealand dollar, complex and expensive compliance costs in manufacturing in Australia and New Zealand and free-trade agreements with China and Thailand as factors.

"When you're having to compete in a playing field with zero tariffs from lower-cost countries, it doesn't matter how smart and how tough our guys are, you can't compete against unlike economies"[13]

This development confirms and reinforces the concerns that the AMWU have been raising in relation to the free-trade agreements negotiated by the former government. It should be of grave concern to this review and the Federal government that unfair competition is being fostered by so called free trade agreements In our 2004 submission to the joint standing committee on treaties in relation to the proposed Australia -- Thailand free-trade agreement the union said the following:

- There were serious inadequacies in the consultation and review process in relation to the proposed agreement.
- The assessment of the likely effects of the agreement was inadequate.
- The CIE report was both flawed and incomplete.
- The agreement will contribute to the industrialisation or "pastoralisation" of the Australian economy.
- The future of the manufacturing industry is critically important to the prospects of Australia and Australian workers in the 21st century.
- The tariff reductions in the Thai free-trade agreement will hurt Australian Manufacturing.
- The failure to include a chapter on enforceable core labour standards is particularly damaging in a free-trade agreement with Thailand.
- In 2003 the minimum wage ranged from (133 baht to 168 baht) per day. This equates to around $4 60 to $5 80 per day.
- Minimum wages are poorly enforced.
- Workers who try to form unions in Thailand are frequently dismissed.

[13] The Australian, April 17, 2008 -- Fisher & Paykel doesn't fear backlash

- 2 to 4% of children between the age of six and 14 years old work illegally in urban areas.

- There is no law to protect employees who refused to do dangerous work.

- The rules of origin in the agreement are insufficient to ensure that only products which are substantially produced in Australia or Thailand obtain concessional treatment under the agreement.

Further examples will be given of violations of trade union and human rights in Thailand in the chapter, ITUC Annual Survey of Violations of Trade Union Rights, 2007.

The AMWU is of the view that unless innovative and substantive industry development policies are implemented as part of the proposed free trade agreement with China, the job losses and hollowing out of the manufacturing industry will have devastating impacts on individuals, families companies, regions and the economy. It is not in the national interest to enter into a free-trade agreement with China, or any other country, that destroys significant and substantial sections of Australia's manufacturing base.

Recommendation -- The review should recommend to government that immediate steps are taken to monitor, analyse and publicise the effects of the Thai free-trade agreement on Australian Manufacturing. Consistent with recommendations in relation to industry policy specific support mechanisms should be developed and implemented for manufacturing companies facing unfair competition from Thailand and China.

False Expectations Created by Econometric Modelling

The 15 June 2005 the Joint Standing Committee on Foreign Affairs, Defence and Trade resolved that the trade subcommittee would examine the operation of the free trade agreements with Singapore, Thailand and the United States with particular reference to:

- Business experience of the free-trade agreements, in particular participation in negotiations on support from Australian agencies in country;
- Government and business perspectives on what works well and what could be improved in the operation of the agreement; and
- Issues to be considered in future free-trade agreements.

The inquiry took the form of a half day round table and was constructed around thematic topics rather than around individual agreements.

Consistent with the concerns raised consistently by the AMWU in relation to the modelling and false expectations the views of the participants are instructive:

The Minerals Council of Australia argued that:

"When people see a big number like $24 billion -- or an even larger number in the case of the United States (FTA) -- it is treated sceptically by the public and by opposition groups. The assumptions are generally complete free trade. It also creates a mistaken impression for groups within Australia who are interested in lowering barriers in the target country… who all of a sudden see the big headline number in an assertion that the benefits from this agreement in this sector are going to be this figure…. the assumption is that complete free trade will be achieved by a certain date. It just never happens like that".

Austrade suggested that heightened expectations in the home country can help to put pressure on the negotiating partner to deliver certain outcomes.

"As negotiators of agreements you can have something that some people say is more realistic, but you're actually negotiating something with another country and you want them to be under pressure to address a whole range of issues. There is a balance to be had in there about domestic expectations but also about the expectations in your negotiating partner's country."

DFAT argued a contradictory and bizarre proposition in trying to balance the political objectives of the then government with the reality of problems with the econometric modelling.

"What the headline figure of a $24 billion increase in GDP in 2015 gave people was a very rough outline of the sort of benefits that might flow from an agreement…I think it was an entirely appropriate, proper and responsible thing for the government to do, even though personally I have big problems with the actual modelling itself. But that is another question -- that is for the econometricians' to answer".

It is an abrogation of responsibility for DFAT to subjugate critical analysis and independent advice to government on key economic matters such as the perceived benefits of the free-trade agreement. To support the government unequivocally and express "big problems" with the modelling that was used to build public support for the free-trade agreement is a betrayal of the long-held principle and convention of independent political advice to government.

The issue of false expectations being promoted, based on the econometric modelling using the computable general equilibrium (CGE) model, must be addressed to ensure that proper independent and dependable modelling is available to advise government and the community.

<u>Recommendation</u> -- Steps should be taken to ensure that DFAT provides independent and fearless advice to government in relation to the success of economic analysis in accurately predicting the costs and benefits of trade agreements particularly analysis based on the computer general equilibrium model.

Bilateralism, Regionalism and the WTO

Dr Christopher M. Dent, Senior Lecturer on the East Asian economy in the Department of East Asian studies at the University of Leeds has undertaken detailed analysis of the free-trade agreements in the Asia-Pacific. He is the author of two books on the subject.14

In his 2006 publication "New Free-Trade Agreements in the Asia-Pacific" Dr Dent describes his particular interest in new trade bilateralism and how this could be an evolutionary step towards building a stronger regional community in East Asia and the Asia-Pacific, and even make an important contribution to the development of international society generally. Dr Dent indicates that at first he was optimistic that the emergence of stronger bilateral economic links amongst Asian and Asia-Pacific states would help construct what he referred to as "Lattice regionalism" which draws upon the analogy of bilateral free-trade agreements forming a lattice framework on which a broader regional community building process could be founded. Dr Dent's initial optimism gave way to an increasing concern the more he researched into the subject. His detailed study concludes that intensifying bilateral free-trade agreement activity is more likely to have the opposite effect. In some of the new bilateral free-trade agreements the trend appears to be to undermine the coherence and viability of existing regional organisations, and has the potential to significantly intensify interstate rivalries, reinforce power asymmetries and exacerbate the development divide in the region15

Dr Dent conducted a major research interview, into aspects of free trade agreements, with 175 Research interviewees from 144 agencies across 8 countries (plus the WTO community in Geneva). The survey covered four areas.

1. Main determining factors
2. Main hindrances
3. Government working with stakeholders
4. Main consequences

[14] New Free-Trade Agreements in the Asia-Pacific, Christopher M. Dent -- Palgrave McMillan 2006 and East Asian regionalism, Routledge 2008

[15] ibid

The results of the survey are detailed below:

Figure 1 - Free Trade Agreement Survey[16]	**Australia**	**Japan**	**New Zealand**	**Singapore**	**South Korea**	**Taiwan**	**Thailand**	**United States**
Main Determining Factors								
Helping consolidate domestic economic reforms	1.8	3.0	2.0	2.7	3.4	2.7	3.3	1.9
APEC trade liberalisation inertia	2.4	2.2	3.5	3.0	2.2	-	2.4	2.0
WTO trade liberalisation inertia	2.8	2.6	4.1	3.1	2.9	-	3.2	3.4
Instigating a new trade policy direction	3.1	3.1	2.8	3.2	3.5	2.7	3.6	3.3
Strengthening diplomatic relations with key trade partners	3.9	3.6	4.1	4.6	3.8	3.8	3.9	3.6
Toward wider regional trade arrangements	2.4	3.1	4.1	3.4	3.7	3.2	2.9	2.5
Strengthen regional economic cohesion	3.0	3.3	3.6	3.3	3.1	3.2	3.2	3.2
Response to regional / global FTA trend	3.1	3.4	2.5	1.9	3.9	3.8	3.4	3.5
Helping achieve global free trade / help WTO	2.4	2.4	3.8	3.0	2.3	2.0	2.2	3.5
Consolidate security alliances - *Australia / US*	4.1	-	-	-	-	-	-	2.6
As a response to 1997/98 financial crisis - *Japan*	-	4.5	-	-	-	-	-	-
Exploiting the benefits of WTO membership - *Taiwan*	-	-	-	-	-	3.3	-	-
'Isolation avoidance' diplomacy - *Taiwan*	-	-	-	-	-	3.9	-	-
ASEAN's problems implementing AFTA - *Thailand*	-	-	-		-	-	2.5	-
Recent securing of Trade Promotion Authority - *US*	-	-	-	-	-	-	-	3.3
Main hindrances								
Agriculture	4.8	4.8	4.3	-	5.0	2.8	3.5	3.3
Opposition from (other) domestic industries	2.2	2.7	2.9	2.9	2.2	2.1	3.2	2.2
Opposition from civil society groups / NGOs	1.7	1.4	2.4	1.1	2.7	1.0	1.5	2.2
Lack of business sector support	1.8	1.6	1.6	1.7	2.4	1.7	1.9	1.6
Low foreign economic policy priority of government	1.3	3.0	1.7	1.1	2.5	1.2	1.8	1.7
Diplomatic over-reach / scarce diplomatic resources	1.1	1.6	2.9	2.3	1.8	1.7	2.9	3.1
Greater domestic problems of FTA partner(s)	-	1.7	-	3.2	3.2	2.0	3.1	2.3
Opposition from other countries or international organisations	1.3	1.6	1.2	1.8	1.2	4.8	1.5	1.1
Non-tariff barriers or other technical issues - *Aus / NZ*	3.5	-	2.7	-	-	-	-	
State bureaucratic inertia or opposition - *Japan / S. Korea*	-	2.6	-	-	2.3	-	-	
Lack of priority afforded by trade partners - *Taiwan, Thailand*	-	-	-	-	-	3.6	2.2	

[16] Notes: Based on author's field research. Figures relate to average 'significance ratings' of 0 to 5, with 5 the highest significance rating.

Figure 1 - Free Trade Agreement Survey[16]	**Australia**	**Japan**	**New Zealand**	**Singapore**	**South Korea**	**Taiwan**	**Thailand**	**United States**
Government Working with Stakeholders								
Agriculture lobby	5.0	4.2	5.0	1.0	3.8	2.8	4.5	4.0
Other industry groups	4.0	4.4	3.3	4.0	3.3	2.8	4.5	3.5
Trade unions	3.0	1.4	3.0	2.2	2.0	1.6	1.7	2.1
Environmental groups	2.5	1.4	3.0	1.7	1.0	1.4	1.5	1.9
Other civil society groups	3.0	1.4	2.5	1.7	1.3	1.0	1.7	1.9
Main Consequences (*net positive / negative*)								
Domestic economic policy reform	1.0	3.4	1.3	2.9	3.4	3.4	3.2	1.5
Domestic economic restructuring	0.8	2.8	2.0	3.0	3.5	3.6	3.4	1.5
For APEC	-0.3	0.6	3.0	1.6	1.9	-	1.0	1.5
For the WTO	0.5	1.2	1.6	1.6	1.8	-	1.4	2.1
Relations with bilateral FTA partners	3.2	4.0	4.2	4.1	3.7	3.9	3.9	4.2
Country's influence in the East Asia / Asia-Pacific region	1.5	3.8	2.4	2.9	2.7	2.9	3.2	2.9
Developing wider regional trade agreements	1.2	2.8	2.5	2.9	3.5	3.3	3.2	2.3
International relations in the region	0.7	3.4	2.2	3.2	2.7	2.5	2.6	2.6
Countries and regions outside the Asia-Pacific	0.2	1.6	0.8	2.4	2.1	2.3	1.7	1.4
Taiwan's relations with China - *Taiwan*	-	-	-	-	-	1.7	-	-
For AFTA	-	-	-	-	-	-	2.6	-
The 'war on terror'	-	-	-	-	-	-	-	1.7

It is important to note that those interviewed in relation to Australia's bilateral agreements ranked the consolidation of security alliances in the Australia/US agreement as the main determining factor. The geo political aim of strengthening diplomatic relationships with key partners is the second most important outcome.

The main hindrances were identified as agriculture and nontariff barriers or other technical issues. This is not in unexpected due to the political influence of the agricultural lobby on the previous government and the reality of the maintenance of nontariff barriers in prospective free trade partners' economies.

The bias towards "relations with bilateral FTA partners" as one of the main consequences compared to economic policy reform and economic restructuring demonstrates the geo political bias of Australia's free-trade agreement strategy.

This review should ensure that the stated objectives of the Prime Minister and the National conference of the ALP should be implemented and the negotiation of bilateral agreements for geo political purposes should not be pursued and all free-trade agreements should be subjected to a national interest test.

Many of the conclusions reached by Dr Dent have been reinforced in a forthcoming paper by Professor John Ravenhill entitled "The Move to Preferential Trade on the Western Pacific Rim: Some Initial Conclusions"[17] Professor Ravenhill concludes amongst other things that:

"The proliferation of PTA's not only has tended to shift attention and resources away from negotiations at the global level but also runs the risk of fragmenting the "pro- liberalisation" coalition in countries that have signed multiple agreements"

The analysis detailed in this submission along with the practical outcomes of the signing of these free-trade agreements demonstrate the urgent need for a new strategic approach to the negotiation of trade agreements, one that is driven by the need to ensure Australia has a broad-based economy with a strong, export focused and highly productive manufacturing industry.

Recent research and academic analysis outlined in this submission reinforces the AMWU's view that bilateral preferential trade agreements are not in the national interest and the Federal government should concentrate on "reforming" the WTO and pursuing multilateral trade liberalisation which is in the national interest.

<u>Recommendation</u> -- The key drivers for trade liberalisation and the objectives of Australia's position in trade negotiations must be to widen Australia's economic base by ensuring a strong and internationally competitive manufacturing sector capable of contributing to international competitiveness, job creation and social well being.

[17] Forthcoming

Accessing Regional and Global Value Chains

Conventional neoclassical economic theory posits that reducing tariffs and regulation and implementing competition policy, along with opening the Australian economy to international competition will produce a healthier and more competitive economy.

This is encapsulated by an opinion piece in the Australian on April 1, 2008 by the Minister for Finance and deregulation Lindsay Tanner. Tanner introduces the age old dichotomy of producerism and consumerism in a manner designed to present it as some modern, insightful (and economically conservative) revelation.

In reality the Minister's views are an anachronistic polemic and fail to develop a proper analysis between the national interest and a narrow, outdated neoclassical economic view of trade and productivity.

A recent working paper by Dr Timothy G. Sturgeon of the Industrial Performance Center, Massachusetts Institute of Technology "From Commodity Chains to Value Chains: Interdisciplinary Theory Building in an Age of Globalisation" comments on the increased economic insecurity, even amongst the "winners" in the global economy.

"Policy makers responsible for responding to the pressures of global integration are desperate for conceptual framework and theoretical constructs that can help to guide their work, which often includes making difficult trade-offs in the context of extremely complex and rapidly changing situations. The so called "Washington Consensus," the view that countries simply need to get their macro economic house in order and be open to international trade and investment to advance on the global economy, provides little guidance to policy makers and non-governmental activist for dealing with the concerns of workers, communities, and industries that are in the midst of wrenching change or which remain completely severed from the global economy. The need for pragmatism motivates theories characterised by simplicity, easy applicability in the face of variety, and resonance with real-world situations[18]"

The majority of influential Australian politicians continue to espouse policies underpinned by the economic and social theories of Hayek, and Milton Friedman. Responding to globalisation and the development of corporate based value chains will require a rethinking of existing policy bias and ineffectual or nonexistent policy frameworks.

Dr Sturgeon concludes his paper in the following terms:

"Because the stakes are so high, we must take global integration seriously, and develop ways of thinking that place novel and emergent features of the global economy in the foreground. In simpler times it made sense to focus on the roles of comparative advantage and the market -- and capability -- seeking activities of multinational corporations and motivating and structuring International trade and investment. While these concepts have proved to be extremely robust and are still valuable, they do not emphasise the fragmentation of the value

[18] Sloan Industry Studies Working Papers, from commodity change the value chains: Interdisciplinary Theory Building in an Age of Globalisation, Dr Timothy G. Sturgeon, industrial Performance Center MIT 2007

chain or the fluid, real-time integration of capabilities in advanced economies with the rapidly rising capabilities in places that were all but outside of the capitalist global economy only two decades ago, such as China, India, Russia, and Vietnam. In fact they emphasise the opposite: National exports specialisation in undifferentiated commodities on one hand and finished products, on the other hand and the extension of existing national advantage, via multinational affiliates, to places where industrial capabilities lag far behind. While the rise of Global Value Chains do not render this view of global competition completely anachronistic, it is safe to say that the picture has grown much more complex"

It is extremely important that this review highlights the changed circumstances facing Australian governments, industries, companies and the community. This review must challenge governments to develop sophisticated but simple and easily applicable responses that reflect the more complex situation facing Australian manufacturing and the economy. Falling back to the simplistic and anachronistic consumer/producer dichotomy and relying on the Washington consensus and the theory of comparative advantage will ensure a further hollowing out of Australian manufacturing with severe and negative implications for the economic health of Australia.

The study of Global Value Chains and problems in developing a theory to allow policymakers understand the challenges and develop political responses were discussed in an MIT briefing paper "Globalisation Employment and Economic Development"19

The paper focused on five central questions related to Global outsourcing:

1. What are the dynamics of job creation and job losses during the last five to 10 years in the United States and overseas, both in the aggregate and in particular industries? (Number of jobs)

2. Which countries and regions have been the primary beneficiaries and losers in the Global job shifts? (Location of jobs)

3. What are the mechanisms which job creation and loss in advanced industrial and developing economies are linked to Global Value chains? (Sticky versus footloose jobs)

4. What do we know that the distribution of jobs and relatively high value activities and low value activities in Global Value chains? (Quality of jobs)

5. What is the evidence for industrial upgrading (or downgrading) based on the availability and distribution of jobs in Global Value chains? (Jobs and development)

It is interesting to note that this research has been undertaken in the United States over the last four years. This demonstrates a serious analysis of the development of extremely complex

[19] Globalisation, Employment, and Economic Development: a Briefing Paper, Gary Gereffi and Timothy G. Sturgeon, MIT IPC Working Paper IPC -04-007

Global Value Chains and the increased skills, technology, and innovation available to low cost producers through the investment by multinational manufacturing corporations.

To our knowledge, no comparative detailed analysis has been undertaken within Australia and neither has the previous government taken steps to understand the economic and social factors arising from the hollowing out of Australian manufacturing.

Simply negotiating imperfect and indeed flawed free trade agreements and presenting this as the answers to Australia's economic prosperity, employment prospects and increased productive performance is either naive or dishonest.

This review should recommend that an independent study is undertaken of the economic and social implications of the economy becoming even more reliant on mining, agriculture, and services.

It should be noted that as far back as 2004 the MIT briefing paper was warning of the offshoring of knowledge intensive business services, such as engineering, design, accounting, legal and medical advice, financial analysis, and business consulting.

The briefing paper also noted that the global economy is increasingly concentrated at the top and fragmented at the bottom, both in terms of countries and firms. Given this consolidation, profits are driven down at the base of the Global Value Chains because of intense competition, leaving little money for reinvestment, innovation, or wage increases.

According to the briefing paper real opportunities to move up value chains in the global economy appears to reside in a very small number of developing countries, and within the largest of these economies (like China and India), in particular sub national regions. This is why there is considerable concern and scepticism about the current prospects for "spreading the gains" from globalisation. This 2004 assessment is completely consistent with the Australian manufacturing experience with Australian companies experiencing cost down pressures from major multinationals resulting in an inevitable reduction in technological investment, training research and development and innovation. This inevitably leads to offshoring of Australian employment. The AMWU has viewed this as a deliberate strategy by major multinationals and is inconsistent with their reciprocal obligations to the Australian government and Australian community who have provided decades of assistance for overseas corporations operating in Australia.

The growing power of multinational corporations, Ron Blackwell argues, is increasingly uncontested by workers and unregulated by governments, allowing the world's largest firms to "pursue profit with no regard for the wider social or environmental impact of their activities"[20]

The paper notes that, "Compared to workers who lost jobs in other sectors of the US economy, the characteristics of trade displaced workers in manufacturing include being "*slightly older, notably less educated, with longer job tenures, somewhat more likely to be a minority, and far more likely to be production oriented (just less than one half of*

[20] Blackwell, Ronald. 1997. "Globalisation and the American Labour Movement"

manufacturing displaced are lower skilled blue-collar workers) the characteristics of displaced workers in manufacturing do not correspond with the profile of workers who succeeds in typical training programs, which limits their probability of employment. This has led Kletzer and others to discuss new policies such as wage insurance, designed to improve the opportunity for workers in trade adjustment programmes".

This mirrors the Australian experience. Nevertheless, simply providing some short-term financial support to workers who have lost high skilled and highly paid jobs as a result of free-trade agreements and globalisation is insufficient to stem job losses and ensure a broad-based Australian economy with a globally oriented and internationally competitive manufacturing base.

The emerging question in the United States, and an issue that must be considered by this review, is what will happen if local manufacturing firms are completely or predominantly excluded from the Global Value Chain?

Manufacturing job losses and the degradation of capabilities in the manufacturing sector will create significant and systemic economic and social problems in key regions and across the economy.

A key aspect of this review must be to provide sufficient analytical and practical support to the manufacturing industry through well funded industry development support which allows the manufacturing sector access to the Global Value chain based on improved productive performance and international competitiveness.

<u>Recommendation</u> -- The Department of Foreign Affairs and Trade and the Department of Industry must conduct an inquiry based on the MIT analysis of Global Value chains in order to develop strategies to ensure Australia's involvement in international production networks and development of Manufacturing clusters and hubs within Australia.

An Effective Industry Policy Package

Work done by NIEIR, and outlined in this section, reinforces the Bernanke analysis that dramatic changes have swept through the global economy which require a re-evaluation of traditional policy remedies that have previously been implemented to enhance Australia's position in traded goods and services sectors. Point to point trade is losing relevance; the concept of imports and exports is replaced by domestically focused and internationally focused segments of the economy; traded goods and services are no longer fixed but a rapidly evolving menu of opportunities; Stand-alone firms are being replaced by virtual conglomerates that join and separate in response to customer requirements. In dealing with this, Australia will need to take a medium to longer term view of improving its global market share and use a set of unashamedly corporate tools aimed at identifying core competencies, capital requirements and marketing tools. The *Enterprise Australia* model aims to increase the nation's performance in the international economy using the same tools and techniques a multi-national firm would use to evaluate its core competencies, develop strategies that build on these competencies and grow its share of market opportunities for those competencies.

Traditional approaches to industry policy relied on identifying products (and occasionally services) that could be sold to people in other countries. In the fluid economy of the 21st century the question is: What are the skills and competencies Australia has for which there is a demand internationally. For instance, Australia has traditionally traded wheat. Does that mean the country has skills and competencies in land management and/or agricultural machinery? A more complex example would be: Australia has been very successful over the past 10 years exporting passenger motor vehicles. Does that mean we have skills and competencies in vehicle assembly, in automotive engineering or automotive design or all three? It would certainly appear that we have competencies in aspects of automotive engineering while automotive design has been a strong growth area in recent years. If there is a core competency in engineering and design, how does Australia strengthen both the skills base and the linkages with global customers for these skills? If the Australian automotive market is small and its plants are sub-scale, do we still have something to offer the global vehicle industry as a centre of innovation and design with an ideal test market for new prototypes. How do we move Australia to this position and market this concept to the global industry and thus lock our industry into a more secure future that is based on a more sophisticated vision than just selling cars.

A schematic of the Enterprise Australia Action Plan is set out at Figure 1.

In looking at the key areas where an Action Plan would seek to intervene to strengthen the competitiveness of Australia in selected competencies would be:

1. Scaling up by bringing together firms through networks and clusters in order to respond to the demands of global supply chains.

2. Market linkages. Not traditional point to point export assistance but by developing links with decision makers in global supply chains (who may not be based in actual markets).

3. Knowledge linkages: Bringing together different arms of Australia's knowledge development infrastructure from learning institutions, research organisations, industry and government creating new knowledge interfaces and providing direction to learning programs.

4. Physical infrastructure to support market access for both physical products (goods) and knowledge products or services.

5. Leadership development. Parts of Australian industry are leaderless when it comes to dealing with international markets. Government can play an important role in fostering and recognising industry leaders capable of building both market and knowledge linkages.

6. Investment attraction. Attracting key global investments that capitalise on, develop and integrate Australia's core competencies into the global economy.

7. Cost reduction. Through both the tax system and physical infrastructure government can influence the cost base for business operating in Australia and therefore its competitiveness in the global market. This includes the cost of research and development.

8. Marketing. Australia needs to be positioned in the international market in a way that highlights its core competencies and preparedness to support further development in those areas.

The outcomes envisaged from this range of interventions would include both types of successful enterprises identified earlier in the report – worker bees and innovators. The second type of business would be based on achieving market changing breakthroughs in Australia's core areas. This would require a long term view and creating the right environment for breakthroughs to emerge. The challenge then will always be to ensure the benefits of any breakthrough is commercialised in a way that adds to Australia's competencies and role in international markets.

Recommendation

1. **The government creates an Enterprise Australia (EA) authority with specific responsibility for preparing an audit of Australian competencies; an audit of existing market linkages and; an audit of market opportunities for Australia. That based on this, EA would identify priority competencies that could be marketed on a global basis and a strategic plan to improve the competitiveness of Australia in those areas. Subsequently, EA would be responsible for marketing those core competencies internationally. EA would incorporate most trade programs including Austrade.**

2. **That the government create an Enterprise Australia committee of Cabinet to oversee the coordination of policy initiatives to fulfil the requirements of the EA strategic plan. Elements likely to be included have been listed above and would interface with Treasury, Finance, Trade, Industry Development, Technology and Education as well as others.**

3. **That the government commit $1 billion annually on measures to implement the EA plan and that measures considered include but not be confined to:**

    - **$300 million investment allowance;**

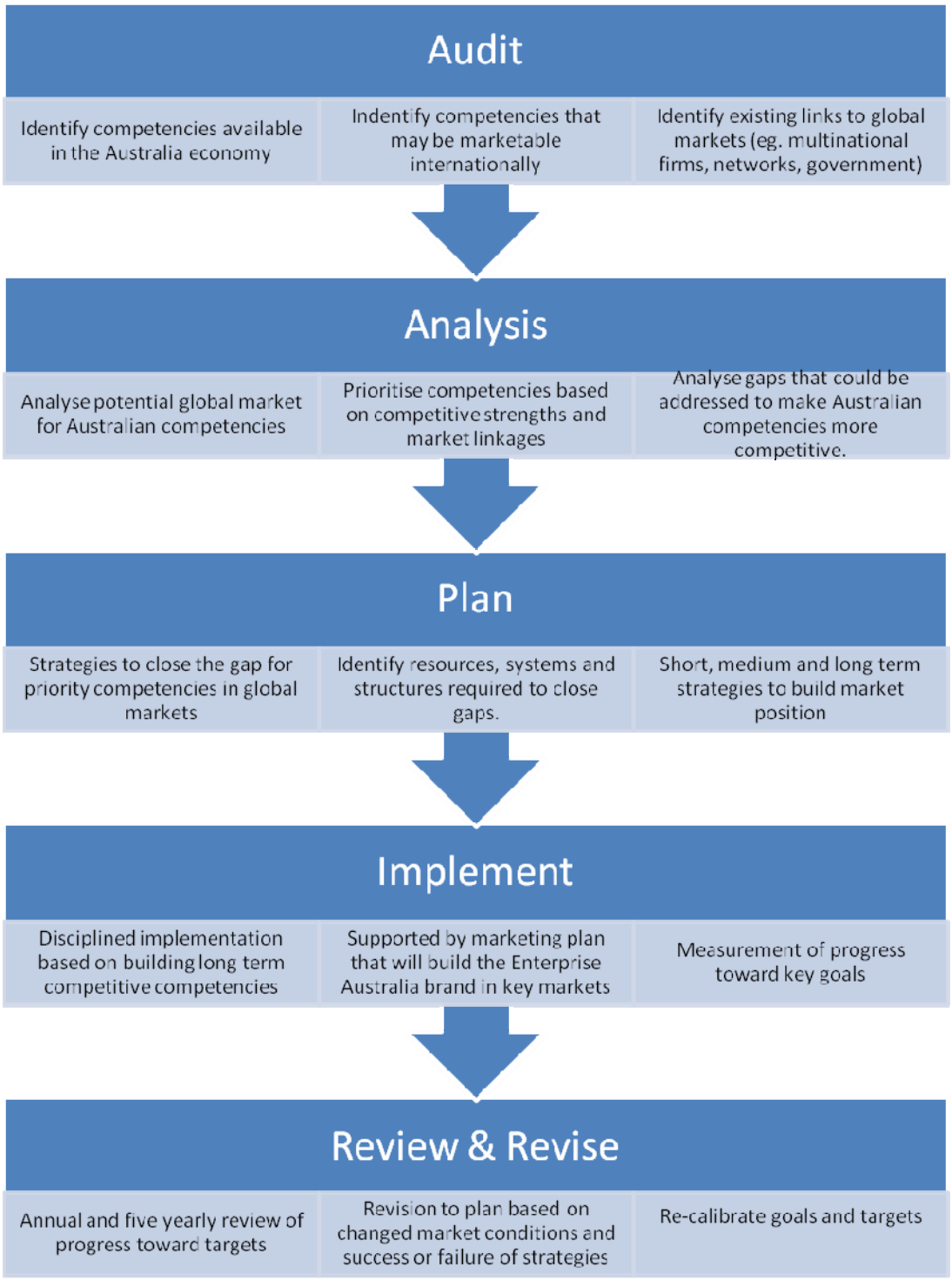
    - **$300 million research and development assistance scheme;**

- **$225 million increase in the export market development grant scheme;**
- **$75 million technology diffusion program;**
- **$50 million incentive program to attract foreign equity into small and medium**
- **sized manufacturing businesses; and**
- **$50 million strategy to attract and train highly skilled labour for the application of advanced manufacturing technologies.**

If this $1 billion program was maintained through to 2020 it would make a significant contribution to expanding the demand for Australian manufactured products, including:

- **Creating at a minimum almost 300,000 direct and indirect jobs.**
- **Increasing GDP by at least $54 billion in 2005 prices.**

Figure 2


Audit
Identify competencies available in the Australia economy
Indentify competencies that may be marketable internationally
Identify existing links to global markets (eg. multinational firms, networks, government)
Analysis
Analyse potential global market for Australian competencies
Prioritise competencies based on competitive strengths and market linkages
Analyse gaps that could be addressed to make Australian competencies more competitive.
Plan
Strategies to close the gap for priority competencies in global markets
Identify resources, systems and structures required to close gaps.
Short, medium and long term strategies to build market position
Implement
Disciplined implementation based on building long term competitive competencies
Supported by marketing plan that will build the Enterprise Australia brand in key markets
Measurement of progress toward key goals
Review & Revise
Annual and five yearly review of progress toward targets
Revision to plan based on changed market conditions and success or failure of strategies
Re-calibrate goals and targets

National Manufacturing Forum

There is a need for a paradigm shift in relation to the thinking and prejudices surrounding industry development policy within Australia. Predictable, outdated and inflexible pronouncements from the Productivity Commission in relation to industry development policy are part of the ideological thinking that militates against a dynamic, sustainable and balanced economic base.

Meeting the challenge of ensuring that we continue to "make things" in Australia demands a change in thinking from viewing industry policy as an investment instead of a cost. Developing integrated industry and policy responses will require sophisticated initiatives in order to assist Australian industry to compete effectively in an increasingly competitive and unfair manufacturing environment.

National Manufacturing Forum Recommendations

In addition to the financial package, the recommendations of the National Manufacturing Forum must be implemented21

The National Manufacturing Council comprised State government, business persons, industry groups, and unions. The Council funded research into the challenges and opportunities facing the manufacturing industry and also consulted widely within the industry. The forum developed a wide range of recommendations that were considered fundamental to the future productive performance and international competitiveness of the manufacturing industry. The recommendations included:

- The need for a commitment from government ministers responsible for manufacturing to meet at least annually to oversee and influence the implementation of recommendations arising from the report and to consider relevant future policy options.

- A process to formalise and coordinate efforts, exchange ideas and information about success and failures of manufacturing initiatives across the jurisdictions, and to provide additional input to the ministers on manufacturing developments.

- Ensuring that manufacturing does not carry an undue tax burden relative to other sectors in international competitive terms.

- Industry and government to develop in concert, a meaningful process to measure and benchmark the relative productive performance of Australian manufacturing companies against that being achieved in competitor countries.

[21] Strategic Actions to Boost Australian Manufacturing, a Report by the National Manufacturing Forum, October 2006.

- Australian manufacturing to be valued as a combination of its parts; its contributions and design, innovation and ingenuity; how elaborately transformed raw materials and simple products off the value chain; the value of production and employment; and all of logistics in getting products to market; the marketing and sales processes; its administrative requirements; environmental and social impact; and after sales and through life service.

A range of recommendations pertaining to globalisation priorities were also developed included:

- Recognise the holistic impact on the manufacturing sector of trade agreements and arrangements and ensure that Australia's negotiations around them provide net gains for Australian manufacturing;

- Develop initiatives that facilitate export market development and encourage manufacturers to focus on the specific advantages of international business, including access to economies of scale and niche growth market;

- Encourage Industry Capability Networks to work with Austrade, State/Territory agencies and other bodies to promote industry capability on a global supply chain basis and provide specific project information and tendering advice to local firms;

- Maximise opportunities for manufacturing in areas where Australia currently has the advantage, or the opportunity to develop advantage; and

- Develop ways to attract equity into the Australian small to medium-size manufacturers, especially in regional areas, as an avenue to access foreign markets, develop new products, improve processes and enhance capability

- Provide greater funding for the Export Market Development Grant scheme, expand the eligibility criteria and create easier access to it, including less onerous documentation (but with appropriate controls). State and Territory governments to work with Commonwealth to encourage and facilitate experience exporters to mentor and leverage new exporters (particularly SMEs); and

- Better align State and Territory export initiatives with the support programs at Commonwealth level (including but not limited to the EMPG scheme).

- Intellectual property rights must be protected and enforced

- Technical barriers to market access must be removed

- Freer movement of managerial technical personnel between market should be permitted (with appropriate checks and balances) and

- Anti-dumping procedures must be swift and effective

- As a means of creating better opportunities for Australian manufacturing, Australian trade negotiators and relevant agencies (including Austrade) work cooperatively with the Industry Capability Network in conjunction with industry representative bodies in

finalising and implementing trade agreements. This may require the placement of ICN staff in strategic overseas locations

- The Commonwealth be requested to remove funding constraints to free up access to the Supplier Access to Major Projects scheme and the SAMP Global so that the ICN can work more effectively with Australian industry to pursue opportunities in significant Australian and offshore projects (including foreign aid related , reconstruction schemes following natural disasters etc)

- Provide a single entry point (web site) for Australian manufacturers to discover information, programs, latest initiatives, and provide links to overseas research.

- A compendium of all programs available in the State and Territory and through the Commonwealth should also be included

- Disseminate critical information about the operation of markets and issues that may impact on the future performance of specific sectors, such as changes to regulations, mergers and acquisitions, politics and local conditions

- Encourage innovative ideas through leadership and undertake other appropriate activities

- Conduct regular (annual) manufacturing conferences with speakers who are leaders in their field, relevant to manufacturing and global developments.

- Keep abreast of international developments, particularly through organised forums such as the Intelligent Manufacturing Systems scheme and from emerging studies and publications

<u>Recommendation</u> -- The recommendations of the National Manufacturing Forum which relate to the globalisation challenge facing Australian manufacturing should, along with the other Manufacturing Forum recommendations on investment; skills etc be adopted by the review panel.

Professor Rodrik- Industrial (Industry) Policy for the 21st Century

If we are to have a sophisticated review of export policies and programmes, the role of industry policy in enhancing the competitiveness and productive performance of the Australian manufacturing sector must be considered. As previously noted, adoption of the policy strictures of the Washington consensus, will not deliver a vibrant, productive and internationally competitive economy.

This view is reinforced by a paper by Professor Danny Rodrik, Harvard University, entitled "Industrial Policy for the 21st Century"22

In this paper Professor Rodrik outlines 10 principles for industry development policies:

1. incentives should be provided only to "new" activities
2. There should be clear benchmarks/criteria for success and failure
3. There must be a built in sunset clause
4. Public support must target activities, not sectors
5. Activities that are subsidised must have the clear potential of providing spill over and demonstration effects
6. The authority for carrying out industrial (industry) policies must be vested in agencies with demonstrated competence
7. The implementing agencies must be monitored closely by a principal with a clear stake in the outcomes and has political authority at the highest level
8. Agencies carrying out promotion must maintain channels of communication with the private sector
9. Optimally, mistakes that result in "picking losers" will occur
10. Promotion activities need to have the capacity to renew themselves, so the cycle of discovery becomes an ongoing one

These proposals are not inconsistent with the range of recommendations proposed by the AMWU, NIEIR and National Manufacturing Forum. This independent approach along with the analysis and observations of the Massachusetts Institute of Technology researchers reinforces the strategy and plans outlined in this submission.

In order to ensure trade policy is consistent with the national interest, strong and effective industry policy must be developed.

[22] Industrial Policy for the 21st Century, Danny Roderick, Harvard University, September 2004

Professor Rodrik outlined an Illustrative Range of Incentive Programs which is consistent with recommendations made in this submission these include:

- subsidising costs of self-discovery
- developing mechanisms for higher risk finance
- internalising coordination externalities
- public research and development
- subsidising general technical training
- taking advantage of nationals abroad

Professor Rodrik argues that properly formulated industrial (industry) policies have an important role to play in a balanced strategy as liberalisation and privatisation have failed to deliver the expected performance.

In his concluding remarks, Professor Rodrik outlines the standard arguments against industry policy and details the counter argument in each case. He further argues that there is plenty of scope for industrial policies in the present international economic environment. In fact, contrary to general belief, the last two decades have seen a tremendous amount of industrial (industry) policy. Professor Rodrik states:

"I have taken the view in this paper that industrial (industry) policy is a process of economic self-discovery in the broader sense. The right image to carry in one's head is not of omniscient planners who can intervene with the first best Pigovian subsidies to internalise any and all externalities, but of an interactive process of strategic cooperation between the private and public sectors which, on the one hand, serves to elicit information on business opportunities and constraints and, on the other hand, generates policy initiatives in response" (page 38)

The AMWU is of the view that the growing international critique of the neoclassical free market approach to trade must be considered by this review. It is the essential that the review ensures that trade policy is framed in such a way that the long-term economic viability of the nation is insured by developing a strong, productive and internationally competitive manufacturing sector which widens Australia's economic base and reduces its reliance on primary produce, and minerals.

International experience in countries such as Singapore, Korea, Japan, Scandinavia and South America demonstrate that sophisticated industry policy initiatives are essential to ensure the viability of manufacturing in the face of unfair competition from China, Thailand and other Southeast Asian Nations.

<u>Recommendation</u> -- The principles and the illustrative range of incentive programs outlined by Professor Rodrik should be merged with recommendations of NIEIR, and the National Manufacturing Forum to ensure that Australia's trade policy is based on principles that encourage and support improved productive performance and manufacturing excellence.

Violations of Trade Union Rights

Asia and Pacific

It is untenable for any review of Australia's trade policy to ignore violations of trade union and human rights in the name of international trade. The International Trade Union Congress in its 2007, annual survey of violations of trade union rights identifies a range of violations against trade union movement and its members in the Asia Pacific region ranging from death to dismissals.[23]

The survey identifies:

- 37 deaths
- 10 death threats
- 427 torture/beating/injuries
- 2874 arrests
- 353 detentions
- 14 imprisonments
- 4865 dismissals

It is against this background that the former government negotiated free-trade agreements with Thailand, and Singapore and the United States. The current Labor government is seeking to negotiate a free trade agreement with China.

The ITUC seeks to increase intergovernmental cooperation to ensure the social dimension of globalisation, including decent work and fundamental workers rights is right at the centre of decision-making at the world's major global and regional institutions. This includes the World Bank, International Monetary Fund, World Trade Organisation, United Nations and the specialised agencies, especially the International Labour Organisation (ILO) with its tripartite structure and mandate to set international social standards.

The ITUC on behalf of the international trade union movement has conducted campaigns to achieve decent work for all and has coordinated action around:

- Trade, investment and labour standards
- Health and safety at work on sustainable environmental practices
- Global governance

[23] ITUC 2007 Annual Survey of violations of trade union rights

- The social responsibilities of business including global social dialogue
- Social protection sound legal employment relationships
- Trade union organising
- Fighting HIV and AIDS
- Combating child labour/ forced labour

It is the AMWU's view that the Australian government has an obligation to pursue improvements to workers rights when it seeks to negotiate free-trade agreements. This review should ensure that trade agreements contain provisions to facilitate the implementation of core labour standards with trading partners.

The ICFTU said the following in relation to current signatories of free-trade agreements with Australia and proposed free-trade partners:

Thailand

"In a year that saw another coup d'état, there are numerous cases of harassment and dismissals of union leaders and members, usually following organising campaigns or strikes to support very basic demands after management failed to negotiate. Employers ignored court rulings and Ministry of Labour decisions with impunity. Migrant workers again proved particularly vulnerable to abuse" [24]

India

"Barriers to the organising of trade unions continue in law and practice, and the government maintain strong restrictions on the right to strike. Workers at two garment factories faced a systematic antiunion campaign, while Unilever closed down a factory to remove the union. A farm worker was killed when police attacked protesters. The government remains committed to a policy of creating greater flexibility in labour law which would be the detrimental to workers and their unions"

China

"Once again, many workers found themselves detained or arrested, charged and imprisoned for their involvement in collective protest action during the year in the People's Republic of China, where trade union rights are not respected. Workers are prevented by law from organising outside the All China Federation of Trade Unions (ACFTU), which is bound by its constitution to accept the leadership of the Chinese Communist Party (CCP). The Trade Union Law bans workers from organising independently."

Singapore

"Several restrictions in the labour law are outdated and not applied in practice; unions have asked for the law to be revised in order to reflect that. Under a legislative amendment introduced in 2004, union members no longer have the power to accept or reject collective

[24] ITUC

agreements negotiated between their representatives and the employer. They do however; retain the power to vote the union leadership out of office"

United States

"Effective union busting campaigns mean that many union organising attempts fail despite initial support from a majority of workers. Over 30 million workers are still denied basic collective bargaining rights by law, including 40 per cent of federal public sector workers. Millions more were deprived of organising and bargaining rights in 2006 following an National Labour Relations Board ruling that vastly expanded its interpretation of the term "supervisor". It is hoped that the Employee Free Choice Act awaiting consideration by the US Senate at the time of writing, willsignificantly strengthen basic trade union rights."

Detailed reports on the violation of trade union rights in countries where Australia has negotiated a free-trade agreement, and in countries where we propose to negotiate bilateral agreements can be accessed in the ITUC 2007 survey of violations of trade union rights.

The use of export processing zones to deny workers their basic rights and establish unfair competitive advantage for Australia's trading partners must be addressed in future free trade agreements.

Recommendation -- That the government develops a work plan and political strategy to pursue the implementation of ILO conventions and core labour standards in all current and future trade agreements. This must include strong monitoring and enforcement provisions, which includes the trade union movement in Australia and partner countries. Further this strategy to be pursued at the WTO, IMF, World Bank and ILO as a priority.

Environmental Challenges

In a speech given on 12 December 2007 to the United Nations framework Convention on climate change in Bali, the Prime Minister Kevin Rudd said:

"Climate change is the defining challenge of our generation. Our choice will impact on future generations. This is, therefore, a problem which requires a global solution. It requires a multilateral solution."

Elsewhere in his speech, the Prime Minister:

- Stated that the costs of action on climate change would be far less than the costs of inaction;
- Acknowledged that such action would require tough choices;
- Identified climate change as the top priority for his government;
- Called for a comprehensive approach; and
- Referred to the Garnaut Review, which the ALP had commissioned prior to winning government.

The final paragraph of the speech read in part:

The community of nations must reach agreement. There is no Plan B. There is no other planet that we can escape to. We only have this one. And none of us can do it alone."

If the Prime Ministers speech is to be more than empty rhetoric, climate change and the environment more generally should not be considered in isolation of other issues, including in particular trade. Trade is intimately connected to economic development in the nature of industry, carrying implications for energy use and, through it, climate change.

The government's approach to trade and the environment should not be allowed to pull in opposite directions. If Australian industry is to be held to appropriate environmental standards, then so too should our trading partners.

The interim report of the Garnaut Climate Change Review was released in February 2008. Its executive summary contains the following passages:

"The largest source of increased urgency (to take action on climate change) is the unexpectedly high growth of the world economy in the early 21st century, combined with unexpectedly high energy intensity of that growth and continuing reliance on high emissions fossil fuels as sources of energy. These developments are associated with strong economic growth in the developing world, first of all in China."[25]

[25] the (US) National Energy Information Centre reports that:

"The challenge is to end the link between economic growth and emissions of greenhouse gases"

"Australia playing its full part in international effort on climate change can have a positive effect on global outcomes."

"To be effective in contributing as much as possible to an effective global effort soundly based domestic and international policies only to be sustained steadily over long periods. Policy makers will need to eschew short term responses that seem to deal with immediate problems but contribute to the building of pressures for future policy change."

The balance between the alleged benefits of free trade agreements and a reduction of poverty in developing countries must be weighed against the fundamental role of ensuring sustainability of trade and the planet. In addition to the unfair competition created by many of Australia's trading partners through the exploitation and denial of core labour standards to workers, the manipulation of currency and substantial nontariff barriers the degradation of the environment in the name of trade must be addressed by this inquiry.

The Centre for Environmental Law and Policy, the Centre for International Earth Science Information Network Columbia University, in collaboration with the World Economic Forum and the Joint Research Centre of the European Commission have published a groundbreaking report and developed a 2008 Environmental Performance26

The index ranks geographical peer groups by country and environmental performance index. The EPI is a fact base and empirical approach to environmental protection and global sustainability. The EPI focuses on two over arching objectives (1) reducing environmental stresses on human health and (2) promoting ecosystem vitality and natural resource management.

According to the executive summary, accompanying the index, over arching objectives are broad goals that reflect the policy priorities of environmental authorities around the world as well as the environmental dimensions of the Millennium Development Goals. Success in meeting these objectives is gauged using 25 indicators of on the ground results tracked in six well-established policy categories.

"World carbon dioxide emissions are expected to increase by 1.9% annually between 2001and 2005…. Much of the increases in these emissions is expected to occur in the developing world where emerging economies, such as China and India, fuel economic development with fossil energy. Developing countries emissions are expected to grow above the world average at 2.7% annually between 2001 and 2025; and surpass emissions of industrialised countries near 2018"

[26] 2008 environmental performance index-http//epi.yale.edu

The index identifies 6 policy categories:

1. Environmental Health
2. Air Pollution (Effects on Ecosystems)
3. Water (Effects on Ecosystems)
4. Biodiversity and Habitat
5. Productive Natural Resources
6. Climate Change

The authors stress that the EPR's real value lays not in numerical rankings but rather from careful analysis of the underlying data and performance metrics. With results displayed by issue, policy category, peer group, and country, the EPI facilities the identification of leaders and laggards, highlights the best policy practices, and identifies priorities for action. More generally the EPI provides a powerful tool for steering environmental investments, refining policy choices, and understanding what drives policy outcome.

The EPR ranks 149 countries. The United States is ranked 39, Australia 46, Thailand 53, China 105 and India 120.

These rankings demonstrate that Thailand, China, and India have an unacceptable and unsustainable competitive advantage against Australian industry.

China and India, the emerging superpowers, are ranked with some of the poorest and smallest Asian, African and Pacific nations with limited resources to improve their environmental standing.

Continuing to ignore the environmental aspects of free trade agreements is incompatible with the government's stated environmental objectives and a new, innovative approach to the environment and trade must be developed. This should include clarifying the relationship between trade rules and the Multilateral Environmental Agreements and using bilateral negotiations to enhance the mutual supportiveness of trade and the environment. Steps should be taken to ensure that environmental considerations are included in existing agreements and in any proposed free-trade agreements.

According to the Economics and Trade Branch Division of Technology, Industry and Economics United Nations Environment Program, six core MEAs are frequently identified in the WTO as relevant to negotiations. These include:

- The Convention on International Trade in Endangered Species of Wild Fauna and Flora,
- The Montréal protocol on substances that deplete the ozone layer
- The Basel Convention on the control of transboundary movements of hazardous waste and their disposal,
- The Cartagena protocol on biosafety,

- The Rotterdam Convention on the prior informed consent procedure for certain hazardous chemicals and pesticides in international trade, and

- The Stockholm Convention on persistent organic pollutants

Using the EPR ranking in conjunction with the six core MEA's and the principles of the Rio Declaration within bilateral free-trade agreements would be a significant step forward in ensuring improved environmental sustainability. Australia should take the lead in using this methodology as a demonstration and driving force for WTO initiatives designed to ensure environmental and trade sustainability.

There is a significant hidden cost to the importation of manufactured goods to Australia from countries which do not ensure efficient and effective environmental considerations in the product of the good. This provides some other existing bilateral trading partners with a competitive advantage based on unsustainable environmental costs. Use of the EPR ranking is essential to ensure that the sustainability of the planet is not sacrificed on the altar of free trade and international "competitiveness".

Recommendation -- That steps are taken to improve environmental outcomes in all Australia's existing and future trade agreements. Australian trade negotiators to ensure that specific clauses are included in agreements designed to improve the EPR ranking of the participating countries and compliance with the six core Multilateral Environmental Agreements.

NIEIR - Technical Chapter

X Industry development policies: myths and realities

X.1 Introduction

Putting aside the comparative advantage industries of agricultural and mining, the debate over the need for, and effectiveness of, different approaches to industry development policies has been intense in Australia for 40 years. Unfortunately there has been little advance in the debate in that positions have remained largely unchanged for 40 years.

Where comparative advantage (rainfall, soil quality, temperature, in-situ resource availability, resource processing capacity) does not exist there is a need to create competitive advantage in order to ensure that trade capacity is realised, either for import replacement or export expansion. Over the last 40 years the Australian debate on how to create competitive advantage has been polarised with one side arguing that the best and perhaps the only way to do this is largely to allow market forces to freely operate. If any specific policy is involved then it is a policy which removes obstacle to the efficient operation of market forces.

These policies would be directed at:

1. removing restrictions on trade side as tariffs, quotas, etc.;

2. removing measures which favour one industry or commodity over another industry or commodity such as export incentives, investment incentives, R and D incentives, etc.;

3. negotiate bi-lateral or multi-lateral trade agreements that enable free trade and goods and services between countries or groups of countries.

The policy combination is often referred to as the “level playing field” approach to policy development. The rationale for this approach is further explored in the next chapter below.

The opposite polar position, as embodied in the NIEIR view, is that the level playing field approach will not create competitive advantage, although they will increase the profitability and some investment comparative advantage industries. What the level playing field approach does do is to make the economic growth drivers over-reliant on natural resource development and debt accumulation, which is not likely to be sustainable in the long term.

The question to be addressed here is to what extent level playing field policies are likely to stimulate a net positive outcome for the non-resource export sector. Given that Australia now has a lengthy history with level playing field type policies, this now becomes an empirical question.

The empirical questions examined in this paper are:

1. has the reduction in industry assistance led to improved export performance by industry?

2. has free trade agreements led to improved net trade outcomes?

X.2 Reduction in assistance and export performance

Appendix X.1 gives the results of the estimation of long run export demand functions for 34 Australian manufacturing industries. The equations directly test for the relationship between export performance and assistance. The results show that in the main exports have been positively conducted with the level of industry assistance given to Australian industry. That is, reductions in assistance (which has occurred for nearly all manufacturing industries over the last 15 to 20 years) have been associated with the loss of export markets.

These results are quantified in Table X.1. The losing industries are industries where a positive correlation was found between the level of assistance and export performance. Hence, the run down in assistance resulted in a reduction in exports with the 2007 lost estimate given in column 1. The industries which produce a gain in export performance from a reduction in assistance are given in column two of the table. The industries which have zero entries for both columns are industries which:

1. have statistically weak coefficients for the assistance variable in the export demand function; and/or

2. have little or no change in assistance between the early 1990s and recent times.

The only major illustration of a strong link between export growth and the run down in assistance is the motor vehicle industry. However, this cannot be used as evidence for the level playing field approach to policy because the run down in assistance in motor vehicles was explicitly linked to additional assistance designed to explicitly increase the incentive to export.

What do the results in Table X.1 imply? Firstly, there is little evidence to suggest that by itself run down in assistance will result in increased exports by the industry inflicted by the assistance decline. Secondly, the results are evidence that the destruction of production capacity by the assistance run down destroys a significant part of the export capacity in the industry. This has long been a NIEIR argument. Thirdly, the results indicate that the export performance of an industry cannot be removed from the context of the overall performance of the industry.

The proponents of the level playing field view would argue that the results in Table X.2 may be so that they do not capture the general benefits to industry, e.g. mining, agriculture, tertiary industry, from the assistance run down. That is, it cannot be assumed that there would have been a net $19 billion gain in annual exports if assistance had remained unchanged. This is correct, but this argument is not relevant here because:

1. there is no chance that tariffs (other than perhaps CO2 content tariffs) will be increased in the foreseeable future; and

2. the focus here is on how industries are likely respond to development strategies.

In the context of the issues for the 21st Century id that there is little evidence from Table X.1 to support the level playing field dogma that industries will not respond positively to strategies which increase non-tariff assistance, overall, especially in relation to export performance.

X.3 The realised benefit from Free Trade Treaties – Australian export performance

Over the past five years three Free Trade Agreements have become operational. They are the:

- Australia-Singapore Free Trade Agreements (ASFTA) from the middle of 2003;
- Australia-Thailand Free Trade Agreement (ATHFTA) from the commencement of 2005; and
- Australia-United States Free Trade Agreement (AUSFTA) also from the commencement of 2005.

The common policy assumption of Free Trade Agreements (FTAs) is that by themselves Free Trade Agreements, by eliminating restrictions on trade, give "considerable impetus for ongoing growth in international commerce". The implication is that both countries gain significantly in net economic terms from the agreements.

The core question is, of course, is there evidence for this from the realised results from the treaties to date? Put simply, after three years is there evidence, from the perspective of manufacturing exports, of a net positive benefit to Australian industry from the agreements?

Manufacturing is central to the overall benefits of FTAs. The mining industry since the agreements have been signed have been supplied constrained and is likely to remain so for the foreseeable future. The agricultural industry has also been resource constrained from having to operate well below its potential from adverse climatic conditions. This also could be a long term reality if the more pessimistic scenarios for climate change weather patterns are realised. In short, the agreements are unlikely to have any significant impact on these sectors for the foreseeable future. As has been pointed out elsewhere in this study the Tertiary sector has in general been a poor export performer.

Therefore, if Australia is to experience a net benefit from these agreements, then from the tradable goods perspective the impact on manufacturing will have to be the main driver.

Although the estimates of the early net direct benefits of the three Free Trade Agreements are reported below, this is only a by-product of the objectives of this paper. The main objective is to test the assumption that, as far as Australian exports are concerned, FTAs by themselves will lead to significantly improved export performance.

X.3.1 The impact of FTAs: the core methodology

The core strategy is to estimate two sets of estimated equations by FTA countries. The first is a "restricted" model which assumes that the FTA with the country has had no impact on the import penetration into Australian markets. The second or "unrestricted" model assumes that the FTA has had a significant impact in determining the ability of the FTA country to access Australian markets. If the two models are not significantly different, then it is evidence that the FTA has not changed the competitiveness of local industry. If, on the other hand, there is a significant difference between the two models, then it is evidence that the FTA has altered the competitiveness of local industry.

Two tests are applied. They are a F-Test which examines the stability of the restricted and unrestricted equation and the coefficient test which focuses on the stability of the estimated coefficients of the restricted equation and, in particular, the constant term.

X.3.2 The quantitative findings

Appendix X.2 presents the equation results.

Table X.2 indicates whether or not a significant impact was found for the FTA in terms of exports from Australian industry. The results indicate that the following industries, thus far, did not gain from any FTA:

- meat products;
- fruit and vegetables;
- beverages;
- clothing;
- printing;
- the chemical industries, except plastics;
- metals, except iron and steel; and
- machinery and equipment industries, except electronic.

Table 3 shows the quantitative impact of the FTA in terms of additional annual exports. The highest overall total is given by the constant term test model, with a gain of $400 million for manufacturing in 2007 prices. The highest gain is from the ATHFTA, although the results from the AUSFTA are not far behind. The gains from the ASFTA are relatively small.

X.4 FTA: Australian industry import penetration estimates

Appendix 3 outlines the model and results for the test of whether or not the FTA countries have increased their share of total Australian imports by industry because of the FTAs. The qualitative results are given in Table 4 and the quantitative results are given in Table 5. The average for the two model tests is a $3.0 billion increase in imports. The largest import penetration is from Thailand FTA. The AUSFTA produces little evidence of increased import penetration. This is surprising and for many of the equations the inference is that the AUSFTA led to a reduction in import penetration. The explanation is probably that the competitiveness of China, Thailand and other developing economies, was such that this neutralised the impact of the AUSFTA as far as Australian industry was concerned. That is, the competitiveness of developing economies, compared to the United States, meant that the increased United States competitiveness in Australian markets because of the AUSFTA was not anywhere near enough to win significant market share from developing economies.

Increased import from a FTA country does not necessarily result in loss of domestic Australian production if the only outcome is displacement of imports from a non-FTA economy. That is, trade diversion occurs.

Appendix X.4 tests for the extent of trade diversion. The results are summarised in Table X.6. In general there is only marginal evidence for trade diversion with the majority of industry cases being one where the increased import penetration resulted in domestic production destruction.

X.5 FTA: The net gains to Australian manufacturing industry

Table X.7 shows the net gains from the FTA by Australian manufacturing sector. The results in the table are the results in Table X.3 multiplied by 0.8 so as to exclude the distribution and transport margin, plus the results in Table X.5 multiplied by 1, minus the trade diversion coefficient in Table X.6. The results from Table X.7 indicate a net production loss by Australian manufacturing industry of between $2.6 and $2.9 billion.

The question is to what period the estimate refers to. The method of estimation is one where the average impact of the FTA over the period is estimated. Hence, this would put the estimate at around mid 2006 to late 2006. As the impact could be expected to grow with time, the net impact by the end of 2007 is likely to be larger. Beyond that no inference can be drawn as it will depend on the provisions of each FTA. The methodology of testing for impacts is an empirical one that does not take into account the provisions of each FTA beyond 2007. Each year will require new testing.

X.6 Conclusion

The inference is clear. Market access and changes in realised competitiveness from tariff reductions are not necessary conditions for significant impacts on manufacturing production. Why this is the case is explained in the next section.

Secondly, if the AUSFTA can make little impact against the competitiveness of China, Thailand, etc. It raises concern about what is the net impact of any Australian-China Free Trade Agreement.

Table X.1 Impact of reduction in assistance since early 1990s on the level of industry exports in 2007		
	Losing industries	**Gaining industries**
Meat and Meat Product Manufacturing	0	0
Dairy Product Manufacturing	0	0
Fruit and Vegetable Processing	0	0
Oil and Fat Manufacturing	0	174
Flour Mill and Cereal Food Manufacturing and Bakery	-29	0
Other Food Manufacturing	-2537	0
Beverage and Malt Manufacturing	0	0
Textile Fibre, Yarn and Woven Fabric Manufacturing	0	0
Textile Product Manufacturing	-1603	0
Knitting Mills	0	103
Clothing and Footwear Manufacturing	-3575	0
Logs and Wood products	-1331	0
Paper and Paper Product Manufacturing	-112	0
Printing and Services to Printing and Publishing	-126	0
Petroleum and Coal including mining	0	614
Basic Chemical Manufacturing	-2172	0
Other Chemical Product Manufacturing	-1857	0
Rubber Product Manufacturing	-57	0
Plastic Product Manufacturing	-1064	0
Glass and Glass Product Manufacturing	-61	0
Ceramic Product Manufacturing	-36	0
Cement, Lime, Plaster and Concrete Product Manufacturing	0	0
Non-Metallic Mineral Product Manufacturing n.e.c.	-191	0
Iron and Steel Manufacturing	-2046	0
Basic Non-Ferrous Metal Manufacturing and product	0	0
Structural and Sheet Metal Product Manufacturing	-144	0
Fabricated Metal Product Manufacturing	-133	0
Motor Vehicle and Part Manufacturing	0	3469
Other Transport Equipment Manufacturing	0	0
Photographic and Scientific Equipment Manufacturing	0	0
Electronic and Electrical Equipment Manufacturing	-790	0
Industrial Machinery and Equipment Manufacturing	-4718	0
Furniture Manufacturing	-117	0
Other Manufacturing	-548	0
Total	**-23247**	**4360**

Table X.2 Exports from Australian industry – Was there a significant impact from FTA?

	Singapore		Thailand		United States	
	Equation test	Constant term test	Equation test	Constant term test	Equation test	Constant term test
Meat and Meat Product Manufacturing	no	no	no	No	no	no
Dairy Product Manufacturing	yes	yes	no	Yes	no	yes
Fruit and Vegetable Processing	no	no	no	No	no	no
Oil and Fat Manufacturing	no	yes	no	No	no	yes
Flour Mill and Cereal Food Manufacturing and Bakery	no	yes	no	No	yes	yes
Other Food Manufacturing	yes	yes	no	No	no	no
Beverage and Malt Manufacturing	no	no	no	No	no	no
Textile Fibre, Yarn and Woven Fabric Manufacturing	no	no	no	No	yes	yes
Textile Product Manufacturing	no	no	yes	Yes	no	no
Knitting Mills	no	no	no	No	yes	yes
Clothing and Footwear Manufacturing	no	no	no	No	no	no
Logs and Wood products	no	no	no	Yes	no	no
Paper and Paper Product Manufacturing	no	no	yes	Yes	no	no
Printing and Services to Printing and Publishing	no	no	no	No	no	no
Petroleum and Coal including mining	no	no	no	No	no	no
Basic Chemical Manufacturing	no	no	no	No	no	no
Other Chemical Product Manufacturing	no	no	no	No	no	no
Rubber Product Manufacturing	no	no	no	No	no	no
Plastic Product Manufacturing	no	no	no	Yes	no	no
Glass and Glass Product Manufacturing	no	no	yes	Yes	no	no
Ceramic Product Manufacturing	no	no	no	No	no	yes
Cement, Lime, Plaster and Concrete Product Manufacturing	no	no	no	Yes	no	yes
Non-Metallic Mineral Product Manufacturing n.e.c.	no	no	yes	Yes	no	no
Iron and Steel Manufacturing	no	no	no	No	yes	yes
Basic Non-Ferrous Metal Manufacturing and product	no	no	no	No	no	no
Structural and Sheet Metal Product Manufacturing	no	no	no	No	no	no
Fabricated Metal Product Manufacturing	no	no	no	No	no	no
Motor Vehicle and Part Manufacturing	no	no	no	Yes	no	no
Other Transport Equipment Manufacturing	no	no	no	No	no	no
Photographic and Scientific Equipment Manufacturing	no	no	no	No	no	no
Electronic and Electrical Equipment Manufacturing	no	yes	no	No	no	no
Industrial Machinery and Equipment Manufacturing	no	no	no	no	no	no
Furniture Manufacturing	no	no	no	No	no	no
Other Manufacturing	no	no	no	No	yes	no

Table X/3 Exports from Australian industry by FTA – $2007m impact circa 2006-2007

	Singapore		Thailand		United States		All countries	
	Equation test	**Constant term test**	**Equation test**	**Constant term test**	**Equation test**	**Constant term test**	**Equation test**	**Constant term test**
Meat and Meat Product Manufacturing	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dairy Product Manufacturing	18.3	18.3	0.0	19.2	0.0	21.6	18.3	59.1
Fruit and Vegetable Processing	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Oil and Fat Manufacturing	0.0	1.7	0.0	0.0	0.0	2.9	0.0	4.6
Flour Mill and Cereal Food Manufacturing and Bakery	0.0	1.5	0.0	0.0	5.2	5.2	5.2	6.7
Other Food Manufacturing	29.2	29.2	0.0	0.0	0.0	0.0	29.2	29.2
Beverage and Malt Manufacturing	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Textile Fibre, Yarn and Woven Fabric Manufacturing	0.0	0.0	0.0	0.0	5.0	5.0	5.0	5.0
Textile Product Manufacturing	0.0	0.0	3.4	3.4	0.0	0.0	3.4	3.4
Knitting Mills	0.0	0.0	0.0	0.0	2.2	2.2	2.2	2.2
Clothing and Footwear Manufacturing	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Logs and Wood products	0.0	0.0	0.0	1.2	0.0	0.0	0.0	1.2
Paper and Paper Product Manufacturing	0.0	0.0	11.7	11.7	0.0	0.0	11.7	11.7
Printing and Services to Printing and Publishing	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Petroleum and Coal including mining	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Basic Chemical Manufacturing	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other Chemical Product Manufacturing	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rubber Product Manufacturing	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Plastic Product Manufacturing	0.0	0.0	0.0	8.3	0.0	0.0	0.0	8.3
Glass and Glass Product Manufacturing	0.0	0.0	0.7	0.7	0.0	0.0	0.7	0.7
Ceramic Product Manufacturing	0.0	0.0	0.0	0.0	0.0	1.7	0.0	1.7
Cement, Lime, Plaster and Concrete Product Manufacturing	0.0	0.0	0.0	0.8	0.0	1.6	0.0	2.4
Non-Metallic Mineral Product Manufacturing n.e.c.	0.0	0.0	125.9	125.9	0.0	0.0	125.9	125.9
Iron and Steel Manufacturing	0.0	0.0	0.0	0.0	116.6	116.6	116.6	116.6
Basic Non-Ferrous Metal Manufacturing and product	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Structural and Sheet Metal Product Manufacturing	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fabricated Metal Product Manufacturing	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Motor Vehicle and Part Manufacturing	0.0	0.0	0.0	6.9	0.0	0.0	0.0	6.9
Other Transport Equipment Manufacturing	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Photographic and Scientific Equipment Manufacturing	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Electronic and Electrical Equipment Manufacturing	0.0	15.1	0.0	0.0	0.0	0.0	0.0	15.1
Industrial Machinery and Equipment Manufacturing	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Furniture Manufacturing	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other Manufacturing	0.0	0.0	0.0	0.0	3.6	0.0	3.6	0.0
Total	**47.5**	**65.9**	**141.6**	**178.1**	**132.5**	**156.7**	**321.6**	**400.7**

Table X.4 Imports into Australian industry – Was there a significant impact from FTA?

	Singapore		Thailand		United States	
	Equation test	**Constant term test**	**Equation test**	**Constant term test**	**Equation test**	**Constant term test**
Meat and Meat Product Manufacturing	no	no	no	no	no	no
Dairy Product Manufacturing	no	no	no	no	yes	yes
Fruit and Vegetable Processing	yes	yes	no	yes	no	no
Oil and Fat Manufacturing	no	no	yes	yes	yes	yes
Flour Mill and Cereal Food Manufacturing and Bakery	yes	yes	yes	yes	no	no
Other Food Manufacturing	no	no	no	no	no	no
Beverage and Malt Manufacturing	yes	yes	no	no	no	no
Textile Fibre, Yarn and Woven Fabric Manufacturing	no	no	yes	yes	no	no
Textile Product Manufacturing	no	no	no	no	no	no
Knitting Mills	no	no	no	no	no	no
Clothing and Footwear Manufacturing	yes	yes	yes	yes	no	no
Logs and Wood products	no	no	no	yes	yes	yes
Paper and Paper Product Manufacturing	no	no	no	no	no	no
Printing and Services to Printing and Publishing	yes	yes	no	yes	no	no
Petroleum and Coal including mining	yes	yes	no	yes	no	no
Basic Chemical Manufacturing	no	no	no	no	no	no
Other Chemical Product Manufacturing	yes	yes	yes	yes	no	no
Rubber Product Manufacturing	no	no	no	no	no	no
Plastic Product Manufacturing	no	no	no	no	no	no
Glass and Glass Product Manufacturing	no	no	no	no	no	no
Ceramic Product Manufacturing	no	no	no	no	no	no
Cement, Lime, Plaster and Concrete Product Manufacturing	no	no	no	no	no	no
Non-Metallic Mineral Product Manufacturing n.e.c.	no	yes	yes	no	no	no
Iron and Steel Manufacturing	yes	yes	yes	yes	no	no
Basic Non-Ferrous Metal Manufacturing and product	no	no	no	no	no	no
Structural and Sheet Metal Product Manufacturing	no	no	no	yes	no	no
Fabricated Metal Product Manufacturing	no	no	no	no	no	no
Motor Vehicle and Part Manufacturing	yes	yes	yes	yes	no	no
Other Transport Equipment Manufacturing	no	no	no	yes	no	no
Photographic and Scientific Equipment Manufacturing	no	no	yes	yes	no	no
Electronic and Electrical Equipment Manufacturing	no	no	no	no	no	no
Industrial Machinery and Equipment Manufacturing	no	no	no	no	no	no
Furniture Manufacturing	yes	yes	no	yes	no	no
Other Manufacturing	yes	yes	no	yes	no	no

Table X.5 Imports into Australian industry by FTA – $2007m impact circa 2006-2007

	Singapore		Thailand		United States		All countries	
	Equation test	**Constant term test**	**Equation test**	**Constant term test**	**Equation test**	**Constant term test**	**Equation test**	**Constant term test**
Meat and Meat Product Manufacturing	0	0	0	0	0	0	0.0	0.0
Dairy Product Manufacturing	0	0	0	0	19	19	19.3	19.3
Fruit and Vegetable Processing	0	0	0	21	0	0	0.2	21.4
Oil and Fat Manufacturing	0	0	2	2	8	8	10.0	10.0
Flour Mill and Cereal Food Manufacturing and Bakery	7	7	5	5	0	0	12.3	12.3
Other Food Manufacturing	0	0	0	0	0	0	0.0	0.0
Beverage and Malt Manufacturing	5	5	0	0	0	0	4.5	4.5
Textile Fibre, Yarn and Woven Fabric Manufacturing	0	0	3	3	0	0	3.5	3.5
Textile Product Manufacturing	0	0	0	0	0	0	0.0	0.0
Knitting Mills	0	0	0	0	0	0	0.0	0.0
Clothing and Footwear Manufacturing	2	2	23	23	0	0	25.5	25.5
Logs and Wood products	0	0	0	5	7	7	7.1	12.6
Paper and Paper Product Manufacturing	0	0	0	0	0	0	0.0	0.0
Printing and Services to Printing and Publishing	10	10	0	1	0	0	9.9	11.0
Petroleum and Coal including mining	1013	1013	0	91	0	0	1013.2	1104.3
Basic Chemical Manufacturing	0	0	0	0	0	0	0.0	0.0
Other Chemical Product Manufacturing	78	78	17	17	0	0	94.5	94.5
Rubber Product Manufacturing	0	0	0	0	0	0	0.0	0.0
Plastic Product Manufacturing	0	0	0	0	0	0	0.0	0.0
Glass and Glass Product Manufacturing	0	0	0	0	0	0	0.0	0.0
Ceramic Product Manufacturing	0	0	0	0	0	0	0.0	0.0
Cement, Lime, Plaster and Concrete Product Manufacturing	0	0	0	0	0	0	0.0	0.0
Non-Metallic Mineral Product Manufacturing n.e.c.	0	260	116	0	0	0	115.9	259.7
Iron and Steel Manufacturing	108	108	58	58	0	0	166.1	166.1
Basic Non-Ferrous Metal Manufacturing and product	0	0	0	0	0	0	0.0	0.0
Structural and Sheet Metal Product Manufacturing	0	0	0	5	0	0	0.0	4.6
Fabricated Metal Product Manufacturing	0	0	0	0	0	0	0.0	0.0
Motor Vehicle and Part Manufacturing	3	3	1358	1358	0	0	1361.4	1361.4
Other Transport Equipment Manufacturing	0	0	0	4	0	0	0.0	3.7
Photographic and Scientific Equipment Manufacturing	0	0	20	20	0	0	20.5	20.5
Electronic and Electrical Equipment Manufacturing	0	0	0	0	0	0	0.0	0.0
Industrial Machinery and Equipment Manufacturing	0	0	0	0	0	0	0.0	0.0
Furniture Manufacturing	6	6	0	68	0	0	6.2	74.4
Other Manufacturing	6	6	0	14	0	0	6.3	20.1
Total	**1239**	**1499**	**1603**	**1697**	**34**	**34**	**2876.1**	**3229.2**

Table X.6 Net gains to Australian industry by FTA – $ 2007m impact circa 2006-2007

	Singapore		Thailand		United States		All countries	
	Equation test	**Constant term test**	**Equation test**	**Constant term test**	**Equation test**	**Constant term test**	**Equation test**	**Constant term test**
Meat and Meat Product Manufacturing	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dairy Product Manufacturing	14.7	14.7	0.0	15.4	-19.3	-2.0	-4.6	28.0
Fruit and Vegetable Processing	-0.2	-0.2	0.0	-21.3	0.0	0.0	-0.2	-21.4
Oil and Fat Manufacturing	0.0	1.4	-2.3	-2.3	-7.6	-5.3	-10.0	-6.3
Flour Mill and Cereal Food Manufacturing and Bakery	-7.0	-5.8	-5.3	-5.3	4.2	4.2	-8.1	-6.9
Other Food Manufacturing	23.3	23.3	0.0	0.0	0.0	0.0	23.3	23.3
Beverage and Malt Manufacturing	-4.5	-4.5	0.0	0.0	0.0	0.0	-4.5	-4.5
Textile Fibre, Yarn and Woven Fabric Manufacturing	0.0	0.0	-2.8	-2.8	4.0	4.0	1.2	1.2
Textile Product Manufacturing	0.0	0.0	2.7	2.7	0.0	0.0	2.7	2.7
Knitting Mills	0.0	0.0	0.0	0.0	1.7	1.7	1.7	1.7
Clothing and Footwear Manufacturing	-2.2	-2.2	-23.3	-23.3	0.0	0.0	-25.5	-25.5
Logs and Wood products	0.0	0.0	0.0	-4.5	-7.1	-7.1	-7.1	-11.6
Paper and Paper Product Manufacturing	0.0	0.0	9.3	9.3	0.0	0.0	9.3	9.3
Printing and Services to Printing and Publishing	-9.9	-9.9	0.0	-1.1	0.0	0.0	-9.9	-11.0
Petroleum and Coal including mining	-1013.2	-1013.2	0.0	-91.2	0.0	0.0	-1013.2	-1104.3
Basic Chemical Manufacturing	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other Chemical Product Manufacturing	-76.4	-76.4	-16.2	-16.2	0.0	0.0	-92.6	-92.6
Rubber Product Manufacturing	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Plastic Product Manufacturing	0.0	0.0	0.0	6.6	0.0	0.0	0.0	6.6
Glass and Glass Product Manufacturing	0.0	0.0	0.5	0.5	0.0	0.0	0.5	0.5
Ceramic Product Manufacturing	0.0	0.0	0.0	0.0	0.0	1.4	0.0	1.4
Cement, Lime, Plaster and Concrete Product Manufacturing	0.0	0.0	0.0	0.6	0.0	1.3	0.0	2.0
Non-Metallic Mineral Product Manufacturing n.e.c.	0.0	-259.7	-15.2	100.7	0.0	0.0	-15.2	-159.0
Iron and Steel Manufacturing	-108.2	-108.2	-57.8	-57.8	93.3	93.3	-72.8	-72.8
Basic Non-Ferrous Metal Manufacturing and product	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Structural and Sheet Metal Product Manufacturing	0.0	0.0	0.0	-4.6	0.0	0.0	0.0	-4.6
Fabricated Metal Product Manufacturing	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Motor Vehicle and Part Manufacturing	-3.3	-3.3	-1358.1	-1352.6	0.0	0.0	-1361.4	-1355.8
Other Transport Equipment Manufacturing	0.0	0.0	0.0	-3.7	0.0	0.0	0.0	-3.7
Photographic and Scientific Equipment Manufacturing	0.0	0.0	-20.5	-20.5	0.0	0.0	-20.5	-20.5
Electronic and Electrical Equipment Manufacturing	0.0	12.1	0.0	0.0	0.0	0.0	0.0	12.1
Industrial Machinery and Equipment Manufacturing	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Furniture Manufacturing	-6.2	-6.2	0.0	-68.2	0.0	0.0	-6.2	-74.4
Other Manufacturing	-6.3	-6.3	0.0	-13.8	2.9	0.0	-3.5	-20.1
Total	-1199.4	-1444.5	-1488.8	-1553.0	72.1	91.4	-2616.2	-2906.0

Appendix X.1: Assistance and export performance

The equation used to test for the impact of assistance on export performance is:

$$ln(Ex_i / Wex_i) = \propto_{0,i} + \propto_{1,i} ln(Pex_i / Pwex_i) + \propto_{2,i} ln(1 + nr_i) + \propto_{3,i} T \quad \text{(X.1.1)}$$

Where:

Exi	=	Australian exports of industry i in constant $m;
Wexi	=	world export of industry i in constant $m;
Pexi	=	price index of Australian exports of industry i, 2006.1 equals 1.0;
Pwexi	=	world export price index of industry i, 2006.1 equals 1.0;
Nri	=	normal rate of assistance for Australia industry i, which is lagged and averaged over 10 quarters;
T	=	Time.

Only long run demand functions are estimated. The short run dynamics are of no interest to this study.

As a substitute of world exports of industry i, the total imports into the United States with the corresponding import price index is used in the estimation of equation (X.1.1).

The results of the estimation are given in Table 1.1. The first thing to note about the results is that they indicate an export price elasticity of near unity. NIEIR has long contended that there has been no evidence whatsoever to support the export price elasticities used by the Productivity Commission in its commissioned modelling of the impact of reductions in assistance. These elasticities have varied from 2 to 10. The average elasticity in the table all the $\propto$1,i coefficients, is less than unity.

As for the $\propto$2,i coefficient, in the majority of cases it is greater than zero. That is, exports are positively correlated with the level of assistance.

The results in Table X.1 are derived from those coefficients in Table 1.1 where the absolute t value is greater than unity.

Table X.1.1 Total Australia exports by industry – estimated coefficients

	A0	t stat	A1	t stat	A2	t stat	A3	t stat	Adj R-squared	Durbin-Watson	Sum sq resid
Meat and Meat Product Manufacturing	-1.91	-8.5	-0.91	-6.8	0.11	1.9	-0.01	-0.5	0.7	1.3	0.2
Dairy Product Manufacturing	0.29	0.5	-0.29	-1.6	-0.18	-0.6	-0.01	-2.5	0.6	1.8	1.0
Fruit and Vegetable Processing	-2.60	-6.5	-0.57	-3.0	-0.03	-0.2	-0.01	-5.0	0.7	1.6	0.8
Oil and Fat Manufacturing	-4.41	-9.1	-0.53	-3.9	-0.87	-5.6	-0.02	-9.1	0.7	1.2	0.8
Flour Mill and Cereal Food Manufacturing and Bakery	0.55	0.4	-0.11	-1.1	0.70	1.8	-0.01	-7.7	0.7	1.2	0.3
Other Food Manufacturing	5.22	5.3	-1.23	-7.0	2.04	6.5	-0.01	-1.6	0.8	1.3	3.8
Beverage and Malt Manufacturing	-2.82	-8.0	-0.28	-1.8	-0.11	-0.9	0.01	6.0	0.7	0.7	0.6
Textile Fibre, Yarn and Woven Fabric Manufacturing	0.62	0.4	-1.06	-9.9	0.49	0.8	0.00	0.1	0.7	1.6	1.3
Textile Product Manufacturing	0.46	0.4	-0.97	-17.6	2.15	3.1	0.03	1.9	0.9	1.4	1.1
Knitting Mills	-7.60	-6.5	-0.47	-3.8	-3.38	-2.5	-0.09	-3.4	0.8	1.8	1.7
Clothing and Footwear Manufacturing	-2.62	-4.0	-0.93	-18.2	1.21	1.8	0.02	1.0	0.9	1.2	1.2
Logs and Wood products	0.01	0.0	-1.08	-8.6	1.07	4.1	0.01	4.0	0.7	1.4	1.0
Paper and Paper Product Manufacturing	-3.70	-11.1	-1.04	-17.3	0.13	1.1	0.02	6.2	0.9	0.9	1.2
Printing and Services to Printing and Publishing	-0.96	-2.1	-0.94	-22.2	0.51	3.7	0.00	-1.7	1.0	1.4	0.9
Petroleum and Coal including mining	-4.22	-11.3	-0.18	-2.6	-0.68	-5.8	-0.01	-7.3	1.0	1.4	0.3
Basic Chemical Manufacturing	-0.02	-0.1	-0.54	-6.3	0.74	11.2	0.01	4.7	0.5	1.4	0.3
Other Chemical Product Manufacturing	-1.02	-4.7	-0.61	-9.7	0.38	4.6	-0.01	-4.4	1.0	1.2	0.5
Rubber Product Manufacturing	-3.35	-8.6	-0.72	-9.5	0.35	2.1	-0.01	-3.4	0.7	1.0	1.0
Plastic Product Manufacturing	-1.20	-4.8	-0.70	-5.4	0.92	8.8	0.00	1.8	0.8	1.1	0.7
Glass and Glass Product Manufacturing	0.09	0.1	-1.03	-23.6	1.03	3.2	0.00	-1.4	0.9	1.5	0.7
Ceramic Product Manufacturing	-1.80	-2.8	-0.94	-9.3	0.49	3.1	0.00	-1.1	0.7	1.3	1.0
Cement, Lime, Plaster and Concrete Product Manufacturing	-1.30	-1.4	-1.06	-2.1	0.36	2.1	-0.04	-2.0	0.5	0.7	0.6
Non-Metallic Mineral Product Manufacturing n.e.c.	1.49	1.7	-0.74	-10.2	1.01	3.1	0.00	1.0	0.8	1.0	1.2
Iron and Steel Manufacturing	2.65	1.8	-0.76	-5.5	1.79	3.6	-0.01	-2.3	0.6	0.9	2.2
Basic Non-Ferrous Metal Manufacturing and product	2.65	0.0	-0.76	0.0	1.79	0.0	-0.01	0.0	1.0	0.0	0.0
Structural and Sheet Metal Product Manufacturing	-0.72	-1.4	-0.76	-10.7	1.00	4.8	-0.01	-1.9	0.9	1.4	1.9
Fabricated Metal Product Manufacturing	-2.96	-9.0	-0.94	-24.8	0.44	3.1	0.01	2.3	1.0	1.8	1.7
Motor Vehicle and Part Manufacturing	-10.99	-6.2	-0.84	-12.6	-4.26	-3.5	-0.08	-3.0	0.9	1.2	1.9
Other Transport Equipment Manufacturing	-2.22	-2.8	-0.82	-30.9	0.06	0.2	-0.02	-3.6	1.0	1.8	3.3
Photographic and Scientific Equipment Manufacturing	-3.44	-8.0	-1.02	-35.3	-0.01	-0.1	0.00	0.0	1.0	1.9	0.7
Electronic and Electrical Equipment Manufacturing	-3.46	-10.6	-0.89	-17.6	0.34	2.6	0.00	-0.8	0.9	1.7	1.1
Industrial Machinery and Equipment Manufacturing	-1.71	-6.1	-0.73	-10.6	0.82	8.0	0.01	3.5	0.8	1.3	0.7
Furniture Manufacturing	-3.67	-10.8	-0.85	-14.6	0.45	3.5	0.00	-1.6	0.8	1.4	1.3
Other Manufacturing	-1.97	-2.9	-0.93	-14.9	1.19	4.2	0.03	5.1	0.8	1.1	3.9

Table X.1.2 Non-free trade agreement country imports into Australia – restricted model

	A0	t stat	A1	t stat	A2	t stat	A3	t stat	A4	t stat	Adj R-squared	Durbin-Watson	Sum sq resid
Meat and Meat Product Manufacturing	1.13	8.1	-0.53	-4.0	-1.03	-1.0	-0.003	-1.2	0.35	3.4	0.67	0.67	1.16
Dairy Product Manufacturing	1.78	14.1	-0.96	-5.1	-1.55	-1.1	0.011	8.9	-0.01	-0.8	0.67	0.67	0.52
Fruit and Vegetable Processing	1.92	12.3	-1.01	-4.8	2.51	2.7	0.012	8.6	0.15	2.0	0.89	1.40	1.20
Oil and Fat Manufacturing	2.18	38.5	-0.92	-10.8	0.08	0.3	0.007	7.3	0.04	1.1	0.70	1.56	1.41
Flour Mill and Cereal Food Manufacturing and Bakery	0.59	6.7	0.39	2.7	2.26	4.3	0.019	11.5	0.36	3.9	0.96	1.47	0.73
Other Food Manufacturing	2.83	19.8	-0.79	-6.6	-0.64	-2.0	0.016	24.9	-0.02	-0.4	0.94	2.20	0.69
Beverage and Malt Manufacturing	2.47	26.6	-0.66	-5.3	0.00	0.0	0.008	5.9	0.20	5.1	0.65	1.94	1.49
Textile Fibre, Yarn and Woven Fabric Manufacturing	2.92	22.8	0.10	0.9	1.82	1.7	0.002	1.8	0.26	4.7	0.65	1.94	0.35
Textile Product Manufacturing	2.90	39.5	-0.95	-20.9	-0.82	-3.4	0.004	4.8	0.10	3.3	0.37	1.94	0.47
Knitting Mills	3.52	37.8	-0.41	-4.4	8.85	4.1	0.011	8.7	0.16	2.6	0.88	2.26	1.09
Clothing and Footwear Manufacturing	4.38	36.4	-0.61	-4.1	0.85	1.4	0.011	10.5	-0.01	-0.4	0.84	2.52	0.83
Logs and Wood products	3.09	29.3	-0.78	-8.3	-1.59	-4.0	0.007	5.0	0.09	2.5	0.67	0.84	0.84
Paper and Paper Product Manufacturing	3.65	33.7	-0.73	-6.5	1.50	1.8	0.010	13.8	0.03	1.3	0.67	0.84	0.65
Printing and Services to Printing and Publishing	3.26	35.7	-1.04	-16.1	-0.45	-1.8	-0.004	-5.4	-0.05	-1.5	0.91	0.87	0.99
Petroleum and Coal including mining	5.93	44.7	-0.36	-1.6	1.84	1.6	0.015	8.0	-0.22	-5.9	0.74	1.54	0.83
Basic Chemical Manufacturing	3.98	53.2	-0.29	-2.8	0.26	1.5	0.012	19.2	0.03	1.7	0.74	1.54	0.28
Other Chemical Product Manufacturing	3.78	65.6	-0.91	-95.4	-0.01	-0.3	0.025	27.3	-0.03	-3.1	0.94	1.54	0.23
Rubber Product Manufacturing	3.60	74.4	-0.80	-17.6	-0.08	-0.6	0.010	10.0	0.00	-0.1	1.00	1.54	0.24
Plastic Product Manufacturing	3.92	36.6	-0.90	-15.6	-0.06	-0.1	0.009	14.9	0.04	1.0	0.95	1.54	0.33
Glass and Glass Product Manufacturing	2.03	41.6	-0.74	-15.7	-0.12	-0.6	0.011	15.8	0.21	5.5	0.96	0.80	0.71
Ceramic Product Manufacturing	2.70	24.3	-0.58	-4.0	-1.67	-1.0	0.006	5.8	0.12	2.2	0.96	0.80	0.54
Cement, Lime, Plaster and Concrete Product Manufacturing	1.81	21.9	-1.23	-12.9	0.82	1.8	0.012	12.8	-0.04	-2.6	0.94	0.69	1.01
Non-Metallic Mineral Product Manufacturing n.e.c.	3.81	42.8	-0.87	-8.2	-0.32	-2.1	0.005	1.9	0.17	4.6	0.66	1.01	3.93
Iron and Steel Manufacturing	4.07	93.8	-0.91	-20.5	0.05	1.2	0.013	29.4	0.00	-0.2	0.66	1.01	0.34
Basic Non-Ferrous Metal Manufacturing and product	2.66	28.0	-1.02	-21.4	0.09	0.5	0.011	11.2	0.19	3.0	0.91	0.70	1.89
Structural and Sheet Metal Product Manufacturing	2.28	51.4	-0.91	-10.6	0.10	0.5	0.011	13.1	0.03	2.2	0.74	0.80	0.82
Fabricated Metal Product Manufacturing	2.82	73.3	-0.85	-9.0	-0.04	-0.4	0.007	8.6	0.00	0.2	0.59	2.20	0.85
Motor Vehicle and Part Manufacturing	4.93	30.3	-0.73	-10.5	0.03	0.3	0.011	5.9	0.11	2.0	0.59	2.20	0.48
Other Transport Equipment Manufacturing	2.73	6.7	-0.49	-6.4	0.20	2.0	0.012	5.6	0.21	2.1	0.76	1.79	7.12
Photographic and Scientific Equipment Manufacturing	4.07	54.6	-0.81	-19.6	-0.17	-4.5	0.013	27.2	0.01	0.6	0.76	1.79	0.42
Electronic and Electrical Equipment Manufacturing	3.91	24.7	-0.64	-8.2	1.14	3.8	0.018	18.1	0.20	4.9	0.93	1.79	0.60
Industrial Machinery and Equipment Manufacturing	5.56	41.9	-0.85	-13.1	0.16	0.9	0.012	21.8	-0.01	-0.2	0.91	1.79	0.34
Furniture Manufacturing	2.48	23.8	-0.47	-2.8	-2.24	-1.5	0.024	13.7	0.09	1.8	0.89	1.54	1.96
Other Manufacturing	3.44	30.4	-0.94	-13.8	-0.23	-2.0	0.012	8.5	0.03	0.9	0.76	1.95	2.95

Table X.1.3 Non-free trade agreement country imports into Australia – unrestricted model

	A0	t stat	A1	t stat	A2	t stat	A3	t stat	A4	t stat	A5	t stat	Adj R-squared	Durbin-Watson	Sum sq resid
Meat and Meat Product Manufacturing	1.19	10.3	-0.56	-5.0	-0.43	-0.5	-0.007	-3.7	0.43	5.0	0.16	5.6	0.8	1.0	0.8
Dairy Product Manufacturing	1.75	12.7	-0.91	-4.4	-1.56	-1.1	0.011	7.5	-0.01	-0.7	0.01	0.6	0.8	1.0	0.5
Fruit and Vegetable Processing	1.82	12.2	-0.81	-3.9	3.06	3.4	0.012	8.9	0.07	0.9	0.29	3.1	0.9	1.6	1.0
Oil and Fat Manufacturing	2.17	38.1	-0.92	-10.8	0.06	0.3	0.007	6.9	0.02	0.6	0.19	1.0	0.7	1.6	1.4
Flour Mill and Cereal Food Manufacturing and Bakery	0.59	6.7	0.39	2.6	2.27	4.1	0.019	11.3	0.36	3.9	0.00	-0.1	1.0	1.5	0.7
Other Food Manufacturing	2.84	19.1	-0.80	-6.5	-0.65	-2.0	0.017	18.6	-0.03	-0.4	-0.01	-0.3	0.9	2.2	0.7
Beverage and Malt Manufacturing	2.36	20.0	-0.53	-3.7	-0.36	-0.7	0.010	5.7	0.23	5.3	-0.07	-1.6	0.7	1.9	1.4
Textile Fibre, Yarn and Woven Fabric Manufacturing	2.97	28.2	-0.08	-0.8	1.81	2.0	0.003	3.1	0.30	6.6	-0.20	-5.8	0.7	1.9	0.2
Textile Product Manufacturing	2.82	41.8	-0.91	-22.0	-0.92	-4.3	0.006	6.7	0.12	4.3	-0.15	-4.4	0.6	1.9	0.4
Knitting Mills	3.52	37.4	-0.41	-4.4	8.84	4.1	0.011	7.7	0.16	2.6	0.05	0.4	0.9	2.3	1.1
Clothing and Footwear Manufacturing	4.39	36.1	-0.61	-4.1	0.82	1.3	0.011	9.2	-0.01	-0.4	0.01	0.3	0.8	2.5	0.8
Logs and Wood products	3.01	26.9	-0.82	-8.7	-1.41	-3.5	0.009	5.1	0.11	3.0	-0.21	-1.9	0.7	1.0	0.8
Paper and Paper Product Manufacturing	3.65	34.1	-0.83	-6.5	2.00	2.3	0.010	13.4	0.05	1.9	-0.03	-1.6	0.7	1.0	0.6
Printing and Services to Printing and Publishing	3.23	36.0	-1.03	-16.5	-0.53	-2.2	-0.005	-5.9	-0.03	-0.8	0.06	2.3	0.9	1.0	0.9
Petroleum and Coal including mining	5.84	37.7	-0.37	-1.7	1.75	1.6	0.015	8.1	-0.20	-4.7	-0.01	-1.1	0.7	1.5	0.8
Basic Chemical Manufacturing	4.04	58.6	-0.49	-4.6	0.14	0.9	0.012	21.5	0.04	2.3	-0.03	-4.1	0.7	1.5	0.2
Other Chemical Product Manufacturing	3.75	69.6	-0.91	-102.7	-0.01	-0.3	0.026	29.3	-0.02	-3.0	-0.02	-3.5	1.0	1.5	0.2
Rubber Product Manufacturing	3.60	74.5	-0.79	-17.4	-0.06	-0.4	0.011	9.2	-0.01	-0.5	-0.02	-1.2	1.0	1.5	0.2
Plastic Product Manufacturing	3.95	27.8	-0.91	-14.8	-0.01	0.0	0.010	11.6	0.03	0.5	-0.01	-0.4	0.9	1.5	0.3
Glass and Glass Product Manufacturing	2.05	44.6	-0.79	-17.1	-0.23	-1.2	0.013	14.1	0.15	3.7	-0.14	-3.4	1.0	1.5	0.6
Ceramic Product Manufacturing	2.73	28.9	-0.70	-5.5	0.10	0.1	0.008	8.0	0.12	2.7	-0.60	-5.2	1.0	1.5	0.4
Cement, Lime, Plaster and Concrete Product Manufacturing	1.81	22.6	-1.27	-13.5	0.97	2.2	0.013	12.9	-0.04	-2.5	-0.20	-2.2	0.9	0.8	0.9
Non-Metallic Mineral Product Manufacturing n.e.c.	3.83	36.4	-0.86	-8.0	-0.34	-2.1	0.005	1.6	0.17	4.3	0.01	0.4	0.7	1.0	3.9
Iron and Steel Manufacturing	4.07	93.5	-0.92	-20.3	0.05	1.2	0.013	23.4	0.00	-0.3	-0.01	-0.7	0.7	1.0	0.3
Basic Non-Ferrous Metal Manufacturing and product	2.67	35.2	-1.03	-27.1	0.13	0.9	0.016	14.7	0.12	2.2	-0.25	-6.3	0.9	1.0	1.2
Structural and Sheet Metal Product Manufacturing	2.23	47.6	-0.87	-10.3	0.12	0.7	0.012	13.2	0.04	2.9	-0.05	-2.6	0.8	0.9	0.7
Fabricated Metal Product Manufacturing	2.80	69.5	-0.88	-9.3	-0.02	-0.2	0.007	8.4	0.01	0.5	-0.03	-1.6	0.6	2.3	0.8
Motor Vehicle and Part Manufacturing	4.85	29.0	-0.73	-10.7	0.04	0.4	0.011	6.1	0.13	2.4	-0.01	-1.8	0.6	2.3	0.5
Other Transport Equipment Manufacturing	2.71	6.6	-0.48	-6.2	0.21	2.0	0.011	4.0	0.22	2.1	0.01	0.5	0.8	1.8	7.1
Photographic and Scientific Equipment Manufacturing	4.05	53.6	-0.82	-19.3	-0.18	-4.7	0.014	20.2	0.01	0.8	-0.01	-1.4	0.8	1.8	0.4
Electronic & Electrical Equip Manufacturing	3.97	28.4	-0.63	-9.2	0.38	1.2	0.022	19.1	0.17	4.7	-0.04	-4.6	0.9	1.8	0.5
Industrial Machinery & Equipment Manufacturing	5.68	34.4	-0.86	-13.2	0.20	1.0	0.011	14.1	-0.03	-0.9	0.01	1.3	0.9	1.8	0.3
Furniture Manufacturing	2.48	18.9	-0.47	-2.4	-2.29	-1.4	0.024	12.4	0.10	1.6	0.00	-0.1	0.9	1.5	2.0
Other Manufacturing	3.42	29.6	-0.95	-13.7	-0.25	-2.1	0.013	7.2	0.03	0.9	-0.03	-0.8	0.8	2.0	2.9

Table X.4 Non-free trade agreement country imports into Australia – affected by FTA?			
	F test	**F and dummy variable test**	**Dummy variable coefficient**
Meat and Meat Product Manufacturing	yes	no	0.00
Dairy Product Manufacturing	no	no	0.00
Fruit and Vegetable Processing	no	no	0.00
Oil and Fat Manufacturing	no	no	0.00
Flour Mill and Cereal Food Manufacturing and Bakery	no	no	0.00
Other Food Manufacturing	no	no	0.00
Beverage and Malt Manufacturing	no	no	0.00
Textile Fibre, Yarn and Woven Fabric Manufacturing	yes	yes	-0.20
Textile Product Manufacturing	yes	yes	-0.15
Knitting Mills	no	no	0.00
Clothing and Footwear Manufacturing	no	no	0.00
Logs and Wood products	no	no	0.00
Paper and Paper Product Manufacturing	no	no	0.00
Printing and Services to Printing and Publishing	no	no	0.00
Petroleum and Coal including mining	no	no	0.00
Basic Chemical Manufacturing	yes	yes	-0.03
Other Chemical Product Manufacturing	yes	yes	-0.02
Rubber Product Manufacturing	no	no	0.00
Plastic Product Manufacturing	no	no	0.00
Glass and Glass Product Manufacturing	no	no	0.00
Ceramic Product Manufacturing	yes	yes	-0.60
Cement, Lime, Plaster and Concrete Product Manufacturing	no	no	0.00
Non-Metallic Mineral Product Manufacturing n.e.c.	no	no	0.00
Iron and Steel Manufacturing	no	no	0.00
Basic Non-Ferrous Metal Manufacturing and product	yes	yes	-0.25
Structural and Sheet Metal Product Manufacturing	no	no	0.00
Fabricated Metal Product Manufacturing	no	no	0.00
Motor Vehicle and Part Manufacturing	no	no	0.00
Other Transport Equipment Manufacturing	no	no	0.00
Photographic and Scientific Equipment Manufacturing	no	no	0.00
Electronic and Electrical Equipment Manufacturing	yes	yes	-0.04
Industrial Machinery and Equipment Manufacturing	no	no	0.00
Furniture Manufacturing	no	no	0.00
Other Manufacturing	no	no	0.00

Appendix X.2: Testing for FTA impact – Australian export performance

The restricted model for testing whether Australia gained from an FTA by country is:

$$ln(exa_{i,j} / imt_{i,j}) = \propto_{0,i,j} + \propto_{1,i,j} ln(Pexa_{i,j} / Pimt_{i,j}) + \propto_{2,i} ln(ass_i) + \propto_{3,i,j} Time \quad \text{(X.2.1)}$$

Where:

exai,j = exports from Australia to country j by industry i, in constant $m;
imti,j = total imports for country j for industry i, in constant $m;
Pexai,j = export price index for exports from Australia for industry i to country j, 2006.1 equals 1.0;
assi = budgetary industry assistance industry i, as a ratio to exports.

The restricted model takes the form:

$$ln(exa_{i,j} / imt_{i,j}) = \propto_{0,i,j} + \propto_{1,i,j} ln(Pexa_{i,j} / Pimt_{i,j}) + \propto_{2,i} ln(ass_i) + \propto_{3,i,j} Time + \propto_{4,i,j} . d_j + \propto_{5,i,j} . d_j . ln(Pexa_{i,j} / Pimt_{i,j}) + \propto_{6,i,j} . Time2 \quad \text{(X.2.2)}$$

dj = dummy variable taking the value 1 from the quarter the FTA for country j came into operation;
Time2 = Time two with the value 1 for the quarter the FTA for country j came into operation, 2 the next quarter and so on.
j =
1. Singapore
2. Thailand
3. United States

i =

1. Meat and Meat Product Manufacturing
2. Dairy Product Manufacturing
3. Fruit and Vegetable Processing
4. Oil and Fat Manufacturing
5. Flour Mill and Cereal Food Manufacturing and Bakery
6. Other Food Manufacturing
7. Beverage and Malt Manufacturing
8. Textile Fibre, Yarn and Woven Fabric Manufacturing
9. Textile Product Manufacturing
10. Knitting Mills
11. Clothing and Footwear Manufacturing
12. Logs and Wood products
13. Paper and Paper Product Manufacturing
14. Printing and Services to Printing and Publishing
15. Petroleum and Coal including mining
16. Basic Chemical Manufacturing
17. Other Chemical Product Manufacturing
18. Rubber Product Manufacturing
19. Plastic Product Manufacturing
20. Glass and Glass Product Manufacturing
21. Ceramic Product Manufacturing
22. Cement, Lime, Plaster and Concrete Product Manufacturing
23. Non-Metallic Mineral Product Manufacturing n.e.c.
24. Iron and Steel Manufacturing
25. Basic Non-Ferrous Metal Manufacturing and product
26. Structural and Sheet Metal Product Manufacturing
27. Fabricated Metal Product Manufacturing
28. Motor Vehicle and Part Manufacturing
29. Other Transport Equipment Manufacturing
30. Photographic and Scientific Equipment Manufacturing
31. Electronic and Electrical Equipment Manufacturing
32. Industrial Machinery and Equipment Manufacturing
33. Furniture Manufacturing
34. Other Manufacturing

To test for equation stability the Chow test is used. To implement the test the F statistic is used.

$$F = \frac{(SSR(R) - SSR(U)) / J}{SSR(U) / (T - K)}$$

Where:

SSR(R) = Sum of squared residuals from the estimated equation (X.2.1);
SSR(U) = Sum of squared residuals form estimated equation (X.2.2);
J = Number of estimated coefficients in estimated equation (X.2.1);
T = Number of observations;
K = Number of estimated coefficients in estimated equation (X.2.2).

The critical value of F, F_i, is obtained from the F_i distribution, J, $T - K$. If $F<F_i$ then the hypothesis that the FTA has had no impact on exports from Australia to country j for industry i cannot be rejected. If $F>F_i$ then the hypothesis that the FTA has had an impact on the exports of industry i to country j cannot be rejected.

However, this does not mean that the impact of the FTA has been to increase export trade. Structural change may have occurred but the impact may have been to reduce exports.

Hence, the following equation is also estimated:

$$\begin{aligned} ln(exa_{i,j} / imt_{i,j}) &= \propto_{0,i,j} + \propto_{1,i,j} ln(Pexa_{i,j} / Pimt_{i,j}) \\ &+ \propto_{2,i} ln(ass_i) + \propto_{3,i,j} . Time + \propto_{4,i,j} d_j \end{aligned} \qquad \text{(X.2.3)}$$

If $F>F_i$ and $\propto_{3,i,j}>0$ then the hypothesis that the FTA with country *j* has had a significant impact on Australian exports is accepted.

The constant term test for a positive outcome for an FTA is accepted if:

$$\propto_{4,i,j} > 0$$
$$t \text{ statistics for } \propto_{3,i,j} > 1.0$$

For either test the quantitative estimation of the impact on trade is given by:

$$EV_{i,j} - EV_{i,j} / EXP(\propto_{4,i,j})$$

Where:

EVi,j = Export value from Australia to country j for industry i in 2007 in $m.

For Singapore it was not possible to secure the data for the real imports by industry. Hence, the versions of the equations estimated were, for the restricted model:

$$\begin{aligned} ln(exa_{i,1}) &= \propto_{0,i,1} + \propto_{1,i,1} . ln(imt_1) \\ &+ \propto_{2,i,1} . ln(Pexa_{i,1} . sex/scp_i) + \propto_{3,i} . ln(ass_i) \\ &+ \propto_{4,i,1} Time \end{aligned}$$

For the unrestricted model:

$$\begin{aligned} ln(exa_{i,1}) &= \propto_{0,i,1} + \propto_{1,i,1} ln(imt_1) \\ &+ \propto_{2,i,1} ln(Pexa_{i,1} . sex/scpi) + \propto_3 ln(ass_i) + \propto_{4,i,1} Time \\ &+ \propto_5 d_1 + \propto_6 d_1 . ln(imt_1) + \propto_7 d_1 ln(Pexa_{i,1} . sex/scpi) \\ &+ \propto_8 d_1 . Time2 \end{aligned}$$

For the constant term test model:

$$\begin{aligned} ln(exa_{i,1}) &= \propto_{0,i,1} + \propto_{1,i,1} . ln(imt_1) + \propto_{2,i,1} . ln(Pexa_{i,1} . sex/scpi) \\ &+ \propto_{3,i,1} . ln(ass_i) + \propto_{4,i,1} . Time + \propto_{5,i} . d_1 \end{aligned}$$

Where:

imt1 = Total imports of goods and services from Singapore in constant US$m;
sex = Singapore – US exchange rate;
scpi = Singapore CPI.

The results for the estimated equation sets are given in Table sets X.2.1 to X.2.3.

The sample period for the two equation sets varied depending on data availability. For Singapore the sample period was 1990.1 to 2007.4. For the United States it was 1995.1 to 2007.4, while for Thailand it was 1998.1 to 2007.4.

Table X.2.1(a) Outcome for the estimation of equation X.2.1 for Singapore

	A0	t stat	A1	t stat	A2	t stat	A3	t stat	A4	t stat	Adj R-squared	Durbin-Watson	Sum sq resid	Std err regrn
Meat and Meat Product Manufacturing	-1.53	-0.68	0.12	0.49	-0.87	-7.28	-0.46	-1.01	0.00	0.00	0.72	1.86	16.86	0.50
Dairy Product Manufacturing	2.29	1.43	0.12	0.72	-0.35	-2.56	0.14	1.11	0.01	3.07	0.61	1.79	1.57	0.15
Fruit and Vegetable Processing	-4.50	-2.12	0.38	1.66	-1.11	-8.69	-0.55	-3.61	-0.02	-4.24	0.71	1.63	2.40	0.19
Oil and Fat Manufacturing	11.10	3.45	-0.87	-2.69	-1.26	-8.87	0.50	2.29	0.02	3.67	0.52	1.43	6.12	0.30
Flour Mill and Cereal Food Manufacturing and Bakery	-13.87	-4.68	1.36	4.52	-0.59	-2.84	-0.33	-1.67	-0.02	-4.67	0.34	1.30	5.31	0.28
Other Food Manufacturing	-9.35	-2.68	0.83	2.38	-0.94	-11.47	-0.73	-3.05	0.01	1.60	0.87	0.85	6.78	0.32
Beverage and Malt Manufacturing	-0.72	-0.26	-0.02	-0.06	-0.74	-8.47	-0.42	-2.47	0.03	5.32	0.80	1.22	3.91	0.24
Textile Fibre, Yarn and Woven Fabric Manufacturing	15.84	1.94	-1.84	-2.08	-1.51	-17.53	-1.10	-2.48	0.02	1.60	0.86	0.87	34.28	0.72
Textile Product Manufacturing	-22.74	-7.55	2.28	7.06	-0.94	-26.54	-0.32	-1.92	-0.04	-6.66	0.93	1.76	5.31	0.28
Knitting Mills	-5.09	-1.28	0.19	0.44	-1.09	-8.23	-0.71	-3.19	0.01	1.74	0.65	1.28	9.46	0.38
Clothing and Footwear Manufacturing	-18.54	-4.45	1.81	4.11	-1.11	-9.55	-0.70	-3.32	-0.03	-3.26	0.68	0.87	7.96	0.34
Logs and Wood products	-18.21	-4.59	1.77	4.10	-0.96	-19.20	-0.40	-1.29	-0.04	-5.71	0.84	1.52	9.44	0.38
Paper and Paper Product Manufacturing	-6.59	-3.35	0.88	4.08	-0.92	-21.57	0.08	0.49	-0.01	-3.79	0.87	1.76	2.33	0.19
Printing and Services to Printing and Publishing	-5.88	-2.77	0.64	2.81	-1.03	-43.00	-0.11	-1.43	0.00	0.58	0.98	1.64	2.16	0.18
Petroleum and Coal including mining	21.33	5.43	-1.51	-3.85	0.32	1.45	0.28	1.05	0.04	4.45	0.35	0.83	9.15	0.37
Basic Chemical Manufacturing	-5.40	-2.26	0.78	3.31	-1.09	-20.99	-0.17	-1.60	-0.02	-4.90	0.93	1.66	3.36	0.22
Other Chemical Product Manufacturing	-0.89	-0.51	0.30	1.73	-0.98	-12.99	-0.05	-0.70	0.01	2.49	0.81	1.43	1.86	0.17
Rubber Product Manufacturing	-16.32	-4.07	1.75	4.35	-0.72	-7.46	0.20	1.19	-0.02	-2.31	0.48	1.43	9.13	0.37
Plastic Product Manufacturing	-8.22	-4.08	1.09	5.38	-1.00	-12.23	0.10	1.10	-0.02	-3.86	0.80	1.62	2.37	0.19
Glass and Glass Product Manufacturing	-8.68	-1.95	1.16	2.56	-0.84	-10.79	0.44	2.42	-0.03	-3.10	0.77	1.15	12.25	0.43
Ceramic Product Manufacturing	-15.65	-3.18	1.92	3.84	-1.04	-10.74	0.60	2.97	-0.03	-2.92	0.86	1.04	14.91	0.47
Cement, Lime, Plaster and Concrete Product Manufacturing	-29.87	-5.86	3.23	6.24	-1.10	-9.62	0.26	1.39	-0.06	-6.30	0.81	1.01	16.08	0.49
Non-Metallic Mineral Product Manufacturing n.e.c.	2.22	0.53	0.82	1.91	-0.79	-8.17	0.82	5.41	-0.02	-2.19	0.71	1.27	10.75	0.40
Iron and Steel Manufacturing	-12.16	-4.44	1.58	5.41	-0.83	-11.65	-0.11	-0.85	-0.05	-10.27	0.85	1.19	4.25	0.25
Basic Non-Ferrous Metal Manufacturing and product	-11.61	-3.62	1.29	3.78	-0.90	-16.20	-0.80	-5.67	-0.04	-7.26	0.89	1.33	5.69	0.29
Structural and Sheet Metal Product Manufacturing	-19.17	-4.77	2.12	5.03	-0.94	-8.76	0.19	1.03	-0.04	-6.71	0.70	1.08	8.34	0.35
Fabricated Metal Product Manufacturing	-3.33	-0.91	0.30	0.75	-0.99	-51.24	-0.43	-2.49	-0.01	-1.92	0.99	1.48	7.46	0.33
Motor Vehicle and Part Manufacturing	-6.69	-1.58	0.91	2.09	-0.87	-15.96	0.24	0.96	-0.01	-1.70	0.79	1.13	9.90	0.38
Other Transport Equipment Manufacturing	4.24	0.60	-0.27	-0.35	-0.86	-24.09	-0.33	-1.39	0.00	0.40	0.91	1.61	24.83	0.61
Photographic and Scientific Equipment Manufacturing	2.41	0.69	0.04	0.10	-1.13	-24.42	-0.30	-1.00	-0.01	-1.46	0.92	0.81	4.76	0.27
Electronic and Electrical Equipment Manufacturing	-7.17	-2.49	1.15	3.54	-1.01	-22.76	0.25	0.96	-0.01	-2.00	0.89	0.66	4.37	0.26
Industrial Machinery and Equipment Manufacturing	-8.79	-3.05	1.41	4.36	-0.90	-36.91	0.23	0.86	-0.02	-3.17	0.96	1.55	4.33	0.25
Furniture Manufacturing	-8.53	-3.04	0.79	2.71	-0.95	-25.41	-1.09	-6.00	-0.02	-4.37	0.92	1.53	4.71	0.27
Other Manufacturing	-7.02	-2.12	0.71	2.05	-0.88	-24.50	-0.54	-2.72	0.00	0.35	0.92	1.53	5.78	0.29

Table X.2.1(b) Outcome for the estimation of equation X.2.1 for Thailand

	A0	t stat	A1	t stat	A2	t stat	A3	t stat	Adj R-squared	Durbin-Watson	Sum sq resid	Std err regrn
Meat and Meat Product Manufacturing	1.96	0.21	-1.41	-4.53	1.72	0.72	-0.03	-1.64	0.35	2.03	65.60	1.35
Dairy Product Manufacturing	0.40	0.19	-1.20	-3.64	0.39	0.72	-0.02	-4.25	0.53	1.48	2.37	0.26
Fruit and Vegetable Processing	-2.93	-0.90	-0.91	-3.15	-0.10	-0.12	-0.04	-3.76	0.78	1.42	7.71	0.46
Oil and Fat Manufacturing	-9.71	-2.08	-0.77	-1.85	-1.39	-1.17	-0.02	-1.73	0.15	1.20	14.47	0.63
Flour Mill and Cereal Food Manufacturing and Bakery	-0.99	-0.18	-0.62	-3.19	0.61	0.43	-0.06	-5.84	0.52	1.59	22.14	0.78
Other Food Manufacturing	-13.55	-8.35	-1.22	-8.33	-2.34	-5.71	0.01	1.93	0.73	1.85	1.94	0.23
Beverage and Malt Manufacturing	-4.47	-1.69	-0.44	-3.43	-0.10	-0.16	0.01	1.62	0.20	1.85	5.12	0.38
Textile Fibre, Yarn and Woven Fabric Manufacturing	-1.18	-2.05	-2.09	-10.80	0.30	1.74	-0.02	-5.09	0.79	1.42	2.07	0.24
Textile Product Manufacturing	-5.62	-7.29	-1.00	-10.35	-0.26	-1.18	0.02	2.67	0.86	0.82	3.71	0.32
Knitting Mills	-12.49	-6.95	-1.67	-4.91	-1.60	-2.79	0.04	3.24	0.58	1.55	19.99	0.75
Clothing and Footwear Manufacturing	-4.38	-4.41	-0.78	-10.22	-0.44	-1.52	-0.02	-2.15	0.84	0.92	6.54	0.43
Logs and Wood products	-6.93	-5.29	-1.08	-21.89	-0.24	-0.64	0.04	8.72	0.93	1.92	4.24	0.34
Paper and Paper Product Manufacturing	-8.83	-4.83	-0.99	-13.78	-0.96	-1.81	0.02	2.62	0.84	0.55	7.48	0.46
Printing and Services to Printing and Publishing	-4.00	-6.97	-1.02	-15.56	0.07	0.33	0.01	0.68	0.89	1.40	8.78	0.49
Petroleum and Coal including mining	-8.31	-2.38	-1.62	-8.67	-0.97	-1.09	-0.01	-0.21	0.81	2.44	48.01	1.15
Basic Chemical Manufacturing	-4.24	-5.83	-1.01	-11.94	0.05	0.27	-0.01	-0.76	0.80	1.35	2.04	0.24
Other Chemical Product Manufacturing	-3.89	-7.80	-0.73	-10.37	-0.14	-1.08	0.01	0.78	0.75	1.71	1.04	0.17
Rubber Product Manufacturing	-5.96	-4.22	-0.98	-19.67	0.05	0.13	0.00	0.07	0.91	1.25	8.41	0.48
Plastic Product Manufacturing	-3.78	-4.39	-1.15	-8.35	0.50	2.26	0.02	1.96	0.70	0.80	2.99	0.29
Glass and Glass Product Manufacturing	-7.42	-3.43	-0.48	-3.69	-0.36	-0.82	-0.03	-1.27	0.25	0.91	24.30	0.82
Ceramic Product Manufacturing	-6.16	-3.26	-1.01	-12.11	0.02	0.04	-0.01	-0.49	0.80	1.67	16.92	0.70
Cement, Lime, Plaster and Concrete Product Manufacturing	-3.09	-2.15	-1.00	-16.51	0.28	0.98	0.01	0.52	0.89	1.82	10.70	0.55
Non-Metallic Mineral Product Manufacturing n.e.c.	-5.21	-3.19	-0.76	-9.73	-0.52	-1.59	-0.02	-1.02	0.71	1.36	12.82	0.60
Iron and Steel Manufacturing	-5.07	-4.32	-0.69	-3.13	-0.08	-0.23	0.00	-0.17	0.18	1.62	13.51	0.61
Basic Non-Ferrous Metal Manufacturing and product	-2.03	-5.87	-0.97	-19.26	0.07	0.74	0.02	4.42	0.92	0.89	1.17	0.18
Structural and Sheet Metal Product Manufacturing	-3.17	-3.40	-1.02	-6.56	0.32	1.20	-0.02	-1.87	0.53	1.47	8.32	0.48
Fabricated Metal Product Manufacturing	-4.18	-4.37	-0.94	-23.36	0.09	0.31	0.01	0.80	0.95	2.07	8.92	0.50
Motor Vehicle and Part Manufacturing	-5.86	-7.66	-1.07	-15.02	-1.10	-1.84	-0.04	-4.34	0.90	1.05	9.54	0.51
Other Transport Equipment Manufacturing	-4.10	-3.81	-0.86	-15.85	0.94	2.59	0.04	2.80	0.88	2.48	29.17	0.91
Photographic and Scientific Equipment Manufacturing	-5.17	-2.71	-1.00	-14.29	-0.30	-0.51	-0.04	-3.05	0.88	0.84	8.03	0.47
Electronic and Electrical Equipment Manufacturing	-8.62	-5.92	-1.07	-17.63	-0.74	-1.67	-0.04	-3.37	0.93	1.58	5.62	0.40
Industrial Machinery and Equipment Manufacturing	-5.15	-5.56	-0.85	-19.44	0.15	0.52	0.02	2.38	0.92	1.99	2.31	0.25
Furniture Manufacturing	-2.73	-13.47	-0.88	-12.21	0.00	0.00	-0.06	-6.48	0.90	1.21	11.30	0.55
Other Manufacturing	-4.10	-7.78	-1.11	-6.78	0.00	0.00	-0.05	-2.30	0.69	0.39	66.64	1.34

Table X.2.1(c) Outcome for the estimation of equation X.2.1 for United States

	A0	t stat	A1	t stat	A2	t stat	A3	t stat	Adj R-squared	Durbin-Watson	Sum sq resid	Std err regrn
Meat and Meat Product Manufacturing	-7.75	-4.93	-1.21	-7.91	-0.33	-0.82	0.00	1.41	0.55	1.59	4.70	0.31
Dairy Product Manufacturing	-2.39	-1.25	-0.79	-1.85	0.28	0.56	0.01	1.68	0.03	2.15	6.85	0.38
Fruit and Vegetable Processing	-7.63	-2.86	-1.48	-6.62	-0.49	-0.73	-0.01	-2.83	0.49	1.15	13.64	0.53
Oil and Fat Manufacturing	-2.02	-0.64	-0.52	-2.34	1.02	1.30	-0.01	-0.95	0.27	1.14	16.02	0.58
Flour Mill and Cereal Food Manufacturing and Bakery	-10.57	-4.94	-0.23	-0.91	-1.00	-1.84	0.00	0.92	0.04	1.04	8.75	0.43
Other Food Manufacturing	-5.60	-2.33	-1.21	-28.23	-0.10	-0.17	-0.02	-4.00	0.95	1.04	11.01	0.48
Beverage and Malt Manufacturing	-8.38	-7.21	-0.91	-5.31	-1.00	-3.36	0.03	11.55	0.89	0.89	2.60	0.23
Textile Fibre, Yarn and Woven Fabric Manufacturing	-3.70	-6.48	-0.53	-3.09	-0.13	-0.79	-0.05	-16.50	0.92	1.14	3.49	0.27
Textile Product Manufacturing	-5.90	-12.28	-1.08	-23.58	-0.13	-0.88	0.00	0.00	0.92	1.34	2.46	0.23
Knitting Mills	-7.32	-11.29	-0.81	-6.35	-0.18	-0.91	-0.04	-11.15	0.75	1.20	4.62	0.31
Clothing and Footwear Manufacturing	-6.51	-7.63	-0.71	-6.17	-0.09	-0.36	-0.04	-9.99	0.76	0.52	7.49	0.39
Logs and Wood products	-7.56	-6.53	-1.10	-29.18	-0.14	-0.43	0.00	0.33	0.95	1.00	5.59	0.34
Paper and Paper Product Manufacturing	-1.34	-0.85	-0.99	-19.35	2.00	4.35	0.05	8.89	0.88	0.95	11.03	0.48
Printing and Services to Printing and Publishing	-4.70	-14.17	-1.00	-22.70	0.12	1.13	-0.02	-5.31	0.92	1.51	3.20	0.26
Petroleum and Coal including mining	-0.44	-0.19	-0.79	-1.13	1.20	1.81	-0.01	-0.44	0.41	1.02	59.40	1.11
Basic Chemical Manufacturing	-5.68	-11.95	-1.16	-17.42	0.19	1.43	0.01	1.45	0.87	1.21	2.54	0.23
Other Chemical Product Manufacturing	-3.35	-7.22	-0.23	-3.11	0.17	1.37	-0.03	-4.61	0.88	1.61	2.30	0.22
Rubber Product Manufacturing	-3.26	-3.58	-0.59	-3.93	0.91	3.54	0.03	2.44	0.36	0.73	9.31	0.44
Plastic Product Manufacturing	-7.10	-17.09	-0.73	-9.78	0.00	0.03	0.01	2.53	0.67	1.81	1.93	0.20
Glass and Glass Product Manufacturing	-2.97	-4.56	-0.57	-4.35	0.21	1.77	-0.01	-1.17	0.87	1.11	3.69	0.28
Ceramic Product Manufacturing	-9.98	-10.43	-0.99	-17.20	-0.51	-2.57	0.00	-0.45	0.89	1.42	9.69	0.45
Cement, Lime, Plaster and Concrete Product Manufacturing	-5.70	-3.02	-1.16	-15.05	0.24	0.63	-0.03	-2.10	0.86	0.80	37.98	0.89
Non-Metallic Mineral Product Manufacturing n.e.c.	-7.88	-5.65	-0.90	-4.43	-0.46	-1.68	-0.02	-2.28	0.26	1.04	19.04	0.63
Iron and Steel Manufacturing	-6.00	-9.20	-2.35	-7.28	-0.41	-2.12	-0.03	-5.69	0.59	1.47	6.47	0.37
Basic Non-Ferrous Metal Manufacturing and product	-3.22	-4.48	-0.76	-6.88	0.53	2.50	0.02	2.94	0.54	0.89	9.44	0.44
Structural and Sheet Metal Product Manufacturing	-6.06	-14.53	-0.77	-10.66	-0.15	-1.25	-0.02	-4.74	0.84	1.50	3.17	0.26
Fabricated Metal Product Manufacturing	-5.04	-7.07	-0.93	-20.20	0.52	2.48	0.05	7.47	0.93	2.07	8.69	0.43
Motor Vehicle and Part Manufacturing	-5.61	-14.55	-0.57	-10.07	-0.12	-0.40	-0.01	-1.57	0.73	0.97	6.64	0.37
Other Transport Equipment Manufacturing	-4.56	-14.45	-0.92	-36.36	-0.20	-2.07	-0.01	-2.51	0.96	1.61	4.08	0.29
Photographic and Scientific Equipment Manufacturing	-4.55	-9.80	-0.97	-57.58	0.24	1.62	0.02	5.68	0.99	1.43	1.11	0.15
Electronic and Electrical Equipment Manufacturing	-5.26	-7.96	-0.96	-24.64	0.41	1.98	0.01	1.44	0.94	1.57	1.72	0.19
Industrial Machinery and Equipment Manufacturing	-5.16	-12.02	-0.91	-15.63	0.09	0.69	-0.01	-3.35	0.87	1.32	0.95	0.14
Furniture Manufacturing	-5.37	-5.50	-0.96	-23.56	0.99	2.07	0.00	-0.78	0.92	1.62	4.60	0.31
Other Manufacturing	-7.94	-4.56	-0.70	-7.18	-0.56	-0.64	0.01	2.35	0.60	0.84	12.04	0.50

Table X.2.2(a) Outcome for the estimation of equation X.2.2 for Singapore

	A0	t stat	A1	t stat	A2	t stat	A3	t stat	A4	t stat	A5	t stat
Meat and Meat Product Manufacturing	-14.20	-2.10	1.58	2.22	-0.83	-5.09	0.10	0.16	-0.01	-1.27	8.24	0.24
Dairy Product Manufacturing	5.33	3.21	-0.28	-1.51	-0.55	-2.69	-0.17	-0.99	0.01	2.83	-35.75	-3.58
Fruit and Vegetable Processing	-4.64	-1.97	0.49	1.83	-0.77	-3.15	-0.23	-1.01	-0.01	-1.38	9.86	0.72
Oil and Fat Manufacturing	13.70	3.77	-1.30	-3.17	-1.20	-7.10	0.00	0.00	0.02	2.76	-34.11	-1.64
Flour Mill and Cereal Food Manufacturing and Bakery	-13.64	-4.03	1.27	3.26	-0.72	-2.85	-0.55	-1.66	-0.03	-4.97	30.83	1.57
Other Food Manufacturing	-3.61	-0.84	-0.11	-0.22	-1.00	-8.84	-1.81	-5.35	0.00	0.30	3.18	0.12
Beverage and Malt Manufacturing	-3.37	-1.10	0.38	1.11	-0.70	-6.42	-0.04	-0.12	0.03	4.06	-10.04	-0.53
Textile Fibre, Yarn and Woven Fabric Manufacturing	8.57	1.27	-1.00	-1.36	-1.38	-13.52	-0.54	-1.50	0.04	2.87	-52.74	-1.36
Textile Product Manufacturing	-23.58	-7.43	2.41	7.02	-0.94	-26.27	-0.17	-1.01	-0.04	-6.38	23.90	1.29
Knitting Mills	-8.80	-2.02	0.60	1.29	-1.02	-6.64	-0.55	-2.35	0.01	1.56	-16.06	-0.55
Clothing and Footwear Manufacturing	-21.07	-6.11	2.18	5.99	-0.75	-6.95	-0.13	-0.73	-0.02	-2.19	23.92	1.24
Logs and Wood products	-21.66	-4.86	2.17	4.33	-0.88	-14.12	-0.17	-0.49	-0.04	-4.95	-2.70	-0.09
Paper and Paper Product Manufacturing	-4.87	-2.25	0.66	2.75	-0.95	-20.15	-0.05	-0.33	-0.01	-2.75	6.22	0.49
Printing and Services to Printing and Publishing	-7.98	-3.70	0.84	3.66	-1.05	-42.47	-0.13	-1.69	0.00	0.42	7.47	0.60
Petroleum and Coal including mining	9.25	2.41	-0.37	-1.00	1.06	5.42	-0.02	-0.08	0.02	2.87	-28.49	-1.26
Basic Chemical Manufacturing	-4.06	-1.31	0.69	2.43	-1.11	-20.23	-0.04	-0.25	-0.02	-3.37	-7.52	-0.39
Other Chemical Product Manufacturing	-2.10	-0.87	0.41	1.85	-0.98	-10.84	-0.11	-0.83	0.01	1.49	3.42	0.26
Rubber Product Manufacturing	-14.34	-2.82	1.63	3.45	-0.84	-6.53	0.38	1.47	-0.02	-1.55	-13.19	-0.45
Plastic Product Manufacturing	-13.01	-5.27	1.48	6.46	-0.98	-11.00	-0.17	-1.41	-0.03	-5.29	48.32	3.42
Glass and Glass Product Manufacturing	-18.56	-4.18	1.93	4.44	-0.73	-8.36	0.04	0.21	-0.03	-4.23	31.19	1.18
Ceramic Product Manufacturing	-29.15	-7.06	3.10	7.25	-0.70	-6.10	0.06	0.28	-0.04	-5.76	6.37	0.24
Cement, Lime, Plaster and Concrete Product Manufacturing	-38.97	-7.59	4.07	8.10	-0.98	-7.17	0.11	0.46	-0.07	-7.92	47.33	1.55
Non-Metallic Mineral Product Manufacturing n.e.c.	-0.75	-0.18	0.97	2.32	-0.33	-2.15	0.58	3.06	-0.01	-2.01	6.17	0.25
Iron and Steel Manufacturing	-11.90	-4.26	1.59	5.51	-0.84	-8.34	0.02	0.11	-0.04	-8.89	16.56	0.92
Basic Non-Ferrous Metal Manufacturing and product	-12.34	-3.77	1.37	4.05	-0.95	-16.35	-0.76	-3.21	-0.04	-6.83	12.61	0.61
Structural and Sheet Metal Product Manufacturing	-19.80	-4.82	2.02	4.73	-0.79	-5.72	-0.25	-0.86	-0.04	-6.14	35.22	1.34
Fabricated Metal Product Manufacturing	-2.62	-0.69	0.40	1.01	-0.98	-34.02	0.05	0.17	-0.01	-1.87	25.27	1.08
Motor Vehicle and Part Manufacturing	-11.75	-2.77	1.41	3.25	-0.69	-9.25	0.37	1.62	-0.01	-1.46	28.85	1.10
Other Transport Equipment Manufacturing	1.79	0.23	-0.07	-0.09	-0.87	-20.75	-0.45	-1.84	0.01	0.89	37.18	0.84
Photographic and Scientific Equipment Manufacturing	-4.18	-1.28	0.84	2.13	-1.03	-23.38	0.27	0.89	0.00	0.12	10.24	0.71
Electronic and Electrical Equipment Manufacturing	-6.02	-1.60	1.01	2.27	-1.04	-19.68	0.15	0.42	-0.01	-2.31	-0.91	-0.05
Industrial Machinery and Equipment Manufacturing	-11.53	-3.18	1.69	3.98	-0.91	-35.52	0.31	0.88	-0.02	-2.92	6.31	0.36
Furniture Manufacturing	-12.83	-3.45	1.29	3.20	-0.98	-24.12	-0.61	-1.94	-0.02	-3.27	18.03	0.87
Other Manufacturing	-14.28	-3.97	1.54	3.96	-0.78	-18.26	0.11	0.35	0.01	0.89	0.64	0.04

Table X.2.2(a) Outcome for the estimation of equation X.2.2 for Singapore (continued)

	A6	t stat	A7	t stat	A8	t stat	Adj R-	Durbin	Sum sq	Std er
Meat and Meat Product Manufacturing	-0.76	-0.23	0.12	0.46	-0.05	-0.46	0.73	1.94	15.41	0.49
Dairy Product Manufacturing	3.37	3.58	0.28	1.02	-0.08	-2.67	0.68	2.37	1.18	0.14
Fruit and Vegetable Processing	-0.94	-0.73	-0.33	-0.90	0.01	0.30	0.71	1.73	2.24	0.19
Oil and Fat Manufacturing	3.24	1.65	-0.14	-0.45	-0.07	-1.18	0.54	1.60	5.59	0.30
Flour Mill and Cereal Food Manufacturing and Bakery	-2.91	-1.56	0.22	0.33	0.09	1.59	0.34	1.49	4.99	0.28
Other Food Manufacturing	-0.26	-0.11	0.04	0.22	0.06	0.88	0.89	1.21	5.14	0.29
Beverage and Malt Manufacturing	0.97	0.54	-0.15	-0.66	-0.06	-1.10	0.80	1.26	3.54	0.24
Textile Fibre, Yarn and Woven Fabric Manufacturing	4.88	1.34	0.17	1.16	-0.23	-2.17	0.91	0.92	19.08	0.55
Textile Product Manufacturing	-2.31	-1.31	0.09	0.78	0.08	1.65	0.94	2.17	4.42	0.27
Knitting Mills	1.53	0.55	-0.25	-0.68	-0.08	-0.94	0.66	1.36	8.61	0.37
Clothing and Footwear Manufacturing	-2.29	-1.26	-0.67	-2.60	0.03	0.59	0.81	1.54	4.53	0.27
Logs and Wood products	0.24	0.08	-0.08	-0.50	-0.03	-0.34	0.85	1.70	8.51	0.37
Paper and Paper Product Manufacturing	-0.61	-0.50	0.16	1.26	0.03	0.99	0.88	1.78	2.03	0.18
Printing and Services to Printing and Publishing	-0.69	-0.59	0.09	1.31	-0.01	-0.23	0.98	1.85	1.82	0.17
Petroleum and Coal including mining	2.62	1.22	-1.47	-3.24	-0.08	-1.47	0.63	1.26	4.95	0.28
Basic Chemical Manufacturing	0.72	0.39	0.25	1.03	-0.02	-0.38	0.93	1.65	3.21	0.23
Other Chemical Product Manufacturing	-0.33	-0.26	0.26	0.91	0.00	-0.02	0.80	1.49	1.78	0.17
Rubber Product Manufacturing	1.22	0.44	0.32	1.50	-0.04	-0.45	0.47	1.39	8.75	0.37
Plastic Product Manufacturing	-4.56	-3.42	-0.09	-0.38	0.11	2.95	0.83	1.84	1.94	0.18
Glass and Glass Product Manufacturing	-2.97	-1.19	-0.05	-0.31	0.02	0.28	0.82	1.52	8.96	0.38
Ceramic Product Manufacturing	-0.74	-0.30	-0.34	-2.16	-0.05	-0.67	0.92	1.65	7.72	0.35
Cement, Lime, Plaster and Concrete Product Manufacturing	-4.41	-1.52	-0.37	-1.63	0.04	0.44	0.85	1.49	12.14	0.44
Non-Metallic Mineral Product Manufacturing n.e.c.	-0.65	-0.28	-0.63	-3.39	0.05	0.71	0.78	1.77	7.66	0.35
Iron and Steel Manufacturing	-1.60	-0.94	0.44	1.79	0.06	1.34	0.85	1.07	3.86	0.25
Basic Non-Ferrous Metal Manufacturing and product	-1.18	-0.61	0.44	2.44	0.01	0.20	0.89	1.36	5.18	0.29
Structural and Sheet Metal Product Manufacturing	-3.29	-1.32	-0.40	-1.39	0.06	0.77	0.71	1.16	7.53	0.35
Fabricated Metal Product Manufacturing	-2.42	-1.10	-0.03	-0.66	0.13	2.06	0.99	1.66	6.51	0.32
Motor Vehicle and Part Manufacturing	-2.74	-1.10	-0.29	-2.38	0.06	0.69	0.83	1.40	7.76	0.35
Other Transport Equipment Manufacturing	-3.54	-0.85	0.07	0.85	0.07	0.61	0.92	1.82	22.27	0.59
Photographic and Scientific Equipment Manufacturing	-0.95	-0.70	-0.10	-1.24	-0.04	-0.88	0.96	1.31	2.60	0.20
Electronic and Electrical Equipment Manufacturing	0.07	0.04	0.15	1.41	0.02	0.30	0.89	0.68	4.10	0.26
Industrial Machinery and Equipment Manufacturing	-0.60	-0.36	0.03	0.20	0.00	0.06	0.96	1.63	4.04	0.25
Furniture Manufacturing	-1.75	-0.90	0.17	1.69	0.03	0.55	0.93	1.70	4.13	0.26
Other Manufacturing	-0.14	-0.09	-0.21	-3.52	0.00	-0.06	0.95	2.24	3.67	0.24

Table X.2.2(b) Outcome for the estimation of equation X.2.2 for Thailand

	A0	t stat	A1	t stat	A2	t stat	A3	t stat	A4	t stat	A5	t stat
Meat and Meat Product Manufacturing	-9.31	-0.71	-1.55	-4.13	-1.23	-0.36	-0.06	-1.78	0.18	0.18	0.52	0.75
Dairy Product Manufacturing	0.29	0.12	-1.17	-2.34	0.36	0.55	-0.02	-2.03	0.13	0.51	0.68	0.73
Fruit and Vegetable Processing	2.56	0.58	-0.77	-2.22	1.29	1.14	-0.03	-2.00	-0.38	-0.75	-0.79	-1.16
Oil and Fat Manufacturing	-11.18	-1.76	-0.73	-1.52	-1.75	-1.07	-0.01	-0.61	-0.62	-1.21	0.63	0.63
Flour Mill and Cereal Food Manufacturing and Bakery	1.09	0.14	-0.61	-3.00	1.18	0.59	-0.05	-2.34	-0.74	-1.27	-0.11	-0.12
Other Food Manufacturing	-9.90	-4.07	-1.16	-4.48	-1.39	-2.27	0.02	2.79	0.05	0.22	0.02	0.06
Beverage and Malt Manufacturing	-7.43	-1.94	-0.37	-2.50	-0.88	-0.88	0.00	0.27	-0.37	-1.12	0.14	0.26
Textile Fibre, Yarn and Woven Fabric Manufacturing	-1.64	-2.86	-2.36	-9.12	0.22	1.27	0.00	-0.78	-0.10	-0.62	0.21	0.56
Textile Product Manufacturing	-3.90	-6.14	-1.13	-15.05	0.11	0.63	-0.01	-1.87	-0.19	-0.88	0.16	0.50
Knitting Mills	-11.23	-5.92	-1.94	-5.52	-1.21	-2.05	0.02	1.28	0.17	0.32	2.33	2.24
Clothing and Footwear Manufacturing	-4.55	-4.24	-0.70	-7.11	-0.51	-1.63	-0.01	-0.68	-0.56	-1.57	0.00	0.01
Logs and Wood products	-6.65	-4.86	-1.08	-21.63	-0.18	-0.45	0.04	4.39	0.77	1.60	0.74	1.23
Paper and Paper Product Manufacturing	-7.55	-6.32	-1.03	-22.34	-0.71	-2.05	-0.02	-2.48	-0.09	-0.40	0.11	0.22
Printing and Services to Printing and Publishing	-4.96	-6.52	-1.04	-14.10	-0.19	-0.71	0.03	2.02	-0.06	-0.14	-0.03	-0.17
Petroleum and Coal including mining	-9.86	-2.69	-2.08	-9.57	-1.53	-1.61	0.01	0.27	-3.06	-2.55	1.35	1.71
Basic Chemical Manufacturing	-5.21	-6.63	-0.99	-11.69	-0.16	-0.79	0.00	-0.20	-0.43	-2.41	-0.18	-0.91
Other Chemical Product Manufacturing	-3.53	-6.21	-0.82	-9.41	-0.01	-0.07	0.02	2.30	0.14	1.02	0.06	0.38
Rubber Product Manufacturing	-4.44	-2.67	-1.02	-15.04	0.48	1.09	0.03	1.17	0.75	1.74	-0.08	-0.66
Plastic Product Manufacturing	-3.19	-3.30	-1.07	-6.44	0.60	2.40	0.01	0.77	0.26	1.10	0.01	0.04
Glass and Glass Product Manufacturing	-7.13	-3.76	-0.78	-5.19	-0.41	-1.05	-0.08	-2.88	2.39	3.70	1.13	2.84
Ceramic Product Manufacturing	-6.02	-3.00	-1.09	-8.59	0.09	0.21	0.00	0.06	0.55	0.96	0.23	1.25
Cement, Lime, Plaster and Concrete Product Manufacturing	-3.52	-2.38	-1.02	-13.53	0.17	0.55	-0.01	-0.55	0.13	0.31	0.06	0.46
Non-Metallic Mineral Product Manufacturing n.e.c.	-4.05	-2.47	-0.74	-7.33	-0.28	-0.84	-0.01	-0.31	1.19	2.93	0.11	0.67
Iron and Steel Manufacturing	-2.13	-1.15	-0.46	-1.99	0.65	1.33	-0.01	-0.75	-0.61	-1.34	-0.22	-0.46
Basic Non-Ferrous Metal Manufacturing and product	-3.59	-7.24	-0.97	-22.48	-0.33	-2.47	0.02	6.07	0.04	0.35	0.15	1.21
Structural and Sheet Metal Product Manufacturing	-3.02	-1.78	-1.03	-6.05	0.35	0.77	-0.02	-1.87	0.32	0.70	0.15	0.24
Fabricated Metal Product Manufacturing	-6.84	-4.01	-0.94	-18.84	-0.59	-1.29	0.02	1.31	-0.48	-1.17	0.00	-0.03
Motor Vehicle and Part Manufacturing	-5.75	-6.61	-1.10	-13.49	-1.18	-1.79	-0.06	-4.77	-0.10	-0.24	0.03	0.18
Other Transport Equipment Manufacturing	-4.58	-4.00	-0.89	-16.31	0.83	2.30	0.05	2.28	1.04	1.38	0.46	2.66
Photographic and Scientific Equipment Manufacturing	-4.63	-2.57	-0.87	-11.56	0.01	0.02	-0.01	-0.30	-1.06	-2.25	-0.04	-0.27
Electronic and Electrical Equipment Manufacturing	-8.84	-5.30	-1.05	-10.62	-0.79	-1.56	-0.03	-1.63	-0.20	-0.37	-0.01	-0.05
Industrial Machinery and Equipment Manufacturing	-4.33	-4.35	-0.75	-13.38	0.40	1.30	0.02	2.44	-0.09	-0.43	-0.24	-2.55
Furniture Manufacturing	-3.03	-13.57	-0.91	-12.69	0.00	0.00	-0.03	-2.53	-0.49	-1.30	0.35	1.48
Other Manufacturing	-4.81	-9.84	-0.90	-5.08	0.00	0.00	0.04	1.42	-2.78	-3.48	-0.08	-0.28

Table X.2.2(b) Outcome for the estimation of equation X.2.2 for Thailand (continued)

	A6	t stat	Adj R-squared	Durbin-Watson	Sum sq resid	Std err regrn
Meat and Meat Product Manufacturing	0.16	1.13	0.33	2.18	61.66	1.37
Dairy Product Manufacturing	0.00	-0.03	0.52	1.52	2.22	0.26
Fruit and Vegetable Processing	-0.08	-1.51	0.79	1.57	6.83	0.45
Oil and Fat Manufacturing	0.09	1.26	0.16	1.27	13.16	0.63
Flour Mill and Cereal Food Manufacturing and Bakery	0.03	0.30	0.50	1.70	21.01	0.80
Other Food Manufacturing	-0.06	-2.35	0.75	2.03	1.62	0.22
Beverage and Malt Manufacturing	0.08	1.71	0.20	2.02	4.66	0.38
Textile Fibre, Yarn and Woven Fabric Manufacturing	-0.04	-1.98	0.82	1.72	1.62	0.22
Textile Product Manufacturing	0.12	5.38	0.93	1.79	1.77	0.23
Knitting Mills	0.11	1.65	0.62	1.49	16.68	0.71
Clothing and Footwear Manufacturing	0.03	0.64	0.84	0.99	6.07	0.43
Logs and Wood products	-0.07	-1.24	0.93	2.03	3.92	0.34
Paper and Paper Product Manufacturing	0.16	5.76	0.94	1.43	2.76	0.29
Printing and Services to Printing and Publishing	-0.08	-1.83	0.89	1.56	7.57	0.48
Petroleum and Coal including mining	0.06	0.48	0.85	2.82	35.70	1.04
Basic Chemical Manufacturing	-0.01	-0.26	0.85	1.80	1.43	0.21
Other Chemical Product Manufacturing	-0.04	-2.58	0.77	2.01	0.85	0.16
Rubber Product Manufacturing	-0.13	-2.29	0.92	1.43	7.25	0.47
Plastic Product Manufacturing	0.03	1.03	0.74	1.04	2.44	0.27
Glass and Glass Product Manufacturing	-0.15	-1.73	0.45	1.53	16.44	0.71
Ceramic Product Manufacturing	-0.08	-1.31	0.81	2.00	14.75	0.68
Cement, Lime, Plaster and Concrete Product Manufacturing	0.05	1.05	0.89	1.97	9.88	0.55
Non-Metallic Mineral Product Manufacturing n.e.c.	-0.17	-3.14	0.77	1.75	9.47	0.54
Iron and Steel Manufacturing	0.20	3.40	0.36	2.00	9.62	0.54
Basic Non-Ferrous Metal Manufacturing and product	-0.07	-4.60	0.95	1.47	0.69	0.14
Structural and Sheet Metal Product Manufacturing	-0.03	-0.61	0.51	1.47	8.01	0.49
Fabricated Metal Product Manufacturing	-0.06	-1.21	0.96	2.31	8.00	0.49
Motor Vehicle and Part Manufacturing	0.09	2.05	0.91	1.28	8.00	0.49
Other Transport Equipment Manufacturing	-0.08	-1.02	0.90	2.29	23.13	0.85
Photographic and Scientific Equipment Manufacturing	0.02	0.40	0.92	1.04	5.22	0.40
Electronic and Electrical Equipment Manufacturing	0.00	0.03	0.92	1.46	5.55	0.41
Industrial Machinery and Equipment Manufacturing	0.00	-0.18	0.93	2.09	1.89	0.24
Furniture Manufacturing	-0.07	-1.46	0.91	1.26	9.27	0.52
Other Manufacturing	-0.04	-0.41	0.79	0.69	40.68	1.09

Table X.2.2(c) Outcome for the estimation of equation X.2.2 for United States

	A0	t stat	A1	t stat	A2	t stat	A3	t stat	A4	t stat	A5	t stat
Meat and Meat Product Manufacturing	-9.31	-0.71	-1.55	-4.13	-1.23	-0.36	-0.06	-1.78	0.18	0.18	0.52	0.75
Dairy Product Manufacturing	0.29	0.12	-1.17	-2.34	0.36	0.55	-0.02	-2.03	0.13	0.51	0.68	0.73
Fruit and Vegetable Processing	2.56	0.58	-0.77	-2.22	1.29	1.14	-0.03	-2.00	-0.38	-0.75	-0.79	-1.16
Oil and Fat Manufacturing	-11.18	-1.76	-0.73	-1.52	-1.75	-1.07	-0.01	-0.61	-0.62	-1.21	0.63	0.63
Flour Mill and Cereal Food Manufacturing and Bakery	1.09	0.14	-0.61	-3.00	1.18	0.59	-0.05	-2.34	-0.74	-1.27	-0.11	-0.12
Other Food Manufacturing	-9.90	-4.07	-1.16	-4.48	-1.39	-2.27	0.02	2.79	0.05	0.22	0.02	0.06
Beverage and Malt Manufacturing	-7.43	-1.94	-0.37	-2.50	-0.88	-0.88	0.00	0.27	-0.37	-1.12	0.14	0.26
Textile Fibre, Yarn and Woven Fabric Manufacturing	-1.64	-2.86	-2.36	-9.12	0.22	1.27	0.00	-0.78	-0.10	-0.62	0.21	0.56
Textile Product Manufacturing	-3.90	-6.14	-1.13	-15.05	0.11	0.63	-0.01	-1.87	-0.19	-0.88	0.16	0.50
Knitting Mills	-11.23	-5.92	-1.94	-5.52	-1.21	-2.05	0.02	1.28	0.17	0.32	2.33	2.24
Clothing and Footwear Manufacturing	-4.55	-4.24	-0.70	-7.11	-0.51	-1.63	-0.01	-0.68	-0.56	-1.57	0.00	0.01
Logs and Wood products	-6.65	-4.86	-1.08	-21.63	-0.18	-0.45	0.04	4.39	0.77	1.60	0.74	1.23
Paper and Paper Product Manufacturing	-7.55	-6.32	-1.03	-22.34	-0.71	-2.05	-0.02	-2.48	-0.09	-0.40	0.11	0.22
Printing and Services to Printing and Publishing	-4.96	-6.52	-1.04	-14.10	-0.19	-0.71	0.03	2.02	-0.06	-0.14	-0.03	-0.17
Petroleum and Coal including mining	-9.86	-2.69	-2.08	-9.57	-1.53	-1.61	0.01	0.27	-3.06	-2.55	1.35	1.71
Basic Chemical Manufacturing	-5.21	-6.63	-0.99	-11.69	-0.16	-0.79	0.00	-0.20	-0.43	-2.41	-0.18	-0.91
Other Chemical Product Manufacturing	-3.53	-6.21	-0.82	-9.41	-0.01	-0.07	0.02	2.30	0.14	1.02	0.06	0.38
Rubber Product Manufacturing	-4.44	-2.67	-1.02	-15.04	0.48	1.09	0.03	1.17	0.75	1.74	-0.08	-0.66
Plastic Product Manufacturing	-3.19	-3.30	-1.07	-6.44	0.60	2.40	0.01	0.77	0.26	1.10	0.01	0.04
Glass and Glass Product Manufacturing	-7.13	-3.76	-0.78	-5.19	-0.41	-1.05	-0.08	-2.88	2.39	3.70	1.13	2.84
Ceramic Product Manufacturing	-6.02	-3.00	-1.09	-8.59	0.09	0.21	0.00	0.06	0.55	0.96	0.23	1.25
Cement, Lime, Plaster and Concrete Product Manufacturing	-3.52	-2.38	-1.02	-13.53	0.17	0.55	-0.01	-0.55	0.13	0.31	0.06	0.46
Non-Metallic Mineral Product Manufacturing n.e.c.	-4.05	-2.47	-0.74	-7.33	-0.28	-0.84	-0.01	-0.31	1.19	2.93	0.11	0.67
Iron and Steel Manufacturing	-2.13	-1.15	-0.46	-1.99	0.65	1.33	-0.01	-0.75	-0.61	-1.34	-0.22	-0.46
Basic Non-Ferrous Metal Manufacturing and product	-3.59	-7.24	-0.97	-22.48	-0.33	-2.47	0.02	6.07	0.04	0.35	0.15	1.21
Structural and Sheet Metal Product Manufacturing	-3.02	-1.78	-1.03	-6.05	0.35	0.77	-0.02	-1.87	0.32	0.70	0.15	0.24
Fabricated Metal Product Manufacturing	-6.84	-4.01	-0.94	-18.84	-0.59	-1.29	0.02	1.31	-0.48	-1.17	0.00	-0.03
Motor Vehicle and Part Manufacturing	-5.75	-6.61	-1.10	-13.49	-1.18	-1.79	-0.06	-4.77	-0.10	-0.24	0.03	0.18
Other Transport Equipment Manufacturing	-4.58	-4.00	-0.89	-16.31	0.83	2.30	0.05	2.28	1.04	1.38	0.46	2.66
Photographic and Scientific Equipment Manufacturing	-4.63	-2.57	-0.87	-11.56	0.01	0.02	-0.01	-0.30	-1.06	-2.25	-0.04	-0.27
Electronic and Electrical Equipment Manufacturing	-8.84	-5.30	-1.05	-10.62	-0.79	-1.56	-0.03	-1.63	-0.20	-0.37	-0.01	-0.05
Industrial Machinery and Equipment Manufacturing	-4.33	-4.35	-0.75	-13.38	0.40	1.30	0.02	2.44	-0.09	-0.43	-0.24	-2.55
Furniture Manufacturing	-3.03	-13.57	-0.91	-12.69	0.00	0.00	-0.03	-2.53	-0.49	-1.30	0.35	1.48
Other Manufacturing	-4.81	-9.84	-0.90	-5.08	0.00	0.00	0.04	1.42	-2.78	-3.48	-0.08	-0.28

Table X.2.2(c) Outcome for the estimation of equation X.2.2 for United States (continued)

	A6	t stat	Adj R-squared	Durbin-Watson	Sum sq resid	Std err regrn
Meat and Meat Product Manufacturing	0.16	1.13	0.33	2.18	61.66	1.37
Dairy Product Manufacturing	0.00	-0.03	0.52	1.52	2.22	0.26
Fruit and Vegetable Processing	-0.08	-1.51	0.79	1.57	6.83	0.45
Oil and Fat Manufacturing	0.09	1.26	0.16	1.27	13.16	0.63
Flour Mill and Cereal Food Manufacturing and Bakery	0.03	0.30	0.50	1.70	21.01	0.80
Other Food Manufacturing	-0.06	-2.35	0.75	2.03	1.62	0.22
Beverage and Malt Manufacturing	0.08	1.71	0.20	2.02	4.66	0.38
Textile Fibre, Yarn and Woven Fabric Manufacturing	-0.04	-1.98	0.82	1.72	1.62	0.22
Textile Product Manufacturing	0.12	5.38	0.93	1.79	1.77	0.23
Knitting Mills	0.11	1.65	0.62	1.49	16.68	0.71
Clothing and Footwear Manufacturing	0.03	0.64	0.84	0.99	6.07	0.43
Logs and Wood products	-0.07	-1.24	0.93	2.03	3.92	0.34
Paper and Paper Product Manufacturing	0.16	5.76	0.94	1.43	2.76	0.29
Printing and Services to Printing and Publishing	-0.08	-1.83	0.89	1.56	7.57	0.48
Petroleum and Coal including mining	0.06	0.48	0.85	2.82	35.70	1.04
Basic Chemical Manufacturing	-0.01	-0.26	0.85	1.80	1.43	0.21
Other Chemical Product Manufacturing	-0.04	-2.58	0.77	2.01	0.85	0.16
Rubber Product Manufacturing	-0.13	-2.29	0.92	1.43	7.25	0.47
Plastic Product Manufacturing	0.03	1.03	0.74	1.04	2.44	0.27
Glass and Glass Product Manufacturing	-0.15	-1.73	0.45	1.53	16.44	0.71
Ceramic Product Manufacturing	-0.08	-1.31	0.81	2.00	14.75	0.68
Cement, Lime, Plaster and Concrete Product Manufacturing	0.05	1.05	0.89	1.97	9.88	0.55
Non-Metallic Mineral Product Manufacturing n.e.c.	-0.17	-3.14	0.77	1.75	9.47	0.54
Iron and Steel Manufacturing	0.20	3.40	0.36	2.00	9.62	0.54
Basic Non-Ferrous Metal Manufacturing and product	-0.07	-4.60	0.95	1.47	0.69	0.14
Structural and Sheet Metal Product Manufacturing	-0.03	-0.61	0.51	1.47	8.01	0.49
Fabricated Metal Product Manufacturing	-0.06	-1.21	0.96	2.31	8.00	0.49
Motor Vehicle and Part Manufacturing	0.09	2.05	0.91	1.28	8.00	0.49
Other Transport Equipment Manufacturing	-0.08	-1.02	0.90	2.29	23.13	0.85
Photographic and Scientific Equipment Manufacturing	0.02	0.40	0.92	1.04	5.22	0.40
Electronic and Electrical Equipment Manufacturing	0.00	0.03	0.92	1.46	5.55	0.41
Industrial Machinery and Equipment Manufacturing	0.00	-0.18	0.93	2.09	1.89	0.24
Furniture Manufacturing	-0.07	-1.46	0.91	1.26	9.27	0.52
Other Manufacturing	-0.04	-0.41	0.79	0.69	40.68	1.09

Table X.2.3(a) Outcome for the estimation of equation X.2.3 for Singapore

	A0	t stat	A1	t stat	A2	t stat	A3	t stat	A4	t stat	A5	t stat
Meat and Meat Product Manufacturing	-9.21	-1.68	0.86	1.57	-0.85	-7.10	-0.57	-1.11	-0.01	-1.38	-0.02	-0.09
Dairy Product Manufacturing	2.58	1.62	0.07	0.39	-0.41	-2.87	0.06	0.42	0.01	2.32	0.11	1.41
Fruit and Vegetable Processing	-4.05	-1.90	0.36	1.56	-0.99	-6.21	-0.46	-2.81	-0.01	-2.58	-0.16	-1.32
Oil and Fat Manufacturing	11.34	3.55	-0.98	-2.96	-1.21	-8.39	0.25	0.93	0.02	2.68	0.23	1.45
Flour Mill and Cereal Food Manufacturing and Bakery	-13.15	-4.36	1.23	3.87	-0.72	-3.09	-0.52	-2.08	-0.03	-4.83	0.20	1.22
Other Food Manufacturing	-8.66	-2.71	0.57	1.73	-0.90	-11.95	-1.33	-4.89	0.00	0.03	0.56	3.72
Beverage and Malt Manufacturing	-0.75	-0.26	-0.02	-0.06	-0.74	-7.60	-0.44	-2.04	0.03	4.34	0.01	0.11
Textile Fibre, Yarn and Woven Fabric Manufacturing	13.07	1.95	-1.46	-2.01	-1.36	-18.02	-0.58	-1.55	0.04	3.31	-1.58	-5.78
Textile Product Manufacturing	-24.58	-8.35	2.51	7.88	-0.93	-27.20	-0.17	-0.97	-0.04	-6.81	-0.33	-2.79
Knitting Mills	-6.59	-1.64	0.37	0.86	-1.03	-7.62	-0.58	-2.50	0.01	1.95	-0.29	-1.72
Clothing and Footwear Manufacturing	-18.76	-5.11	1.91	4.92	-0.94	-8.54	-0.34	-1.67	-0.02	-2.22	-0.64	-4.53
Logs and Wood products	-19.32	-5.00	1.88	4.47	-0.91	-17.19	-0.35	-1.16	-0.03	-4.94	-0.39	-2.36
Paper and Paper Product Manufacturing	-6.90	-3.49	0.91	4.21	-0.90	-20.77	0.07	0.48	-0.01	-3.33	-0.10	-1.28
Printing and Services to Printing and Publishing	-5.97	-2.75	0.64	2.79	-1.03	-42.58	-0.11	-1.38	0.00	0.60	-0.02	-0.22
Petroleum and Coal including mining	16.48	4.66	-1.09	-3.13	0.66	3.28	0.05	0.23	0.03	4.56	-0.86	-4.89
Basic Chemical Manufacturing	-4.78	-1.91	0.74	3.08	-1.09	-20.95	-0.11	-0.83	-0.02	-4.63	0.10	0.86
Other Chemical Product Manufacturing	-1.21	-0.64	0.33	1.79	-0.96	-11.71	-0.08	-0.87	0.01	2.31	-0.05	-0.51
Rubber Product Manufacturing	-15.69	-3.70	1.70	4.12	-0.72	-7.32	0.26	1.23	-0.02	-2.14	0.09	0.47
Plastic Product Manufacturing	-8.39	-3.85	1.10	5.20	-0.99	-11.23	0.08	0.77	-0.02	-3.75	-0.02	-0.22
Glass and Glass Product Manufacturing	-12.91	-2.91	1.37	3.15	-0.75	-9.40	0.03	0.15	-0.03	-3.35	-0.79	-3.00
Ceramic Product Manufacturing	-22.12	-5.13	2.19	5.17	-0.98	-11.96	-0.17	-0.78	-0.03	-4.02	-1.28	-5.34
Cement, Lime, Plaster and Concrete Product Manufacturing	-31.10	-5.79	3.28	6.26	-1.08	-8.87	0.12	0.46	-0.06	-6.33	-0.23	-0.75
Non-Metallic Mineral Product Manufacturing n.e.c.	-0.40	-0.09	0.92	2.18	-0.77	-8.24	0.51	2.39	-0.02	-2.42	-0.49	-2.09
Iron and Steel Manufacturing	-12.08	-4.42	1.56	5.33	-0.76	-8.23	-0.13	-1.03	-0.04	-8.91	-0.16	-1.13
Basic Non-Ferrous Metal Manufacturing and product	-11.60	-3.58	1.29	3.76	-0.90	-16.05	-0.79	-5.35	-0.04	-6.97	0.01	0.09
Structural and Sheet Metal Product Manufacturing	-19.17	-4.73	2.13	4.99	-0.95	-8.55	0.19	1.02	-0.04	-6.36	0.02	0.12
Fabricated Metal Product Manufacturing	-3.09	-0.84	0.28	0.71	-1.00	-49.16	-0.40	-2.30	-0.01	-2.00	0.11	0.71
Motor Vehicle and Part Manufacturing	-7.79	-1.85	1.02	2.35	-0.87	-16.09	0.28	1.15	-0.01	-1.16	-0.30	-1.87
Other Transport Equipment Manufacturing	3.64	0.53	-0.25	-0.35	-0.86	-24.79	-0.44	-1.85	0.01	1.13	-0.60	-2.41
Photographic and Scientific Equipment Manufacturing	4.14	1.27	-0.24	-0.62	-1.07	-23.53	-0.62	-2.16	0.00	-0.80	-0.40	-3.62
Electronic and Electrical Equipment Manufacturing	-7.02	-2.44	1.15	3.55	-1.01	-22.80	0.30	1.13	-0.01	-2.13	0.12	1.07
Industrial Machinery and Equipment Manufacturing	-9.37	-3.30	1.42	4.49	-0.91	-36.64	0.11	0.40	-0.02	-3.12	-0.21	-1.91
Furniture Manufacturing	-10.06	-3.36	0.97	3.06	-0.94	-25.39	-0.85	-3.37	-0.02	-3.16	-0.22	-1.39
Other Manufacturing	-11.62	-3.77	1.27	3.88	-0.89	-28.12	0.26	1.05	0.01	2.48	-0.69	-4.56

Table X.2.3(a) Outcome for the estimation of equation X.2.3 for Singapore (continued)

	Adj R-squared	Durbin-Watson	Sum sq resid	Std err regrn
Meat and Meat Product Manufacturing	0.72	1.87	16.28	0.50
Dairy Product Manufacturing	0.61	1.89	1.52	0.15
Fruit and Vegetable Processing	0.71	1.67	2.34	0.19
Oil and Fat Manufacturing	0.53	1.47	5.93	0.30
Flour Mill and Cereal Food Manufacturing and Bakery	0.34	1.34	5.20	0.28
Other Food Manufacturing	0.89	1.04	5.60	0.29
Beverage and Malt Manufacturing	0.79	1.22	3.91	0.24
Textile Fibre, Yarn and Woven Fabric Manufacturing	0.90	1.00	22.76	0.59
Textile Product Manufacturing	0.94	1.97	4.75	0.27
Knitting Mills	0.66	1.35	9.06	0.37
Clothing and Footwear Manufacturing	0.75	1.19	6.07	0.30
Logs and Wood products	0.85	1.66	8.71	0.36
Paper and Paper Product Manufacturing	0.87	1.79	2.27	0.19
Printing and Services to Printing and Publishing	0.98	1.64	2.16	0.18
Petroleum and Coal including mining	0.52	1.06	6.72	0.32
Basic Chemical Manufacturing	0.93	1.66	3.32	0.22
Other Chemical Product Manufacturing	0.80	1.43	1.85	0.17
Rubber Product Manufacturing	0.48	1.42	9.10	0.37
Plastic Product Manufacturing	0.80	1.61	2.37	0.19
Glass and Glass Product Manufacturing	0.80	1.35	10.78	0.40
Ceramic Product Manufacturing	0.90	1.20	10.42	0.40
Cement, Lime, Plaster and Concrete Product Manufacturing	0.81	1.05	15.95	0.49
Non-Metallic Mineral Product Manufacturing n.e.c.	0.72	1.26	10.08	0.39
Iron and Steel Manufacturing	0.85	1.19	4.17	0.25
Basic Non-Ferrous Metal Manufacturing and product	0.89	1.33	5.69	0.29
Structural and Sheet Metal Product Manufacturing	0.69	1.08	8.34	0.36
Fabricated Metal Product Manufacturing	0.99	1.48	7.40	0.33
Motor Vehicle and Part Manufacturing	0.80	1.20	9.40	0.38
Other Transport Equipment Manufacturing	0.92	1.78	22.83	0.59
Photographic and Scientific Equipment Manufacturing	0.94	0.91	3.97	0.25
Electronic and Electrical Equipment Manufacturing	0.89	0.68	4.30	0.26
Industrial Machinery and Equipment Manufacturing	0.96	1.61	4.10	0.25
Furniture Manufacturing	0.92	1.58	4.58	0.26
Other Manufacturing	0.94	1.91	4.39	0.26

Table X.2.3(b) Outcome for the estimation of equation X.2.3 for Thailand

	A0	t stat	A1	t stat	A2	t stat	A3	t stat	A4	t stat	Adj R-squared	Durbin-Watson	Sum sq resid	Std err regrn
Meat and Meat Product Manufacturing	-0.92	-0.09	-1.41	-4.49	0.95	0.35	-0.05	-1.44	0.52	0.58	0.33	2.09	64.97	1.36
Dairy Product Manufacturing	-0.09	-0.04	-0.94	-2.48	0.25	0.46	-0.02	-3.35	0.25	1.31	0.54	1.63	2.26	0.25
Fruit and Vegetable Processing	-1.70	-0.46	-0.86	-2.89	0.21	0.22	-0.04	-2.86	-0.21	-0.69	0.77	1.45	7.61	0.47
Oil and Fat Manufacturing	-7.18	-1.42	-0.68	-1.63	-0.71	-0.54	0.00	-0.06	-0.51	-1.23	0.17	1.19	13.87	0.63
Flour Mill and Cereal Food Manufacturing and Bakery	2.70	0.44	-0.61	-3.20	1.60	1.01	-0.05	-2.51	-0.66	-1.31	0.53	1.70	21.11	0.78
Other Food Manufacturing	-12.80	-7.00	-1.23	-8.33	-2.14	-4.56	0.01	1.91	-0.14	-0.90	0.73	1.83	1.89	0.23
Beverage and Malt Manufacturing	-3.79	-1.26	-0.45	-3.43	0.08	0.10	0.01	1.36	-0.13	-0.50	0.18	1.86	5.09	0.38
Textile Fibre, Yarn and Woven Fabric Manufacturing	-1.47	-2.57	-2.17	-11.41	0.25	1.45	-0.01	-1.68	-0.27	-1.99	0.80	1.55	1.86	0.23
Textile Product Manufacturing	-5.01	-6.27	-1.04	-10.94	-0.14	-0.63	0.00	0.23	0.37	2.00	0.87	0.96	3.32	0.31
Knitting Mills	-12.15	-6.23	-1.70	-4.85	-1.51	-2.48	0.03	1.64	0.22	0.48	0.57	1.55	19.86	0.75
Clothing and Footwear Manufacturing	-4.75	-4.71	-0.71	-8.26	-0.55	-1.86	-0.01	-0.49	-0.42	-1.47	0.84	0.97	6.16	0.42
Logs and Wood products	-6.55	-4.83	-1.08	-21.84	-0.16	-0.40	0.04	4.44	0.20	1.02	0.93	2.00	4.12	0.34
Paper and Paper Product Manufacturing	-7.68	-4.45	-1.01	-15.19	-0.69	-1.40	-0.01	-0.52	0.68	2.79	0.87	0.87	6.12	0.42
Printing and Services to Printing and Publishing	-4.65	-6.13	-1.01	-15.58	-0.13	-0.47	0.02	1.45	-0.44	-1.29	0.89	1.40	8.38	0.49
Petroleum and Coal including mining	-11.24	-3.33	-1.95	-9.33	-1.82	-2.09	0.00	-0.08	-2.16	-2.77	0.84	2.71	39.40	1.06
Basic Chemical Manufacturing	-5.18	-7.66	-1.02	-13.97	-0.15	-0.88	0.00	-0.21	-0.46	-3.68	0.85	1.83	1.47	0.20
Other Chemical Product Manufacturing	-4.05	-7.20	-0.74	-9.83	-0.17	-1.23	0.01	0.91	-0.07	-0.63	0.74	1.75	1.03	0.17
Rubber Product Manufacturing	-5.92	-3.78	-0.98	-19.13	0.05	0.14	0.00	0.06	0.02	0.05	0.91	1.25	8.41	0.49
Plastic Product Manufacturing	-2.82	-3.19	-1.09	-8.38	0.71	3.19	0.02	1.57	0.42	2.56	0.74	1.10	2.52	0.27
Glass and Glass Product Manufacturing	-7.16	-3.55	-0.63	-4.69	-0.39	-0.96	-0.07	-2.64	1.24	2.56	0.35	1.05	20.47	0.76
Ceramic Product Manufacturing	-6.04	-3.15	-0.99	-10.84	0.05	0.14	0.00	0.00	-0.24	-0.55	0.80	1.68	16.77	0.70
Cement, Lime, Plaster and Concrete Product Manufacturing	-3.08	-2.15	-1.00	-16.35	0.26	0.89	0.00	-0.22	0.34	1.08	0.89	1.87	10.36	0.54
Non-Metallic Mineral Product Manufacturing n.e.c.	-5.38	-3.31	-0.79	-9.77	-0.58	-1.77	-0.03	-1.56	0.43	1.23	0.71	1.42	12.29	0.59
Iron and Steel Manufacturing	-5.81	-3.30	-0.67	-3.02	-0.27	-0.56	0.00	0.03	-0.28	-0.57	0.16	1.60	13.38	0.62
Basic Non-Ferrous Metal Manufacturing and product	-2.29	-4.39	-0.97	-18.96	0.01	0.05	0.02	4.32	-0.10	-0.67	0.92	0.92	1.16	0.18
Structural and Sheet Metal Product Manufacturing	-2.35	-1.71	-1.00	-6.28	0.53	1.42	-0.02	-2.03	0.32	0.81	0.53	1.52	8.17	0.48
Fabricated Metal Product Manufacturing	-5.80	-4.09	-0.93	-23.27	-0.34	-0.84	0.02	1.15	-0.60	-1.52	0.96	2.21	8.36	0.49
Motor Vehicle and Part Manufacturing	-5.35	-6.41	-1.08	-15.28	-0.79	-1.27	-0.05	-4.22	0.45	1.43	0.91	1.21	9.02	0.51
Other Transport Equipment Manufacturing	-4.42	-3.57	-0.85	-15.20	0.86	2.18	0.05	2.20	-0.32	-0.55	0.88	2.46	28.91	0.92
Photographic and Scientific Equipment Manufacturing	-4.35	-2.75	-0.88	-13.77	0.10	0.21	0.00	-0.15	-1.04	-4.26	0.92	1.02	5.29	0.39
Electronic and Electrical Equipment Manufacturing	-8.79	-5.89	-1.05	-14.53	-0.78	-1.73	-0.03	-2.06	-0.17	-0.64	0.93	1.47	5.56	0.40
Industrial Machinery and Equipment Manufacturing	-5.10	-5.44	-0.85	-19.23	0.15	0.53	0.01	1.71	0.09	0.61	0.92	1.97	2.29	0.26
Furniture Manufacturing	-2.95	-13.38	-0.88	-12.73	0.00	0.00	-0.04	-2.95	-0.62	-2.07	0.91	1.30	10.10	0.53
Other Manufacturing	-4.81	-10.81	-0.94	-6.90	0.00	0.00	0.03	1.42	-2.99	-4.74	0.80	0.70	41.02	1.07

Table X.2.3(c) Outcome for the estimation of equation X.2.3 for United States

	A0	t stat	A1	t stat	A2	t stat	A3	t stat	A4	t stat	Adj R-squared	Durbin-Watson	Sum sq resid	Std err regrn
Meat and Meat Product Manufacturing	-7.82	-4.63	-1.22	-7.65	-0.35	-0.80	0.00	0.85	0.02	0.11	0.55	1.58	4.70	0.32
Dairy Product Manufacturing	-3.52	-1.78	-1.03	-2.35	-0.02	-0.04	0.00	0.06	0.36	1.77	0.07	2.20	6.43	0.37
Fruit and Vegetable Processing	-8.03	-2.80	-1.48	-6.54	-0.60	-0.82	-0.02	-2.18	0.11	0.40	0.48	1.16	13.59	0.54
Oil and Fat Manufacturing	-3.63	-1.14	-0.44	-2.01	0.55	0.69	-0.02	-2.02	0.57	1.91	0.31	1.24	14.87	0.56
Flour Mill and Cereal Food Manufacturing and Bakery	-13.37	-6.77	-0.32	-1.42	-1.78	-3.52	-0.01	-2.35	0.80	4.13	0.28	1.40	6.42	0.37
Other Food Manufacturing	-6.43	-2.51	-1.21	-28.13	-0.33	-0.50	-0.02	-3.39	0.23	0.93	0.95	1.06	10.81	0.48
Beverage and Malt Manufacturing	-6.58	-6.54	-0.89	-6.47	-0.50	-1.92	0.04	14.12	-0.50	-5.10	0.93	1.40	1.67	0.19
Textile Fibre, Yarn and Woven Fabric Manufacturing	-3.61	-6.78	-0.82	-4.37	-0.08	-0.53	-0.06	-16.17	0.42	2.94	0.93	1.41	2.95	0.25
Textile Product Manufacturing	-6.06	-12.78	-1.10	-24.10	-0.15	-1.09	0.00	1.40	-0.21	-1.95	0.93	1.48	2.27	0.22
Knitting Mills	-7.07	-11.69	-0.82	-6.97	-0.14	-0.79	-0.05	-11.13	0.42	3.05	0.79	1.34	3.86	0.29
Clothing and Footwear Manufacturing	-6.63	-12.91	-1.02	-13.24	-0.08	-0.55	-0.02	-5.15	-1.18	-9.24	0.91	1.40	2.66	0.24
Logs and Wood products	-8.01	-7.15	-1.07	-29.07	-0.24	-0.75	0.01	2.04	-0.39	-2.39	0.95	1.05	4.98	0.33
Paper and Paper Product Manufacturing	-2.75	-1.96	-0.98	-21.90	1.65	4.06	0.06	10.40	-0.84	-4.13	0.91	1.23	8.09	0.41
Printing and Services to Printing and Publishing	-5.14	-13.43	-1.01	-23.49	-0.01	-0.12	-0.01	-1.50	-0.30	-2.08	0.92	1.54	2.93	0.25
Petroleum and Coal including mining	-6.01	-2.85	-0.56	-1.01	-0.17	-0.29	-0.01	-0.50	-2.62	-5.57	0.64	1.32	35.79	0.87
Basic Chemical Manufacturing	-6.10	-11.25	-1.14	-17.11	0.09	0.62	0.01	1.52	-0.19	-1.54	0.87	1.23	2.42	0.23
Other Chemical Product Manufacturing	-4.25	-7.98	-0.32	-4.25	-0.02	-0.17	-0.02	-4.48	-0.35	-2.90	0.89	1.81	1.95	0.20
Rubber Product Manufacturing	-3.64	-3.37	-0.54	-3.26	0.81	2.73	0.03	2.41	-0.18	-0.67	0.35	0.75	9.22	0.44
Plastic Product Manufacturing	-7.30	-15.17	-0.75	-9.55	-0.05	-0.34	0.01	2.58	-0.10	-0.84	0.67	1.82	1.90	0.20
Glass and Glass Product Manufacturing	-2.95	-4.43	-0.55	-3.51	0.21	1.73	-0.01	-1.19	-0.04	-0.25	0.86	1.10	3.69	0.28
Ceramic Product Manufacturing	-9.81	-10.39	-1.01	-17.54	-0.50	-2.61	-0.01	-1.29	0.36	1.67	0.89	1.52	9.15	0.44
Cement, Lime, Plaster and Concrete Product Manufacturing	-5.13	-2.89	-1.12	-15.30	0.27	0.75	-0.05	-3.46	1.16	2.86	0.88	0.91	32.36	0.83
Non-Metallic Mineral Product Manufacturing n.e.c.	-7.91	-5.62	-0.89	-4.22	-0.46	-1.67	-0.02	-1.67	-0.12	-0.39	0.24	1.05	18.98	0.64
Iron and Steel Manufacturing	-4.29	-4.75	-2.45	-7.95	0.03	0.13	-0.04	-6.53	0.65	2.59	0.63	1.70	5.66	0.35
Basic Non-Ferrous Metal Manufacturing and product	-5.09	-4.60	-0.80	-7.42	0.06	0.20	0.03	3.62	-0.67	-2.17	0.57	0.91	8.58	0.43
Structural and Sheet Metal Product Manufacturing	-5.77	-8.50	-0.78	-10.24	-0.08	-0.40	-0.02	-4.72	0.10	0.53	0.83	1.53	3.15	0.26
Fabricated Metal Product Manufacturing	-5.04	-4.58	-0.93	-19.87	0.52	1.71	0.05	7.00	0.00	-0.01	0.93	2.07	8.69	0.43
Motor Vehicle and Part Manufacturing	-6.30	-17.93	-0.64	-13.00	-0.43	-1.70	0.01	1.51	-0.75	-4.75	0.82	1.22	4.48	0.31
Other Transport Equipment Manufacturing	-4.51	-11.86	-0.92	-35.71	-0.19	-1.71	-0.01	-1.87	0.04	0.24	0.96	1.61	4.08	0.29
Photographic and Scientific Equipment Manufacturing	-4.45	-9.26	-0.96	-52.81	0.26	1.73	0.02	4.67	0.07	0.84	0.99	1.54	1.09	0.15
Electronic and Electrical Equipment Manufacturing	-5.49	-9.16	-0.93	-25.88	0.35	1.91	0.01	2.77	-0.30	-3.45	0.95	1.87	1.37	0.17
Industrial Machinery and Equipment Manufacturing	-5.48	-13.46	-0.95	-17.25	0.02	0.16	-0.01	-2.34	-0.21	-3.15	0.89	1.35	0.78	0.13
Furniture Manufacturing	-5.12	-5.07	-0.95	-22.96	1.13	2.26	0.00	0.22	-0.15	-0.96	0.92	1.65	4.51	0.31
Other Manufacturing	-8.06	-4.51	-0.70	-7.12	-0.63	-0.70	0.01	1.42	0.09	0.37	0.59	0.85	12.01	0.51

Appendix X.3: Testing for the impact of FTA on import penetration into Australian industry

A two stage process is adopted to test for the extent that import penetration has increased in Australian markets because of the FTAs. The first step in estimating the extent that the FTAs have allowed a country to increase its share of total imports into the Australian market for an industry.

The restricted model is given by:

$$ln(imr_{i,j}) = \propto_{0,i,j} + \propto_{1,i,j} . ln(imd_{i,j} / imd_i) + \propto_{2,i,j} . Time \quad (X.3.1)$$

Where:

$imr_{i,j}$ = Share of imports from FTA country *j* in total imports into Australia for industry *i,* with both the numerator and denominator measured in constant $ millions.

$imd_{i,j}$ = Import price index for imports from FTA country *j* into Australia in US$ for industry *i*, 2006.,1 equals 1.0.

imd_i = Total import price index for imports of industry *i* into Australia in US$, 2006.1 equals 1.0.

The unrestricted model is given by:

$$ln(imr_{i,j}) = \propto_{0,i,j} + \propto_{1,i,j} . ln(imd_{i,j} / imd_i) + \propto_{2,i,j} . Time + \propto_{4,i,j} . d_j + \propto_5 d_j . ln(imd_{i,j} / imd_i) + \propto_6 . Time2 \quad (X.3.2)$$

The constant term model is given by:

$$ln(imr_{i,j}) = \propto_{0,i,j} + \propto_{1,i,j} . ln(imd_{i,j} / imd_j) + \propto_{2,i,j} . Time + \propto 3_{,i,j} d_j \quad (3.3)$$

The estimate coefficients for the three equations by the FTA countries are given in the attached tables.

The petroleum impact from the Singapore FTA is reduced by 75 per cent to discount for the relative large price increases and to make the estimates comparable with the other industry findings in terms of "real" net impact in Australian industry.

Table X.3.1(a) Outcome for the estimation of equation X.2.1 for Singapore

	A0	t stat	A1	t stat	A2	t stat	Adj R-squared	Durbin-Watson	Sum sq resid	Std err regrn
Meat and Meat Product Manufacturing	-4.56	-45.43	-0.10	-0.49	0.00	-2.01	0.03	1.32	5.82	0.29
Dairy Product Manufacturing	-12.51	-18.81	0.47	1.07	0.11	8.93	0.67	1.18	68.65	1.38
Fruit and Vegetable Processing	-4.95	-31.72	-1.40	-5.27	-0.04	-11.67	0.66	0.99	20.63	0.55
Oil and Fat Manufacturing	-2.72	-46.41	-0.91	-25.85	0.00	-3.10	0.91	1.69	3.07	0.21
Flour Mill and Cereal Food Manufacturing and Bakery	-1.97	-11.16	0.44	2.72	-0.01	-3.67	0.15	0.45	9.34	0.37
Other Food Manufacturing	-2.45	-43.58	-0.37	-3.61	-0.01	-9.38	0.76	1.38	2.14	0.18
Beverage and Malt Manufacturing	-5.79	-50.81	-0.68	-6.99	0.00	1.97	0.41	1.06	10.66	0.39
Textile Fibre, Yarn and Woven Fabric Manufacturing	-5.49	-68.49	-0.67	-8.44	0.00	0.60	0.52	1.53	7.39	0.33
Textile Product Manufacturing	-5.72	-26.61	-0.83	-12.45	0.00	-0.62	0.80	1.36	11.70	0.41
Knitting Mills	-6.55	-34.01	-1.02	-5.88	-0.02	-3.66	0.36	0.95	39.27	0.75
Clothing and Footwear Manufacturing	-6.22	-54.23	-1.05	-13.78	-0.01	-3.56	0.79	0.53	14.32	0.46
Logs and Wood products	-5.41	-57.35	-1.05	0.00	0.00	0.00	-0.01	0.22	44.77	0.80
Paper and Paper Product Manufacturing	-4.32	-39.29	-0.35	-2.67	0.01	2.95	0.11	1.38	6.78	0.31
Printing and Services to Printing and Publishing	-2.82	-82.15	-0.95	-23.32	0.00	2.15	0.89	1.16	1.08	0.13
Petroleum and Coal including mining	-2.21	-34.32	-0.95	0.00	0.00	0.00	-0.01	0.28	20.83	0.55
Basic Chemical Manufacturing	-3.90	-48.40	-0.70	-4.73	0.00	1.96	0.23	1.56	5.92	0.29
Other Chemical Product Manufacturing	-4.68	-52.11	-0.92	-6.27	0.01	6.27	0.41	1.19	7.61	0.33
Rubber Product Manufacturing	-4.97	-71.91	-1.15	-13.24	0.00	2.77	0.72	1.00	5.71	0.29
Plastic Product Manufacturing	-3.57	-95.98	-1.10	-23.24	-0.01	-10.66	0.92	0.74	1.49	0.15
Glass and Glass Product Manufacturing	-4.02	-53.61	-1.04	-41.92	-0.03	-18.31	0.96	1.27	6.79	0.31
Ceramic Product Manufacturing	-7.70	-33.14	-1.01	-11.11	0.01	1.25	0.65	1.18	43.97	0.80
Cement, Lime, Plaster and Concrete Product Manufacturing	-5.33	-24.71	-0.96	-14.86	-0.01	-1.72	0.77	1.93	27.36	0.63
Non-Metallic Mineral Product Manufacturing n.e.c.	-6.62	-28.06	-0.87	-7.29	0.07	15.23	0.80	1.14	42.63	0.79
Iron and Steel Manufacturing	-4.84	-61.35	-0.86	-10.05	0.02	9.93	0.76	0.87	6.80	0.31
Basic Non-Ferrous Metal Manufacturing and product	-5.05	-36.11	-1.04	-13.67	0.01	3.57	0.72	0.69	18.87	0.52
Structural and Sheet Metal Product Manufacturing	-3.99	-63.23	-0.99	-16.92	0.00	-2.20	0.81	2.41	2.83	0.20
Fabricated Metal Product Manufacturing	-5.06	-95.12	-0.99	0.00	0.00	0.00	-0.01	1.14	14.27	0.45
Motor Vehicle and Part Manufacturing	-8.23	-81.89	-0.99	0.00	0.01	3.72	0.14	1.45	12.28	0.42
Other Transport Equipment Manufacturing	-5.66	-19.49	-0.99	0.00	0.02	2.48	0.06	1.68	102.46	1.22
Photographic and Scientific Equipment Manufacturing	-4.21	-141.93	-0.93	-53.20	0.01	7.95	0.98	1.07	1.05	0.12
Electronic and Electrical Equipment Manufacturing	-3.23	-37.53	-0.99	-20.70	0.00	1.29	0.92	0.60	2.34	0.18
Industrial Machinery and Equipment Manufacturing	-3.55	-58.45	-0.47	-12.37	0.00	-0.29	0.68	1.17	3.26	0.22
Furniture Manufacturing	-3.26	-30.28	-1.49	-21.44	-0.04	-16.91	0.87	1.17	7.98	0.34
Other Manufacturing	-4.84	-36.19	-0.85	-14.48	-0.01	-4.62	0.82	1.00	14.38	0.46

Table X.3.1(b) Outcome for the estimation of equation X.2.1 for Thailand

	A0	t stat	A1	t stat	A2	t stat	Adj R-squared	Durbin-Watson	Sum sq resid	Std err regrn
Meat and Meat Product Manufacturing	-1.29	-52.57	-0.20	-1.64	0.01	16.24	0.05	1.90	0.57	0.09
Dairy Product Manufacturing	-7.48	-55.07	-0.93	-2.35	0.00	-0.17	0.76	1.09	22.24	0.57
Fruit and Vegetable Processing	-1.96	-44.66	-0.73	-2.98	-0.01	-12.69	0.21	1.15	2.14	0.18
Oil and Fat Manufacturing	-5.08	-25.95	-1.29	-4.37	-0.01	-2.03	0.21	1.14	22.33	0.57
Flour Mill and Cereal Food Manufacturing and Bakery	-2.78	-49.46	0.56	4.53	0.00	-1.54	0.89	1.66	2.70	0.20
Other Food Manufacturing	-2.61	-54.74	-1.00	-12.84	-0.01	-7.91	0.42	1.84	1.33	0.14
Beverage and Malt Manufacturing	-4.72	-22.95	-1.41	-6.53	-0.01	-2.74	0.42	0.68	51.49	0.86
Textile Fibre, Yarn and Woven Fabric Manufacturing	-3.30	-85.97	-0.59	-2.71	-0.01	-6.12	0.32	0.55	1.67	0.16
Textile Product Manufacturing	-4.27	-38.85	-0.72	-5.57	0.02	5.37	0.12	1.71	10.57	0.39
Knitting Mills	-4.41	-53.65	-0.51	-3.25	0.00	-1.47	0.96	1.12	7.68	0.33
Clothing and Footwear Manufacturing	-3.33	-52.71	-0.99	-19.97	-0.02	-14.25	0.48	1.59	1.76	0.16
Logs and Wood products	-4.98	-59.34	-0.50	-6.86	0.01	8.03	0.73	0.72	3.02	0.21
Paper and Paper Product Manufacturing	-6.43	-41.62	-0.93	-7.20	0.05	13.09	0.77	1.53	24.76	0.60
Printing and Services to Printing and Publishing	-7.69	-58.45	-0.92	-9.14	0.04	13.66	0.71	2.26	20.08	0.54
Petroleum and Coal including mining	-6.12	-11.52	-3.64	-11.17	0.02	2.13	0.88	0.95	196.98	1.84
Basic Chemical Manufacturing	-7.43	-72.15	-0.69	-5.30	0.04	18.93	0.95	1.56	10.40	0.39
Other Chemical Product Manufacturing	-5.95	-115.12	-1.03	-35.18	0.00	3.02	0.95	0.97	3.18	0.21
Rubber Product Manufacturing	-3.97	-80.75	-0.89	-19.90	0.02	15.21	0.90	0.52	1.65	0.15
Plastic Product Manufacturing	-4.12	-111.17	-0.92	-17.88	0.01	14.87	0.92	0.56	1.67	0.16
Glass and Glass Product Manufacturing	-3.94	-57.08	-0.95	-20.43	0.01	5.90	0.50	0.91	4.71	0.26
Ceramic Product Manufacturing	-3.01	-83.34	-0.74	-7.62	0.00	-2.37	0.59	0.89	1.55	0.15
Cement, Lime, Plaster and Concrete Product Manufacturing	-5.52	-46.03	-0.74	0.00	0.03	10.25	0.78	0.45	17.50	0.50
Non-Metallic Mineral Product Manufacturing n.e.c.	-4.10	-26.33	-1.05	-10.79	0.02	3.98	0.85	0.58	22.77	0.57
Iron and Steel Manufacturing	-4.85	-68.48	-0.94	-15.69	0.02	13.52	0.81	0.59	6.05	0.30
Basic Non-Ferrous Metal Manufacturing and product	-5.84	-56.62	-1.03	-9.98	0.03	13.84	0.96	1.54	12.96	0.43
Structural and Sheet Metal Product Manufacturing	-5.91	-80.35	-0.98	-35.16	0.03	22.28	0.78	1.32	4.47	0.25
Fabricated Metal Product Manufacturing	-6.19	-57.05	-0.90	-15.02	-0.01	-4.73	0.84	0.14	14.30	0.46
Motor Vehicle and Part Manufacturing	-9.64	-36.62	-0.90	0.00	0.12	19.40	0.26	1.45	84.35	1.11
Other Transport Equipment Manufacturing	-10.75	-26.42	-0.90	0.00	0.05	5.00	0.79	0.78	157.37	1.57
Photographic and Scientific Equipment Manufacturing	-6.16	-82.20	-0.80	-14.63	0.02	11.40	0.96	0.84	5.17	0.27
Electronic and Electrical Equipment Manufacturing	-5.42	-49.72	-0.73	-9.08	0.03	14.31	0.93	1.14	1.95	0.17
Industrial Machinery and Equipment Manufacturing	-6.12	-128.86	-0.42	-9.13	0.04	31.33	0.57	0.27	2.73	0.20
Furniture Manufacturing	-3.85	-44.75	-0.79	-7.60	0.01	3.37	0.97	1.45	8.98	0.36
Other Manufacturing	-3.85	-85.53	-1.03	-48.63	-0.01	-8.91	0.00	0.00	2.37	0.19

Table X.3.1(c) Outcome for the estimation of equation X.2.1 for United States

	A0	t stat	A1	t stat	A2	t stat	Adj R-squared	Durbin-Watson	Sum sq resid	Std err regrn
Meat and Meat Product Manufacturing	-1.97	-21.84	0.06	0.14	-0.01	-4.03	0.18	1.84	7.72	0.33
Dairy Product Manufacturing	-3.38	-22.38	-0.08	-0.18	-0.02	-6.41	0.36	0.79	27.41	0.63
Fruit and Vegetable Processing	-2.52	-27.96	-0.99	-1.99	0.00	0.35	0.03	0.67	9.00	0.36
Oil and Fat Manufacturing	-3.36	-25.28	-1.22	-6.11	0.00	-1.27	0.42	1.25	10.31	0.39
Flour Mill and Cereal Food Manufacturing and Bakery	-1.78	-15.25	0.64	2.48	-0.02	-6.65	0.38	1.04	11.59	0.41
Other Food Manufacturing	-2.12	-27.33	-0.94	-7.44	0.00	0.93	0.51	1.04	3.52	0.23
Beverage and Malt Manufacturing	-1.66	-43.01	-0.81	-19.95	0.00	-3.52	0.86	1.80	1.82	0.16
Textile Fibre, Yarn and Woven Fabric Manufacturing	-2.23	-84.24	-1.09	-7.27	-0.01	-19.83	0.88	0.91	0.80	0.11
Textile Product Manufacturing	-1.66	-33.05	-0.79	-13.19	-0.01	-7.83	0.90	0.33	2.21	0.18
Knitting Mills	-2.99	-34.00	-0.46	-2.72	-0.02	-10.20	0.59	0.96	8.79	0.36
Clothing and Footwear Manufacturing	-3.30	-43.95	-0.95	-16.27	-0.01	-6.99	0.92	1.56	2.48	0.19
Logs and Wood products	-1.40	-14.14	-0.87	-10.09	-0.03	-17.16	0.94	1.44	4.22	0.25
Paper and Paper Product Manufacturing	-1.53	-44.11	-0.94	-32.42	-0.01	-16.32	0.96	0.46	1.25	0.13
Printing and Services to Printing and Publishing	-0.92	-36.23	-1.06	-54.39	0.00	-7.47	0.98	0.67	0.75	0.10
Petroleum and Coal including mining	-2.41	-30.36	-0.95	-21.82	-0.03	-15.58	0.89	1.18	6.65	0.31
Basic Chemical Manufacturing	-1.39	-32.79	-1.03	-19.30	0.00	-1.02	0.85	1.21	1.76	0.16
Other Chemical Product Manufacturing	-1.38	-72.39	-1.01	-93.30	0.00	-8.36	0.85	1.21	0.43	0.08
Rubber Product Manufacturing	-1.93	-78.63	-1.05	-46.52	0.00	-0.47	0.99	1.21	0.41	0.08
Plastic Product Manufacturing	-1.23	-73.57	-1.09	-46.75	-0.01	-24.47	0.98	1.21	0.34	0.07
Glass and Glass Product Manufacturing	-1.62	-56.67	-1.03	-5.16	-0.01	-15.43	0.79	1.03	0.94	0.12
Ceramic Product Manufacturing	-3.03	-48.45	-0.74	-4.39	-0.01	-9.08	0.62	1.26	4.62	0.26
Cement, Lime, Plaster and Concrete Product Manufacturing	-1.49	-32.22	-1.04	-56.85	-0.01	-10.78	0.98	0.51	2.16	0.18
Non-Metallic Mineral Product Manufacturing n.e.c.	-4.01	-16.99	-0.82	-5.54	0.02	2.80	0.51	0.92	52.24	0.87
Iron and Steel Manufacturing	-2.01	-46.18	-1.04	-28.40	-0.01	-10.00	0.93	0.43	2.28	0.18
Basic Non-Ferrous Metal Manufacturing and product	-1.73	-41.79	-1.03	-24.96	-0.02	-15.26	0.92	0.91	2.08	0.17
Structural and Sheet Metal Product Manufacturing	-2.00	-46.98	-1.01	-62.43	-0.01	-8.35	0.98	0.68	1.50	0.15
Fabricated Metal Product Manufacturing	-1.26	-28.03	-1.02	-41.31	0.00	1.40	0.96	1.61	2.43	0.19
Motor Vehicle and Part Manufacturing	-2.32	-39.55	-0.70	-4.08	0.00	2.15	0.33	0.61	2.25	0.18
Other Transport Equipment Manufacturing	-0.57	-10.02	-1.29	-35.78	0.00	-2.83	0.95	1.75	2.62	0.19
Photographic and Scientific Equipment Manufacturing	-0.98	-42.78	-1.00	-60.01	0.00	-3.11	0.95	1.75	0.48	0.08
Electronic and Electrical Equipment Manufacturing	-1.57	-15.32	-0.78	-10.40	-0.01	-5.02	0.69	0.62	1.73	0.16
Industrial Machinery and Equipment Manufacturing	-0.94	-61.07	-0.94	-62.84	-0.01	-26.07	0.69	0.62	0.29	0.06
Furniture Manufacturing	-2.33	-51.61	-1.04	-19.20	-0.01	-9.88	0.84	0.63	2.48	0.19
Other Manufacturing	-1.82	-36.39	-0.99	-41.71	0.00	-3.12	0.96	0.91	2.92	0.21

Table X.3.2(a) Outcome for the estimation of equation X.2.2 for Singapore

	A0	t stat	A1	t stat	A2	t stat	A3	t stat	A4	t stat	A5	t stat	Adj R-squared	Durbin-Watson	Sum sq resid	Std err regrn
Meat and Meat Product Manufacturing	-4.63	-43.63	-0.02	-0.10	0.00	-0.53	0.21	0.95	-0.96	-1.68	-0.02	-1.50	0.05	1.42	5.46	0.29
Dairy Product Manufacturing	-13.40	-14.22	0.84	1.42	0.14	5.75	-0.43	-0.49	-0.25	-0.23	-0.06	-0.93	0.66	1.29	64.82	1.40
Fruit and Vegetable Processing	-4.75	-28.45	-1.40	-4.48	-0.05	-10.02	-0.63	-1.34	-0.71	-1.29	0.08	3.15	0.71	1.24	16.97	0.51
Oil and Fat Manufacturing	-2.75	-44.83	-0.93	-24.19	0.00	-1.17	0.14	0.85	-0.33	-0.86	-0.02	-1.71	0.91	1.72	2.90	0.21
Flour Mill & Cereal Food Manufacturing & Bakery	-2.15	-9.45	-0.08	-0.34	-0.02	-7.35	1.00	5.48	0.82	2.80	0.03	2.11	0.65	1.18	3.66	0.24
Other Food Manufacturing	-2.51	-39.19	-0.43	-4.06	-0.01	-5.35	0.03	0.17	0.13	0.18	-0.01	-1.43	0.77	1.46	2.00	0.17
Beverage and Malt Manufacturing	-5.59	-53.92	-0.75	-8.25	-0.01	-2.34	0.21	1.02	0.03	0.07	0.05	2.16	0.57	1.54	7.31	0.33
Textile Fibre, Yarn & Woven Fabric Manufacturing	-5.51	-61.76	-0.60	-5.79	0.00	0.17	0.38	1.46	-0.46	-2.10	-0.01	-0.83	0.53	1.45	6.88	0.32
Textile Product Manufacturing	-6.03	-25.83	-0.88	-12.62	0.01	1.94	-0.54	-1.51	0.05	0.28	0.00	0.21	0.83	1.56	9.86	0.39
Knitting Mills	-7.00	-31.90	-0.83	-4.55	0.00	0.40	-0.67	-1.70	-0.15	-0.34	-0.04	-1.19	0.44	1.14	32.66	0.70
Clothing and Footwear Manufacturing	-6.03	-49.06	-1.07	-14.23	-0.02	-5.01	0.36	1.49	0.10	0.39	0.02	1.03	0.81	0.68	12.17	0.43
Logs and Wood products	-5.22	-52.04	-1.07	0.00	0.00	0.00	-0.35	-0.93	0.10	0.00	-0.04	-1.25	0.14	0.27	36.39	0.74
Paper and Paper Product Manufacturing	-4.23	-35.69	-0.14	-0.90	0.01	2.28	-0.12	-0.65	-0.88	-2.35	-0.01	-0.33	0.16	1.41	6.15	0.31
Printing and Services to Printing and Publishing	-2.79	-88.16	-0.91	-25.58	0.00	-0.83	0.36	5.70	-0.32	-2.30	-0.01	-2.93	0.92	1.60	0.72	0.10
Petroleum and Coal including mining	-2.47	-61.86	-0.91	0.00	0.00	0.00	0.94	6.30	-0.32	0.00	0.01	0.88	0.71	1.07	5.77	0.29
Basic Chemical Manufacturing	-3.97	-39.53	-0.73	-4.29	0.01	2.02	0.36	2.14	-0.46	-1.23	-0.04	-3.46	0.33	1.87	4.91	0.27
Other Chemical Product Manufacturing	-4.39	-40.84	-0.60	-3.31	0.00	0.65	0.13	0.74	-0.36	-1.31	0.05	3.46	0.55	1.55	5.61	0.29
Rubber Product Manufacturing	-5.06	-66.01	-1.13	-13.12	0.01	3.73	-0.42	-2.18	-0.02	-0.04	0.01	0.81	0.75	1.17	5.03	0.28
Plastic Product Manufacturing	-3.61	-89.10	-1.08	-23.39	-0.01	-5.33	-0.12	-1.50	-0.39	-0.86	0.00	-0.53	0.92	0.81	1.33	0.14
Glass and Glass Product Manufacturing	-4.04	-46.77	-1.02	-29.72	-0.03	-10.10	-0.42	-2.07	-0.08	-1.36	0.03	1.75	0.96	1.30	6.33	0.31
Ceramic Product Manufacturing	-7.93	-35.28	-1.14	-11.37	0.03	3.97	-0.48	-0.85	0.21	1.14	-0.12	-3.57	0.72	1.54	32.67	0.71
Cement, Lime, Plaster & Concrete Product Manuf.	-5.45	-20.91	-1.02	-12.07	-0.01	-1.11	0.22	0.53	0.14	1.00	0.00	0.09	0.77	1.91	26.95	0.64
Non-Metallic Mineral Product Manufacturing n.e.c.	-6.51	-23.59	-0.86	-6.37	0.06	8.99	0.63	0.76	0.11	0.29	-0.02	-0.34	0.79	1.17	41.79	0.80
Iron and Steel Manufacturing	-4.60	-71.66	-0.79	-11.87	0.01	2.91	0.42	3.31	-0.07	-0.36	0.03	3.26	0.88	1.77	3.37	0.23
Basic Non-Ferrous Metal Manufacturing & product	-5.36	-34.94	-1.12	-14.42	0.02	5.22	-0.21	-0.75	0.20	0.88	-0.04	-1.46	0.76	0.88	15.46	0.48
Structural and Sheet Metal Product Manufacturing	-4.00	-48.91	-0.95	-9.81	0.00	-1.77	0.14	1.02	-0.09	-0.69	-0.01	-0.63	0.80	2.37	2.79	0.21
Fabricated Metal Product Manufacturing	-5.04	-82.32	-0.95	0.00	0.00	0.00	-0.42	-1.81	-0.09	0.00	0.04	1.75	-0.80	1.23	13.58	0.45
Motor Vehicle and Part Manufacturing	-8.08	-71.67	-0.95	0.00	0.00	0.53	0.13	0.58	-0.09	0.00	0.03	1.59	0.20	1.63	11.00	0.41
Other Transport Equipment Manufacturing	-5.56	-16.50	-0.95	0.00	0.01	1.27	-0.76	-1.11	-0.09	0.00	0.09	1.67	0.05	1.75	98.33	1.22
Photographic & Scientific Equipment Manufact.	-4.27	-134.26	-0.97	-49.45	0.01	7.89	-0.04	-0.43	0.18	1.83	-0.01	-2.15	0.98	1.34	0.85	0.11
Electronic and Electrical Equipment Manufacturing	-3.25	-33.47	-0.96	-17.50	0.00	2.14	-0.10	-0.74	-0.08	-0.49	-0.01	-0.61	0.93	0.65	2.17	0.18
Industrial Machinery & Equipment Manufacturing	-3.61	-70.80	-0.55	-11.86	0.01	2.82	0.07	0.58	-0.21	-1.19	-0.04	-4.11	0.78	1.47	2.10	0.18
Furniture Manufacturing	-3.22	-29.35	-1.31	-11.26	-0.05	-17.33	0.34	1.37	0.11	0.51	0.04	1.29	0.90	1.29	6.24	0.31
Other Manufacturing	-4.67	-39.18	-0.92	-18.52	-0.02	-7.47	1.01	4.98	0.51	4.06	-0.01	-0.54	0.89	1.22	8.29	0.35

Table X.3.2(b) Outcome for the estimation of equation X.2.2 for Thailand

	A0	t stat	A1	t stat	A2	t stat	A3	t stat	A4	t stat	A5	t stat	Adj R-squared	Durbin-Watson	Sum sq resid	Std err regrn
Meat and Meat Product Manufacturing	-1.34	-56.80	-0.31	-2.90	0.01	17.37	-0.04	-0.61	0.60	0.60	-0.02	-2.33	0.05	1.97	0.40	0.08
Dairy Product Manufacturing	-7.41	-49.40	-0.50	-1.04	0.00	-0.98	0.08	0.21	-2.17	-1.36	0.02	0.36	0.76	1.12	21.27	0.57
Fruit and Vegetable Processing	-2.00	-39.35	-0.93	-3.46	-0.01	-7.65	-0.19	-1.59	0.70	0.61	0.01	0.54	0.49	1.82	2.02	0.17
Oil and Fat Manufacturing	-4.79	-28.23	-1.25	-5.02	-0.02	-5.10	0.27	0.81	-0.69	-0.88	0.11	2.74	0.30	1.16	13.77	0.46
Flour Mill & Cereal Food Manufacturing & Bakery	-2.93	-40.41	0.30	1.94	0.00	1.45	-0.15	-1.05	-0.95	-1.01	-0.04	-1.32	0.89	1.70	2.30	0.19
Other Food Manufacturing	-2.60	-49.48	-0.96	-11.82	-0.01	-6.35	-0.07	-0.61	-0.68	-1.86	0.01	0.65	0.40	1.86	1.25	0.14
Beverage and Malt Manufacturing	-4.64	-19.55	-1.33	-4.51	-0.02	-2.40	0.12	0.20	0.11	0.19	0.03	0.41	0.50	0.96	50.89	0.88
Textile Fibre, Yarn & Woven Fabric Manufacturing	-3.32	-86.21	-0.06	-0.23	-0.01	-5.71	0.28	2.60	-1.06	-1.96	-0.02	-1.41	0.44	0.71	1.36	0.14
Textile Product Manufacturing	-4.38	-37.84	-0.64	-4.33	0.02	5.92	-0.38	-1.13	-0.44	-0.92	0.01	0.08	0.09	1.73	8.46	0.36
Knitting Mills	-4.39	-48.37	-0.52	-3.17	0.00	-1.53	0.06	0.26	0.42	0.51	0.01	0.28	0.97	1.37	7.60	0.34
Clothing and Footwear Manufacturing	-3.31	-54.23	-1.00	-21.83	-0.02	-13.84	-0.15	-1.15	0.19	0.45	0.04	1.83	0.51	1.67	1.41	0.15
Logs and Wood products	-5.09	-54.90	-0.56	-7.48	0.02	7.71	-0.02	-0.12	0.82	1.31	-0.01	-0.64	0.78	0.84	2.74	0.20
Paper and Paper Product Manufacturing	-6.80	-38.97	-1.17	-6.93	0.06	12.91	-0.57	-1.35	0.28	1.08	-0.05	-0.89	0.78	1.68	19.84	0.55
Printing and Services to Printing and Publishing	-7.82	-56.74	-0.85	-7.99	0.05	12.43	-0.45	-1.28	0.16	0.36	-0.03	-0.58	0.72	2.38	18.22	0.53
Petroleum and Coal including mining	-6.46	-11.34	-3.66	-11.28	0.04	2.71	-0.98	-0.77	4.61	0.87	0.00	-0.02	0.90	1.24	184.83	1.83
Basic Chemical Manufacturing	-7.40	-74.15	-0.47	-3.52	0.04	15.34	0.00	-0.01	-1.03	-1.67	0.02	0.35	0.95	1.80	8.52	0.36
Other Chemical Product Manufacturing	-5.89	108.68	-1.02	-36.16	0.00	0.70	-0.11	-0.70	1.11	1.70	0.06	2.45	0.95	0.99	2.71	0.20
Rubber Product Manufacturing	-3.90	-57.71	-0.94	-16.21	0.01	8.13	-0.05	-0.46	-0.10	-0.55	0.03	1.70	0.93	0.91	1.55	0.15
Plastic Product Manufacturing	-4.20	-119.50	-0.83	-17.34	0.02	16.17	-0.27	-2.05	-0.42	-0.38	-0.01	-0.43	0.94	0.86	1.16	0.13
Glass and Glass Product Manufacturing	-3.74	-45.77	-1.08	-19.77	0.00	0.96	-0.14	-0.80	0.20	1.05	0.09	4.44	0.57	1.10	3.30	0.22
Ceramic Product Manufacturing	-2.96	-80.39	-0.74	-8.12	0.00	-4.03	0.01	0.08	-0.22	-0.29	0.03	2.17	0.77	1.61	1.28	0.14
Cement, Lime, Plaster & Concrete Product Manuf.	-5.80	-58.52	-0.74	0.00	0.04	14.66	-0.10	-0.40	-0.22	0.00	-0.14	-4.33	0.80	0.46	9.48	0.38
Non-Metallic Mineral Product Manufacturing n.e.c.	-3.95	-25.99	-1.00	-10.27	0.01	1.82	0.63	1.58	0.51	1.40	0.09	1.71	0.88	0.71	18.92	0.54
Iron and Steel Manufacturing	-4.94	-73.15	-0.90	-17.25	0.03	13.87	0.08	0.41	-1.37	-1.60	-0.04	-0.97	0.80	0.60	4.39	0.26
Basic Non-Ferrous Metal Manufacturing & product	-5.89	-51.36	-1.05	-9.94	0.04	11.04	-0.25	-0.50	0.33	0.25	0.02	0.39	0.96	1.50	12.64	0.44
Structural and Sheet Metal Product Manufacturing	-5.94	-67.74	-1.00	-30.64	0.03	16.63	0.06	0.33	0.11	1.09	0.02	0.48	0.78	1.49	4.38	0.26
Fabricated Metal Product Manufacturing	-6.20	-51.47	-0.84	-11.45	-0.01	-3.62	-0.20	-0.61	-0.30	-1.95	0.05	1.16	0.86	0.19	13.50	0.45
Motor Vehicle and Part Manufacturing	-10.03	-36.94	-0.84	0.00	0.14	17.95	-0.89	-1.28	-0.30	0.00	-0.09	-1.02	0.25	1.51	71.20	1.04
Other Transport Equipment Manufacturing	-10.49	-23.11	-0.84	0.00	0.04	2.92	-0.01	-0.01	-0.30	0.00	0.12	0.93	0.81	0.88	152.02	1.58
Photographic & Scientific Equipment Manufact.	-6.28	-79.62	-0.83	-15.67	0.02	11.28	-0.22	-1.19	0.04	0.13	-0.02	-0.88	0.96	0.91	4.41	0.26
Electronic and Electrical Equipment Manufacturing	-5.35	-47.21	-0.80	-9.12	0.03	13.84	-0.01	-0.09	0.45	1.52	-0.01	-0.46	0.93	1.21	1.82	0.17
Industrial Machinery & Equipment Manufacturing	-6.11	-113.55	-0.39	-6.67	0.04	18.65	0.12	0.63	-0.36	-1.03	0.00	0.08	0.58	0.32	2.67	0.20
Furniture Manufacturing	-3.89	-41.54	-0.72	-6.03	0.01	3.75	-0.35	-1.31	-0.53	-1.21	-0.03	-0.43	0.97	1.51	8.29	0.35
Other Manufacturing	-3.83	-76.55	-1.04	-47.47	-0.01	-7.32	0.07	0.56	0.17	0.87	0.01	0.66	0.89	1.68	2.31	0.19

Table X.3.2(c) Outcome for the estimation of equation X.2.2 for United States

	A0	t stat	A1	t stat	A2	t stat	A3	t stat	A4	t stat	A5	t stat	Adj R-squared	Durbin-Watson	Sum sq resid	Std err regrn
Meat and Meat Product Manufacturing	-2.04	-20.38	-0.04	-0.08	-0.01	-1.94	-0.29	-1.11	-4.73	-1.11	-0.02	-0.58	0.19	1.97	7.25	0.33
Dairy Product Manufacturing	-3.10	-20.89	0.99	2.06	-0.04	-8.12	0.53	1.37	-0.34	-0.22	0.10	1.96	0.49	1.03	20.75	0.56
Fruit and Vegetable Processing	-2.61	-24.97	-1.31	-2.37	0.00	1.48	-0.36	-1.47	-1.08	-0.46	0.01	0.33	0.04	0.69	8.50	0.36
Oil and Fat Manufacturing	-3.22	-25.41	-1.21	-6.49	-0.01	-3.31	0.90	3.61	-0.11	-0.19	-0.05	-1.63	0.55	1.77	7.66	0.34
Flour Mill & Cereal Food Manufacturing & Bakery	-2.08	-14.01	0.10	0.33	-0.01	-1.79	-0.76	-2.59	-0.33	-0.17	0.01	0.15	0.46	1.12	9.64	0.38
Other Food Manufacturing	-2.25	-28.41	-1.04	-8.49	0.01	3.24	-0.21	-1.21	0.51	0.93	-0.02	-0.87	0.58	1.26	2.85	0.21
Beverage and Malt Manufacturing	-1.71	-40.56	-0.85	-16.27	0.00	-0.79	-0.04	-0.41	-0.07	-0.71	-0.02	-1.57	0.87	1.88	1.62	0.16
Textile Fibre, Yarn & Woven Fabric Manufacturing	-2.24	-77.46	-1.00	-5.31	-0.01	-14.59	0.10	1.23	0.01	0.02	-0.02	-1.28	0.88	0.97	0.77	0.11
Textile Product Manufacturing	-1.71	-33.12	-0.73	-11.07	-0.01	-5.28	-0.02	-0.15	-0.08	-0.36	-0.03	-0.93	0.92	0.48	1.67	0.16
Knitting Mills	-3.07	-32.89	-0.47	-2.79	-0.02	-6.60	-0.42	-1.78	-0.56	-0.66	0.01	0.28	0.61	1.00	8.06	0.35
Clothing and Footwear Manufacturing	-3.36	-43.85	-0.96	-16.70	-0.01	-4.53	-0.23	-1.40	-0.33	-0.64	0.01	0.24	0.93	1.75	2.22	0.18
Logs and Wood products	-1.28	-11.72	-0.80	-9.06	-0.04	-14.90	-0.02	-0.10	-0.95	-1.30	0.02	0.91	0.94	1.60	3.80	0.24
Paper and Paper Product Manufacturing	-1.59	-40.34	-0.95	-24.88	-0.01	-10.25	-0.08	-0.85	-0.01	-0.24	-0.02	-1.50	0.96	0.57	1.01	0.12
Printing and Services to Printing and Publishing	-0.94	-34.91	-1.04	-50.20	0.00	-4.70	-0.07	-0.98	-0.13	-1.52	0.01	0.53	0.98	0.67	0.69	0.10
Petroleum and Coal including mining	-2.49	-29.98	-0.96	-22.55	-0.02	-10.69	-0.28	-1.33	0.17	0.20	-0.01	-0.31	0.90	1.31	5.97	0.30
Basic Chemical Manufacturing	-1.39	-31.93	-1.08	-18.55	0.00	-0.56	0.16	1.27	0.04	0.16	-0.03	-1.25	0.86	1.36	1.62	0.16
Other Chemical Product Manufacturing	-1.40	-71.24	-1.01	-98.65	0.00	-4.43	-0.13	-2.26	-0.07	-0.29	0.00	0.20	0.86	1.36	0.36	0.07
Rubber Product Manufacturing	-1.96	-58.40	-1.02	-35.41	0.00	0.90	-0.02	-0.43	0.11	1.17	-0.01	-1.24	0.99	1.36	0.38	0.08
Plastic Product Manufacturing	-1.27	-84.66	-1.04	-51.37	-0.01	-17.58	-0.03	-0.53	0.02	0.04	-0.02	-2.33	0.98	1.36	0.21	0.06
Glass and Glass Product Manufacturing	-1.61	-51.33	-1.01	-4.95	-0.01	-11.78	0.10	0.89	-1.82	-0.61	-0.01	-0.69	0.78	1.01	0.93	0.12
Ceramic Product Manufacturing	-3.02	-44.32	-0.74	-4.36	-0.01	-7.16	0.29	1.71	0.64	0.46	-0.04	-1.81	0.63	1.35	4.38	0.26
Cement, Lime, Plaster & Concrete Product Manuf.	-1.53	-30.91	-1.04	-58.14	-0.01	-7.26	-0.28	-2.42	-0.10	-0.38	0.02	1.29	0.98	0.59	1.96	0.17
Non-Metallic Mineral Product Manufacturing n.e.c.	-4.04	-16.18	-0.87	-5.42	0.02	2.61	0.42	0.65	0.26	0.43	-0.06	-0.74	0.50	0.98	51.10	0.88
Iron and Steel Manufacturing	-2.08	-48.41	-1.03	-30.78	-0.01	-5.70	-0.26	-2.01	-0.33	-0.61	0.00	0.04	0.94	0.61	1.78	0.16
Basic Non-Ferrous Metal Manufacturing & product	-1.80	-44.12	-1.05	-27.94	-0.01	-10.10	-0.09	-0.53	0.33	0.72	-0.02	-1.21	0.94	1.14	1.60	0.16
Structural and Sheet Metal Product Manufacturing	-2.10	-46.64	-1.03	-61.84	0.00	-4.23	-0.02	-0.25	0.00	0.00	-0.03	-1.80	0.99	0.98	1.15	0.13
Fabricated Metal Product Manufacturing	-1.33	-28.97	-0.98	-35.09	0.00	3.65	-0.12	-0.94	-0.02	-0.37	-0.02	-1.27	0.97	2.00	1.97	0.17
Motor Vehicle and Part Manufacturing	-2.32	-38.35	-0.68	-3.97	0.00	1.66	0.10	0.59	-4.82	-1.76	0.00	-0.07	0.34	0.59	2.11	0.18
Other Transport Equipment Manufacturing	-0.58	-11.00	-1.25	-37.82	0.00	-1.06	-0.28	-2.40	-0.50	-3.95	0.00	0.23	0.97	1.90	1.94	0.17
Photographic & Scientific Equipment Manufact.	-1.00	-40.41	-1.01	-60.30	0.00	-0.78	-0.10	-1.71	-0.01	-0.09	0.00	0.25	0.97	1.90	0.44	0.08
Electronic and Electrical Equipment Manufacturing	-1.53	-15.26	-0.86	-10.98	-0.01	-4.41	-0.10	-0.98	-0.09	-0.33	-0.02	-1.56	0.73	0.61	1.44	0.15
Industrial Machinery & Equipment Manufacturing	-0.93	-54.60	-0.92	-49.36	-0.01	-17.12	0.01	0.14	-0.11	-0.99	0.01	1.21	0.73	0.61	0.27	0.06
Furniture Manufacturing	-2.42	-55.83	-1.15	-21.01	-0.01	-6.81	0.09	0.70	-0.02	-0.08	-0.06	-2.02	0.88	0.97	1.77	0.16
Other Manufacturing	-1.91	-38.30	-1.00	-45.90	0.00	0.03	-0.13	-1.01	0.11	0.55	-0.02	-0.84	0.97	1.17	2.29	0.19

Table X.3.3(a) Outcome for the estimation of equation X.2.3 for Singapore

	A0	t stat	A1	t stat	A2	t stat	A3	t stat	Adj R-squared	Durbin-Watson	Sum sq resid	Std err regrn
Meat and Meat Product Manufacturing	-4.58	-44.33	-0.14	-0.67	0.00	-0.72	-0.12	-1.01	0.03	1.35	5.74	0.29
Dairy Product Manufacturing	-13.03	-15.57	0.65	1.37	0.13	6.11	-0.76	-1.01	0.67	1.24	66.69	1.38
Fruit and Vegetable Processing	-4.81	-28.68	-1.41	-5.42	-0.04	-9.43	0.43	1.94	0.68	1.05	19.55	0.54
Oil and Fat Manufacturing	-2.73	-44.53	-0.92	-24.18	0.00	-1.50	-0.08	-0.80	0.90	1.68	3.04	0.21
Flour Mill and Cereal Food Manufacturing and Bakery	-1.80	-14.97	0.30	2.71	-0.02	-10.23	0.94	9.18	0.61	1.21	4.17	0.25
Other Food Manufacturing	-2.48	-39.84	-0.38	-3.69	-0.01	-6.08	-0.08	-1.04	0.76	1.36	2.11	0.18
Beverage and Malt Manufacturing	-5.67	-53.42	-0.81	-8.76	-0.01	-1.78	0.65	4.23	0.52	1.34	8.44	0.35
Textile Fibre, Yarn and Woven Fabric Manufacturing	-5.51	-61.47	-0.69	-7.70	0.00	0.71	-0.07	-0.43	0.51	1.51	7.37	0.33
Textile Product Manufacturing	-6.01	-27.86	-0.87	-13.85	0.01	2.00	-0.56	-3.52	0.83	1.56	9.90	0.38
Knitting Mills	-6.92	-32.98	-0.89	-5.43	0.00	0.06	-1.01	-3.41	0.44	1.14	33.54	0.70
Clothing and Footwear Manufacturing	-6.05	-50.05	-1.06	-14.82	-0.02	-4.92	0.56	3.19	0.81	0.67	12.46	0.43
Logs and Wood products	-5.22	-52.20	-1.06	0.00	0.00	0.00	-0.75	-3.73	0.14	0.28	37.24	0.73
Paper and Paper Product Manufacturing	-4.34	-38.85	-0.32	-2.29	0.01	2.64	-0.09	-0.68	0.10	1.39	6.74	0.31
Printing and Services to Printing and Publishing	-2.77	-81.77	-0.93	-24.93	0.00	-1.33	0.19	3.93	0.91	1.46	0.88	0.11
Petroleum and Coal including mining	-2.47	-62.42	-0.93	0.00	0.00	0.00	1.05	13.32	0.71	1.08	5.84	0.29
Basic Chemical Manufacturing	-3.93	-39.24	-0.72	-4.51	0.01	1.55	-0.05	-0.42	0.22	1.54	5.91	0.29
Other Chemical Product Manufacturing	-4.49	-43.75	-0.76	-5.17	0.01	1.79	0.43	3.16	0.48	1.40	6.64	0.31
Rubber Product Manufacturing	-5.07	-67.32	-1.14	-13.81	0.01	4.01	-0.32	-2.79	0.75	1.13	5.12	0.27
Plastic Product Manufacturing	-3.61	-91.08	-1.09	-23.79	-0.01	-5.54	-0.15	-2.64	0.92	0.83	1.35	0.14
Glass and Glass Product Manufacturing	-4.06	-47.28	-1.03	-39.73	-0.03	-10.93	-0.11	-0.81	0.96	1.27	6.72	0.31
Ceramic Product Manufacturing	-7.89	-34.23	-1.09	-12.02	0.02	3.05	-0.95	-2.87	0.68	1.33	39.15	0.76
Cement, Lime, Plaster and Concrete Product Manufacturing	-5.33	-23.47	-0.96	-14.65	-0.01	-1.19	0.01	0.04	0.77	1.93	27.36	0.63
Non-Metallic Mineral Product Manufacturing n.e.c.	-6.49	-24.48	-0.86	-7.11	0.06	9.20	0.36	1.11	0.80	1.16	41.88	0.78
Iron and Steel Manufacturing	-4.63	-69.25	-0.79	-11.87	0.01	3.37	0.71	7.08	0.86	1.60	3.92	0.24
Basic Non-Ferrous Metal Manufacturing and product	-5.25	-34.97	-1.05	-14.50	0.02	4.63	-0.59	-2.85	0.75	0.80	16.85	0.50
Structural and Sheet Metal Product Manufacturing	-3.97	-58.66	-0.99	-16.76	0.00	-2.01	0.06	0.68	0.81	2.40	2.81	0.20
Fabricated Metal Product Manufacturing	-5.04	-81.70	-0.99	0.00	0.00	0.00	-0.08	-0.61	-0.02	1.15	14.20	0.45
Motor Vehicle and Part Manufacturing	-8.11	-72.64	-0.99	0.00	0.00	0.84	0.38	2.25	0.19	1.59	11.42	0.41
Other Transport Equipment Manufacturing	-5.65	-16.91	-0.99	0.00	0.02	1.61	0.01	0.03	0.04	1.68	102.46	1.23
Photographic and Scientific Equipment Manufacturing	-4.26	-132.42	-0.96	-48.87	0.01	7.43	-0.17	-3.05	0.98	1.25	0.92	0.12
Electronic and Electrical Equipment Manufacturing	-3.25	-38.65	-0.96	-20.34	0.00	2.32	-0.17	-2.25	0.93	0.63	2.18	0.18
Industrial Machinery and Equipment Manufacturing	-3.57	-60.24	-0.56	-10.66	0.00	1.91	-0.30	-2.43	0.70	1.12	3.00	0.21
Furniture Manufacturing	-3.20	-32.52	-1.37	-19.67	-0.05	-17.29	0.57	4.05	0.90	1.35	6.43	0.31
Other Manufacturing	-4.56	-36.04	-0.84	-16.71	-0.03	-7.44	0.83	5.13	0.87	1.47	10.36	0.39

Table X.3.3(b) Outcome for the estimation of equation X.2.3 for Thailand

	A0	t stat	A1	t stat	A2	t stat	A3	t stat	Adj R-squared	Durbin-Watson	Sum sq resid	Std err regrn
Meat and Meat Product Manufacturing	-3.10	-44.75	0.75	2.40	0.01	4.36	0.00	-0.01	0.41	1.44	3.62	0.23
Dairy Product Manufacturing	-11.04	-14.26	-1.80	-1.02	0.13	7.68	-0.58	-0.82	0.72	1.20	67.19	1.39
Fruit and Vegetable Processing	-2.64	-15.73	1.37	1.56	-0.03	-6.49	1.10	4.21	0.38	1.35	23.13	0.58
Oil and Fat Manufacturing	-1.13	-4.99	-0.52	-1.60	-0.01	-0.91	0.76	2.93	0.17	1.51	26.91	0.63
Flour Mill and Cereal Food Manufacturing and Bakery	-1.45	-12.74	-0.84	-3.58	0.02	5.63	0.31	2.02	0.65	0.81	6.51	0.31
Other Food Manufacturing	0.51	7.53	0.03	0.32	0.00	1.86	-0.15	-1.92	0.05	1.66	2.21	0.18
Beverage and Malt Manufacturing	-2.48	-16.71	-0.11	-0.73	0.01	2.14	0.22	0.85	0.15	0.98	21.19	0.56
Textile Fibre, Yarn and Woven Fabric Manufacturing	-2.01	-16.93	-0.85	-1.32	-0.01	-2.79	0.22	1.14	0.13	1.89	13.68	0.45
Textile Product Manufacturing	-1.44	-6.69	0.20	0.86	0.00	-0.28	-0.87	-2.98	0.15	1.87	33.02	0.70
Knitting Mills	-4.02	-19.19	-0.85	-2.30	0.02	3.09	-1.33	-4.07	0.21	1.66	42.22	0.79
Clothing and Footwear Manufacturing	-1.65	-4.42	-0.21	-0.74	-0.01	-1.60	0.51	1.38	0.06	1.31	54.67	0.90
Logs and Wood products	-1.13	-4.33	-0.30	-1.44	-0.03	-5.41	0.45	1.81	0.56	0.46	23.03	0.58
Paper and Paper Product Manufacturing	-0.65	-6.40	0.00	0.05	0.02	5.79	-0.07	-0.45	0.44	1.40	8.16	0.35
Printing and Services to Printing and Publishing	0.17	2.69	0.02	0.47	0.00	-0.25	0.22	2.14	0.07	1.32	3.90	0.24
Petroleum and Coal including mining	2.95	29.11	-0.01	-0.16	0.01	5.01	0.84	5.49	0.69	0.82	9.20	0.37
Basic Chemical Manufacturing	0.66	7.84	0.10	0.99	0.01	6.11	-0.37	-2.86	0.33	2.00	6.24	0.30
Other Chemical Product Manufacturing	-0.45	-5.04	0.02	0.45	0.02	8.87	0.66	4.68	0.80	1.88	7.59	0.33
Rubber Product Manufacturing	-1.38	-7.42	0.42	2.72	0.02	4.67	-0.67	-3.04	0.22	1.60	14.01	0.45
Plastic Product Manufacturing	0.62	8.69	-0.21	-2.21	0.00	-1.47	-0.03	-0.28	0.09	0.66	5.01	0.27
Glass and Glass Product Manufacturing	-2.48	-4.89	-0.05	-0.15	0.03	1.90	-3.13	-4.04	0.27	1.39	140.78	1.44
Ceramic Product Manufacturing	-7.15	-20.79	-1.50	-1.77	0.01	1.44	-1.14	-2.06	0.06	1.66	113.79	1.30
Cement, Lime, Plaster and Concrete Product Manufacturing	-2.00	-6.04	-1.50	0.00	0.00	0.45	-0.14	-0.27	-0.04	1.74	110.10	1.27
Non-Metallic Mineral Product Manufacturing n.e.c.	-0.99	-3.71	-0.29	-1.72	0.07	9.07	0.14	0.34	0.73	1.54	60.91	0.95
Iron and Steel Manufacturing	-1.02	-9.08	0.00	-0.02	0.03	8.25	0.64	3.57	0.74	1.06	12.60	0.43
Basic Non-Ferrous Metal Manufacturing and product	-1.31	-5.46	0.15	0.68	0.02	2.47	-0.28	-0.73	0.06	1.19	57.54	0.92
Structural and Sheet Metal Product Manufacturing	-1.94	-15.53	0.02	0.39	0.01	1.92	0.29	1.77	0.19	2.39	10.39	0.39
Fabricated Metal Product Manufacturing	-1.97	-16.18	0.06	1.01	0.01	1.78	-0.07	-0.34	0.03	1.39	14.57	0.46
Motor Vehicle and Part Manufacturing	-2.58	-21.95	0.06	0.00	0.01	3.04	0.60	3.23	0.42	1.61	13.87	0.45
Other Transport Equipment Manufacturing	-0.59	-1.58	0.06	0.00	0.02	1.44	0.69	1.16	0.08	1.71	140.43	1.44
Photographic and Scientific Equipment Manufacturing	0.31	1.34	0.11	0.72	0.01	0.91	0.76	2.36	0.17	0.76	39.85	0.77
Electronic and Electrical Equipment Manufacturing	2.88	8.67	0.54	2.11	0.00	0.04	0.08	0.34	0.14	1.29	17.44	0.51
Industrial Machinery and Equipment Manufacturing	2.04	19.78	0.01	0.11	0.01	1.86	0.05	0.28	0.12	0.88	10.23	0.39
Furniture Manufacturing	-1.55	-7.72	0.12	0.55	-0.01	-1.69	1.94	6.03	0.37	0.54	39.85	0.77
Other Manufacturing	0.84	3.55	-0.05	-0.47	-0.04	-5.92	0.65	1.74	0.36	1.51	54.48	0.90

Table X.3.3(c) Outcome for the estimation of equation X2.3 for United States

	A0	t stat	A1	t stat	A2	t stat	A3	t stat	Adj R-squared	Durbin-Watson	Sum sq resid	Std err regrn
Meat and Meat Product Manufacturing	-2.04	-20.57	-0.08	-0.18	-0.01	-1.97	-0.23	-1.66	0.20	1.92	7.42	0.33
Dairy Product Manufacturing	-3.13	-20.85	0.84	1.83	-0.04	-7.84	1.10	4.04	0.48	0.98	22.11	0.57
Fruit and Vegetable Processing	-2.61	-25.60	-1.38	-2.60	0.00	1.61	-0.30	-1.91	0.06	0.71	8.54	0.35
Oil and Fat Manufacturing	-3.20	-25.88	-1.23	-6.95	-0.01	-3.57	0.63	4.47	0.55	1.67	7.97	0.34
Flour Mill and Cereal Food Manufacturing and Bakery	-2.10	-15.11	0.04	0.15	-0.01	-1.73	-0.69	-3.66	0.47	1.10	9.68	0.38
Other Food Manufacturing	-2.24	-28.90	-1.02	-8.68	0.01	3.17	-0.33	-3.82	0.59	1.29	2.90	0.21
Beverage and Malt Manufacturing	-1.71	-41.03	-0.85	-19.74	0.00	-0.93	-0.17	-2.43	0.87	1.88	1.68	0.16
Textile Fibre, Yarn and Woven Fabric Manufacturing	-2.23	-78.14	-1.10	-7.06	-0.01	-14.64	0.00	-0.08	0.88	0.91	0.80	0.11
Textile Product Manufacturing	-1.74	-34.22	-0.81	-14.72	-0.01	-4.66	-0.25	-3.69	0.92	0.47	1.84	0.16
Knitting Mills	-3.07	-33.37	-0.49	-3.01	-0.02	-6.69	-0.34	-2.35	0.62	1.01	8.13	0.35
Clothing and Footwear Manufacturing	-3.36	-44.54	-0.96	-17.15	-0.01	-4.56	-0.20	-2.71	0.93	1.72	2.24	0.18
Logs and Wood products	-1.32	-12.10	-0.83	-9.43	-0.04	-14.58	0.19	1.83	0.94	1.52	4.02	0.24
Paper and Paper Product Manufacturing	-1.60	-43.45	-0.97	-34.48	-0.01	-10.51	-0.19	-3.55	0.96	0.58	1.06	0.12
Printing and Services to Printing and Publishing	-0.94	-34.91	-1.05	-52.39	0.00	-4.75	-0.08	-1.76	0.98	0.74	0.72	0.10
Petroleum and Coal including mining	-2.49	-30.48	-0.96	-22.89	-0.02	-10.91	-0.34	-2.75	0.90	1.32	5.98	0.30
Basic Chemical Manufacturing	-1.39	-31.27	-1.03	-18.64	0.00	-0.67	-0.02	-0.25	0.85	1.21	1.76	0.16
Other Chemical Product Manufacturing	-1.41	-72.43	-1.01	-100.17	0.00	-4.44	-0.11	-3.60	0.85	1.21	0.36	0.07
Rubber Product Manufacturing	-1.96	-63.18	-1.02	-39.07	0.00	1.05	-0.07	-1.78	0.99	1.21	0.39	0.08
Plastic Product Manufacturing	-1.26	-78.92	-1.05	-48.39	-0.01	-16.87	-0.13	-4.92	0.98	1.21	0.25	0.06
Glass and Glass Product Manufacturing	-1.61	-51.97	-1.02	-5.04	-0.01	-11.99	0.02	0.46	0.78	1.02	0.94	0.12
Ceramic Product Manufacturing	-3.01	-43.87	-0.74	-4.36	-0.01	-7.26	0.06	0.51	0.62	1.27	4.61	0.26
Cement, Lime, Plaster and Concrete Product Manufacturing	-1.53	-31.12	-1.04	-58.29	-0.01	-7.13	-0.15	-2.13	0.98	0.55	2.03	0.17
Non-Metallic Mineral Product Manufacturing n.e.c.	-4.04	-16.38	-0.83	-5.46	0.02	2.62	-0.17	-0.46	0.51	0.93	52.08	0.88
Iron and Steel Manufacturing	-2.08	-48.84	-1.03	-31.29	-0.01	-5.84	-0.28	-4.20	0.94	0.64	1.81	0.16
Basic Non-Ferrous Metal Manufacturing and product	-1.80	-44.33	-1.05	-28.19	-0.01	-10.27	-0.28	-4.26	0.94	1.17	1.64	0.16
Structural and Sheet Metal Product Manufacturing	-2.07	-47.37	-1.02	-67.00	0.00	-4.52	-0.20	-3.53	0.99	0.90	1.27	0.14
Fabricated Metal Product Manufacturing	-1.32	-28.84	-1.00	-42.80	0.00	3.41	-0.26	-3.47	0.97	1.91	2.07	0.17
Motor Vehicle and Part Manufacturing	-2.31	-37.76	-0.70	-4.03	0.00	1.69	0.00	0.06	0.32	0.61	2.25	0.18
Other Transport Equipment Manufacturing	-0.61	-10.65	-1.28	-36.75	0.00	-0.80	-0.19	-2.48	0.96	1.94	2.40	0.19
Photographic and Scientific Equipment Manufacturing	-1.00	-41.35	-1.01	-62.03	0.00	-0.76	-0.09	-2.58	0.96	1.94	0.44	0.08
Electronic and Electrical Equipment Manufacturing	-1.52	-15.66	-0.87	-11.59	-0.01	-4.71	-0.22	-3.31	0.73	0.64	1.49	0.15
Industrial Machinery and Equipment Manufacturing	-0.94	-54.37	-0.93	-50.33	-0.01	-16.82	0.02	0.62	0.73	0.64	0.29	0.06
Furniture Manufacturing	-2.40	-51.68	-1.07	-20.83	-0.01	-6.39	-0.25	-3.34	0.86	0.88	2.13	0.18
Other Manufacturing	-1.90	-37.92	-0.99	-45.79	0.00	-0.14	-0.30	-3.83	0.97	1.21	2.41	0.19

Appendix X.4: Testing for trade diversion versus production destruction

The extent to which Australia is a net beneficiary of the FTAs will depend on the extent that imports into Australia from the FTA countries are trade diverting. For example, if the imports coming into Australia from the FTA economies were fully trade diverting, then the impact on Australian domestic production would be zero. This is because the additional imports into Australia would be at the expense of imports from third countries.

On the other hand, if trade diversion is zero then all the additional imports into Australia form the FTA economies would be at the expense of domestic production. Therefore, the extent of trade diversion needs to be tested for.

To do this two models for other imports into Australia are estimated for other imports. The two models are:

$$\begin{aligned} ln(imro_i) &= \propto_{1,i} + \propto_{2,i} . ln(imdo_i . usaex . (1 + na_i) / OP_i) \\ &+ \propto_{3,i} . ln(imdo_i / imd_i) + \propto_{4,i} . T \\ &+ \propto_{5,i} . ln(ftaimr_i) \end{aligned} \quad \text{(X.4.1)}$$

Where:

$imro_i$ = Imports into Australia for industry *i* from other countries. That is, excluding Singapore, Thailand and the USA as a share of total supply for industry *i*.

$imdo_i$ = The import price index for imports into Australia in $US from other countries, 2006.1 equals 1.0.

OP_i = Output price index for Australian production of industry *i*.

usaex = Australia-United States exchange rate.

$ftaimr_i$ = $D\ ln(imr_{i,j} + imr_{i,j} + imr_{i,i})$ r1, 2, 3

The unrestricted equation is given by:

$$\begin{aligned} ln(imro_i) &= \propto_{1,i} + \propto_{2,i} ln(imdo_i . usaex_i . (1 + na_i) / OP_i) \\ &+ \propto_{3,i} ln(imdo_i / imd_i) + \propto_{4,i} T + \propto_{5,i} ln(ftaimr_i) \\ &+ \propto_{6,i} D_{2005.1} ln(ftaimr_i) \end{aligned} \quad \text{(X.4.2)}$$

Where:

$D_{2005.1}$ = 1 from 2005.1, zero elsewhere.

If there is a structural break between the two equations and the sign of ∝6,i is significantly negative, it is strong evidence that the FTAs have resulted in at least some trade diversion and domestic industry to some extent has been sheltered from the impact of the FTAs. If, on the other hand, there is no evidence of a structural break between the two equations and the ∝6,i coefficient is not significantly different from zero at the 5 per cent level, then there is little evidence for trade diversion and the domestic industry has accommodated the full effects of any increased import driven by the FTAs by contracting local production.

The results are given in Table X.4.1.

The equation stability test and the (negative) sign of the ∝6,i variable are the test for trade diversion. If the estimated equation from the test then the ∝6,i coefficient is used to measure the extent of trade diversion.

Y The dynamics of manufacturing expansion

The results of the last chapter are of no surprise and in keeping with NIEIR's long held view of the drivers of manufacturing expansion. In its assessment of the USFTA, NIEIR concluded that the net trade benefits could well be small or negative (The State of Australian Manufacturing: 2006, AMWU, July 2006).

However, in its report in 2006 for the AMWU, "*The State of Australian Manufacturing: 2006"*, NIEIR outlined its view of the dynamics of expansion in manufacturing which is uniquely different from the drivers of agricultural and mining expansion. The same mechanism will explain the drivers for most tertiary industries.

Y.1 The state of manufacturing

As NIEIR argued in the 2006 "State of Australian Manufacturing" report, and verified by the analysis of this study, it is clear that the principles that have driven Australian manufacturing development policies over the early 1970s have been wrong. The lower the level of manufacturing industry assistance, the poorer the performance.

Australia's policy approach to the manufacturing sector over the last two to three decades has been biased towards the view that the main reason for Australia's low productivity levels are issues associated with X efficiency productivity drivers. X efficiency productivity drivers cover factors not directly associated with capital, labour or knowledge inputs. Examples are:

- the strength of entrepreneurship;
- the strength of the culture of innovation;
- managerial competency and accountability;
- market structure and conduct; and
- the strength of competitiveness, etc.

The main way to increase X efficiency drivers is to increase the strength of competition by influencing market structure, in general, but in particular by reducing all barriers to competition including industry assistance in whatever form.

The core principle underlying manufacturing industry development policies has been that, in general, industry development policies reduce productivity by reducing the strength of X efficiency drivers of productivity growth.

Hence, the way forward to a productive and growing manufacturing sector is to dismantle industry assistance and let the full force of market forces unleash innovation, cultural change and productivity improvements.

The poor state of the Australian manufacturing sector (Table Y.1), plus the fact that manufacturing industry assistance is at the lowest level since World War I, indicates that the core principle is wrong. This is of no surprise. NIEIR has been arguing that it is wrong for two decades. That is, what NIEIR has been arguing for two decades is that an approach to manufacturing development policies centred on the core principle would simply produce a

declining, low productive manufacturing sector, which would result in substantial macroeconomic cost to the economy.

Table Y.1 Australian manufacturing performance against OECD economies

Note – several economies have been removed from this table. The complete table is contained in the full report.	Comparative labour productivity (value added per employed relative to OECD best practice)		Value added productivity growth rate	Export share in production	Share of manufact-uring in total product	R&D expenditure as a per cent of value added	Invest-ment to value added ratio
	1990	2003	1990-2003	2003	2003	2000 or 2003	2003
Australia	72.1	53.0	2.6	20.1	12.7	3.74	0.12
Austria	72.5	61.0	3.8	66.6	20.7	-	0.17
Belgium	100.0	75.5	2.9	119.7	20.1	6.77	0.15
Canada	90.2	68.4	3.0	38.7	19.0	3.68	0.09
Denmark	60.7	44.7	2.8	68.9	15.7	-	0.20
Finland	72.1	69.8	4.9	48.2	27.4	10.50	0.09
France	84.2	74.4	4.2	37.2	19.1	6.95	0.17
Germany	87.2	48.5	0.5	47.5	21.0	7.61	0.15
Greece	48.8	33.8	2.3	22.4	11.9	-	0.30
Iceland	61.4	47.8	3.2	39.3	14.8	-	0.13
Italy	76.4	46.8	1.3	34.1	20.1	2.41	0.22
Japan	79.7	62.8	3.3	18.5	22.9	9.22	-
Korea	35.5	55.6	8.9	32.4	33.2	7.35	0.24
Luxembourg	84.9	68.8	3.5	-	11.4	-	-
Netherlands	82.6	56.3	2.1	90.4	16.0	5.70	0.14
New Zealand	70.7	50.0	2.4	40.9	16.6	-	0.14
Norway	73.3	43.2	1.0	42.5	10.9	5.78	0.17
Portugal	40.6	28.2	2.3	32.3	19.3	-	0.23
Spain	73.1	47.0	1.7	28.6	18.5	2.11	0.25
Sweden	65.5	76.6	6.5	28.7	27.2	14.37	0.12
United Kingdom	78.5	59.6	3.0	41.4	17.1	6.07	0.13
United States	99.7	100.0	5.2	15.6	17.4	8.40	0.10

Source: NIEIR, "*The State of Manufacturing: 2006*".

The NIEIR view of the manufacturing world is one where:

- the main cause of Australia's low manufacturing productivity is largely structural, that is mainly caused by, low scale and poor export performance;
- the main driver of productivity growth is output growth and, therefore, the main route to accelerating productivity growth is via creating market conditions where the manufacturing industry is willing to expand;
- a true level playing field approach to the economy realises that manufacturing must be singled out for industry development assistance because it is inherently more risky than other industries. Equalising risk between industries is the only appropriate way to generate efficient resource allocation based on level playing field principles;
- manufacturing has high strategic value in its own right, which requires that manufacturing plays its part as a growth driver; and
- industry development policies for manufacturing are particularly effective, not only because it can be efficiently designed to unlock productivity growth, but also because of the dynamics of cumulative causation, which means that initial advances in productivity (driven by industry development policies) create the predictions for flow-

on endogenous productivity growth. That is, there is a strong productivity multiplier effect.

In the 2006 report NIEIR argued that given its small scale and poor productivity performance, Australia's manufacturing productivity levels are about as good as can be expected. NIEIR reached this conclusion by using OECD data to test directly whether Australia's low productivity is due to poor (relative) X efficiency or structural constraints. This was done by estimating a cross-section equation for 2003 across OECD economies for productivity levels where the driver variables are:

- scale of manufacturing output; and
- the share of exports in manufacturing output.

If the residual for Australia from this equation is significantly negative, that is Australia's productivity levels are well below the level that should prevail given OECD structural benchmarks, then it would suggest that X efficiency factors may well be important as a driver of productivity. On the other hand, if the residual is positive, then it would suggest that the Australian productivity level is as good as or better than what would be expected given the manufacturing sector's structural features. The result was that the residual for Australia was positive. That is, the X efficiency drivers of productivity are as strong or better in Australia than the average of other OECD economies.

On the other hand, if Australia had the same structural features as Canada (that is, in terms of manufacturing scale and share of exports in production) then Australia's manufacturing productivity would be some 18 per cent higher.

The solution to increasing the productivity of manufacturing lies in targeting selected manufacturing industries, or more appropriately in the modern globalised economies, clusters of manufacturing activity for demand expansion stimulus via export expansion and, where possible, import replacement.

This of course is at the heart of current manufacturing industry development policies in Western Europe and North America.

Y.2 Australia's approach to the manufacturing industry has been built on an error, namely the fallacy of composition

Past industry policy in Australia is based on the most elementary error in economics: the fallacy of composition.

It is of course understandable that at the individual firm level reductions in output can lead to productivity advances via rationalisation. That is, where reductions in output are less than the reductions in faster inputs in general, and labour input in particular. However, industry development policy framework in Australia has committed the most elementary errors in economics, namely the fallacy of composition. This occurs when one attempts to generalise from a relationship that is true for an individual or firm, but is not necessarily true for a group, or in this case an industry.

What the empirical evidence indicates is that the productivity gains from rationalisation by one firm can be neutralised by the spill-over consequences for the industry, the cluster and or the supply chain. The mechanism explaining this is well known. Rationalisation by one firm will lead to a hollowing out of the industry supply chain which:

- leads to increased unit costs of production in supplying industries from the loss of demand;
- reduces the economies of scale and scope in R&D effort;
- reduces the connectiveness of the supply chain with final consumers, which reduces the capacity to innovate;
- reduces the capacity of the supply chain to attract/generate its unique skilled labour requirements; and
- increases the risks and uncertainty of operating in the supply chain.

This mechanism explains the positive relationship between industry assistance and export performance found above.

Y.3. The nature of the drivers of expansion in the mining industry are inherently different from the drivers of expansion in the manufacturing sector. Manufacturing has higher risks.

Perhaps the main reason why Australian policy makers at the highest level have failed in their design of manufacturing policy is that they have failed to understand that the drivers of expansion in mining and agriculture are very different from the drivers of expansion in manufacturing.

Figure Y.1 shows the expansion drivers of agriculture/mining and manufacturing. For agriculture/mining the market driver is expansion of demand. An increase in demand forces up prices which provides the cash flow for expansion. Investment is undertaken and production will expand until the price is driven back to the cost of the next new mine, oil and gas, or wheat field. The key driver is a terms of trade gain.

The same mechanism is true for manufacturing commodity processing industries. However, for general manufacturing the location of market niches for expansion depend on the bootstrap efforts of the individual producers. The key driver here is product differentiation. That is differentiation of the product, in terms of design, functionality, and/or cost, so to gain a competitive edge. The efforts of a firm in terms of adopting best practice production technology, innovation via research and development expenditures and market development expenditures are all part of either achieving competitive edge product differentiation or identifying opportunities for greater exploitation of existing advantages.

For this type of manufacturing, the individual producer creates the market, while for agriculture/mining the producer responds to the market. This is why differentiated product manufacturing are sometimes called hard industries. This is because they embody greater risk than most other industries, which can be seen, as an example, from the fact that differentiated product manufacturing have to create their own finance for expansion, whereas for agriculture and mining this is delivered by the market.

In the 2006 report NIEIR presented quantitative evidence that the risks for manufacturing were significantly higher than most other industries because the kick-starting of manufacturing expansion at the individual producer level is generally difficult. But once initial success is achieved, a self-sustaining growth dynamic can be initiated. The dynamic is

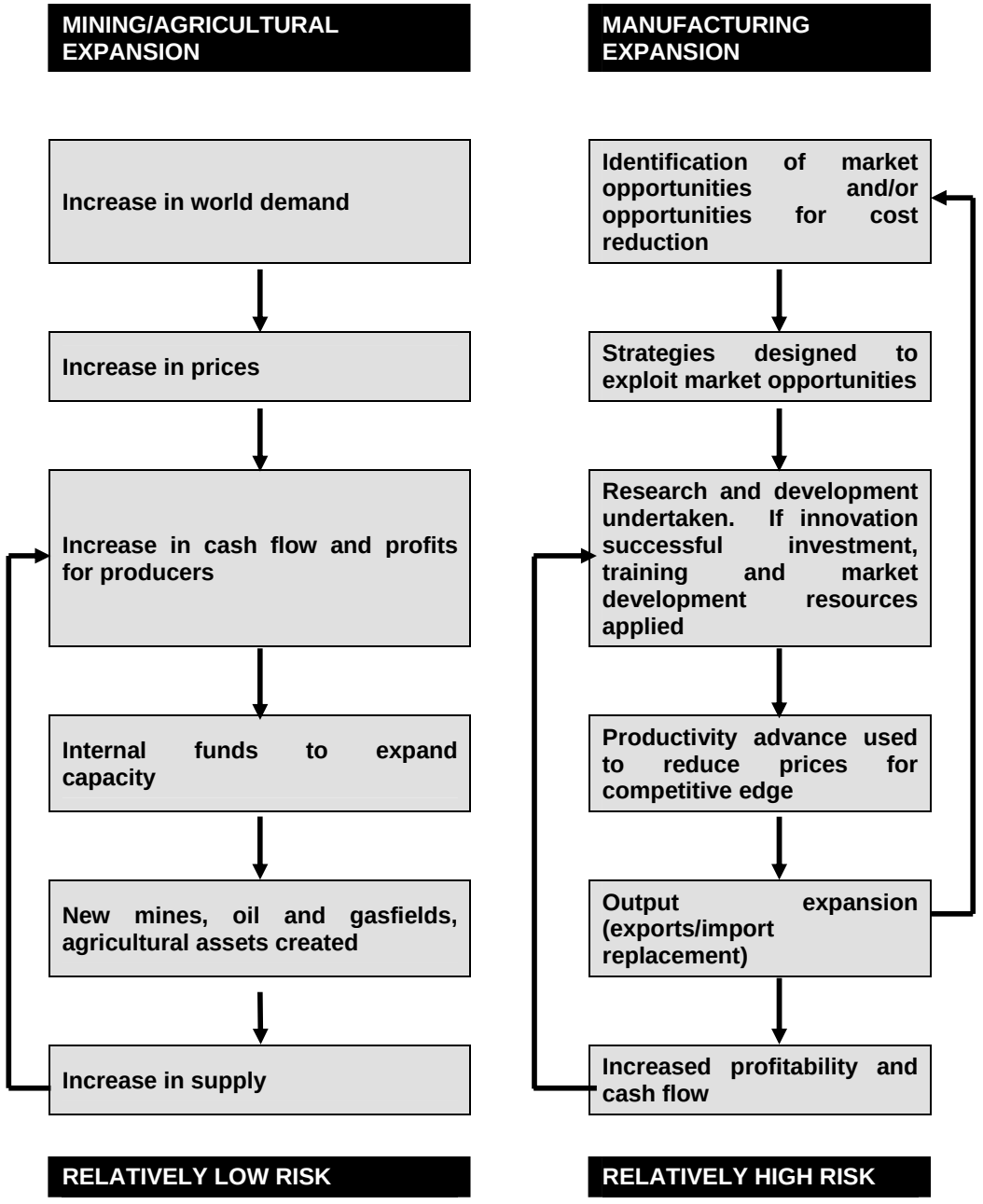
termed cumulative causation. This also explains why industry assistance measures for differentiated product manufacturers can generate large long term benefits.

Figure Y.2 outlines the process of cumulative causation. In the figure the initial demand expansion is triggered by either a producer's own efforts (securing bank finance, new equity finance, merger, etc.) or with industry development policy assistance. Market expansion is initiated and productivity will increase, both directly from the initial actions and, most importantly, from the expansion in market demand. The increase in productivity provides the increase in cash flow to finance additional strategies (price reduction, investment, R&D, market development) to further expand markets. Economies of scale and scope are expanded, both for the producer and the spillover effects to the supply chain the producer operates in. This leads to further expansion in demand, which in turn leads to further productivity growth and so on creating a self-sustaining growth dynamic.

Unlike agriculture and mining, where a supply response will bring an episode of expansion to an end, in manufacturing there is no such constant for an individual producer in an industry in a small country. As long as an individual producer is willing to plough resources generated from previous demand expansion back into driving the next demand expansion, the higher relative growth can be sustained indefinitely.

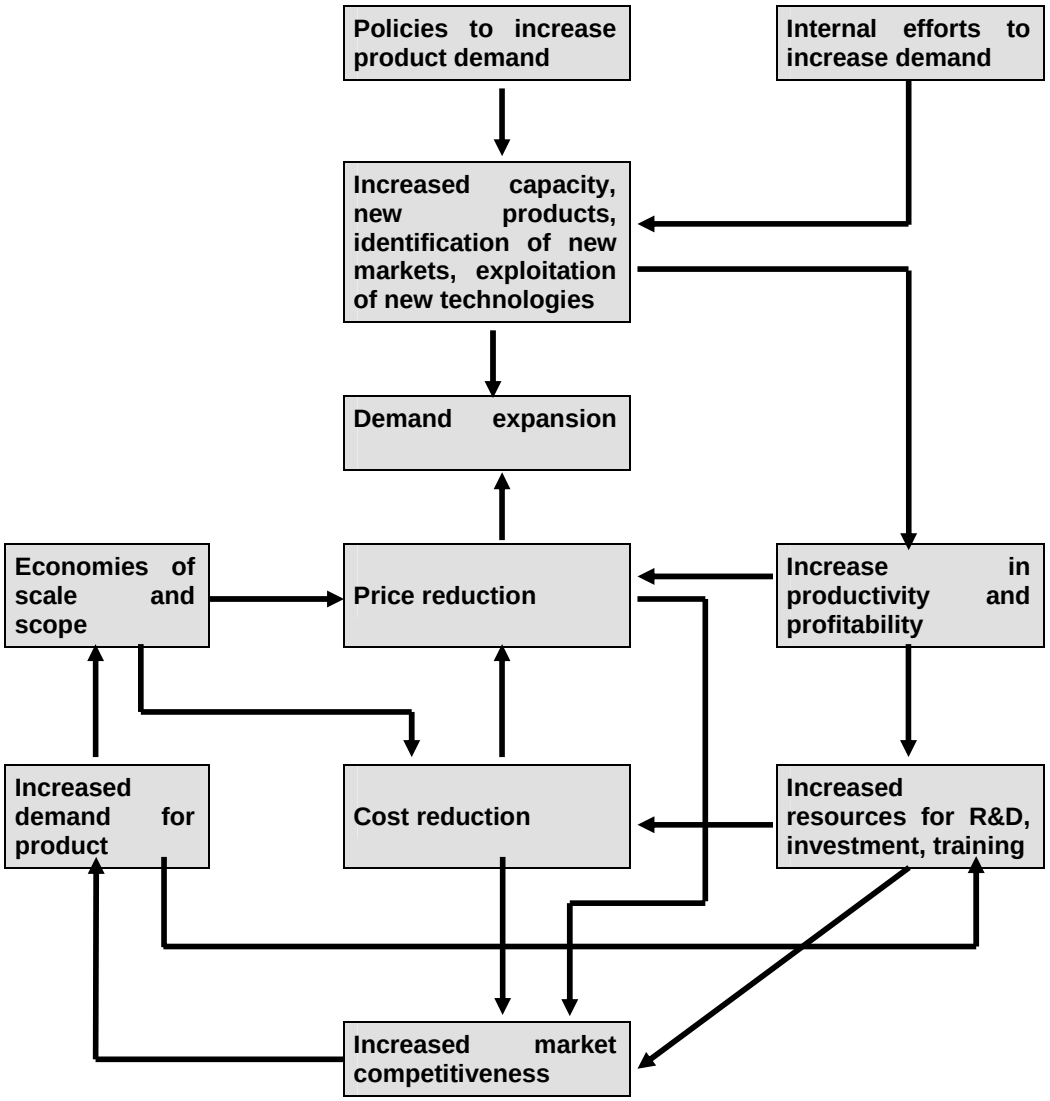
The mechanism (Figure Y.2) explains why policies of export, R&D, investment incentives, etc. can be very powerful over the long term in benefiting the performance of Australian manufacturing and tertiary industries. Far more powerful than any FTA by itself will deliver.

Figure Y.1: Mining/agricultural expansion versus manufacturing expansion



In short policy initiatives are necessary because the manufacturing sector is doing about as well as can be expected, given its risks, current activity levels, and obstacles to growth given its small size, distance from major innovation centres and export capability. If any net benefit is to be achieved from FTAs in the long-run strong complementary industry development policies are a necessary condition.

Figure Y.2: Manufacturing expansion: cumulative causation and sustained expansion



Summary of Recommendations

The following recommendations have been made throughout this submission.

- The review of trade policy must acknowledge and adopt the findings of the NIEIR report as listed on page 6.

- The Prime Minister's public support for industry policy and the principles contained in the ALP 2007 Platform should underpin proposals by the review panel.

- Behind the border trade and economic reform must include environmental, trade, and human rights issues. In the domestic context development and adoption of sophisticated industry development policies must underpin Australia's trade negotiations at the bilateral, regional, and multilateral levels.

- Recognising that Australia is struggling to maintain relevance in key global supply chains and missing out on the massive growth in services trade. The changing nature of international trade and the Bernanke and NIEIR analysis reinforces the need for new thinking on trade and industry policy consistent with the stated objectives of the Prime Minister and ALP policy

- Australia should not enter into further bilateral free-trade agreements until an inquiry is conducted into the failure of econometric modelling used by the previous Howard government to justify Australia's commitment to bilateral agreements. The government should commit to developing a genuinely independent econometric model to assess the economic implications of trade agreements. The Australian government must genuinely commit to a strategy of reforming the WTO and pursue multilateral agreements under a reformed WTO instead of the failed bilateral approach which is widely recognised as impeding multilateralism. A reformed WTO approach must allow for domestic industry policies to promote industry development, capacity in global supply chains, and respect for environmental costs and balanced social and economic development in local communities. It must also allow for enforceable social labour and environmental standards.

- The review should recommend to government that immediate steps are taken to monitor, analyse and publicise the effects of the Thai free-trade agreement on Australian Manufacturing. Consistent with recommendations in relation to industry policy specific support mechanisms should be developed and implemented for manufacturing companies facing unfair competition from Thailand and China.

- Steps should be taken to ensure that DFAT provides independent and fearless advice to government in relation to the success of economic analysis in actually predicting the costs and benefits of trade agreements particularly analysis based on the computer general equilibrium model.

- The key drivers for trade liberalisation and the objectives of Australia's position in trade negotiations must be to widen Australia's economic base by ensuring a strong and internationally competitive manufacturing sector capable of contributing to international competitiveness, job creation and social well being.

- The Department of Foreign Affairs and Trade and the Department of Industry must conduct an inquiry based on the MIT analysis of Global Value chains in order to

develop strategies to ensure Australia's involvement in international production networks and development of Manufacturing clusters and hubs within Australia.

- The government creates an Enterprise Australia (EA) authority with specific responsibility for preparing an audit of Australian competencies; an audit of existing market linkages and; an audit of market opportunities for Australia. That based on this, EA would identify priority competencies that could be marketed on a global basis and a strategic plan to improve the competitiveness of Australia in those areas. Subsequently, EA would be responsible for marketing those core competencies internationally. EA would incorporate most existing of the Commonwealth including Austrade.

- That the government create an Enterprise Australia committee of Cabinet to oversee the coordination of policy initiatives to fulfil the requirements of the EA strategic plan. Elements likely to be included have been listed above and would interface with Treasury, Finance, Trade, Industry Development, Technology and Education as well as others.

- That the government commit $1 billion annually on measures to implement the EA plan and that measures considered include but not be confined to:

    - $300 million investment allowance;

    - $300 million research and development assistance scheme;

    - $225 million increase in the export market development grant scheme;

    - $75 million technology diffusion program;

    - $50 million incentive program to attract foreign equity into small and medium

    - sized manufacturing businesses; and

    - $50 million strategy to attract and train highly skilled labour for the application of advanced manufacturing technologies.

  If this $1 billion program was maintained through to 2020 it would make a significant contribution to expanding the demand for Australian manufactured products, including:

    - Creating at a minimum almost 300,000 direct and indirect jobs.

    - Increasing GDP by at least $54 billion in 2005 prices.

- The recommendations of the National Manufacturing Forum which relate to the globalisation challenge facing Australian manufacturing should, along with the other Manufacturing Forum recommendations on investment; skills etc be adopted by the review panel.

- The principles and the illustrative range of incentive programs outlined by Professor Rodrik should be merged with recommendations of NIEIR, and the National Manufacturing Forum to ensure that Australia's trade policy is based on principles that encourage and support improved productive performance and manufacturing excellence.

- That the government develops a work plan and political strategy to pursue the implementation of ILO conventions and core labour standards in all current and future trade agreements, this must include strong monitoring and enforcement provisions which includes the trade union movement in Australia and partner countries. Further the strategy to be pursued at the WTO, IMF, World Bank and ILO as a priority.

- That steps are taken to improve environmental outcomes in all Australia's existing and future trade agreements. Australian trade negotiators to ensure that specific clauses are included in agreements designed to improve the EPR ranking of the participating countries and compliance with the six core Multilateral Environmental Agreements.