REPORT

Economic benefits of Australia's North Asian FTAs

Prepared for
Department of Foreign Affairs and Trade

12 June 2015

THE CENTRE FOR INTERNATIONAL ECONOMICS
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Executive summary

This report

- This report considers the economic benefits of Australia's free trade agreements (FTAs) with Korea, Japan and China (collectively referred to as North Asia).
- Each of the FTAs include liberalisation of both goods and services trade. The implications of each of these types of liberalisation are modelled separately, as well as in combination.

Good liberalisation

- ***Goods liberalisation*** under the FTAs is expected to lead to:
  - Australia's exports of goods to North Asia being 11.7 per cent (or $16.9 billion) higher in 2035 than they would otherwise have been (in the absence of the FTAs); and
  - Australia's exports of goods to all countries being 1.6 per cent (or $5.4 billion) higher in 2035 than they would have otherwise have been.

Services liberalisation

- ***Services liberalisation*** under the FTAs is expected to lead to:
  - Australia's exports of services to North Asia being 13.9 per cent ($2.2 billion) higher in 2035 than they would otherwise have been; and
  - Australia's exports of services to all countries being 2.1 per cent ($1.8 billion) higher in 2035 than they would otherwise have been.

Combined liberalisation

- ***Combined,*** the goods and services liberalisation under the three FTAs are expected to lead to an increase in:
  - exports to North Asia of up to 11.1 per cent, compared to what would be the case without the FTAs in 2035
  - exports to all destinations of up to 1.5 per cent, compared to what would be the case without the FTAs in 2035
- Together, the combined liberalisation under the FTAs is projected to lead to a net increase in both GDP (a measure of economic output in Australia) and real household consumption (a measure of economic welfare of Australian households).
- Between 2016 and 2035, the cumulative impact of the FTAs (in present value terms) is:

  - an increase in GDP of $24.4 billion (compared with what would otherwise have been the case);
  - an increase in real consumption of $46.3 billion (compared with what would otherwise be the case); and
  - an increase in real consumption per household of $4,348 (compared with what would otherwise have been the case).
- The annual employment increase from the combined liberalisations (compared with what would otherwise have been the case) is expected to:
  - start at 7 900 persons in 2016;
  - peak at 14 600 persons in 2020; and
  - return to 5 400 persons in 2035.
- Along with this employment change, real wages are also expected to increase by up to 0.5 per cent (compared with what would otherwise have been the case).

1 Introduction

The Department of Foreign Affairs and Trade (DFAT) commissioned the CIE to conduct economic modelling of the benefits of Australia's North Asian free trade agreements (FTAs). The North Asian FTAs analysed are the Korea-Australia Free Trade Agreement (KAFTA), the Japan-Australia Economic Partnership Agreement (JAEPA) and the China-Australia Free Trade Agreement (ChAFTA). The aim of the project is to understand the combined implication of these agreements for the Australian economy, with a focus on macroeconomic indicators. The analysis considers the effects of liberalisation of trade in goods, services and foreign investment.

DFAT were also interested in understanding the implications, for Australia, of other trade agreements being implemented in the region under the assumption that Australia had not pursued agreements with Korea, Japan and China. To analyse this, we have modelled a range of recently signed trade agreements between these North Asian countries and other economies. A full list of the agreements modelled in the two scenarios is provided in table 1.1 below. The CIE conducted this analysis using two global computable general equilibrium (CGE) economic models – GTAP and CIE G Cubed.

The next chapter of this report sets out the approach to the modelling exercise undertaken, including describing the scenarios modelled, the models used and the method adopted to reflect the FTA arrangements in the models. The subsequent four sections outline the key results of the modelling simulations for scenario 1, the goods liberalisation effects of scenario 2, services liberalisation effects of scenario 2 and the combined macroeconomic effects of scenario 2.

1.1 Modelled FTAs

Australian-North Asian FTAs (Scenario 2)	Other FTAs (Scenario 1)	
Korea-Australia FTA (KAFTA)	China-Chile FTA	Korea –Chile FTA
Japan-Australia EPA (JAEPA)	China-ASEAN FTA	Korea-ASEAN FTA
China-Australia FTA (ChAFTA)	China-Korea FTA	Korea-India FTA
	China-New Zealand FTA	Korea-New Zealand FTA
	Japan-ASEAN EPA	Korea-Canada FTA
	Japan-India EPA	Korea-US FTA
	Japan-Chile EPA	Korea-EU FTA

Note: Australia-NZ CERTA, Australia-US FTA, ASEAN-Australia-NZ FTA and Australia-Chile FTA are included in the baseline

Source: The CIE

2 Methodology

Scenarios

Scenario 1 – other North Asian FTAs in place

Two scenarios are developed for this project. The first seeks to represent a situation in which Australia does not implement FTAs with Korea, Japan or China but other countries continue to implement trade agreements with these North Asian trading partners. The FTAs that are modelled for this scenario are listed in table 2.1.[1] The results of this scenario are compared to a baseline (or business as usual) scenario in which none of these FTAs with Korea, Japan or China are assumed to exist.[2] This scenario is designed to provide insights into the implications for Australia of other countries pursuing bilateral trade liberalisation with Australia's North Asian trading partners while Australia does not pursue these trade agreements.

2.1 FTAs modelled in scenario 1

FTAs with China	FTAs with Korea	FTAs with Japan
China-Chile FTA	Korea-Chile FTA	Japan-ASEAN EPA
China-ASEAN FTA	Korea-ASEAN FTA	Japan-India EPA
China-Korea FTA	Korea-India FTA	Japan-Chile EPA
China-New Zealand FTA	Korea-New Zealand FTA	
	Korea-Canada FTA	
	Korea-US FTA	
	Korea-EU FTA	

Source: The CIE

Scenario 2 – Australia's FTAs with North Asia

The second scenario seeks to illustrate the impacts of the free trade agreements Australia has recently completed with Korea (KAFTA), Japan (JAEPA) and China (ChAFTA). These FTAs are modelled in addition to the FTAs modelled in scenario 1. KAFTA and JAEPA are assumed to be implemented from 2015 and ChAFTA implemented from

1 Services and investment liberalisation was not modelled for these FTAs due to the complexity involved and the limited additional insights expected.

2 The baseline assumes that Australia continues to implement free trade agreements with New Zealand, USA, Chile and ASEAN nations.

2016. As the scenario aims to assess the impacts of the three FTAs as implemented, it is compared to scenario 1, which most closely represents the current situation with all FTAs in place. Scenario 2 includes liberalisation of trade in goods and liberalisation of services trade.

Illustration of scenarios and presentation of results

Charts 2.3 illustrates the way results are described in this report for scenarios 1 and 2.

1. The first chart shows the projected levels of an illustrative variable (this may be GDP or total exports for example) under the baseline, scenario 1 and scenario 2. As shown, under the baseline (no FTAs) the variable is expected to increase over the projection period. The projected level of this variable under scenario 1 is lower than the baseline. Despite the negative affect of scenario 1 on this variable, it is still expected to increase over the projection period. This is an important point – **a reported decline, relative to the baseline, does not imply a decline relative to current levels.**

2. Scenario 1 results in the report are described as changes, at 2035, relative to the baseline. Scenario 2 results are described as changes relative to scenario 1 (at 2016 or 2035). The relevant results are illustrated in the first chart as the difference between the levels at the end of the projection period.

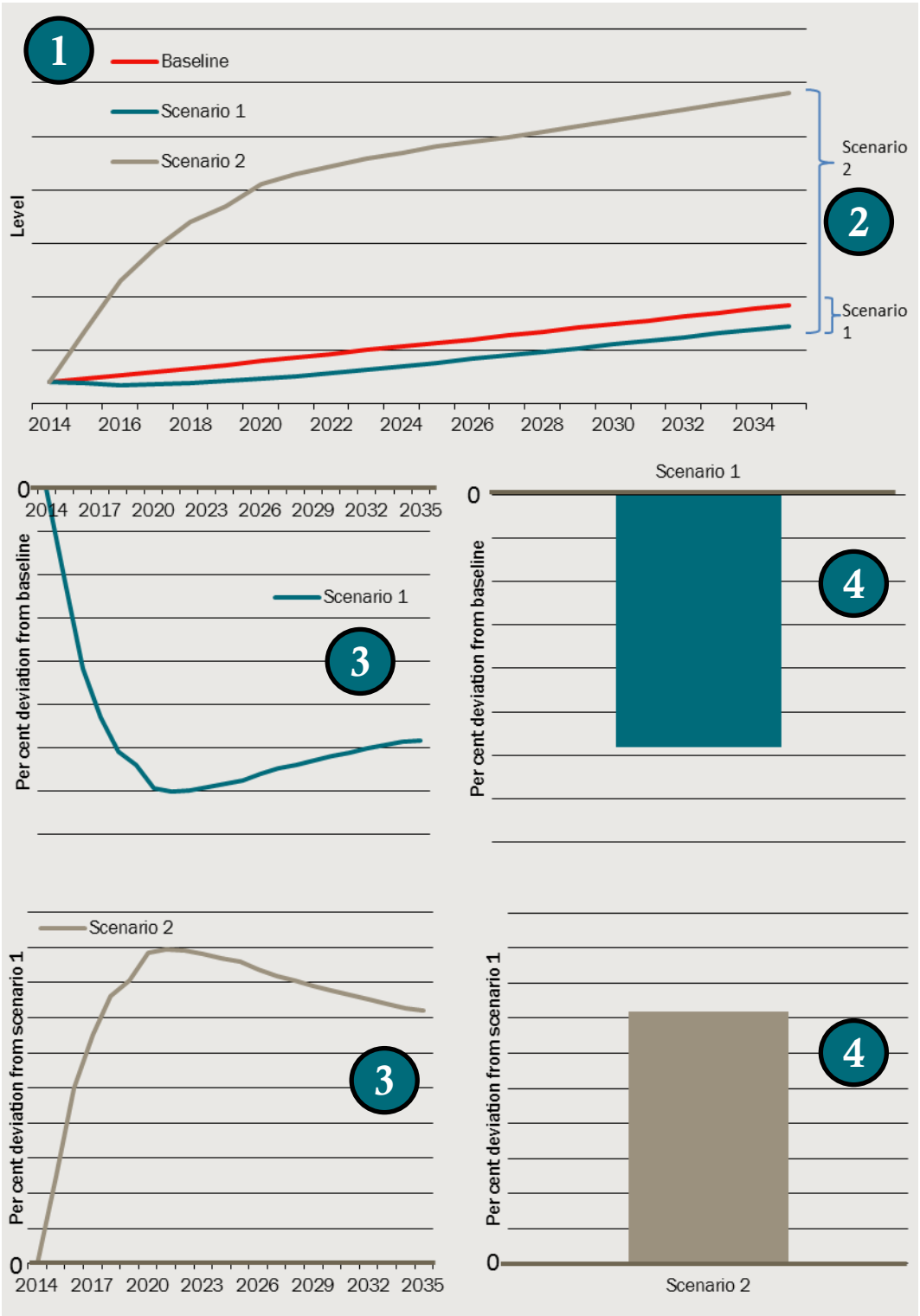
   These results are a snapshot of the situation in a single year, not cumulative over the period. As an illustrative example, GDP in 2035 may be expected to be $1.6 billion in 2035 under the baseline. Under scenario 1, GDP may be projected to be $1.5 billion. This would be reported as a $0.1 billion or 6 per cent decline in GDP relative to the baseline.

   Results are presented graphically in two different ways in the report:

3. - As a per cent deviation from the baseline (or scenario 1 in the case of scenario 2 results) over time.

4. - As a per cent deviation from the baseline (or scenario 1 in the case of scenario 2 results) in a single year (2035 after the FTAs are fully implemented).

2.2 Illustration of approach to reporting results



Data source: The CIE

Modelling goods liberalisation under the FTAs

Goods liberalisation under the FTAs is simulated in the models effectively by altering the bilateral tariff rates for each of the modelled sectors. In the model database used there are 57 economic sectors, 42 of which are goods sectors and 14 services sectors (one sector represents dwellings). Box 2.3 discusses the key factors that determine of the impact of goods liberalisation on exports.

For each of the free trade agreements, the tariff rates (or quotas) that apply under the free trade agreement, and during the implementation period, are set out in tariff elimination schedules. These schedules specify the tariff rates for up to 11,000 different products.[3] Box 2.4 describes the range of different types of goods liberalisation offers that may apply in the FTAs. For each of the tariff elimination schedules for each of the FTAs, the tariff rates under the agreement were aggregated up to the sectors in the model using a simple averaging approach.[4] For those tariff lines that were subject to WTO tariff rate quotas, country specific quotas and agricultural safeguard measures, the quotas were converted to equivalent tariff rates and then averaged. The conversion from quotas and specific duties to ad valorem tariff equivalents was performed using available price information. The availability of price information varied by country and product, and in some cases may be unreliable. On average, however, we believe the estimated change in ad valorem equivalent tariffs reflect the level of liberalisation for each of the sectors modelled.

2.3 What determines the extent of the impact of FTAs on exports?

Five major elements affect the extent of changes in exports that arise from the implementation of goods liberalisation under free trade agreements and are captured in the economic models.

1. Size of the barrier

The size of the trade barrier that is removed by the FTA has a major impact on the extent that changes occur. Removal of a tariff barrier leads to the first round impact of decreasing the price paid by importers and increasing the price received by exporters. This acts to increase demand for these products. So, the removal of tariffs would be expected to increase exports and production of the good. The extent of the increase depends on the magnitude of the tariff reduction. A large reduction in tariffs (resulting for example from the complete removal of a high tariff) would lead to greater changes in exports and production than a smaller reduction in tariffs (from the complete removal of a small tariff or a decrease in the tariff rate). A free trade agreement will not result in this first round effect on products for which there are no tariffs to be

3 The tariff elimination schedules for each of the agreements except for ChAFTA are publicly available. The ChAFTA schedules were provided to the CIE by DFAT on a confidential basis for this project.

4 While no approach to aggregating tariff rates is ideal, experience suggests using a simple average provides a result that sufficiently represents tariff rates and their changes. Trade weighted averages are problematic as the tariffs themselves affect historical trade volumes. Production weighted averages may be relevant but have significant data challenges.

removed, or the product line is excluded from the agreement.

2. Importance in partner's trade flows

The exporting country's initial share of imports to the importing FTA trading partner will affect the degree of change in exports. If the share is small, then the relative impact of the tariff reduction will be large. For a larger share, the tariff reduction will lead to a relatively smaller change in exports.

3. Redistribution of resources

When the demand for export products changes there are flow-on impacts to other sectors of the exporting country's economy. In order to meet an increase in demand for exports of one product, resources in the exporting country are redistributed towards production of that product but away from other products. This will lead to a decrease in production (and potentially exports) of these other products. The extent to which production of other products decreases will depend on their pattern of input use and the elasticity of demand for these products. The opposite will happen if demand for exports of a product fall.

4. Income effects

Trade liberalisation that is trade creating will increase the income (GDP) of both trading partners. Increased income will mean that the countries are able to increase consumption and increase imports from all countries. This impact will be greater for FTAs that lead to greater trade creation and therefore greater increases in GDP. It is possible that countries outside the FTA increase exports of some products due to the increase in imports by the countries within the FTA.

5. Substitution effects

Consumer preferences in the importing country will also determine the extent of changes in trade flows. If there is a greater preference for products from the FTA trading partner compared to other countries and products, the removal of tariffs will have a greater impact on imports from that country. The importers will substitute towards products from the FTA trading partner.

2.4 Types of goods liberalisation offers

Immediate elimination

All tariffs and quotas on the import of these goods are removed immediately from the commencement of the FTA.

Staged elimination

All tariffs on the import of these goods are removed over a number of years (up to 20 years) from the commencement of the FTA. At the end of the implementation period, these goods enter tariff free.

Excluded

These goods are excluded from liberalisation; there is no change in the tariff or quota treatment of these goods under the FTA.

Partial elimination

These goods see a reduction in tariff rates over the implementation period to varying degrees. The tariff rate then remains unchanged.

Seasonal tariffs

These goods have different tariff treatment depending on the months of the year the good is imported.

Country specific quotas

Where a country specific quota is granted, these goods enter duty free (or at a concessional rate) up to the quota level. Beyond this point either the WTO tariff rate quota or standard tariff rate applies. The country specific quotas are either a constant volume or an increasing volume over time. Some goods under a country specific quota are granted duty free access at some point during the implementation period.

Agricultural safeguard measures

Agricultural safeguard measures apply in addition to one of the treatments listed above. The measures are voluntary and may be applied by the importing country. Under the safeguard measures, when imports exceed a trigger level a higher tariff may apply to the imports above the trigger level. Generally, the trigger level increases over time and the tariff rate applied decreases or remains constant.

Modelling services liberalisation

Modelling service liberalisation under the North Asian FTAs is less straight forward than goods liberalisation. Each agreement includes provisions for increased cooperation and recognition, providing service providers of the trading partner with no less favourable

treatment than national or other foreign service providers. However, understanding the implications of these provisions and quantifying them in terms applicable to the modelling framework is challenging.

Services outcomes in the North Asian FTAs

Under each of the North Asian FTAs, Australia agrees to generally provide trading partners' service providers with no less favourable treatment than service providers from Australia or other countries and not to impose limitations on market access. This is with the usual exceptions of listed non-conforming measures.

Beyond these general provisions, Australia agreed to establish a number of working groups or committees to work through any issues that arise and generally encourage enhanced trade in services.

Under KAFTA, Korea has provided Australia with access equivalent to that provided to the US and EU. This includes access to the legal consulting services market, the ability to supply specified financial services without the need for commercial presence, freedom to transfer data in and out of Korea and access to the accountancy consulting services market. They will also enjoy improved access in the telecommunications market, film and television services market. Access will be guaranteed for education services, environmental services, engineering services and other professional services. The countries will also work toward mutual recognition of qualifications.

Under JAEPA, Japan has guaranteed market access in legal services and education services. Australian companies will enjoy greater access in financial services, including trade in wholesale securities transactions, wholesale investment advice and portfolio management services. Telecommunications providers will benefit from greater regulatory certainty and transparency and will have access to telecommunications networks and services. The agreement with Japan also includes a framework to support mutual recognition of qualifications. Any future liberalisation by Japan will be extended to Australia so that Australian companies will maintain the highest level of access to the Japanese markets.

ChAFTA provides Australian service providers with considerably greater access to the Chinese market compared to competitor countries, reducing significant barriers to services trade. Improved access is granted in legal services, telecommunications services, tourism related services, health and aged care services, construction and engineering services, manufacturing services (including services for mineral resources industries), architecture and urban planning, transport and other services.[5]

Historical impacts of FTAs on services trade

As the service liberalisation provided for under these three agreements are similar to that under other agreements, we look to changes in service imports between countries which

5 Further details on the services commitments for all agreements are available from DFAT (www.fta.gov.au).

have been subject to an FTA for some time as an indication of what may happen under the new FTAs.

In particular, we can observe the annual average rate of growth in service trade between existing FTA partners before and after the implementation of the FTAs. For example,

- the annual average rate of growth in Australian exports of services (excluding travel) to the US increased by more than a factor of four with the implementation of the US FTA (from an annual average of 0.69 per cent between 2000 and 2005, to 4.9 per cent from 2005 to 2013).[6]

A further assessment can be made by comparing the growth in services trade between a pair of countries with an FTA, to growth in services trade between countries that do not have an FTA in place over the same period. This comparison (see table 2.5) seeks to remove the effect of variations in economic activity between time periods.

- For example, over the period from 2008 to 2013, Chinese imports of services (excluding travel) from New Zealand increased at an annual average rate of 13.8 per cent. Over the same period, imports from Australia grew at an annual average rate of 11.5 per cent. This difference of 2.3 per cent a year could be attributed to the China-NZ FTA.
- Moreover, in the period since 2012 when the US implemented an FTA with Korea, Korean imports of services (excluding travel) from the US grew at an annual rate of 16.0 per cent. Over the same period, imports from Australia grew at an average annual rate of 3.2 per cent (a difference exceeding a four-fold increase).

Additional examples are presented in table 2.5. Growth in trade is generally higher with an FTA and the rate of growth ranges from being 2.3 percentage points greater to a five-fold increase.

Assumed impacts of services trade liberalisation

The FTA outcomes regarding services trade promote an increase in services trade between Australia and its North Asian trading partners. This improvement is expected to be most significant in the case of China and less so for Korea and Japan.

To represent this increase in the model we have assumed a higher growth rate of Australian imports and exports of services from and to China, Japan and Korea over the period to 2020 after which it is expected that Australia's competitive advantage under ChAFTA would end as China concludes other FTAs. Table 2.6 outlines the assumed increase in the growth rate in the initial period, and the resulting change in services, compared to the baseline, at 2035.

6 Data sourced from OECD.Stat database.

2.5 Observed rate of growth in trade in services (excluding travel) under implemented FTAs compared with trade over the same period with trading partner without FTA (from FTA implementation to 2013)

Importing country	Exporting country	Date of FTA implementation	With FTA growth rate *Observed growth rate in services trade (% p.a.)*	Comparative, without FTA, growth rate *Observed growth rate in imports from Australia (no FTA) over the same time period (% p.a.)*	Difference (percentage points)
Korea	US	2012	16.04	3.21	12.8
	Chile	2008[a]	37.3	10.35	27.0
	EU[b]	2011	11.54	-5.81	17.4
Japan	India	2011	-5.97	-9.98	4.0
China	New Zealand	2008	13.77	11.50	2.3

[a] FTA was implemented in 2004, however, data on services trade is only available from 2008

[b] Growth rates are in total services, as data on services excluding travel not available for the full period

Source: Data sourced from OECD.Stat database, Statistics New Zealand (http://www.stats.govt.nz/browse_for_stats/economic_indicators/balance_of_payments/bop-international-trade-in-services-by-partner-country.aspx), and the US Department of Commerce, Bureau of Economic analysis (http://www.bea.gov/iTable/iTable.cfm?ReqID=62&step=1#reqid=62&step=7&isuri=1&6210=4&6200=172&6211=213).

2.6 Assumptions for modelling services liberalisation

	Increase in growth rate (per year for 5 years)	Increase in services trade, relative to scenario 1, at 2035
	Percentage points	Per cent
Australian exports to		
China	5.0	24.1
Japan	0.5	2.5
Korea	1.0	4.9
Australian imports from		
China	2.0	9.4
Japan	1.0	4.8
Korea	1.5	7.0

Source: The CIE

These assumptions are developed using professional judgement and framed by the following facts.

- The increases are within the bounds of the observed impacts of FTA implementation on services trade outlined in table 2.5 and the discussion above.
- Services trade opportunities to and from China are expected to be greater than Korea and Japan.
- The Chinese market has historically been very restricted. The services access commitments Australia secured into the Chinese market are greater than any other country has been granted.

- The assumed increase in growth rates are proportional to observed historical growth rates in services trade. The assumed increases are between 15 and 25 per cent of the observed historical growth rate (with the exception of Australian services exports to Japan which have a very low growth rate).

Under the assumed temporarily higher growth rate, services exports to China would be 24.1 per cent higher in 2035 than they would otherwise be under the baseline. If the growth rate was assumed to remain at the higher rate over the entire projection period, services exports would 147.3 per cent greater in 2035 than otherwise, and if the growth rate were assumed to double, services would be 1081 per cent greater relative to the baseline.

Australia's imports of services from North Asia are also expected to increase as a result of the FTAs, although not by as much as service exports. This increase in services imports is expected to come through improved recognition of qualifications, and improvements in conditions brought about through working groups. Furthermore, the general increased interactions between the trading partners is expected to lead to an increase in services trade. For example, given the current rate of growth in services imports from China, and an assumed elevated growth rate (by 2 percentage points) for 5 years, Australia's services imports from China in 2035 are assumed to be 9.4 per cent higher than would be the case without ChAFTA (see table 2.6).

Investment liberalisation

The FTAs see some relaxation in Australia's investment conditions for Chinese, Japanese and Korean investors. The three agreements provide broadly the same provisions for each trading partner. The agreements set out general clauses that ensure, among other things, that:

- the treatment of investments and investors from the partner country is no less favourable than the treatment provided to investments and investors from its own country or any other country;
- covered investments from the partner country will be afforded fair and equitable treatment and full protection and security; and
- in the cases of Korea and China, investments and investors will have the right to initiate investor-state dispute settlement proceedings in accordance with international arbitration rules, including those under the International Centre for Settlement of Investment Disputes Convention.

The agreements also specify non-conforming measures. Many of these are unchanged from current arrangements that apply. Others, outlined below, represent liberation of investment restrictions.

- Australia will raise the screening threshold for private investments in non-sensitive sectors from $252 million to $1094 million.
- Australia will raise the screening threshold for investments in developed commercial non-residential real estate from $55 million to $1094 million.

Australia will retain the ability to screen investments in sensitive sectors at lower levels, including media, telecommunications and defence related industries as well as all investment proposals from state-owned enterprises and other foreign government investors. Under the North Asian FTAs, the Australian government reserved the policy space to screen proposals for North Asian investment in agricultural land of over $15 million and agribusiness of over $53 million.

In summary, liberalisation of Australia's inward foreign direct investment arrangements amounts to an increase in the screening thresholds for private investment in most sectors. This makes Australia a more attractive destination of capital from Korea, Japan and China. Despite this improvement in the conditions and reductions in regulatory burden for North Asian investors, we note that:

- screening of investments is not a significant barrier to FDI as very few applications are rejected[7]; and
- the proportion of total FDI affected (that is, from Korea, Japan or China and of the relevant value and in the relevant sectors) is small.

Given the difficulty in using models to capture the long term confidence effects of closer relations associated with the investment changes, we have not imposed any changes in Australian investment conditions within the model simulations.

Similarly, while Korea, Japan and China have not made significant changes to FDI conditions for Australian investors, the difficulty in using models to capture long term confidence effects means that we have not imposed any changes on partner country investment conditions within the model simulations.

The FDI flows between Australia and its North Asian trading partners may, however, change as a result of the trade agreements through indirect means. For example, liberalisation of services trade conditions may lead to increased investment by allowing greater commercial presence. This is captured in the modelling through the services liberalisation assumptions.

Modelling framework

The CIE has undertaken the analysis for the FTAs using the GTAP and CIE G Cubed models. These are both global computable general equilibrium (CGE) models but have different model structures that enable them to provide insights into the impacts of the North Asian FTAs in slightly different ways. The GTAP model is a comparative static model and therefore provides results for a single year, 2035, once the FTAs have been fully implemented. CIE G Cubed is a dynamic model that traces the impacts of the FTAs over the implementation period. Due to its dynamic representation of the economy, the

7 In 2012-13, 13,322 applications to the Foreign Investment Review Board were considered. Of these, 12,731 were approved, 466 withdrawn and 145 exempt. No applications were rejected in 2012-13. In the preceding 5 years, 76 applications (from a total of 41,357 applications considered) were rejected. The vast majority of applications rejected in the past have been investments in real estate. (Figures from FIRB 2012-13 Annual report, http://www.firb.gov.au/content/Publications/AnnualReports/2012-2013/05_Chapter_2.asp)

CIE G Cubed model also provides indicators of the impact of the scenarios on employment.

Both models, however, estimate changes in relative prices brought about by the FTAs and estimate how these changes affect the level of demand for goods and services, and income received from the production of goods and services. Flow-on impacts to the economy from trade liberalisation may also include changes in resource use, productivity, terms of trade, GDP and capital. The models incorporate all of these effects and interactions between actors in the economy to determine the net effect of the FTAs. Box 2.3 explains the different means by which FTAs impact on trade flows.

The modelling results presented in the report are described as percentage changes relative to a baseline (or business as usual) scenario. That is, they compare the expected level of GDP or exports at a future point in time under the FTA scenario with the expected level at the same point in time had the FTAs not been in place. Therefore, a result that states the FTA leads to a decline in exports of a particular commodity does not mean a decline from the current level of exports. If exports were expected to increase over time without the FTA, they still may increase over time with the FTA but to a lesser extent.[8]

The magnitude of changes (in the year 2035) differ slightly between the two models. Some results reported in this report are from GTAP, others are from CIE G Cubed and so results may not appear completely consistent between some tables and charts (the model used is noted below each table and chart). Despite these differences, the results of the two models are consistent in terms of the direction and order of magnitude of changes.

GTAP

GTAP is a publicly available modelling framework and database managed from the Center for Global Trade Analysis at Purdue University. The latest GTAP database (version 8) forms the data component of both the GTAP model and the CIE G Cubed model used in this report.

The standard GTAP model is a multiregion, multisector, CGE model, with perfect competition and constant returns to scale. Innovative aspects of this model include:

- the treatment of private household preferences using the non-homothetic CDE functional form
- the explicit treatment of international trade and transport margins. Bilateral trade is handled via the Armington assumption
- a global banking sector which intermediates between global savings and consumption.

The GTAP model also gives users a wide range of closure options, including unemployment, tax revenue replacement and fixed trade balance closures, and a selection of partial equilibrium closures (which facilitate comparison of results to studies based on partial equilibrium assumptions). For this project, the GTAP model is used to

8 Further explanation of this point is provided on page 5.

compare the world economy under current tariff rates with the state of the economy under tariff rates after FTAs are fully implemented.

CIE G Cubed

The CIE G Cubed model is a more detailed specification of the G Cubed suite of models developed by Professor Warwick McKibbin and Peter Wilcoxen. G Cubed is a world model with substantial regional disaggregation and sectoral detail. Countries and regions are linked both temporally and intertemporally through trade and financial markets. G Cubed contains a strong foundation for analysis of both short run macroeconomic policy analysis as well as long run growth consideration of alternative macroeconomic policies.

Key features of the CIE G Cubed model are:

- detailed identification of sectors and countries/regions comparable to the GTAP database
- identification of trade flows between countries/regions
- identification of investment flows between countries/regions
- incorporation of an integrated financial sector (comprising money, bonds, interest rates, lending, borrowing, expectations, financial flows, and wealth)
- full dynamics that can capture the time path of adjustment for each of the economies/regions modelled
- consumers and producers are allowed to borrow and lend money over time, with decisions influenced by the return on capital versus other assets
- inclusion of adjustment costs and expectations.

The CIE G Cubed model is used in this project to show the dynamic impacts of the FTAs over the implementation period.

3 *Impact of other FTAs on Australia*

This chapter sets out modelling results to illustrate the opportunity cost of Australia not proceeding with FTAs with our North Asian trading partners. They measure the implications for goods trade of 14 FTAs that China, Korea and Japan already have in place.

China, Korea and Japan have all recently secured free trade agreements with a number of other countries. This chapter seeks to understand the implications of these recent agreements for key Australian macroeconomic indicators if Australia did not have agreements with these North Asian trading partners. Table 3.1 sets out the agreements that this chapter considers, and the years in which each of the agreements were implemented. The results reported in this chapter compare the situation with these recently agreed FTAs (referred to as scenario 1) with the situation where these 14 agreements were not implemented (the baseline). Results reported for 'North Asia' refer to the aggregate result for China, Japan and Korea.

It is important to note that adverse effects on Australia's competitiveness from other FTAs are likely to be greater than estimated here. In the future further FTAs are expected to be concluded with our trading partners which would lead to even greater trade diversion away from Australia. Therefore, the opportunity cost to Australia of not entering the North Asian FTAs is likely to increase.

The services and investment outcomes of these FTAs have not been modelled due to the complexity in developing the required assumptions. Given the relatively small impact that the services and investment liberalisation of the agreements including Australia (scenario 2) is projected to have on Australian macroeconomic indicators, services and investment liberalisation between other countries is not expected to have a significant impact on Australia.

3.1 FTAs modelled in scenario 1

FTAs with China		FTAs with Korea		FTAs with Japan	
China-Chile FTA	2007	Korea-Chile FTA	2004	Japan-Chile EPA	2007
China-ASEAN FTA	2005	Korea-ASEAN FTA	2007	Japan-ASEAN EPA	2008
China-Korea FTA	2016	Korea-India FTA	2007	Japan-India EPA	2011
China-New Zealand FTA	2008	Korea-New Zealand FTA	2016		
		Korea-Canada FTA	2015		
		Korea-US FTA	2012		
		Korea-EU FTA	2011		

Source: The CIE

The principle effect of these FTAs is that our North Asian trading partners will find trading with these other countries relatively more attractive than trading with Australia, compared with what would have been the case without the FTAs.

Overall, Australian GDP is projected to remain almost unchanged under this scenario. The equivalent variation (EV, a welfare measure), however, declines under this scenario. There is trade diversion away from Australia, leading to higher prices for Australia's importers. This has two effects – it reduces the volume of Australia's imports and increases consumption of domestically produced products. The domestic products, however, are more expensive than the previously available cheaper imports, leading to a decline in welfare for Australians.

The volume of total exports (of goods and services) is not greatly affected under this scenario, however, the destination of exports shifts away from North Asia towards other countries. Terms of trade declines as result of these FTAs and in order for Australia to maintain the volume of total exports, the value of exports declines.

3.2 Impact of other FTAs on Australia – key macroeconomic results, in 2035 after full implementation of FTAs, compared to baseline

	Per cent change
	%
Exports of goods and services to all destinations	0.0
Exports of goods and services to North Asia	-0.3
Imports of goods and services from all sources	-0.2
Imports of goods and services from North Asia	-0.8
GDP	0.00
Real wage	-0.04
Terms of trade	-0.11

Source: CIE simulations with the GTAP model

Sectoral detail

Tables 3.3 and 3.4 provide a sectoral breakdown of the estimated impact the regional FTAs (excluding Australia's North Asian FTAs) on Australian output and exports. In total, the volume of Australian exports is unchanged by the other FTAs; however, the sectoral makeup of exports, and the destinations, are affected. Australia's exports to North Asia are projected to decline, particularly for the agricultural sectors.

Australia's exports to Korea decline the most – by 4.0 per cent – while exports to China and Japan increase slightly (by 0.4 and 0.6 per cent respectively). This is due to Korea switching its imports of agricultural products from Australia to the US, Canada, EU and New Zealand. Japan and China do not have the same agreements with all of these major competitors and so their demand declines by less. With lower demand for Australian products, the price of Australian products declines relative to what would be otherwise and are therefore more attractive to Japanese and Chinese importers. Australian exports

to other countries increase as Australian exporters re-direct products to other countries but receive lower prices.

The sector most adversely affected (in terms of declines in output and exports) under this scenario is the meat products sector (beef and sheep meat).

Australian imports decline from each of the North Asian economies (by between 0.3 and 1.6 per cent). These declines are associated with manufactured goods (such as wearing apparel and chemical, rubber and plastic products). The free trade agreements mean that North Asian exporters find more favourable prices with their FTA partners than Australia (compared to where there are no FTAs), reducing their trade with Australia.

3.3 Impact of the other FTAs on Australian exports and output by broad sector group, change relative to the baseline, after full implementation in 2035

	Change in output		Change in exports to North Asian FTA partners		Change in exports to all destinations	
	%	A$m	%	A$m	%	A$m
Agriculture	-0.6	-1 454	-6.5	-1 178	-1.7	-887
Mining	0.1	624	0.4	505	0.2	358
Manufacturing	0.1	616	1.0	109	0.2	151
Total goods	**0.0**	**-214**	**-0.4**	**-565**	**-0.1**	**-378**

Source: CIE simulations using the GTAP model

3.4 Impact of other FTAs on Australian exports and output by sector, change relative to the baseline, after full implementation in 2035

Sector	Change in output	Change in exports to North Asia	Change in exports to all destinations
	%	%	%
Agriculture			
Paddy rice	na	na	na
Wheat	-0.4	-2.8	-0.3
Other cereal grains	-0.1	-0.1	0.0
Vegetables, fruit, nuts	0.0	-2.7	0.1
Oil seeds	0.0	0.4	0.4
Sugar cane, sugar beet	na	na	na
Plant-based fibres	0.3	1.2	0.9
Other crops	-0.4	-4.7	-2.3
Cattle, sheep, goats, horses	-2.2	-0.4	1.3
Other animal products	0.1	0.2	0.2
Raw milk	na	na	na
Wool	0.2	0.9	0.9
Forestry	0.2	1.0	0.8
Fishing	0.0	-0.1	0.0
Bovine meat products	-2.6	-15.8	-5.9

Sector	Change in output	Change in exports to North Asia	Change in exports to all destinations
Other meat products	0.1	-3.8	0.3
Vegetable oils and fats	0.1	-1.2	0.5
Dairy products	-0.2	-8.9	-0.9
Processed rice	0.1	0.7	0.3
Sugar	-1.0	-6.0	-2.1
Other food products	-0.1	-3.2	-0.9
Beverages and tobacco	0.0	-2.6	-0.1
Mining			
Coal	0.2	0.3	0.3
Oil	0.3	0.6	0.5
Gas	0.4	0.6	0.6
Minerals nec	0.2	0.2	0.2
Petroleum	0.0	0.3	0.1
Mineral products nec	0.0	1.0	0.2
Ferrous metals	-0.3	1.2	-2.3
Metals nec	0.2	0.8	0.2
Manufacturing			
Textiles	0.1	1.3	-0.5
Wearing apparel	0.1	0.8	-0.8
Leather products	0.1	-0.7	-0.2
Wood products	0.2	0.8	0.7
Paper products, publishing	0.1	0.7	0.4
Chemical, rubber, plastic products	0.1	0.9	0.2
Metal products	0.0	1.3	-0.7
Motor vehicles and parts	0.1	1.6	0.0
Transport equipment nec	0.2	1.1	0.5
Electronic equipment	0.5	1.2	1.2
Machinery and equipment nec	0.3	1.2	0.4
Manufactures nec	0.1	-1.1	0.2

Note: nec – not elsewhere classified; na – export results for non-traded sectors are not applicable

Source: CIE simulations using the GTAP model

4 *Impact of Australia's North Asian FTAs – goods liberalisation*

This chapter sets out modelling results to illustrate the impact of the goods liberalisation under the three free trade agreements Australia has recently signed or concluded with China, Korea and Japan. This scenario assumes all the other FTAs (included in scenario 1) are also in place. The results are compared to scenario 1 where other countries have pursued FTAs in North Asia but Australia has not.

Macroeconomic results

Goods liberalisation under the three North Asian FTAs is projected to drive a 10.0 per cent increase in total exports to our North Asian FTA partners[9] by 2035. Some trade diversion is expected as exports shift from other markets to the North Asian FTA partners. Overall, however, Australia is projected to increase exports to all destinations over the period by 0.5 per cent.

Australia's imports from all sources are projected to increase by 2.5 per cent as imports of manufactured goods from China, Japan and Korea become relatively cheaper. Australia's terms of trade improve, and real wages are projected to be higher with these FTAs than would otherwise be the case. Australian GDP is projected to increase as a result of the goods liberalisation (by 0.05 per cent).

4.1 Impact of goods liberalisation under North Asian FTAs (KAFTA, JAEPA and ChAFTA) on Australia – key macroeconomic results, in 2035 after full implementation of FTAs, compared to scenario 1

	Per cent change
	%
Exports of goods and services to all destinations	0.5
Exports of goods and services to North Asia	10.0
Imports of goods and services from all sources	2.5
Imports of goods and services from North Asia	8.3
GDP	0.05
Real wage	0.3
Terms of trade	1.2

Source: CIE simulations with the GTAP model

9 Results reported for 'North Asia' refer to the aggregate result for China, Japan and Korea.

Sectoral details

Table 4.2 and 4.3 provide sectoral detail for the goods liberalisation under scenario 2 – Australia's North Asian FTAs. The direction and magnitude of the changes in exports for each sector will be driven by the factors outlined in box 2.3. The following section explores some examples and describes the key factors at work.

Agriculture

Lower tariff barriers and higher country-specific quotas for Australian agricultural products in the North Asian economies are projected to lead to increased exports and production. Agricultural output is projected to be 1.6 per cent higher in 2035 than would be the case if the FTAs were not pursued.

Total agricultural exports to all destinations are projected to increase by 5.3 per cent by 2035. The increase in agricultural exports is driven largely by increased wool, meat and dairy product exports. These sectors are also expected to see associated increases in production (although in percentage terms the output effect will appear smaller). Increases in meat and dairy exports are largely due to significant reductions in trade barriers in these sectors.

Increases in wool and cotton exports are partly driven by Australia's own tariff liberalisation (as well as tariff liberalisation in North Asia). Reductions in Australian tariffs on wearing apparel, for example, increases demand for these products from China and subsequently leads to increased Chinese demand for the raw inputs (wool and cotton) from Australia.

The vegetables, fruit and nuts sector experiences a significant reduction in tariff barriers under the three FTAs. This leads to an increase in exports to North Asia. However, at the same time there are resource reallocation effects within the Australian economy. The sector faces cost pressures as other sectors of the economy also demand greater resources, putting downward pressure on output. As the share of production that is destined for the North Asian markets is relatively small, the effects of resource allocations dominate those of the increased North Asian demand. Overall, the result is lower output (than would be the case without the North Asian FTAs) and lower total exports. The remaining exports are redirected towards the more profitable North Asian markets.

Output from the oilseeds sector is also projected to decline compared to scenario 1. This is also mostly due to reallocation of resources within the Australian economy. A significant share of Australia's oilseed exports are to Japan, but the tariff reductions offered by Japan under JAEPA are limited. Therefore, the tariff liberalisation does not drive a significant increase in export demand for Australian oilseeds. Income effects and expansion of domestic oilseed-consuming sectors lead to a limited increase in domestic demand, however, the major consumers of oilseeds (vegetable oils and fats) similarly does not see an increase in output as a result of the FTAs. Consumption of oilseeds in other sectors (for example the bovine meat products sector) is limited. Overall, therefore, with limited increases in demand for oilseeds, the resource reallocation effects (higher real wages) dominate and output (and exports) of the sector declines by 0.6 per cent (3.4 per cent) compared to without the North Asian FTAs.

Australian imports of agricultural products are also projected to increase, however this is off a small base and is not as significant as the increase in exports. The increases in agricultural imports are mostly in processed food products.

Mining and manufacturing

Manufacturing output is projected to decline as manufactured products from North Asia become cheaper and imports increase. A greater share of Australia's domestic manufactured products is exported as consumption of domestic products is replaced with cheaper imports.

Gaining a clear understanding of the impacts on key manufacturing sectors is complicated slightly by the fact that, for some sectors, key inputs are manufactured products from the same sector. This is the case for the chemicals, rubber and plastic products sector and the motor vehicles and parts sector.

Australia lowered its tariffs on North Asian chemicals, rubber and plastics, leading to cheaper imports for Australian consumers. The firms that benefit most from lower cost inputs are those in the chemical, rubber and plastic sectors (which use chemical, rubber, plastic inputs to produce different chemical, rubber, plastic products). This will have conflicting effects on the sector, cheaper imports lowers demand for some domestic products while the output in other parts of the sector will increase from the access to cheaper inputs. At the same time, a reduction in tariffs in the North Asian countries drives an increase in Australian exports of chemical, rubber and plastic products to these countries, which increases demand for some Australian products but also demand for imported inputs. Overall, the result is an increase in Australian exports of chemical, rubber and plastic products but a decline in output from the sector as a greater proportion of chemicals, rubber and plastic products consumed in Australia are imported. Motor vehicles and parts sectors sees similar impacts.

Output and exports of the coal sector are projected to grow by less under scenario 2 than projected under scenario 1 without the FTAs. This is driven by limited tariff reductions offered by the North Asian partners and the higher real wage (that is, effects of resource reallocations within the Australian economy). The tariff reductions under the three FTAs for the coal sector are small in comparison to other sectors due to low existing tariff levels (between 0.4 and 4 per cent for coal compared to 4 to 17 per cent for bovine meat products and 5 to 20 per cent for dairy products). Resource redistribution to these sectors with greater changes in demand for products will negatively affect the coal sector leading to forecast output and exports being lower than under scenario 1.

4.2 Impact of goods liberalisation under North Asian FTAs on Australian goods exports and output by broad sector group, change relative to scenario 1, after full implementation in 2035

	Change in output		Change in exports to North Asian FTA partners		Change in exports to all destinations	
	%	A$m	%	A$m	%	A$m
Agriculture	1.6	4 038	29.2	4 951	5.3	2 736
Mining	-0.1	-619	6.1	7 174	0.5	1 133
Manufacturing	-1.0	-3 945	42.9	4 821	2.3	1 485
Total goods	**0.0**	**-526**	**11.7**	**16 945**	**1.6**	**5 354**

Source: CIE simulations using the GTAP model

4.3 Impact of goods liberalisation under North Asian FTAs on Australian goods exports and output by sector, change relative to scenario 1, after full implementation in 2035

Sector	Change in output	Change in exports to North Asia	Change in exports to all destinations
	%	%	%
Agriculture			
Paddy rice	na	na	na
Wheat	0.1	13.6	-2.7
Other cereal grains	0.9	6.0	2.6
Vegetables, fruit, nuts	-0.3	34.2	-1.2
Oil seeds	-0.6	-1.7	-3.4
Sugar cane, sugar beet	na	na	na
Plant-based fibres	0.8	6.9	0.6
Other crops	0.5	9.4	1.8
Cattle, sheep, goats, horses	4.1	1.6	-5.0
Other animal products	2.6	19.7	10.7
Raw milk	na	na	na
Wool	7.1	22.0	12.3
Forestry	1.0	13.5	9.1
Fishing	0.4	5.6	1.2
Bovine meat products	5.1	42.9	10.9
Other meat products	-0.2	91.7	3.3
Vegetable oils and fats	-0.9	33.8	0.2
Dairy products	1.5	58.8	6.2
Processed rice	-1.2	-4.9	-4.7
Sugar	2.9	24.3	5.7
Other food products	0.5	28.1	5.3
Beverages and tobacco	0.0	29.8	-0.3
Mining			
Coal	-1.6	-0.7	-2.2

Sector	Change in output	Change in exports to North Asia	Change in exports to all destinations
Oil	-1.4	11.6	1.8
Gas	1.2	3.3	2.3
Minerals nec	0.5	1.0	0.5
Petroleum	0.0	13.4	5.7
Mineral products nec	0.1	45.7	3.0
Ferrous metals	-2.2	6.2	-2.9
Metals nec	0.9	22.7	1.6
Manufacturing			
Textiles	0.8	71.0	12.5
Wearing apparel	-0.1	147.6	13.7
Leather products	11.2	140.8	26.3
Wood products	0.1	10.6	6.1
Paper products, publishing	-0.6	-3.3	-5.0
Chemical, rubber, plastic products	-0.7	38.6	2.0
Metal products	-0.8	48.3	-3.2
Motor vehicles and parts	-1.8	60.1	5.5
Transport equipment nec	-2.1	11.0	-4.6
Electronic equipment	-2.3	58.3	1.9
Machinery and equipment nec	-1.7	63.2	0.9
Manufactures nec	-0.5	49.5	-0.2

Note: nec – not elsewhere classified; na – export results for non-traded sectors are not applicable

Source: CIE simulations using the GTAP model

5 *Impact of Australia's North Asian FTAs – services liberalisation*

This chapter sets out modelling results to illustrate the impact of the services liberalisation under the three free trade agreements Australia has recently signed or concluded with China, Korea and Japan. This scenario assumes all the other FTAs (included in scenario 1) are also in place. The results are compared to scenario 1 where other countries have pursued FTAs in North Asia but Australia has not.

Macroeconomic results

Services outcomes of the three North Asian FTAs are projected to lead to an increase in total goods and services exports to our North Asian FTA partners[10] by 2035 of 1.1 per cent. The services liberalisation is expected to result in imports increasing by 0.2 per cent, compared to scenario 1. Australia's terms of trade improve, and real wages are projected to be higher with these FTAs than would otherwise be the case. Australian GDP is projected to increase by around $165 million.

5.1 Impact of services liberalisation of North Asian FTAs (KAFTA, JAEPA and ChAFTA) on Australia – key macroeconomic results, in 2035 after full implementation of FTAs, compared to scenario 1

	Per cent change
	%
Exports of goods and services to all destinations	0.1
Exports of goods and services to North Asia	1.1
Imports of goods and services from all sources	0.2
Imports of goods and services from North Asia	0.5
GDP	0.01
Real wage	0.1
Terms of trade	0.1

Source: CIE simulations with the GTAP model

Sectoral details

Table 5.2 provides sectoral detail for scenario 2 for the services sectors. These results reflect the services outcomes of the three FTAs.

10 Results reported for 'North Asia' refer to the aggregate result for China, Japan and Korea.

The impact of the services outcomes of the three North Asian FTAs on the aggregated services sectors is positive. Compared to what would otherwise be the case without the FTAs in 2035:

- output is expected to be 0.1 per cent (or $1.8 billion) greater
- exports to North Asia are projected to be 13.9 per cent greater, and
- total exports to all destinations 2.1 per cent greater.

The results are broadly the same for each of the services sectors as the same shock was applied to each. The differences in results are due to differences in patterns of demand between the sectors. For example, a high proportion of air transport output is exported and therefore this sector sees the greatest increase in output as a result of the increase in services trade.

5.2 Impact of services liberalisation of North Asian FTAs on Australian exports and output by sector, change relative to scenario 1, after full implementation in 2035

Sector	Change in output	Change in exports to North Asia	Change in exports to all destinations
	%	%	%
Electricity	na	na	na
Gas manufacture, distribution	na	na	na
Water	na	na	na
Construction	0.0	2.5	0.4
Trade	0.1	15.1	3.2
Transport nec	0.2	15.1	2.9
Water transport	0.1	12.9	0.6
Air transport	0.3	11.3	0.9
Communication	0.1	14.8	1.9
Financial services nec	0.0	13.1	1.3
Insurance	0.1	15.8	1.9
Business services nec	0.0	9.4	-0.1
Recreational and other services	0.2	14.7	3.1
Public administration, defence, education, health	0.1	14.8	2.6
Total services (%)	**0.1**	**13.9**	**2.1**
Total services (A$m)	**1 836**	**2 161**	**1 784**

Note: nec – not elsewhere classified; na – export results for non-traded sectors are not applicable

Source: CIE simulations using the GTAP model

6 *Impact of Australia's North Asian FTAs – total macroeconomic impacts*

This chapter sets out modelling results to illustrate the aggregate impact of the goods and services liberalisation of the three free trade agreements Australia has recently signed or concluded with China, Korea and Japan. This scenario assumes all the other FTAs (included in scenario 1) are also in place. The results are compared to scenario 1 where other countries have pursued FTAs in North Asia but Australia has not.

Macroeconomic results

The three North Asian FTAs are projected to drive an 11.1 per cent increase in exports to our North Asian FTA partners[11] by 2035. Overall, Australia's exports to all destinations is projected to be 0.5 per cent higher in 2035 compared to scenario 1.

Australia's imports are projected to be 2.7 per cent higher as imports of manufactured goods from China, Japan and Korea become relatively cheaper. Australia's trade deficit increases slightly but this reflects a greater volume of more productive imports being imported from North Asia. Australia's terms of trade improve, and real wages are projected to be higher with these FTAs than would otherwise be the case. Australian GDP is projected to increase as a result of the FTAs. Based on the results of the dynamic model, CIE G Cubed, the net present value of the cumulative increase in GDP (between 2016 and 2035) is projected to be $24.4 billion.

11 Results reported for 'North Asia' refer to the aggregate result for China, Japan and Korea.

6.1 Impact of North Asian FTAs (KAFTA, JAEPA and ChAFTA) on Australia – key macroeconomic results, in 2035 after full implementation of FTAs, compared to scenario 1

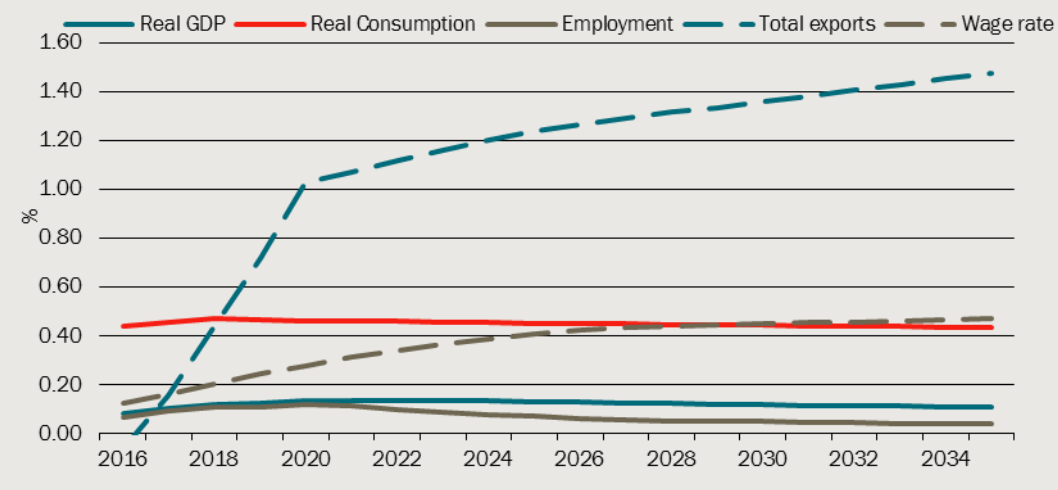
	Per cent change
	%
Exports of goods and services to all destinations	0.5 – 1.5
Exports of goods and services to North Asia	6.9 – 11.1
Imports of goods and services from all sources	2.7
Imports of goods and services from North Asia	4.0 – 8.8
GDP	0.05 – 0.11
Real wage	0.4 – 0.5
Terms of trade	1.1 – 1.3

Note: The ranges represent the results obtained from the two economic models – GTAP and CIE G Cubed. Note that the result for imports from all destinations was the same for each model.

Source: CIE simulations with the GTAP and CIE G Cubed models

Chart 6.2 shows how key variables change over the FTA implementation period. These results are from the CIE G Cubed model which enables the impacts of the FTAs to be examined over time and is able to calculate employment effects.[12] Box 6.3 explains some of the interactions and dynamics over time – particularly for exports. The results from CIE G Cubed show slightly larger impacts due to the enhanced representation of financial markets (investment) in the model compared to GTAP.

6.2 Change in key macro results over time due to KAFTA, JAEPA and ChAFTA, compared scenario 1



Data source: CIE simulations with the CIE-G Cubed model

Chart 6.2 shows the change in GDP in per cent terms, the equivalent dollar values for key years are shows in table 6.3 below.

12 Due to the use of the different model, however, these results may not match exactly with the results provided above. Together the model results provide a range of the estimated potential impact of the FTAs.

- The value of the increase in GDP in the first year of implementation of all three FTAs (2016) is $1,036 million (a 0.1 per cent increase). In 2035, GDP would be $2,260 million higher than would be the case without the FTA (a 0.1 per cent increase).
- The present value of the cumulative increase in GDP between 2016 and 2035 is $24,362 million (using a discount rate of 5 per cent).

In terms of real household consumption, a measure of the welfare impacts of the FTA:

- Real consumption would be $2,886 million higher in 2016 (an increase of 0.4 per cent) and $4,630 million higher in 2035 under the FTAs (a 0.4 per cent increase).
- The present value of the cumulative increase in real consumption between 2016 and 2035 is $46,260 million (using a discount rate of 5 per cent).
- Real consumption per household is estimated to be $312 a year higher in 2016 under the FTAs than without the FTAs.
- In 2035, real consumption per household would be $370 a year higher than would otherwise be the case.
- Between 2016 and 2035, the cumulative value of the increase in real consumption per household in (present value terms with a discount rate of 5 per cent) is $4,348.

In terms of employment:

- As a result of the FTA, there would be a net increase of 7,925 jobs in 2016 and 5,434 jobs in 2035, compared to if the FTAs are not implemented. Note that under typical long run modelling assumptions, the real wage increases over the longer term as employment returns to baseline levels.
- The impact on employment for each year of the projection period, relative to scenario 1, is provided in appendix A.

6.3 Impact of the North Asian FTAs on GDP, real consumption, real consumption per household and employment at 2016 and 2035

	GDP	Real consumption	Real consumption per household [a]	Employment
	A$m	A$m	A$	persons
2016	1 036	2 886	312	7 925
2035	2 260	4 630	370	5 434
Net present value	24 362	46 260	4 348	

[a] Per household figures use ABS projected number of households (series II) in the relevant year (http://www.abs.gov.au/AUSSTATS/abs@.nsf/allprimarymainfeatures/0AAC8BFAE9DD3241CA2568A90013942A?opendocument)

Note: Present value calculations use a discount rate of 5%

Source: CIE simulations with the CIE G Cubed model

6.4 Short term adjustments to liberalisation

Complex interactions occur during the trade and investment liberalisation process in real and financial markets. Chart 6.5 below sets out these interactions. This chart helps to explain the initially slow increase in exports observed in chart 6.2. The areas in grey represent financial market flows and blue are real flows.

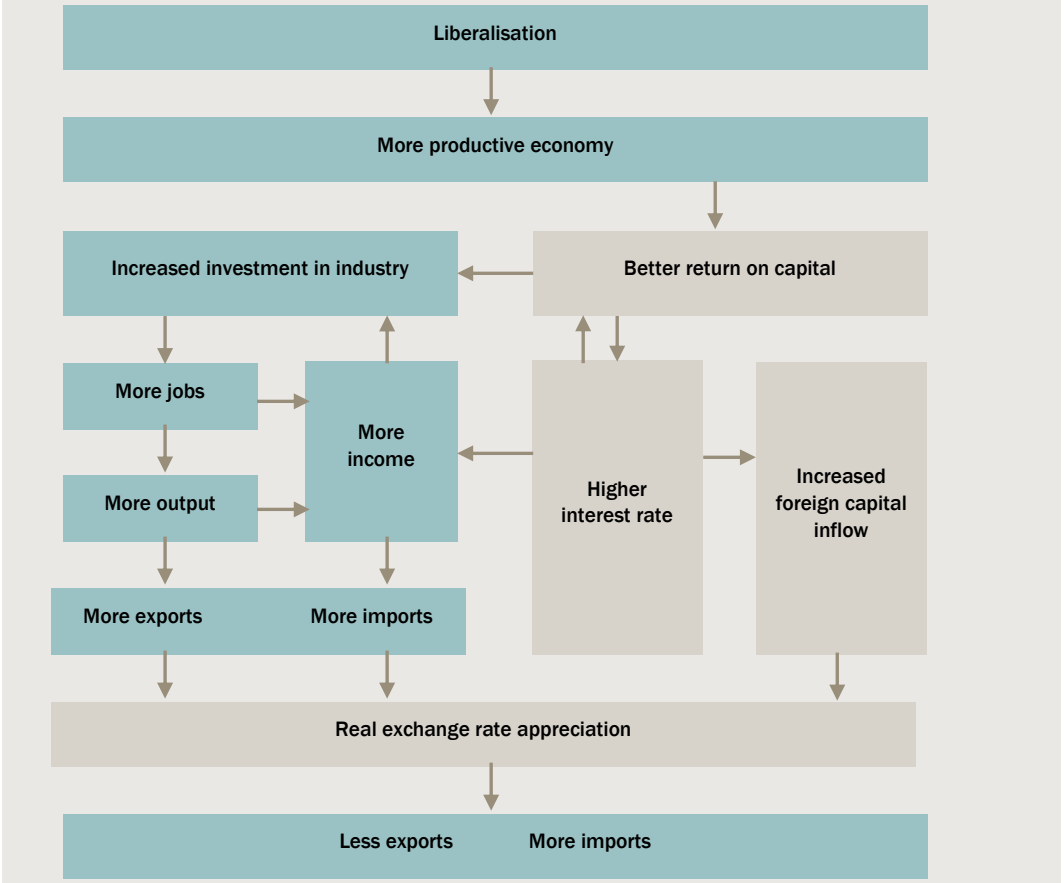
Liberalisation leads to a more productive economy as resources are reallocated to more efficient activities. This leads to a higher rate of return on capital which in turn attracts foreign capital inflows and leads to a real exchange rate appreciation. The extent of capital inflows is limited by the degree of improvement in the rate of return on investment in Australia. There are two different effects on exports.

- The exchange rate appreciation tends to decrease exports.
- At the same time, increased investment in industry drives increased income, output and exports.

In the long term, the increase in exports from greater and more efficient production dominates the negative effects of the real exchange rate on exports. However, in the short term this effect is less pronounced because the financial markets (particularly international capital markets) react rapidly to market changes (and expectations of changes). Adjustments in the real markets are slower which means the increase in exports tends to be minimal at first and accelerate over the projection period as the real markets catch up to the financial markets.

These effects reflect only the trade liberalisation being modelled and therefore any other impacts on real and financial markets, for example the recently observed devaluation of the Australian dollar, take place in addition to the effects described. In reality, actual observed activity levels will reflect a range of different events, not just the trade liberalisation.

6.5 Real and financial flows from liberalisation



Appendices

A Impact of North Asian FTAs on employment

Table A.1 sets out the impact the three North Asian FTAs is expected to have on Australian wages and employment in each year, relative to scenario 1. This table should be interpreted in the same manner as the other results in this report, as set out in chapter 2. For example, we expect there to be 7925 more people employed in 2016 if the FTAs are implemented compared to if they aren't implemented. Similarly, in 2020 there would be 14,566 more jobs if the FTAs are implemented compared to what would be the case in 2020 if the FTAs were not implemented. As the wage rate adjusts, employment returns toward the levels in scenario 1.

A.1 Impacts of the North Asian FTAs on wages and employment, change from corresponding year in scenario 1

	Wage rate	Employment	
	%	%	Persons
2016	0.13	0.07	7 925
2017	0.16	0.09	11 119
2018	0.20	0.11	13 107
2019	0.24	0.11	13 089
2020	0.28	0.12	14 566
2021	0.31	0.11	13 597
2022	0.34	0.10	12 268
2023	0.37	0.09	10 971
2024	0.39	0.08	9 643
2025	0.41	0.07	8 789
2026	0.42	0.06	7 965
2027	0.43	0.06	7 247
2028	0.44	0.05	6 741
2029	0.44	0.05	6 515
2030	0.45	0.05	6 303
2031	0.45	0.05	6 096
2032	0.46	0.05	5 906
2033	0.46	0.04	5 725
2034	0.47	0.04	5 562
2035	0.47	0.04	5 434

Source: CIE simulations using the CIE G Cubed model

B Regional and sectoral detail of models

Table B.1 shows the regional aggregation used in the GTAP and CIE G Cubed models for this project. Table B.2 provides a description of the sectors modelled.

B.1 Regions modelled

Region	
Australia	ASEAN
New Zealand	Rest of Asia
China	USA
Japan	Canada
South Korea	Chile
India	EU 25
Rest of the world	

Source: The CIE

B.2 Description of modelled sectors

GTAP sector	Description
Paddy rice	Rice, husked and unhusked
Wheat	Wheat and meslin
Other cereal grains	Maize (corn), barley, rye, oats, other cereals
Vegetables, fruit, nuts	Vegetables, fruit and nuts, potatoes, cassava, truffles
Oil seeds	Oil seeds and oleaginous fruit; soy beans, copra
Sugar cane, sugar beet	Sugar cane and sugar beet
Plant-based fibres	Cotton, flax, hemp, sisal and other raw vegetable materials used in textiles
Other crops	Live plants; cut flowers and flower buds; flower seeds and fruit seeds; vegetable seeds, beverage and spice crops, unmanufactured tobacco, cereal straw and husks, unprepared, whether or not chopped, ground, pressed or in the form of pellets; swedes, mangolds, fodder roots, hay, lucerne (alfalfa), clover, sainfoin, forage kale, lupines, vetches and similar forage products, whether or not in the form of pellets, plants and parts of plants used primarily in perfumery, in pharmacy, or for insecticidal, fungicidal or similar purposes, sugar beet seed and seeds of forage plants, other raw vegetable materials
Cattle, sheep, goats, horses	Live cattle, sheep, goats, horses, asses, mules, and hinnies; and semen thereof

Other animal products	Swine, poultry and other live animals; eggs, in shell (fresh or cooked), natural honey, snails (fresh or preserved) except sea snails; frogs' legs, edible products of animal origin n.e.c., hides, skins and furskins, insect waxes and spermaceti, whether or not refined or coloured
Raw milk	Raw milk
Wool	Wool, silk, and other raw animal materials used in textile
Forestry	Forestry, logging and related service activities
Fishing	Hunting, trapping and game propagation including related service activities, fishing, fish farms; service activities incidental to fishing
Coal	Mining and agglomeration of hard coal, lignite and peat
Oil	Extraction of crude petroleum and natural gas (part), service activities incidental to oil and gas extraction excluding surveying (part)
Gas	Extraction of crude petroleum and natural gas (part), service activities incidental to oil and gas extraction excluding surveying (part)
Minerals nec	Mining of metal ores, uranium, gems, other mining and quarrying
Bovine meat products	Fresh or chilled meat and edible offal of cattle, sheep, goats, horses, asses, mules, and hinnies, raw fats or grease from any animal or bird.
Other meat products	Pig meat and offal. preserves and preparations of meat, meat offal or blood, flours, meals and pellets of meat or inedible meat offal; greaves
Vegetable oils and fats	Crude and refined oils of soya-bean, maize (corn),olive, sesame, ground-nut, olive, sunflower-seed, safflower, cotton-seed, rape, colza and canola, mustard, coconut palm, palm kernel, castor, tung jojoba, babassu and linseed, perhaps partly or wholly hydrogenated, inter-esterified, re-esterified or elaidinised. Also margarine and similar preparations, animal or vegetable waxes, fats and oils and their fractions, cotton linters, oil-cake and other solid residues resulting from the extraction of vegetable fats or oils; flours and meals of oil seeds or oleaginous fruits, except those of mustard; degras and other residues resulting from the treatment of fatty substances or animal or vegetable waxes.
Dairy products	Dairy products
Processed rice	Rice, semi- or wholly milled
Sugar	Sugar
Other food products	Prepared and preserved fish or vegetables, fruit juices and vegetable juices, prepared and preserved fruit and nuts, all cereal flours, groats, meal and pellets of wheat, cereal groats, meal and pellets n.e.c., other cereal grain products (including corn flakes), other vegetable flours and meals, mixes and doughs for the preparation of bakers' wares, starches and starch products; sugars and sugar syrups n.e.c., preparations used in animal feeding, bakery products, cocoa, chocolate and sugar confectionery, macaroni, noodles, couscous and similar farinaceous products, food products n.e.c.
Beverages and tobacco	Beverages and Tobacco products
Textiles	Textiles and man-made fibres
Wearing apparel	Clothing, dressing and dyeing of fur
Leather products	Tanning and dressing of leather; luggage, handbags, saddlery, harness

	and footwear
Wood products	Wood and products of wood and cork, except furniture; articles of straw and plaiting materials
Paper products, publishing	Includes publishing, printing and reproduction of recorded media
Petroleum	Coke oven products, refined petroleum products, processing of nuclear fuel
Chemical, rubber, plastic products	Basic chemicals, other chemical products, rubber and plastics products
Mineral products nec	Cement, plaster, lime, gravel, concrete
Ferrous metals	Basic production and casting
Metals nec	Production and casting of copper, aluminium, zinc, lead, gold, and silver
Metal products	Sheet metal products, but not machinery and equipment
Motor vehicles and parts	Cars, lorries, trailers and semi-trailers
Transport equipment nec	Manufacture of other transport equipment
Electronic equipment	Office, accounting and computing machinery, radio, television and communication equipment and apparatus
Machinery and equipment nec	Electrical machinery and apparatus n.e.c., medical, precision and optical instruments, watches and clocks
Manufactures nec	Includes recycling
Electricity	Production, collection and distribution
Gas manufacture, distribution	Distribution of gaseous fuels through mains; steam and hot water supply
Water	Collection, purification and distribution
Construction	Building houses factories offices and roads
Trade	All retail sales; wholesale trade and commission trade; hotels and restaurants; repairs of motor vehicles and personal and household goods; retail sale of automotive fuel
Transport nec	Road, rail ; pipelines, auxiliary transport activities; travel agencies
Water transport	Water transport
Air transport	Air transport
Communication	Post and telecommunications
Financial services nec	Includes auxiliary activities but not insurance and pension funding (see next)
Insurance	Includes pension funding, except compulsory social security
Business services nec	Real estate, renting and business activities
Recreational and other services	Recreational, cultural and sporting activities, other service activities; private households with employed persons (servants)
Public administration, defence, education, health	Public administration and defence; compulsory social security, education, health and social work, sewage and refuse disposal, sanitation and similar activities, activities of membership organizations n.e.c., extra-territorial organizations and bodies

Note: nec: not elsewhere classified

Source: GTAP

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