MODELLING THE POTENTIAL BENEFITS OF AN AUSTRALIA-CHINA FREE TRADE AGREEMENT

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Acronyms and Initials

CGE	Computable General Equilibrium
CoPS	Centre of Policy Studies
DFAT	Department of Foreign Affairs and Trade, Australia
FTA	Free Trade Agreement
GDP	Gross Domestic Product
GNE	Gross National Expenditure
GNP	Gross National Product
GTAP	Global Trade Analysis Project
MMC	Monash Multi-Country
MOFCOM	Ministry of Commerce, People's Republic of China
nec	not elsewhere classified
ROW	Rest Of the World
WTO	World Trade Organisation

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Executive summary

1. In 2002 Australia and China established a Trade and Economic Framework to enhance bilateral trade and investment. Under the framework, a joint feasibility study of a possible Australia-China Free Trade Agreement (FTA) is being conducted.

2. The Centre of Policy Studies was commissioned by the Australian Department of Foreign Affairs and Trade to conduct modelling analysis on the potential benefits of an Australia-China FTA. The study was undertaken jointly with experts from the Chinese Academy of Social Sciences and Nankai University.

3. In this study we simulate three aspects of an FTA: removal of border protection on merchandise trade, investment liberalisation, and removal of barriers to services trade. The analytical framework is a multi-country, multi-sector computable general equilibrium model, the Monash-Multi-Country model. In our simulation we assume that the implementation of policy changes under the FTA commences in 2006.

4. In simulating the impacts of policy changes under an FTA, we first simulate a business-as-usual scenario (or baseline). The baseline describes the evolution of the Australian and Chinese economies in the absence of an Australia-China FTA. The effects of the policy changes under the FTA are reported as changes relative to baseline levels.

5. From our modelling we conclude that for both Australia and China the FTA yields increased output and is welfare enhancing. The FTA is estimated to boost the present value (see Figure 7.1 on page 42) of real Gross Domestic Product (GDP) and real Gross National Product (GNP) between 2006 and 2015 as follows:

   - Australia real GDP, US$18 billion;
   - China real GDP, US$64 billion;
   - Australia real GNP, US$22 billion; and
   - China real GNP, US$52 billion.

6. In terms of average annual growth rates between 2005 and 2015, the FTA is estimated to increase Australia's real-GDP growth by 0.039 percentage points; and increase China's real-GDP growth by 0.042 percentage points.

7. Real GDP increases in both countries due to increased capital, improved productivity and better utilisation of resources. A key factor underlying the increase in Australia's real GNP is an improved terms of trade.

8. The FTA enhances the economic partnership between Australia and China by increasing bilateral trade and investment flows. It is also trade creating for the world as a whole. The volume of world imports increases from its baseline level as a result of the Australia-China FTA.

9. In achieving a better utilisation of resources, adjustment of labour between sectors does occur, largely due to the removal of border protection on merchandise trade. However, due to the complementarities of the two countries, such reallocation of labour between sectors tends to facilitate the natural course of adjustment already occurring in the two countries. Furthermore, such adjustment is small in scale compared with what is occurring in the two countries amid globalisation without an FTA.

10. The Australian industries that benefit most from the FTA are cereal grains, wool, wool tops, minerals, and non-ferrous metals. The Chinese industries that benefit most from the FTA are manufacturing industries, especially textiles, wearing apparel, and miscellaneous manufactures (toys and sporting goods etc). Services sector in both countries benefit from the FTA.

11. If the policy changes are implemented gradually between 2006 and 2010, the long-run effects of the FTA in 2015 are similar to those from full implementation in 2006. However, faster implementation leads to earlier delivery of the gains for both countries. As a result, the present values of gains in real GDP and real GNP are smaller with slower implementation.

1. Introduction

The Centre of Policy Studies (CoPS) was commissioned by the Department of Foreign Affairs and Trade (DFAT) to conduct a model-based study into the economic impacts of a Free Trade Agreement (FTA) between Australia and China. The study was undertaken jointly with experts from Chinese Academy of Social Sciences and Nankai University.

The study is based on simulations undertaken with the MONASH Multi-Country Model (MMC) of Australia, China and the Rest Of the World (ROW) developed at CoPS. MMC features:

- Dynamic mechanisms that allow the time-path of effects of a shock, such as the implementation of an FTA, to be analysed over a number of years;
- An industry structure (see Table 1.1) that allows the industrial impacts of an FTA to be analysed in considerable detail;
- A realistic baseline consistent with the views of expert forecasters such as the World Bank and the International Monetary Fund.
- Specific accounting for trade flows between countries that allows for the simulation of removing border protection on bilateral imports; and
- Specific accounting for bilateral investment flows that allows for the simulation of investment liberalisation, as well as the liberalisation of services trade of the commercial-presence type (defined in Box 1.1 below).

Box 1.1 Four modes of trade in services

According to the World Trade Organisation (WTO), trade in services has four modes: *cross-border supply* – services supplied from one country to another (e.g. international telephone calls); *consumption abroad* – consumers from one country making use of a service in another country (e.g. tourism); *commercial presence* – a company from one country setting up subsidiaries or branches to provide services in another country (e.g. a bank from one country setting up operations in another country); and *movement of natural persons* – individuals travelling from their own country to supply services in another (e.g. an actress or construction worker).

In this report the explanation of results are presented in a non-technical manner so as to be readily comprehensible to readers unfamiliar with the MMC model. A brief technical description of the model is given in Appendix A.

The modelling covers simulations of the following three aspects of trade liberalisation under an FTA:

- the removal of existing barriers (tariff and non-tariff) to trade in goods between Australia and China;
- the liberalisation of investment flows between Australia and China; and
- trade liberalization in services between Australia and China.

In modelling the impacts of liberalization, we undertake simulations with MMC over the period 1997 to 2015 under four scenarios. The first scenario is called the baseline. The baseline describes the evolution of the Australian and Chinese economies in the absence of an Australia-China FTA. The remaining three scenarios incorporate one of the three aspects of liberalization. The effects of these aspects are reported as deviations of values of economic variables under the alternative FTA scenarios from their values in the baseline (Figure 1.1).

It should be noted at this point that the quality of the modelling of each aspect of liberalisation reflects the quality of the underlying data on barriers and restrictions. Good quality data are available on tariff-equivalent barriers to merchandise trade in China and Australia. Thus we have considerable confidence in our modelling of the effects of removing merchandise-trade barriers. On the other hand, very little empirical evidence is available on barriers to investment and services trade. Accordingly, our modelling of liberalisation in these areas should be considered as indicative – providing insights into trends and to the general order of magnitude of impacts. Note also that the assumptions underlying our work are for the purposes of modelling and are without prejudice to the content of possible negotiations.

The remainder of this paper is organized as follows. In Section 2 we provide a brief description of the current economic partnership between Australia and China. Trade and investment barriers between Australia and China are discussed in Section 3. The effects of each aspect of liberalization are discussed in Sections 4, 5 and 6. In section 7 we discuss the aggregate effects of all three aspects of an FTA. In section 8 we

impact of an Australia-China FTA on the ROW region. Concluding remarks are in Section 10.

2. Growing economic partnership between Australia and China

Australia and China have become important economic partners in the past ten years. Between 1993 and 2003, the share of China in Australia's total merchandise trade (imports plus exports) increased from 4 per cent to 10 per cent (Figure 2.1). Over the same period, the share of Australia in China's total merchandise trade increased from 1.5 per cent to nearly 2 per cent (Figure 2.1), making Australia the ninth largest trading partner of China[1]. Investment flows have also grown strongly between the two countries, albeit from a low level (Figure 2.2).

The deepening in the economic partnership between Australia and China is due, in the main, to the complementarity in the dynamics of the two economies. The complementarity, which originates from the respective economic endowments and development paths of Australia and China, is revealed in the evolving patterns of bilateral trade and investment flows. These patterns are discussed in the following three sub-sections.

2.1 China's demand for Australian agricultural and mineral products

Rich in mineral and agricultural resources, Australia has become an increasingly important supplier of energy and material inputs, supporting China's rapid economic growth and industrialisation. This is illustrated by four examples. First, rapid industrialisation in China has resulted in (and continues to cause) rapid urbanisation, reducing the number of people relying on scarce land resource for their livelihood. This is increasing the proportion of the population relying on commercial food[2], thus increasing China's demand for imports of various agricultural products. Australian barley, for instance, has become a key input into the production of China's most popular beer. Second, as China becomes the world's largest producer of iron and steel, its demand for Australian iron ore has jumped. Third, rapid economic growth

[1] Australia ranks ninth in MOFCOM's list of ten largest trading partners. European Union and Association of South East Asian Nations are counted as single (collective) trading partners.

[2] China's urban population relies on commercial food; while most of the rural households consume wheat/rice, meat and vegetables produced themselves. The self-sufficiency in food in China's rural area

has caused China to source increasing amounts of oil and gas from overseas, including Australia. This factor is shaping China's energy imports as well as its investment pattern in Australia. From the perspective of the Australian mineral and energy suppliers, China will continue to be a significant market. Fourth, China's demand for advanced farming and mining technology and management will shape bilateral investment in the near future.

2.2 Two-way trade in manufacturing products

Abundant in labour, China has become a dominant supplier of labour-intensive manufactured goods to Australia. Moreover, responding to rapid globalisation, the Australian manufacturing sector is relocating some labour-intensive production to lower-labour-cost countries, including China.

However, trade in manufactured products is not just in one direction. For example, as China supplies increasing quantities of clothing to the world, its demand for Australian lightly-processed wool has risen strongly. China is also importing significant quantities of Australian produced non-ferrous metals. In the higher value-added end, there is significant two-way trade in machinery and equipment between the two countries.

2.3 Cooperation in the services sector

With a mature services sector contributing over seventy per cent of GDP, Australia has much to offer to China as it upgrades its services sector. For example, China is drawing on Australia's experience in the process of establishing its urgently-needed social security system. Also, Australia has become one of the preferred training grounds for China's skilled labour force. Trade in the first two modes of services trade (cross-border supply and consumption abroad) has been growing rapidly - education and tourism dominate Australia's service exports to China; while transportation and travel services dominate China's service exports to Australia (Economic Analytical Unit 2002). Trade in the modes of commercial presence and the movement of natural person (Box 1.1) has also expanded rapidly following China's entry to the WTO.

2.4 Deepening partnership in the future

In our baseline projection (see Box 2.1) from 2005 to 2015, we assume that real GDP

respectively. Also assumed to continue is China's industrialisation process, represented as stronger growth in manufacturing and services than in agriculture and mining, and Australia's shift from manufacturing to services, represented as stronger growth in services than in manufacturing (Table 2.1).

Given the growth trend of the two economies, the volumes of bilateral investment and trade flows between Australia and China continue to grow strongly across all sectors (see Tables 2.1 to 2.3.)

Box 2.1 Baseline: the business-as-usual scenario

The baseline scenario shows how the Chinese and Australian economies are likely to evolve without a FTA. Our modelling starts from the Global Trade Analysis Project (GTAP) database (Dimaranan and McDougall 2002) which is a snapshot in 1997 of the economic structures of various economies in the world and the economic linkages between them[3]. In the baseline simulation, we inform the model how the Australian, Chinese and the Rest of the World (ROW) economies evolved from 1997 to 2003 using historical data; and how the three economies are likely to evolve from 2003 to 2015 using forecast data. The main sources of the historical and forecast data are Access Economics (a private consulting firm located in Australia), the Australian Bureau of Statistics, the World Bank, the International Monetary Fund, Economist Intelligence Unit, the China National Bureau of Statistics, and the Chinese Academy of Social Sciences.

The growth rates of key economic indicators in the baseline, expressed as average annual growth rates between 1997 and 2015, are presented in Table 2.1. These indicators include real GDP, consumption, investment, exports and imports at the macroeconomic level, and industry output. Features of the baseline include:

1. Rapid growth in Chinese real GDP at a rate twice that of Australia's real GDP;

2. Growth in trade volumes in both countries in excess of growth in real GDP; and

3. Continued shifts from manufacturing to services in Australia and declining shares of agriculture and mining in Chinese real GDP.

We assume that real GDP of ROW grow at an average annual rate of 2.4 per cent between 1997 and 2015.

The baseline serves as a business-as-usual scenario, or reference case, against which scenarios containing policy changes due to a FTA are compared (Figure 1.1). The effects of the policy changes are measured as deviations away from the baseline.

3. Trade and investment barriers between Australia and China

Though growth in trade and investment between Australia and China has been strong, there remain significant barriers and restrictions to such flows. In this study, we group these barriers/restrictions into three broad categories:

- Border protections on merchandise trade (including tariffs and quantifiable non-tariff barriers);
- Restrictions to investment flows; and
- Restrictions to services trade.

3.1 Border protection on merchandise trade

The first category of barriers includes tariffs and quantifiable non-tariff barriers on

[3] In our model, we aggregate the database to three country/regions: Australia, China and the ROW

merchandise trade flows. The levels of such barriers assumed for 2005 in this study are presented in Table 3.1. They were estimated as follows.

Our starting point was the estimates of tariff and non-tariff barriers in 1997 reported in the GTAP database[4] (Dimaranan and McDougall 2002). These data were updated to estimates for 2005 using data and information from a range of sources, principally the Australian Productivity Commission, the Chinese Ministry of Finance, and the WTO. The Australian Productivity Commission provided us with 2005-estimates of tariff-equivalent rates applying in Australia to all products identified in Table 3.1. These estimates take account of recent unilateral reductions in tariffs in Australia, especially for textiles, clothing and footwear and for motor vehicles and parts. Estimates of tariff-equivalent rates applying in China for products are based on China's WTO-entry commitments, supplemented by Chinese-sourced data. Note we assume that China's WTO-entry commitments are implemented before the trade liberalisation associated with an Australia-China FTA commences as scheduled.

Two key facts emerge from the data in Table 3.1. First, in 2005 tariff rates[5] in Australia on most merchandise imports from China will be below 5 per cent. However, imports of dairy products and wearing apparel are clear exceptions, being subject to much higher protection than other imports. Textiles, leather products and motor vehicles also are expected to have tariff-equivalent rates of 5 per cent or above.

Second, even though China has liberalised its import regime significantly since the early 1990s, most tariffs in 2005 will still be higher than those of Australia. This is especially so for agriculture and agricultural products. As a major supplier of agricultural and food products, Australia has relatively little border protection for these products, except dairy.

In Box 3.1 we discuss specific issues related to the estimation of tariff-equivalent rates of protection for Australian agricultural imports into China shown in Table 3.1. The discussion is organised under commodity-specific headings.

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[4] The data in the GTAP database combine merchandise tariffs from the World Integrated Trade Solutions (WITS) system of the World Bank and UNCTAD and tariffs on food and agriculture from the Agriculture Trade Policy Database of the USDA/ERS. The latter statistics are based largely on the Agricultural Market Access Database (AMAD). The third source of tariff data is the regional input/output tables underlying the core sections of the GTAP database.

[5] After the completion of the Uruguay Round, non-tariff barriers on manufactured goods in Australia

Box 3.1 Estimates of tariff-equivalent rates of protection for Australian agricultural and food imports into China

Wheat and processed rice

Post China's WTO entry, wheat and processed rice imports from Australia into China are subject to tariff rate quotas. The in-quota rate for Australian imports is 1 per cent while the out-quota rate is 65 per cent. Ten per cent of the quota is to be allocated to non-state traders for wheat. For rice, the share of quota allocated to non-state traders is 50 per cent (Table 3.2). If all quota imports were conducted by non-state traders, Australian wheat and rice exports to China would be subject to only the in-quota rate (1 per cent); because the amount of quota is much higher than the current level of imports from all countries. To quantify the barrier represented by the state share of the trading, we assume part of Australian wheat and rice exports to China would effectively be subject to the out-quota rate (65 per cent). After weighing trade flows and information on tariff rate quota including shares of state-trading, we assume that the tariff equivalents on China's border protection on imports from Australia is 30 per cent for wheat and 10.6 per cent for processed rice (Table 3.1).

Cereal grains nec.

Only a few tariff lines in this group are subject to tariff rate quotas (e.g., corn), with in-quota rates that are generally low. In this commodity grouping, the only Australian export item of any significance is barley. Barley is not subject to a tariff rate quota, but is subject to a tariff of 3 per cent. After considering trade flows, tariff rate quotas and post-WTO tariff rates, we assume that, for this group of commodities, the tariff-equivalent border protection is 3 per cent.

Wool and silk-worm cocoons

The major Australian export item in this commodity group is greasy wool. Wool imports into China are subject to tariff rate quota. The in-quota rate is 1 per cent, while the out-quota rate is 38 per cent (Table 3.2). For wool, designated trading is to be eliminated by 2005. After weighing all the information available for tariff lines in this commodity group, we assume the tariff-equivalent border protection is 15 per cent.

Vegetable oils and fats

A number of commodities in this group are subject to tariff rate quotas. Again, after considering trade flows, tariff rate quotas, in-quota rates, and post-WTO tariff rates, we assume the tariff-equivalent border protection is 13 per cent for this commodity group.

Sugar

Sugar is subject to a tariff rate quota, with an in-quota rate of 15 per cent and an out-quota rate of 50 per cent. 30 per cent of the tariff rate quota for sugar is to be allocated to non-state traders (Table 3.2). The current level of total sugar imports from all countries into China is less than the amount of quota. After weighing all the available information, we assume that the level of tariff equivalents of border protection for China's sugar imports from Australia is about 25 per cent (Table 3.1).

3.2 Restrictions on investment flows

Restrictions on investment flows can take various forms. These include restrictions on direct entry to an industry; restrictions on the operations and flexibility of foreign investors; discrimination between domestic and foreign businesses; and non-transparent regulations and standards that increase the costs of compliance. This section provides an overview of the foreign investment regimes in Australia and China.

3.2.1 Australia's foreign investment regime

According to the *Foreign Acquisition and Takeovers Act 1975,* Foreign Acquisitions and Takeovers Regulations and associated Ministerial Statements, certain types of investment proposals by foreign interests require prior notification and approval from the Australian Government. The Foreign Investment Review Board screens the following types of proposals: foreign investment in existing businesses in excess of A$50 million; foreign investment to establish new businesses in excess of A$10 million; direct investment by foreign governments or their agencies; foreign investment in the media sector, and foreign acquisitions of urban land. In particular, investment proposals made by companies with greater than a 15 per cent direct or indirect holding by a foreign government or agency are subject to screening. Most of the Chinese investment in the mineral and resource sector is likely to fall into this category and therefore be subject to the screening process.

Foreign investment in services industries are generally subject to closer scrutiny by the Australian Foreign Investment Review Board. For example, any foreign takeover or acquisition of an Australian bank is considered on a case-by-case basis. Australia also maintains ownership ceilings on foreign investment in a number of services sectors, such as Australian international airlines (49 per cent), airports (49 per cent), broadcasting (20-35 per cent), newspapers (30-50 per cent) and telecommunications (17 per cent of Telstra).

3.2.2 China's foreign investment regime

Foreign investment in China is subject to notification and approval on a case-by-case basis. Foreign investment in excess of US$30 million is subject to approval of the Ministry of Commerce; while provincial and local governments can approve foreign investments of up to US$30 million that are on the list of encouraged and permitted

category. The Regulation on Guiding Foreign Investment and the Catalogue on Guiding Foreign Investment provide a list of encouraged, restricted and prohibited categories of foreign investment; and foreign investment outside the three lists falls into a permitted category.

As a result of the WTO entry, foreign firms are now allowed to operate in many services sectors. For example, foreign institutions can now establish joint schools with foreign majority ownership. Foreign banks can now provide foreign currency services to domestic and foreign businesses in a number of large cities, and they will be able to offer local currency services to individual customers by 2007. Geographic and branching restrictions on foreign banks will also be gradually removed. Foreign life insurers will be able to establish 50 per cent owned ventures without geographic restrictions by 2005. Foreign firms can now establish securities fund management businesses with an ownership ceiling of 33 per cent increasing to 49 per cent by 2005. In telecommunication, foreign firms are allowed to establish joint ventures in paging services, mobile telephones and value-added services with a foreign ownership ceiling of 25-30 per cent increasing to 49-50 per cent by 2005. Geographic restrictions on foreign investment in telecommunication will also be gradually removed.

3.3 Restrictions on trade in services

There are four modes of delivery in services trade: cross-border supply, consumption abroad, commercial presence, and movement of natural persons (see Box 1.1). Restrictions on all four modes of services trade exist in most countries, but only in recent years have efforts been made to quantify these restrictions and to estimate the effects of removing them. A number of studies have been published in recent years. Dee (2004) exploits cross-country variation in the extent of barriers to trade in a particular service sector, and cross-country variation in the subsequent economic performance of that sector to quantify a panel-average relationship between barriers and performance for a number of countries including Australia. The Australian Productivity Commission published indexes quantifying restrictions to all modes of trade in various countries (for examples, Nguyen-Hong 2000, and Nguyen-Hong and Wells 2003)[6]. Note, though, that while the Productivity Commission's indexes provide a comparison between countries, significant work is required to interpret such

[6] Interestingly, the Productivity Commission indexes show higher level of restrictions in China than in

indexes as impacts on prices (only the later can be used for simulation using models like MMC). The impacts of commercial-presence trade may be easier to quantify. Mai, Horridge and Perkins (2003), using a historical decomposition approach (see Dixon and Rimmer 2002), examined historical evidence from a recent period of investment liberalisation in China to determine the extent to which the liberalisation affected productivity and required rates of return on investment in each sector.

Quantitative barriers between Australia and China for the first two modes of services trade (cross-country supply and consumption abroad) are difficult to quantify, but on face value would appear to be small, especially when compared with tariffs levied on merchandise trade. For example, a Chinese traveller flying Qantas does not pay more tax than an Australian traveller flying Qantas. We therefore did not include the removal of possible restrictions on the first two modes of services trade in this study.

Indirect effects on flows in the first two modes of services trade, however, are captured by the MMC model. These flows can change in response to policy changes simulated. For example, productivity improvements in the services sectors resulting from the removal of barriers to the third mode of services trade may well result in a boost to trade volumes associated with the first two modes of services delivery (see section 6 below).

Barriers between Australia and China for the fourth mode of services trade (movement of natural persons) are identifiable (Nguyen-Hong and Wells 2003). A good example is the restriction on joint recognition of university degrees between the two countries. Removing such restrictions can be modelled as increased mobility of labour between countries. While it is theoretically possible, this type of modelling would take time to implement. Accordingly, we did not include removing restrictions on the fourth mode of services trade in this study.

This leaves us with barriers for the third mode of services trade (commercial presence). These relate primarily to governments' intervention on foreign investment in services sectors. As discussed in section 3.2, both Australia and China scrutinise foreign investment in services sectors, and maintain ownership ceilings on foreign investment in key services sectors. The MMC model captures bilateral investment flows by sector and is therefore well set up to simulate removal of barriers to the third mode of services trade.

4. Removing border protection on merchandise imports

In this section we discuss the effects of removing the tariff and tariff-equivalent barriers (primarily tariff-rate quotas) on merchandise imports shown in Table 3.1. To simulate this policy change, we assume that the tariff-equivalents in Table 3.1 are reduced to zero in 2006.[7]

The Australian economy can be represented by certain key variables that appear in our model: various economic indicators, such as real GDP and consumption at the macroeconomic level, and trade and employment at the industry level. With the reduction in bilateral tariff-equivalents, each of these indicators will deviate from their business-as-usual (or baseline) paths (Box 2.1). These deviations are our measures of the quantitative impacts on Australia of the reductions in tariff-equivalents (Figure 1.1). Similarly, the impacts of the reduction in tariff-equivalents on China are measured by the deviations of China's economic indicators from their baseline-growth paths.

Deviations from baseline values due to the removal of tariff-equivalents on merchandise imports for Australian and Chinese economic variables are given in Tables 4.1, 4.3 and 4.4.

4.1 GDP and Volumes of Trade

Table 4.1 shows that the removal of border protection on merchandise imports increases real GDP in Australia and China. According to our projections, Australia's real GDP in 2015 increases by slightly more than 0.1 per cent (or about US$1 billion[8]) relative to its baseline level, and China's real GDP increases by 0.05 per cent (or about US$1.6 billion).

The removal of border protection on merchandise trade also boosts the volume of bilateral trade between Australia and China. Australian imports from China in 2015 rise by over 7 per cent (or US$2 billion) relative to baseline values, while Chinese imports from Australia increase by nearly 15 per cent (or about US$3 billion).

One of the major sources of GDP-gain in both countries is increased capital (see Table 4.1). Capital shifts from the rest of the world to China and Australia because

[7] At this point we add the standard caveat that the assumptions adopted in this report are for the purposes of modelling and are without prejudice to the content of possible negotiations.

[8] Absolute deviations in economic variables such as real GDP are expressed in constant 2005 US

lower import prices arising from the reductions in bilateral tariffs reduce the cost of investment in both countries. Lowering the cost of investment increases the economy-wide rate of return on investment, leading to increased capital.

A second source of GDP-gain for the FTA partners is trade-liberalisation-induced productivity improvements. Productivity improvements occur when producers react to increased import competition by cutting costs of production. Table 4.2 shows the extent to which productivity improves in both countries when bilateral tariff-equivalent rates are cut. These improvements are endogenously calculated in the model (see Mai, 2003, for further details). The calculation is based on empirical estimates (Chand, McCalman and Gretton 1998), taking into account bilateral trade flows between Australia and China, and China's characteristics as a developing country.

A third source of GDP-gain comes from a reallocation of resources between industries. Our modelling shows (see section 4.4) that as a result of bilateral trade liberalisation each country specialises more in the production of products for which it has a comparative advantage: agricultural and mining goods for Australia; labour-intensive manufacturing products for China. Increased specialisation in goods for which Australia and China each have a comparative advantage leads to a more efficient allocation of resources and hence to increased real GDP.

4.2 Real wages and Employment in the Long-run

Removing border protection on merchandise trade increases the real wage rate in each country in the long-run (see Table 4.1). The real wage rate in Australia in 2015 is 0.5 per cent above its baseline value, while in China the real wage rate is 0.1 per cent above its baseline. In our simulations we assume that in the long-run national employment in each country is determined by demographic factors (e.g., labour-force participation rates) that are unlikely to be affected by the implementation of an FTA. Thus we assume that the removal of protection on merchandise trade has no *long-run* effects on national employment in either Australia or China. The mechanism that keeps employment fixed in the long-run is real-wage adjustment. It follows that any long-run benefits from trade liberalisation are realised in the labour market entirely as an increase in the real wage, rather than as an increase in employment.

Although in our simulations the FTA does not affect employment in the long-run, it

does affect the industrial composition of employment (see Section 4.5). We assume that labour moves between industries so as to maintain inter-industry wage differentials at their baseline levels. Accordingly, in the long-run in each country industries that are favourably affected by the FTA will experience increased employment at the expense of industries that are less favourably affected.

4.3 Welfare effects and the Terms of Trade

Our preferred measure of welfare is real GNP. *Nominal* GNP is the income which accrues to the persons and organisations that are residents of a country. It can be derived by subtracting from GDP the value of net income paid overseas. *Real* GNP is the value of national income accruing to residents measured in terms of the final quantity of goods and services purchased by residents. It is measured as the value of GNP deflated by the price of Gross National Expenditure (GNE)[9].

Table 4.1 shows that in 2015 removal of border protection on merchandise trade will increase real GNP in Australia by 0.2 per cent (or about US$1.7 billion) relative to its baseline level. Real GNP in China is projected to rise by 0.02 per cent (or about US$0.6 billion).

For China, the percentage increase in real GNP is less than the percentage increase in real GDP, because the increase in capital income that partly underlies the increased GDP accrues to foreigners (see Section 4.1). On the other hand, for Australia the percentage increase in real GNP exceeds that of real GDP, even though, as for China, all additional capital is foreign owned. The reason for these contrasting results can be traced through to the changes in each country's terms of trade[10] (see Table 4.1). Australia's terms of trade improve as a result of the removal of border protection, while China's terms of trade deteriorate marginally. Australia's terms of trade improve relative to China's terms of trade because the reduction in Chinese tariffs is larger than the reduction in Australian tariffs (see Table 3.1). All else unchanged, an improvement (deterioration) in the terms of trade increases (reduces) the price of output (which includes exports but not imports) relative to the price of expenditure (which includes imports but not exports). Increases in the price of output (or GDP) relative to the price of expenditure (or GNE) will, in most cases, cause real GNP to

[9] GNE is the sum of private and public consumption plus investment.

[10] The terms of trade is defined as the ratio of the world price of exports to the world price of imports

increase relative to real GDP.

Another commonly used measure of welfare is real consumption (private plus public). As can be seen from Table 4.1, the percentage deviations in real consumption in the long-run match those in real GNP. This is because in our modelling consumption is a function of income accruing to resident households. Household income tends to be strongly correlated with GNP.

4.4 Industry output

Table 4.1 shows the effects on aggregated industry sectors of removing border protection on merchandise trade. At the aggregated-industry level, liberalisation is shown to have a positive or, at worst, mildly negative impacts on output in all sectors in both countries. The sectoral response for China is somewhat more muted than for Australia because the Chinese economy is much larger than the Australian economy. The only sector shown in Table 4.1 as suffering an output decline (relative to baseline values) is Chinese agriculture, reflecting increased penetration by Australian producers in the domestic Chinese market.

Tables 4.3 and 4.4 provide more industry detail for the agriculture, mining and manufacturing sectors. Each table shows percentage deviations in the long-run year for output and employment in individual industries underlying the sectoral aggregations. They also give percentage deviations and absolute changes in the volumes of bilateral trade flows.

Australia's traditional exports to China, such as wool, cereal grains, minerals not elsewhere classified (nec) (including iron ore), non-ferrous metal, and most processed food products, increase significantly relative to baseline values (see the last column of Table 4.4). For example, China's net imports[11] of agriculture products from Australia increase by about US$0.7 billion relative to there baseline levels. This leads to increased production for the Australian industries producing these products, while their Chinese counterparts lose production (compare the first column of numbers in Table 4.3 with those in Table 4.4).

On the other side, China's traditional exports to Australia, including wearing apparel and miscellaneous manufactures expand relative to baseline levels (see the last

[11] China's net imports are Chinese imports from Australia (last column in Table 4.4) minus Australian

column of Table 4.3). For example, Australian net imports[12] of wearing apparel from China increase by about US$0.5 billion. Again, this leads to increased Chinese production, but lower Australian production (compare the first column of numbers in Table 4.4 with those in Table 4.3). Chinese exports of motor vehicles and parts into Australia also rise significantly, but from a relatively low base.

For most other manufacturing products, such as textiles[13]; chemicals, rubber and plastic products; ferrous metals; and machinery and equipment nec, Australia and China have fairly strong two-way trade flows. Our modelling shows that removing bilateral tariff restrictions tends to increase the two-way flows leading to increased production in both countries.

4.5 Industry employment

For Australia, removing border protection on merchandise trade leads to additional job creation in agricultural, mining, processed food and non-ferrous metal industries (see Table 4.3). Conversely, jobs are lost relative to baseline levels in wearing apparel, motor vehicles and miscellaneous manufactures. The largest employment adjustment occurs in the wearing apparel industry, which has a relatively high initial rate of tariff-equivalent protection (Table 3.1). Our modelling results shows that, as a result of the reductions in protection, employment in the Australian wearing apparel industry falls by 2015 to about 12 per cent below its baseline level (Table 4.3).

For China, removing border protection on merchandise trade leads to additional jobs in the textiles, wearing apparel, chemical, metals, and motor vehicles industries (See Table 4.4). Small employment declines occur in the agricultural and mining sectors.

5. Facilitating bilateral investment flows

We assume for modelling purposes that an Australia-China FTA would:

- enhance the understanding of Chinese investment rules and regulations by Australian investors and vice versa;
- lead to simplified foreign investment screening procedures; and
- provide for better protection of bilateral investments.

[12] Australia's net imports are Australian imports from China (last column in Table 4.3) minus Chinese imports from Australia (last column in Table 4.4)

Such investment facilitation can be simulated as reductions in required rates of return on investment that encourage investment flows between Australia and China (see Figure 5.1).

An inflow of foreign investment brings in more advanced technology and management and, therefore, improves productivity in the liberalising countries. Productivity improvements associated with investment liberalisation have been empirically estimated using historical Chinese data (Mai et. al. 2003). The empirical estimates are used in this simulation to calculate the amount of shift in capital supply curves and accompanying improvements in productivity for China and Australia.

In simulating the effects of investment liberalisation, we assume that the liberalisation is implemented fully in 2006, yielding:

- a reduction in the required rate of return on Australian investment in China of 0.5 percentage point (i.e., a reduction from the current required rate of return of, say, 6 per cent to 5.5 per cent);
- a reduction in the required rate of return on Chinese investment in Australia of 0.4 percentage points (i.e., a reduction from the current required rate of return of, say, 6 per cent to 5.6 per cent);
- a 0.12 per cent across-the-board improvement in primary factor productivity in China; and
- a 0.08 per cent across-the-board improvement in primary factor productivity in Australia.

In deriving the magnitude of the above changes we considered the following factors:

- empirical evidence derived from past investment liberalisation in China[14];
- Australia's share in China's total trade and foreign investment;
- less scope for Australia to increase productivity because it is closer to the technology frontier than China;
- less scope for Australia to liberalise its investment regime because it has fewer barriers to foreign investment than China; and

[14] Using a historical closure (see Dixon and Rimmer 2002), Mai (et. al. 2003) estimated the productivity improvement associated a surge of FDI into China's light manufacturing industries between 1991-1996. The size of the simulated improvement was used in this study to calibrate the

- China's share in Australia's total trade and foreign investment.

It should be emphasised that the changes in required rates of return and productivity outlined above are, in our opinion, conservative. This is in keeping with the relatively high level of uncertainty associated with the estimates.

Table 5.1 shows that the simulated reductions in required rates of return lead to increased bilateral investment flows. Under the investment liberalisation scenario, the volume of Australian investment in China increases to about 8 per cent (or about US$0.2 billion) above its baseline level by 2015. The volume of Chinese investment in Australia increases by about 7 per cent (or about US$0.2 billion). Increases in bilateral investment flows between Australia and China lead to productivity improvements in the two countries that, in turn, induce investment from the Rest of the World. The induced investment flow from the Rest of the World to Australia is estimated to be about US$0.4 billion; while the induced investment flow from the Rest of the World to China is estimated to be about US$0.7 billion.

Due to increased investment and hence increased capital and improved productivity, both Australia and China gain from bilateral investment liberalisation in terms of real GDP (Table 5.1). Australia's real GDP in 2015 increases by slightly over 0.1 per cent (or about US$1 billion) relative to its baseline value, while China's real GDP increases by 0.15 per cent (or about US$5 billion).

The effects on real GDP of investment liberalisation are larger than those from the removal of border protection. This is consistent with findings from studies on the effects of China's entry to the WTO. The impact of removing border protection on merchandise trade in line with WTO commitment (see for examples, Fan and Zheng 2000, Ianchovichina and Martin 2001, Mai 2003, and Ianchovichina and Walmsley 2003) are found to be much lower than the impact of investment liberalisation due to China's entry to the WTO (see for examples, Mai, et. al. 2003, and Walmsley, Hertel and Ianchovichina 2004). Mai et. al. (2003) and Mai (2003) find that the GDP-effect of investment liberalisation due to China's entry to the WTO is 5 times larger than the GDP-effect of removing protection on merchandise trade in line with WTO commitments.

Table 5.1 also shows that investment liberalisation under a China-Australia FTA will lead to increased bilateral trade in goods. The volume of Australian imports from

China in 2015 increases by about 0.2 per cent (or about US$58 million) relative to its baseline level; while the volume of Chinese imports from Australia increases by about 0.2 per cent (or about US$39 million).

Increased investment and improved productivity increase the output of all industries in both countries (see the last few rows of Table 5.1, Table 5.2 and 5.3). Not all industries benefit significantly from the first round impacts of the investment and productivity shocks. But all industries, especially consumption-oriented industries, benefit from the induced income effects arising from increased income and hence increased consumption expenditure. For most Australian industries output expansions are about 0.1 per cent of baseline levels. For Chinese industries, the range of output expansions is 0.1 to 0.2 per cent.

Unlike removing border protection on merchandise trade, across border investment liberalisation causes little adjustment of labour between sectors (Table 5.2 and 5.3). This reflects the relatively even pattern of output response.

6. Service trade liberalisation

Services are traditionally classified as non-traded sectors. The nature of providing services normally requires service providers to be proximate to their customers. With improved transportation and communication, the first two modes of services trade (for example, distant education, going overseas for education, and tourism) have been rising steadily throughout the world. The inclusion of commercial presence (establishing services outlets in another country) and movement of natural persons (people going overseas to provide services) in the WTO definition of services trade has greatly expanded the scope for trade in services between countries. It has also revealed significant barriers to services trade inherited in each country's foreign investment regime[15] (see section 3.2).

In simulating bilateral liberalisation in services trade, we assume that an Australia-China FTA enhances the mutual understanding of investment rules and simplifies the review procedures of foreign investment in the services sectors. This, in turn, leads to an increased number of proposals and approvals for bilateral foreign investment

[15] As discussed in section 3.3, while some restrictions to the fourth mode of services trade are identified, modelling the removal of these restrictions requires significant model development work

projects in the services sectors of each country (note that these assumptions are for modelling purposes and are without prejudice to the content of possible negotiations). We model the effects of increased approvals by reducing the required rates of return for Australian investment in the Chinese services sectors by 1.5 percentage points, and by reducing the required rates of return for Chinese investment in the Australian services sectors by 0.7 percentage points. The magnitude of the reductions in required rates of return, though still conservative, is larger than that simulated for the investment liberalisation. This is because, under the investment liberalisation scenario, we assumed general facilitation measures are implemented; while in this simulation, we assume significant liberalisation in terms of increased number of approvals of bilateral foreign investment proposals in services sectors. Services trade liberalisation is assumed to be implemented fully in 2006.

The reduction in required rates of return leads to increased Australian investment in the Chinese services industries and vice versa. The increased foreign ownership leads to improved productivity because firms that invest overseas tend to be at the top of the efficiency scale[16]. The improved productivity, in turn, attracts more foreign investment bilaterally, as well as from the Rest of the World. The induced investment inflow from the Rest of the World into Australia and China contributes further to productivity improvements in the two countries. The average productivity gain estimated for Australian services industries is 0.15 per cent, while, for Chinese services industries, the average gain is simulated to be 0.3 per cent.

Services trade liberalisation increases real GDP in both countries via improved productivity and increased capital. Table 6.1 shows that Australia's real GDP would be 0.15 per cent (or US$1 billion) higher by 2015 with the services trade liberalisation than without; while China's real GDP would be 0.19 per cent (or US$6 billion) higher. Services trade liberalisation is also shown to be welfare enhancing. Australia's real GNP is estimated to be 0.1 per cent higher (or US$1 billion) than baseline in 2015; China's real GNP is 0.2 per cent (or US$5 billion) higher.

Services-trade liberalisation has a general stimulatory effect on sectoral outputs in both countries. (see Table 6.1). The output of the services sector expands partly because of improved productivity (which shifts their supply schedules outwards) and

[16] Firms that serve only domestic markets are at the bottom and firms that serve export markets are at

partly because of beneficial induced income effects. In the long-run improved productivity increases the real wage rate (i.e., the return to the fixed factor). An increased real wage means increased real income and hence increased real consumption. Even industries with relatively little connection to consumption gain from services-trade liberalisation. This is because productivity improvements in the services sectors lower the cost of services inputs for businesses in all areas. This is particularly beneficial for trade-exposed industries which tend to face relatively flat demand schedules. The reduction in business costs enhances the competitiveness of these industries enabling them to expand exports (or to replace imports on local markets) and hence to expand production. Table 6.1 shows that in 2015 the total volume of exports from Australia increases by 0.1 per cent relative to its baseline value. Exports from China increase by 0.2 per cent.

7. Aggregate effects of Australia-China FTA

7.1 Macroeconomic impacts

Each aspect of the Australia-China FTA simulated in this study increases real GDP in the partner economies (see Tables 4.1, 5.1 and 6.1). If fully implemented in 2006 they would collectively increase real GDP in Australia by 0.37 per cent (or US$3 billion) relative to its baseline level in 2015, and increase real GDP in China by 0.39 per cent (or US$12 billion) (see Table 7.1). The present value[17] of the stream of deviations from baseline in Australia's real GDP brought about by comprehensive liberalisation is about US$18 billion over the period 2006 to 2015. The same present-value calculation for China yields a gain of about US$64 billion (Table 8.2).

Table 7.2 shows that, in terms of average annual growth rates between 2005 and 2015, the comprehensive FTA is estimated to increase Australia's real-GDP growth by 0.039 percentage points (see Figure 7.1); and increase China's real-GDP growth by 0.042 percentage points (see Figure 7.2).

Our modelling shows that removing barriers to merchandise trade leads to increased investment flows; and facilitating bilateral investment leads to increased trade flows (see Tables 4.1, 5.1 and 6.1). This indicates that when all three aspects of an FTA are implemented together, the benefits are likely to be higher than the sum of the benefits

[17] By *present value* we mean the total value of the future stream of annual changes in, say, real GDP

derived from each aspect implemented separately, as reported here. Increased investment flows induced by removing barriers to merchandise trade lead to productivity improvements that, in turn, lead to additional trade flows. To the extent that this multiplier effect is not captured in our modelling, we tend to under-estimate the total benefit of the FTA.

Even without accounting for the multiplier effect described above, Table 7.1 shows that in 2015 comprehensive liberalisation increases the level of:

- Australian imports from China by 8 per cent (or US$2 billion);
- Chinese imports from Australia by over 15 per cent (or US$3 billion);
- Australian investment in China by 17 per cent (or US$0.5 billion); and
- Chinese investment in Australia by 11 per cent (or US$0.3 billion) relative to their baseline levels.

All three aspects (goods, services and investment liberalisation) of an FTA are found to be welfare enhancing for both countries. With the FTA, real GNP for Australia would be about 0.5 per cent higher (or US$4 billion) than without the FTA, while real GNP for China would be about 0.3 (or US$9 billion) per cent higher (Table 7.1). In present value terms, if the simulated liberalisation measures are implemented fully in 2006, the sum of the annual changes in real GNP for Australia is US$22 billion. For China the present-value sum of annual changes in real GNP is US$52 billion (Table 8.2).

7.2 Industry impacts

Table 7.3 shows that comprehensive liberalisation will increase output (relative to baseline values) in all Australian industries, except wearing apparel, motor vehicles and parts, and miscellaneous manufactures. For those exceptions, where output declines relative to baseline levels, the negative impacts of removing tariff protection more than offset the positive impacts arising from investment and services-trade liberalisation.

For China, comprehensive liberalisation increases output in all four aggregate-industry sectors (see Table 7.3), with the manufacturing and mining sectors being the most favourably affected. Despite the output gain, employment in the Chinese mining sector is projected to fall relative to its baseline level. As noted in earlier tables, all of

this fall is due to the removal of border protection on merchandise trade; investment and services trade liberalisation induce relatively small increases in mining employment. Employment in the services sector is also projected to fall, due, primarily, to productivity improvement associated with services trade liberalisation.

7.3 Labour market adjustment

As discussed in section 4.2, we assume in our simulation that in the long-run national employment in each country is determined by demographic factors (e.g. population growth) that are unlikely to be affected by an FTA. Any long-run benefits from trade liberalisation are realised in the labour market entirely as an increase in the real wage. Indeed, the comprehensive FTA leads to increases in real wages in both countries relative to their baseline levels (Table 7.1). The FTA, however, is found to affect the industrial composition of employment mainly due to the removal of border protection on merchandise trade.

Table 7.3 shows the comprehensive-FTA induced deviations in employment relative to baseline levels in the long-run year (2015). A key question to ask is to what extent these changes from baseline levels induce adjustment problems in the labour markets of each country. To answer this question we need to compare the deviations from baseline levels with baseline rates of growth over the 2005 to 2015 period. In our discussion below we consider a number of examples for Australia and China. Generally, the additional adjustments due to an Australia-China FTA are shown to be small compared with the adjustment processes that are already occurring.

7.3.1 Australia – Wearing apparel

The Australia-China FTA has adverse effects on employment in several Australian industries, but most notably wearing apparel. In 1997, about 52,000 people were working in the wearing apparel industry in Australia. Due to productivity improvement and relocation to lower-labour-cost countries, the number of persons working in the industry declined to about 22,300 by 2004 (Dixon and Rimmer, 2004). Our baseline simulation shows that the number of persons working in the wearing apparel industry in Australia is likely to decline further to about 13,000 by 2015. Consequently, the 12 per cent reduction in employment from baseline in 2015 arising from an Australia-China FTA (Table 7.3) means 1,500 fewer people working in the wearing apparel industry. This adjustment should be compared with the adjustment

that occurred between 1997 and 2004 – a reduction per annum of about 4,100 jobs.

7.3.2 Australia – motor vehicles and parts

The Australian motor vehicle and parts industry employed about 78,200 people in 2004 (Meagher and Adams 2004). Our baseline projection shows that, mainly because of rapid productivity growth, the industry will lose around 700 jobs per annum through to 2015. At this rate employment will fall to around 70,000 people in 2015. Thus, the 0.6 per cent FTA-induced fall in employment (Table 7.3) means about 400 fewer people working in the motor vehicle and parts industry in 2015 – a small number compared to the annual reductions occurring in the baseline.

7.3.3 China – Agriculture

The agriculture sector in China employed about 331 million people in 1997. Our baseline projection shows that, as China shifts towards a manufacturing- and services-based economy, the number of people employed in the agriculture sector is likely to decline to about 180 million by 2015 – a reduction of about 10 million per annum[18]. The removal of border protection on merchandise trade leads to 0.1 percent reduction in the level of agriculture employment in 2015 (Table 4.4). This means that about 180 thousand fewer people engage in agricultural activities in China as a result of the policy change. This adjustment in agriculture employment due to an Australia-China FTA is small compared with the adjustment process occurring in baseline. The fall in agriculture employment may be mitigated to a certain extent by growth in agriculture investment and services trade (Table 7.3).

7.3.4 China - mining

Another sector to show a negative employment impact for China is mining. In 1997, about 8.7 million people were employed in the mining sector in China. Due mainly to the reform of state-owned enterprises, the number of persons working in the mining industry fell to 5.6 million by 2001. Our baseline projection shows that the number of people employed in the sector is likely to fall further to about 4.8 million by 2015, partly due to resource constraints revealed by rapid economic growth and increasing productivity. Consequently, the 0.7 per cent FTA-induced fall in employment (Table 7.3) means 34,000 fewer people working in the mining sector. This adjustment should

[18] It is important to point out that reductions in agriculture employment do not necessarily mean migration from rural areas to large cities. Job opportunities arise in township and village enterprises

be compared with the adjustment process occurred between 1997 and 2001 – a reduction of about 770,000 per year.

7.3.5 China - services

Employment in the Chinese services sector in 2015 also falls slightly relative to its baseline level (Table 7.3). In percentage terms the falls is spread evenly across communication and financial services. In our baseline, employment in the Chinese services sector is projected to grow at an average annual rate of 2.53 per cent. The 0.1 per cent fall in services-sector employment relative to its baseline level means that, with services trade liberalisation, employment in the services sector would grow at a slightly slower rate of 2.52 per cent per annum instead of 2.53 per cent. In other words, the fall in services-sector employment below its baseline level does not indicate dismissals, but a slightly slower rate of hiring.

8. Faster versus slower liberalisation

In Sections 4 to 7 we discussed the effects of the three aspects of the FTA on the assumption that all barriers are removed immediately in 2006. In reality, however, trade liberalisation is often implemented over a number of years. This raises the question: how would our results be affected if we allowed a slower rate of implementation. To compare the effects of faster versus slower liberalisation, we simulated the three aspects of the FTA with barriers to investment and trade removed gradually between 2006 and 2010 (in a linear fashion).

Our modelling shows that faster implementation leads to earlier delivery of the gains from an FTA for both countries (Figures 8.1 and 8.2). Figure 8.1 presents the deviation from baseline of Australia's real GDP under faster versus slower removal of border protections on merchandise trade. The areas under the curves are the total gains in real GDP between 2006 and 2010. The area under the curve representing the deviation of Australia's real GDP caused by the faster removal of border protections is larger than the area under the curve representing slower liberalisation. Figure 8.2 shows a similar story for China.

As a result, the total present value of the income gains during 2006-2015 is higher when the policy change is implemented faster. This is the case for both countries, and for all three types of policy changes: reductions in border protection on merchandise

2015, faster implementation of all three aspects of an FTA leads to US$4 billion extra gains for Australia in terms of present value of real GDP; for China, the extra gain is US$13 billion (Table 8.2).

In terms of the long-run impact, the difference between faster and slower liberalisation is statistically insignificant in 2015 for all three aspects of the FTA (Tables 7.2 to 7.6). Therefore, all the long-run effects - including effects on macroeconomic indicators, trade and industries - analysed in the previous three sections also apply in the case of gradual liberalisation.

9. Impact on Rest of the World

In terms of real GDP and real GNP, the impact of an Australia-China FTA on ROW as a region is insignificant (Table 9.1). Though the FTA shifts capital away from the ROW into China and Australia, the amount of capital that shifts to the FTA-partners is a negligible proportion of total ROW capital. It follows that the effects on ROW real GDP and real GNP are also negligible.

Table 9.2 shows that an Australia-China FTA is trade creating for the world as a whole. While there is some evidence of minor trade diversion, the total volume of world imports increases from its baseline level as a result of the Australia-China FTA.

10. Concluding remarks

In this study we simulate the effects of a bilateral FTA between Australia and China, covering the removal of border protection on merchandise trade, investment liberalisation and the removal of barriers to services trade. On the basis of our modelling we conclude that the FTA has generally positive effects for Australia and China. In both countries it yields increased real GDP, partly via productivity improvements, and is welfare enhancing. The FTA is estimated to boost the present value of Australia real GDP between 2006 and 2015 by US$18 billion, China real GDP by US$64 billion, Australia real GNP by US$22 billion, and China real GNP by US$52 billion. In terms of average annual growth rates between 2005 and 2015, the FTA is estimated to increase Australia's real-GDP growth by 0.039 percentage points; and increase China's real-GDP growth by 0.042 percentage points (Figures 7.1 and 7.2).

increasing bilateral trade and investment flows. In 2015, the level of total bilateral trade[19] would be about US$5 billion higher with comprehensive liberalisation than without, while total bilateral investment[20] would be about US$1 billion higher. The Australia-China FTA also increases the total volume of world imports from their baseline levels and is thus trade creating for the world as a whole.

At an industry level, the Australian industries shown to gain most from an FTA are wool, cereal grains, minerals nec (including iron ores), sugar, and non-ferrous metals. For China the manufacturing industries contribute most to the overall expansion in the economy, especially, wearing apparel, and miscellaneous manufacturing (including toys and sporting goods etc.). The chemicals, rubber and plastic products industry, the machinery and equipment nec industry, and the services sector in both countries gain from the FTA.

In achieving a better utilisation of resources, adjustment of labour between sectors does occur following the removal of border protection on merchandise trade. Because of the complementarity of the two countries, however, such reallocation of labour between sectors tends to facilitate the natural course of adjustment already occurring in the two countries. Furthermore, such adjustment is small in scale compared with what is occurring in the two countries amid globalisation without an FTA.

[19] Australian imports from China plus Chinese imports from Australia

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Appendix A. The modelling framework – MMC

This Appendix gives an overview of the Monash Multi-Country (MMC) model of Australia, China and the Rest of World (for full model documentation see Mai, 2004). MMC is founded on the MONASH model of Australia (see Dixon and Rimmer, 2002). An important feature of MMC is that it is a dynamic model. It produces sequences of annual solutions connected by dynamic relationships such as physical capital accumulation. Policy analysis with MMC involves the comparison of two alternative sequences of solutions, one generated without the policy change, the other with the policy change in place. The first sequence, called the baseline projection, serves as a control path from which deviations are measured in assessing the effects of the policy shock (Figure 1.1).

Being a multi-country model, MMC includes inter-country/regional linkages. In MMC, changes in economic conditions in any one regional economy affect the others via inter-regional flows of commodities and capital.

The version of MMC used for this report was built in three stages. In the first stage, an existing comparative-static model of a single country – ORANI-G (see Horridge, 2001) – was transformed into a multi-country model by the addition of spatial-dimensions to all variables, equations and coefficients. In the second stage, behavioural and accounting equations concerning international trade flows were added into MMC. In the third stage, capital supply equations distinguishing capital from different sources (domestic and foreign countries/regions) were added. The dynamic mechanisms connecting expected rates of return to investment and connecting investment to capital are based on those used in the MONASH model (see Dixon and Rimmer 2002).

MMC uses a multi-country data base containing input-output data relating to the Australia, China and Rest of World economies, and country-to-country data for international trade and investment flows. The input-output and international trade data are based on the GTAP database (Dimaranan and McDougall, 2002). Main sources for international investment data are the Australian Department of Foreign Affairs and Trade (DFAT), MOFCOM, the

Australian Bureau of Statistics (ABS), the World Bank, and the United Nations Conference on Trade and Development.

In the remainder of this appendix we first provide a general overview of the model, followed by a brief outline of core areas of the underlying model specification. Closure options and solution software are described last.

Overview: Economic agents and the nature of the markets

There are four types of agents in the model: industries, capital creators, households and governments. Currently, 57 industries are recognised in the model (see Table A.1). For each sector in each region there is an associated capital creator. The sectors each produce a single commodity and the capital creators each produce units of capital that are specific to the associated sector. Each region in MMC has a single household and a government which, *inter alia*, intervenes in markets by imposing various taxes. International trade occurs by specifying that imported and domestically produced versions of the same goods are imperfect substitutes in demand.

MMC determines supplies and demands of commodities in each country/region through optimising behaviour of agents in competitive markets. Optimising behaviour also determines industry demands for labour and capital. Labour supply at the national level is determined by demographic factors, while national capital supply responds to rates of return.

The specifications of supply and demand behaviour co-ordinated through market clearing equations comprise the general equilibrium core of the model.

CGE Core: Demands for inputs to be used in the production of commodities

MMC recognises two broad categories of inputs: intermediate inputs and primary factors. Industries in each country/region are assumed to choose the mix of inputs which minimises the costs of production for their level of output. They are constrained in their choice of inputs by a three-level nested production technology. At the first level, intermediate-input bundles and primary-factor bundles are used in fixed proportions to output. These bundles are formed at the second level. Intermediate input bundles are CES combinations of international imported goods and domestic goods. The primary-factor bundle is a CES combination of labour, capital and land. At the

third level, the input of capital is formed as a CES combination of inputs of capital from three sources (domestic and two foreign sources).

CGE Core: Household demands

In each region, the household buys bundles of goods to maximise a Stone-Geary utility function subject to a household expenditure constraint. The bundles are CES combinations of imported and domestic goods. A Keynesian consumption function determines household expenditure as a function of GNP.

CGE Core: Inputs to investment

Capital creators for each country/region demonstrate optimising behaviour in combining commodity inputs to form units of capital. Capital creators do not use primary factors. The use of primary factors in capital creation is recognised through inputs of construction (service).

CGE Core: Governments' demands for commodities

Commodities are demanded from each country/region by governments. In MMC there are several ways of handling these demands, including: (i) endogenously, by a rule such as moving government expenditures with household consumption expenditure or with domestic absorption; (ii) endogenously, as an instrument which varies to accommodate an exogenously determined target such as a required level of government deficit; (iii) exogenously. In this study, we adopted the first assumption.

CGE Core: International trade

The country/regions in MMC choose to supply to domestic versus foreign markets according to relative prices and therefore has an upward sloping export supply curve. They also export transport services to a global shipping sector that, in turn, provide shipping services to move goods between country/regions[21]. The country/regions also choose to import from different foreign sources according to relative prices. Each of them therefore has a downward sloping import demand curve. The slopes of the export supply and import demand curves for each country/region depend on the structure of the economy concerned.

CGE Core: Factor markets

As described above, optimising behaviour also determines industry demands for land, labour and capital. Land is a fixed factor in MMC. Labour supply at the national level is determined by demographic factors, while national capital supply responds to rates of return. Capital ownership can cross country/regional border so that each region's endowment of productive resources reflects relative rates of return.

CGE Core: Physical capital accumulation

The accumulation of physical capital is through investment net of depreciation in each time period. In capital supply schedules, the expected rates of return are related to capital growth via reverse logistic functions (Figure 5.1, see also Dixon and Rimmer 2002). There is a capital supply curve associated with each capital flow, that is, capital owned by country s in country r's industry j, where s and r are the country/regions in MMC. In the current version of MMC, the expected rate of return is determined under static expectations. Under static expectations, investors only take account of current rentals and asset prices when forming current expectations about rates of return.

Model closure

In MMC there are n equations and m variables. Typically the number of variables (m) is greater than the number of equation (n). Thus m-n variables must be chosen to be exogenous (i.e., determined outside of the model). A choice of variables to be made exogenous is called a closure. In policy simulations, naturally endogenous variables (real GDP, output, employment and trade) are set as endogenous variables; while naturally exogenous variables (taxes, technological and tastes changes) are set as exogenous variables.

For the purpose of constructing a baseline, however, observable variables (real GDP, output, employment and trade) are set as exogenous variables to take on board forecasts and information available from outside sources. Typical examples include macro forecasts made by specialist private or public-sector groups and information about future changes in tax and benefit rates announced by the government.

To allow such naturally endogenous variables to be exogenous, an equal

example, to accommodate forecasts for the volumes of agricultural exports we would endogenise variables that locate the positions of foreign demand curves. To accommodate forecasts for macro variables, we would endogenise various macro coefficients, such as the average propensity to consume.

Solution software

MMC is a system of non-linear equations. These are solved using GEMPACK, a suite of programs for implementing and solving economic models. A linear, differential version of the MMC equation system is specified in syntax similar to ordinary algebra. GEMPACK then solves the system of non-linear equations as an Initial Value problem, using a standard method, such as Euler or midpoint. Details of the algorithms available in GEMPACK are given in Harrison and Pearson (1996).

Table A.1

Complete list of MMC industries*

1	paddy rice	30	wood products
2	wheat	31	paper products, publishing
3	cereal grains nec	32	petroleum, coal products
4	vegetables,fruit,nuts	33	chemical, rubber, plastic prods
5	oil seeds	34	mineral products nec
6	sugar cane, sugar beet	35	ferrous metals
7	plant-based fibers	36	metal nec
8	crops nec	37	metal products
9	cattle,sheep,goats,horses	38	motor vehicles and parts
10	animal products nec	39	transport equiqment nec
11	raw milk	40	electronic equipment
12	wool,silk-worm cocoons	41	machinery and equipment nec
13	forestry	42	miscellaneous manufactures
14	fishing	43	electricity
15	coal	44	gas manufacture, distribution
16	oil	45	water
17	gas	46	construction
18	minerals nec	47	Trade
19	meat:cattle,sheep,goats,horse	48	transport nec
20	meat products nec	49	sea transport
21	vegetable oils and fats	50	air transport
22	dairy products	51	communication
23	processed rice	52	financial services nec
24	sugar	53	insurance
25	food products nec	54	business services nec
26	beverages and tobacco products	55	recreation and other services
27	textiles	56	pubadmin/defence/health/educat
28	wearing apparel	57	dwellings
29	leather products		

* The industry classification reported here is identical to the classification used for version 5 of the GTAP database (see Dimaranan and McDougall, 2002). The term "nec" means not elsewhere classified.

Figure 1.1

History, baseline forecasts and policy simulations

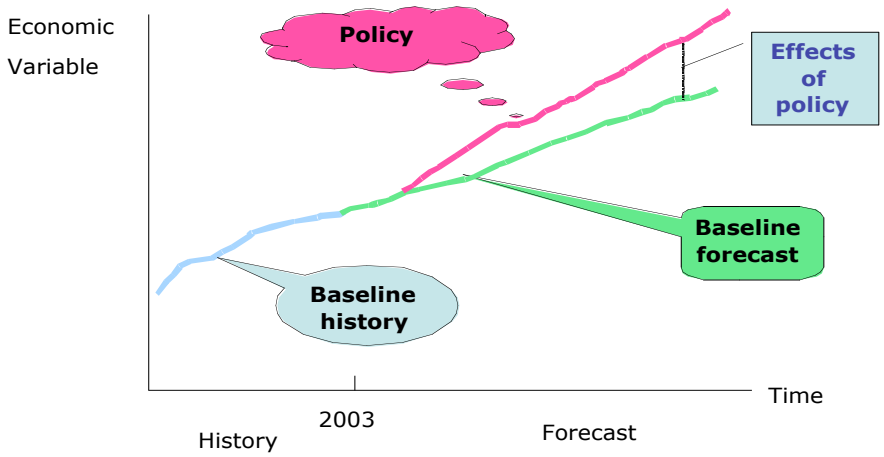


Figure 2.1

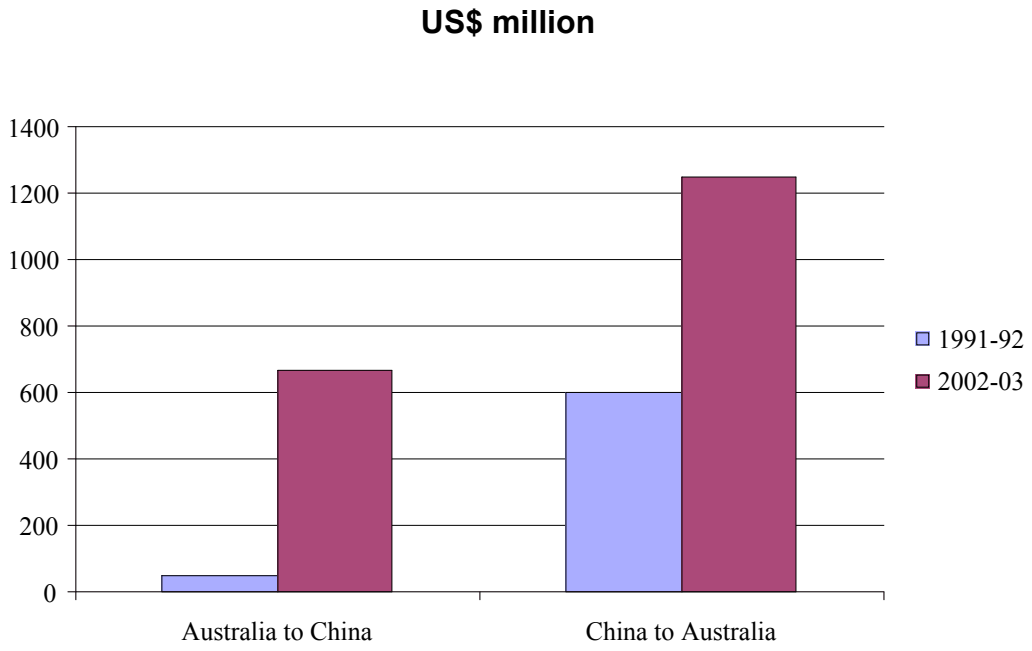
Merchandise trade between Australia and China

Per cent

Source: Calculated from data provided by DFAT.

Figure 2.2

Bilateral investment flows between Australia and China



Source: Based on data provided by DFAT.

Figure 5.1

Simulating the effects of investment liberalisation

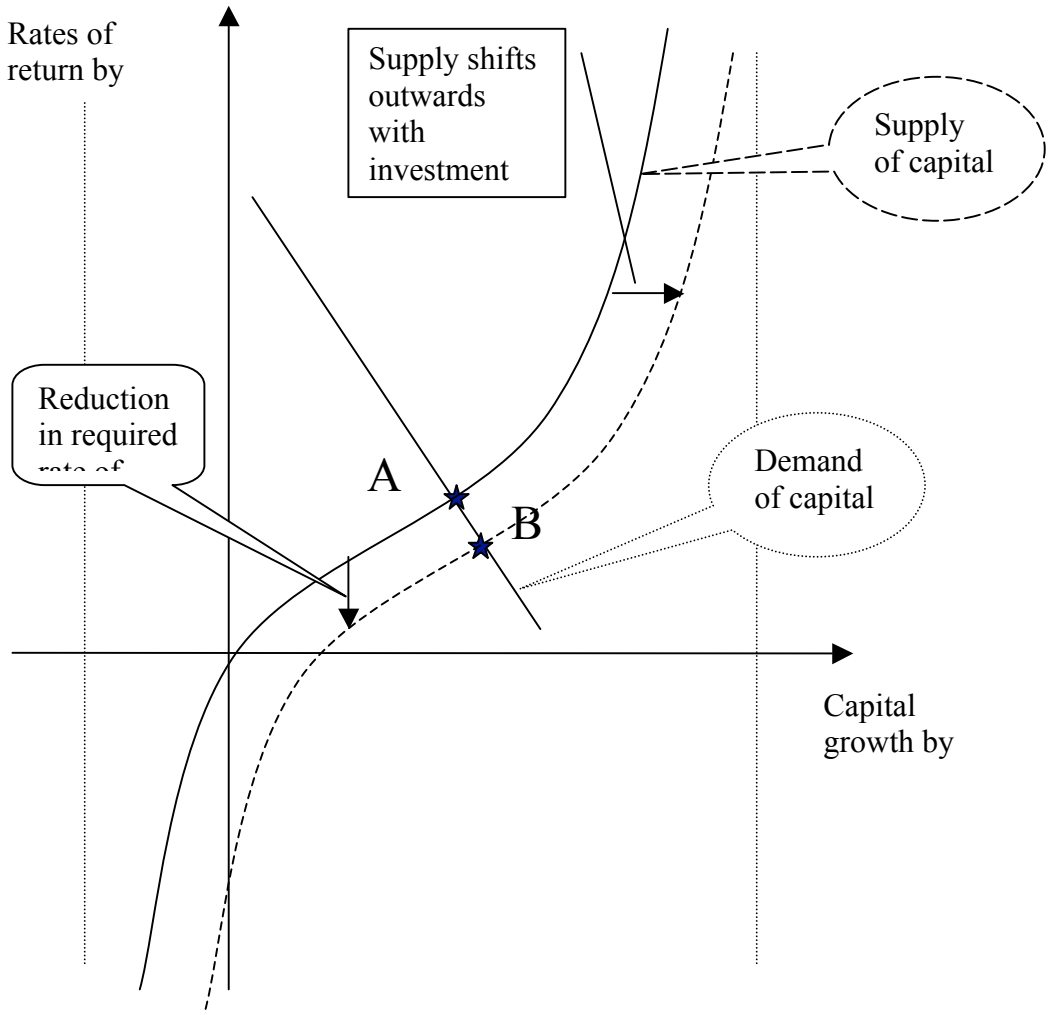


Figure 7.1

Impacts of the FTA on Australian real GDP

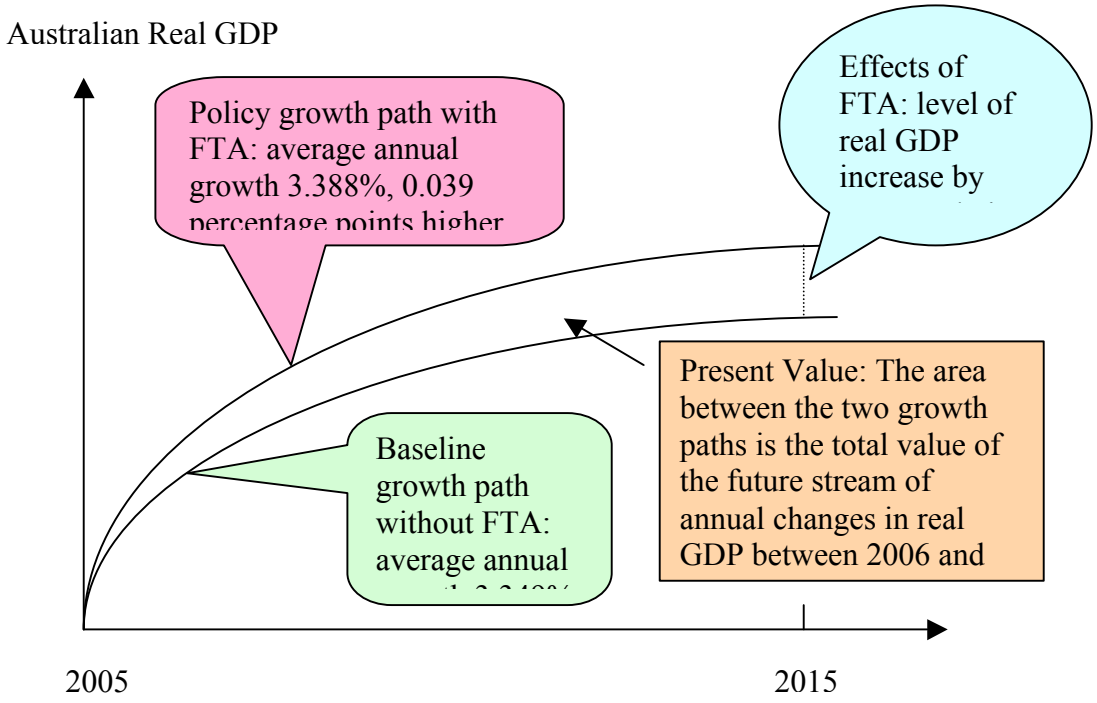


Figure 7.2

Impacts of the FTA on Chinese real GDP

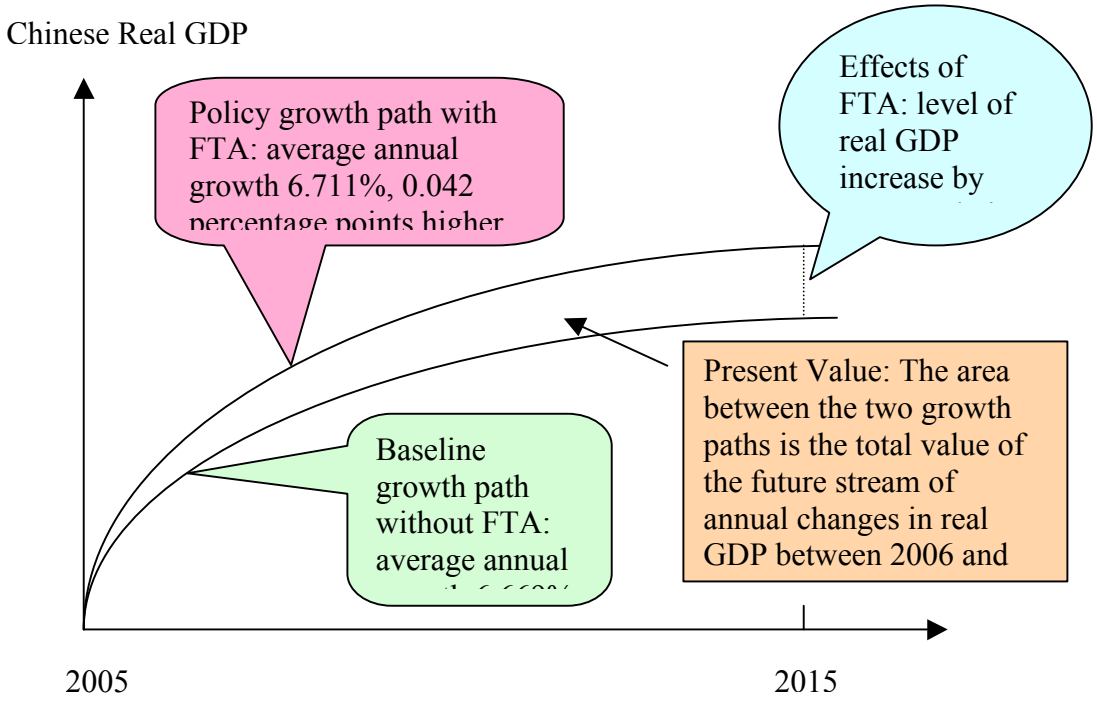
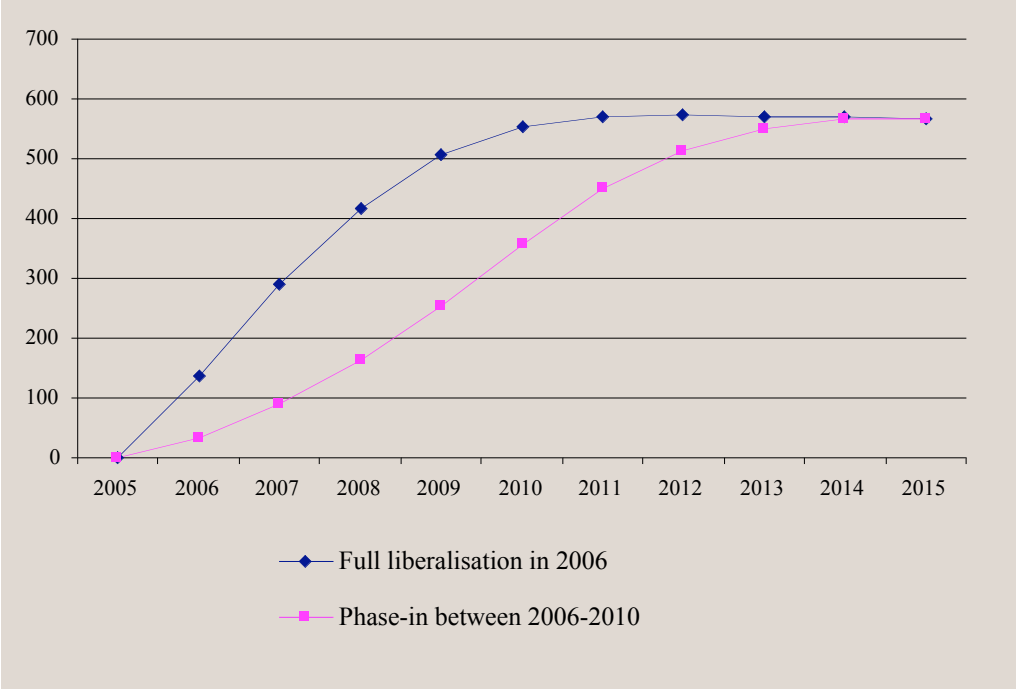


Figure 8.1

Phase-in between 2006-2010 versus full liberalization in 2006:

AUSTRALIA: Deviation of real GDP from baseline due to removal of border protection on merchandise trade

2006-2015, US$ million



Source: Policy simulation.

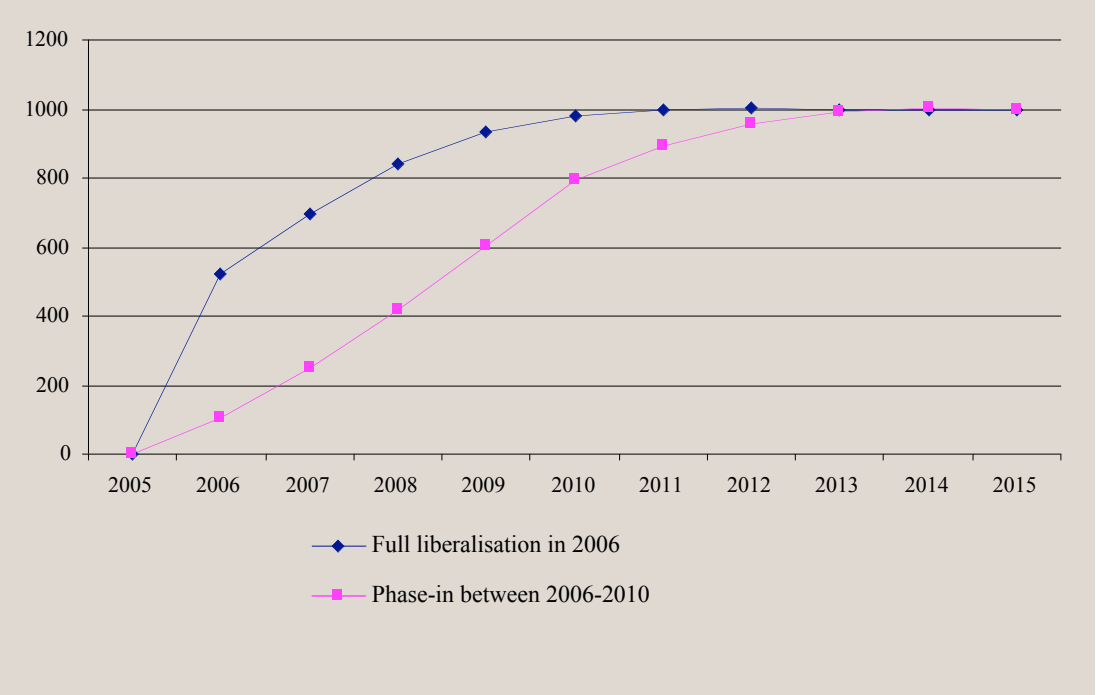
Note: The values in the figure are discounted flows in 2005 US dollars.

Figure 8.2

Phase-in between 2006-2010 versus full liberalization in 2006:

CHINA: Deviation of real GDP from baseline due to removal of border protection on merchandise trade

2006-2015, US$ million



Source: Policy simulation.

Note: The values in the figure are discounted flows in 2005 US dollars.

Table 1.1

Aggregate-industry sectors and industries*

Sector/Industry	Main components
Agriculture	
Wheat	Wheat
Cereal grains nec	Barley, oats, corn, etc.
Wool, silk-worm cocoons	Greasy wool, silk-worm cocoons
Oilseeds	Oilseeds
Mining	
Minerals nec	Base metal ores, ferrous and non-ferrous
Manufacturing	
Meat products nec	Meat products other than bovine products
Dairy products	Dairy products other than raw milk
Sugar	Raw and refined sugar
Food products nec	
Textiles (incl. lightly-processed wool)	Textiles, including lightly-processed wool
Wearing apparel	Clothing and footwear
Chemical, rubber, plastic prods	Chemical, rubber and plastic products
Ferrous metals	Iron and steel
Non-ferrous metals	Non-ferrous metals (eg aluminium)
Motor vehicles and parts	Motor vehicles and parts
Machinery and equipment nec	Machinery and equipment, except transport and electronic
Miscellaneous manufactures	Toys, sporting goods, etc.
Services	
Communication	Postal and telecommunications services
Financial services nec	Financial services other than insurance services

* The full version of MMC recognises 57 industries based on the classification used in the GTAP version 5 database (see Appendix A, Table A.1). However, many of these industries have no strategic significance for an FTA between China and Australia. For this reason, and for brevity of presentation, in our reporting we generally aggregate the results for 57 industries into results for the 4 sectoral aggregations and for the 19 individual industries shown in this table.

Table 2.1

Baseline: the business-as-usual scenario

Average annual growth rates, per cent

	Australia		China	
	1997-2015	2005-2015	1997-2015	2005-2015
Macroeconomic indicators				
Real GDP	3.6	3.3	7.2	6.7
Real Consumption	3.6	3.4	6.0	5.8
Real Investment	3.8	2.9	7.5	6.6
Export volumes	3.5	3.9	10.1	9.2
Import volumes	4.2	3.7	9.0	8.2
Bilateral investment flow volumes				
Australian investment volumes in China	6.2	5.4	n.a.	n.a.
Chinese investment volumes in Australia	n.a.	n.a.	5.2	5.9
Output of aggregated sectors				
Agriculture	2.2	2.4	2.9	2.6
Mining	3.1	3.2	7.0	6.3
Manufacturing	2.2	2.1	8.0	7.4
Services	3.7	3.4	7.3	6.7

Source: baseline simulation.

n.a. not applicable.

Table 2.2

Baseline: Australian imports from China

	Average annual growth in volumes 1997-2015 Per cent	Average annual growth in volumes 2005-2015 Per cent	Volumes[a] 2005 US$million	Volumes[a] 2015 US$million
Total	**10.1**	**8.5**	**12130**	**27398**
Agriculture	***3.7***	***3.3***	**46**	**63**
Wheat	1.9	2.1	**0**	**0**
Cereal grains nec	3.6	3.9	**1**	**1**
Oil seeds	2.4	1.9	**3**	**3**
Wool, silk-worm cocoons	6.2	4.7	**1**	**1**
Mining	***13.2***	***11.4***	**110**	**322**
Minerals nec	13.6	12.5	**16**	**52**
Manufacturing	***9.8***	***8.1***	**11242**	**24424**
Meat products nec	4.3	4.2	**1**	**2**
Dairy products	10.2	10.2	**0**	**0**
Sugar	6.1	5.7	**1**	**1**
Food products nec	8.4	7.7	**98**	**206**
Textiles (incl. lightly-processed wool)	7.9	6.1	**1377**	**2478**
Wearing apparel	6.1	3.4	**1509**	**2107**
Chemical, rubber, plastic prods	12.4	10.7	**1261**	**3493**
Ferrous metals	8.1	7.0	**55**	**107**
Non-ferrous metals	13.0	11.3	**77**	**223**
Motor vehicles and parts	15.3	14.2	**47**	**177**
Machinery and equipment nec	7.2	6.0	**1305**	**2341**
Miscellaneous manufactures	10.7	8.3	**1257**	**2775**
Services	***14.1***	***13.0***	**728**	**2472**

Source: baseline simulation.

[a] Measured in 2005 US dollars.

Table 2.3

Baseline: Chinese imports from Australia

	Average annual growth in volumes 1997-2015 Per cent	Average annual growth in volumes 2005-2015 Per cent	Volumes[a] 2005 US$million	Volumes[a] 2015 US$million
Total	**9.2**	**8.8**	**9279**	**21659**
Agriculture	***8.1***	***7.3***	**2012**	**4072**
Wheat	6.0	5.0	**101**	**166**
Cereal grains nec	3.0	2.1	**395**	**486**
Oil seeds	6.9	6.3	**24**	**44**
Wool, silk-worm cocoons	11.8	9.8	**1006**	**2556**
Mining	***7.6***	***7.7***	**2166**	**4565**
Minerals nec	7.5	7.8	**1994**	**4208**
Manufacturing	***10.6***	***9.9***	**4366**	**11238**
Meat products nec	9.6	8.9	**56**	**130**
Dairy products	10.5	9.5	**100**	**247**
Sugar	7.1	6.7	**89**	**169**
Food products nec	9.1	8.1	**105**	**227**
Textiles (incl. lightly-processed wool)	11.0	10.8	**745**	**2084**
Wearing apparel	4.6	4.2	**33**	**49**
Chemical, rubber, plastic prods	10.1	9.8	**294**	**751**
Ferrous metals	9.6	9.0	**168**	**397**
Non-ferrous metals	11.3	10.3	**1543**	**4100**
Motor vehicles and parts	9.2	9.3	**6**	**14**
Machinery and equipment nec	9.7	8.8	**432**	**1007**
Miscellaneous manufactures	9.9	9.8	**8**	**21**
Services	***9.5***	***9.4***	**742**	**1825**

Source: baseline simulation.

[a] Measured in 2005 US dollars.

Table 3.1

Levels of tariff-equivalent border protection on bilateral merchandise trade between Australia and China

Ad Valorem percentage rates estimated for 2005

	Australia	China
Wheat	0.0	30.0
Cereal grains nec	0.0	3.0
Vegetables, fruit, nuts	0.7	5.9
Oil seeds	0.0	15.0
Plant-based fibers	0.0	3.0
Crops nec	0.0	3.1
Animal products nec	0.0	5.2
Wool, silk-worm cocoons	0.0	15.0
Forestry	0.4	2.2
Fishing	0.0	12.8
Coal	0.0	4.7
Gas	0.0	6.0
Minerals nec	0.0	3.0
Meat: cattle, sheep, goats, horse	0.6	12.0
Meat products nec	1.0	14.0
Vegetable oils and fats	0.6	13.0
Dairy products	12.0	9.9
Processed rice	1.7	10.6
Sugar	2.1	25.0
Food products nec	2.2	15.8
Beverages and tobacco products	3.4	26.0
Textiles (incl. lightly-processed wool)	6.6	9.7
Wearing apparel	14.8	16.7
Leather products	7.4	9.0
Wood products	4.4	6.6
Paper products, publishing	1.8	4.9
Petroleum, coal products	0.0	6.3
Chemical, rubber, plastic prods	2.2	9.1
Mineral products nec	4.0	11.0
Ferrous metals	2.0	7.0
Non-ferrous metals	2.2	6.2
Metal products	3.8	11.0
Motor vehicles and parts	5.2	16.3
Transport equipment nec	0.3	7.5
Electronic equipment	0.3	7.0
Machinery and equipment nec	2.3	8.8
Miscellaneous manufactures	2.5	13.5

Based on data and information from the following sources: GTAP database, Australian Productivity Commission, Chinese Ministry of Finance, and WTO.

Table 3.2

China: tariff rate quotas on agricultural products

2005

	Quota mt	In-quota rate Per cent	Out-quota rate Per cent	Share allocated to non-state traders Per cent
Wheat	9,636,000	1-10	65	10
Rice	5,320,000	1-9	10-65	50
Corn	7,200,000	1-10	40-65	40
Sugar	1,945,000	15	50	30
Cotton	894,000	1	40	67
Wool	287,000	1	38	n.a.
Soybean oil	3,587,100	9	30.7	90
Palm oil	3,168,000	9	30.7	90
Rape-seed oil	1,243,000	9	30.7	90

Source: WTO (2001).

Table 4.1

Removing tariff equivalents on merchandise trade
Full liberalization in 2006:
Effects on macroeconomic indicators and aggregated sectors

Deviations from baseline, 2015

	Australia	China
Macroeconomic indicators		
Real GDP (%)	0.12	0.05
Real GDP (US$million)	944	1610
Real GNP (%)	0.22	0.02
Real GNP (US$million)	1715	610
Real Consumption (%)	0.21	0.02
Export volumes (%)	0.6	0.2
Import volumes (%)	1.3	0.2
Terms of Trade (%)	0.6	-0.1
Capital stock (%)	0.2	0.1
Real wage (%)	0.5	0.1
Volumes of investment flows		
Australian investment in China (%)	0.1	n.a
Australian investment in China (US$million)	2	n.a
Chinese investment in Australia (%)	n.a	0.3
Chinese investment in Australia (US$million)	n.a	10
Investment from the Rest of the World (%)	0.2	0.1
Investment from the Rest of the World (US$million)	1106	818
Volumes of trade flows		
Australian imports from China (%)	7.3	n.a
Australian imports from China (US$million)	1995	n.a
Chinese imports from Australia (%)	n.a	14.8
Chinese imports from Australia (US$million)	n.a	3197
Output of aggregated sectors		
Agriculture	1.2	-0.1
Mining	0.2	0.0
Manufacturing	0.2	0.1
Services	0.0	0.0

Source: Policy simulation.

n.a. not applicable.

Table 4.2

Removing tariff equivalents on merchandise trade

Full liberalization in 2006:

Trade liberalization induced endogenous productivity improvement*

Per cent

	Australia	China
Agriculture	0.0	0.0
Wheat	0.0	0.0
Cereal grains nec	0.0	0.0
Oil seeds	0.0	0.0
Wool, silk-worm cocoons	0.0	0.0
Mining	0.0	0.4
Minerals nec	0.0	0.2
Manufacturing	0.1	0.1
Meat products nec	0.0	0.0
Dairy products	0.0	0.0
Sugar	0.1	0.3
Food products nec	0.0	0.1
Textiles (incl. lightly-processed wool)	0.4	0.1
Wearing apparel	1.7	0.3
Chemical, rubber, plastic prods	0.1	0.0
Ferrous metals	0.0	0.0
Non-ferrous metals	0.0	0.1
Motor vehicles and parts	0.0	0.0
Machinery and equipment nec	0.0	0.0
Miscellaneous manufactures	0.2	0.1

Source: Policy simulation.

* The numbers in this table show the percentage rates of change in output per unit of primary factor (labour, capital and land) input that arise from the removal of border protection shown in Table 3.1. For example, in our modelling we assume that due to the removal of tariffs and tariff equivalent protection on Chinese imports of wearing apparel into Australia, productivity (i.e. output per unit of primary factor input) in the Australian wearing apparel industry will improve by 1.7 per cent.

Table 4.3

Removing tariff equivalents on merchandise trade
Full liberalization in 2006:
AUSTRALIA: Industry results*
2015

	Output Percentage deviation from baseline %	Output Deviation from baseline US$million	Employment Percentage deviation from baseline %	Imports from China Percentage deviation from baseline %	Imports from China Deviation from baseline in Volumes [a] US$ million
Agriculture	**1.2**	**255**	**1.4**	**1.8**	**1**
Wheat	0.4	8	0.4	n.s.	0
Cereal grains nec	0.4	4	0.4	n.s.	0
Oil seeds	2.1	4	2.6	n.s.	0
Wool, silk-worm cocoons	7.1	218	9.2	n.s.	0
Mining	**0.2**	**72**	**0.0**	**0.6**	**2**
Minerals nec	0.7	86	0.5	1.7	1
Manufacturing	**0.2**	**195**	**0.0**	**8.1**	**1977**
Meat products nec	0.4	2	0.5	n.s.	0
Dairy products	0.1	1	-0.1	n.s.	0
Sugar	1.8	14	1.7	n.s.	0
Food products nec	0.2	7	0.0	5.1	11
Textiles (incl. lightly-processed wool)	3.2	98	2.9	9.0	223
Wearing apparel	-5.5	-36	-11.9	24.5	516
Chemical, rubber, plastic prods	0.1	12	0.0	7.4	259
Ferrous metals	0.0	1	-0.1	3.7	4
Non-ferrous metals	1.4	90	1.3	8.5	19
Motor vehicles and parts	-0.6	-43	-0.8	31.5	56
Machinery and equipment nec	0.3	28	0.2	3.8	89
Miscellaneous manufactures	-1.3	-11	-1.7	5.2	144

Source: Policy simulation.

Note: In the body of the table "n.s." means not significant because the value of the underlying trade flow is negligible.

[a] Measured in 2005 US dollars.

Note: The deviations in values in this table are measured in industry value added that may not add up to the total deviation of GDP in Table 4.1. Unlike industry value added, GDP includes indirect taxes.

Table 4.4

Removing tariff equivalents on merchandise trade
Full liberalization in 2006:
CHINA: Industry results
2015

	Output Percentage deviation from baseline %	Output Deviation from baseline US$million	Employment Percentage deviation from baseline %	Imports from Australia Percentage deviation from baseline %	Imports from Australia Deviation from baseline in volumes [a] US$ million
Agriculture	**-0.1**	**-168**	**-0.1**	**16.3**	**663**
Wheat	-0.1	-7	-0.1	20.5	34
Cereal grains nec	-0.1	-12	-0.2	0.9	4
Oil seeds	-0.1	-12	-0.2	61.4	27
Wool, silk-worm cocoons	-4.8	-189	-6.9	19.2	490
Mining	**0.0**	**0**	**-0.9**	**6.6**	**301**
Minerals nec	-0.2	-47	-0.5	6.4	270
Manufacturing	**0.1**	**1150**	**0.0**	**20.3**	**2282**
Meat products nec	0.0	3	-0.1	12.3	16
Dairy products	-0.5	-5	-0.6	27.1	67
Sugar	-0.4	-2	-0.8	40.2	68
Food products nec	0.0	1	-0.1	33.9	77
Textiles (incl. lightly-processed wool)	0.3	248	0.1	17.2	359
Wearing apparel	0.4	328	0.1	93.0	46
Chemical, rubber, plastic prods	0.1	112	0.1	33.1	249
Ferrous metals	0.1	40	0.0	10.5	41
Non-ferrous metals	-0.2	-41	-0.4	19.5	799
Motor vehicles and parts	0.1	25	0.1	116.9	17
Machinery and equipment nec	0.1	96	0.0	13.1	131
Miscellaneous manufactures	0.1	89	0.0	60.7	13

Source: Policy simulation.

[a] Measured in 2005 US dollars.

Note: The deviations in values in this table are measured in industry value added that may not add up to the total deviation of GDP in Table 4.1. Unlike industry value added, GDP includes indirect taxes.

Table 5.1

Effects of Investment liberalization

Full liberalization in 2006

Deviations from baseline, 2015

	Australia	China
Macroeconomic indicators		
Real GDP (%)	0.11	0.15
Real GDP (US$million)	864	4616
Real GNP (%)	0.1	0.1
Real GNP (US$million)	787	3737
Real Consumption (%)	0.1	0.1
Export volumes (%)	0.1	0.2
Import volumes (%)	0.1	0.1
Terms of Trade (%)	0.0	-0.1
Capital stock (%)	0.1	0.1
Real wage (%)	0.1	0.1
Volumes of investment flows		
Australian investment in China (%)	8.2	n.a.
Australian investment in China (US$million)	235	n.a.
Chinese investment in Australia (%)	n.a.	7.1
Chinese investment in Australia (US$million)	n.a.	197
Investment from the Rest of the World (%)	0.1	0.1
Investment from the Rest of the World (US$million)	360	734
Volumes of trade flows		
Australian imports from China (%)	0.2	n.a.
Australian imports from China (US$million)	58.0	n.a.
Chinese imports from Australia (%)	n.a.	0.2
Chinese imports from Australia (US$million)	n.a.	38.6
Output of aggregated sectors		
Agriculture	0.1	0.1
Mining	0.1	0.2
Manufacturing	0.1	0.2
Services	0.1	0.1

Source: Policy simulation.

Table 5.2

Effects of Investment liberalization
Full liberalization in 2006:
AUSTRALIA: Industry results*
2015

	Output Percentage deviation from baseline %	Output Deviation from baseline US$million	Employment Percentage deviation from baseline %	Imports from China Percentage deviation from baseline %	Imports from China Deviation from baseline in Volumes [a] US$ million
Agriculture	**0.1**	**17**	**0.0**	**0.2**	**0**
Wheat	0.0	1	-0.1	n.s.	0
Cereal grains nec	0.1	1	0.0	n.s.	0
Oil seeds	0.1	0	0.0	n.s.	0
Wool, silk-worm cocoons	0.1	3	0.0	n.s.	0
Mining	**0.1**	**51**	**0.0**	**0.3**	**1**
Minerals nec	0.2	21	0.0	0.3	0
Manufacturing	**0.1**	**96**	**0.0**	**0.2**	**49**
Meat products nec	0.0	0	0.0	n.s.	0
Dairy products	0.1	2	0.0	n.s.	0
Sugar	0.1	1	0.0	n.s.	0
Food products nec	0.0	2	-0.1	0.1	0
Textiles (incl. lightly-processed wool)	0.1	3	0.0	0.2	4
Wearing apparel	0.1	0	0.0	0.1	3
Chemical, rubber, plastic prods	0.1	12	0.0	0.3	9
Ferrous metals	0.1	4	0.0	0.2	0
Non-ferrous metals	0.2	12	0.1	0.3	1
Motor vehicles and parts	0.1	10	0.0	0.3	1
Machinery and equipment nec	0.1	8	0.0	0.2	4
Miscellaneous manufactures	0.1	1	0.0	0.2	5
Services	**0.1**	**702**	**0.0**	**0.3**	**8**
Communication	0.1	26	0.0	0.3	0
Financial services nec	0.1	51	0.0	0.3	0

Source: Policy simulation.

Note: In the body of the table "n.s." means not significant because the value of the underlying trade flow is negligible.

[a] Measured in 2005 US dollars.

Note: The output deviations in this table are measured in industry value added that may not add up to the total deviation of GDP in Table 5.1. Unlike industry value added, GDP includes indirect taxes.

Table 5.3

Effects of Investment liberalization
Full liberalization in 2006:
CHINA: Industry results
2015

	Output Percentage deviation from baseline %	Output Deviation from baseline US$million	Employment Percentage deviation from baseline %	Imports from Australia Percentage deviation from baseline %	Imports from Australia Deviation from baseline in volumes [a] US$ million
Agriculture	**0.1**	**481**	**0.0**	**0.1**	**7**
Wheat	0.1	11	0.0	0.1	0
Cereal grains nec	0.1	13	0.0	0.1	1
Oil seeds	0.2	19	0.1	0.2	0
Wool, silk-worm cocoons	0.2	7	0.1	0.2	4
Mining	**0.2**	**133**	**0.0**	**0.2**	**9**
Minerals nec	0.2	48	0.0	0.2	8
Manufacturing	**0.2**	**1742**	**0.0**	**0.2**	**25**
Meat products nec	0.1	11	0.0	0.1	0
Dairy products	0.2	2	0.0	0.1	0
Sugar	0.1	1	0.0	0.2	0
Food products nec	0.1	24	0.0	0.1	0
Textiles (incl. lightly-processed wool)	0.2	147	0.0	0.2	4
Wearing apparel	0.1	121	0.0	0.1	0
Chemical, rubber, plastic prods	0.2	247	0.1	0.2	2
Ferrous metals	0.2	76	0.0	0.2	1
Non-ferrous metals	0.2	37	0.1	0.2	11
Motor vehicles and parts	0.2	53	0.1	0.1	0
Machinery and equipment nec	0.1	213	0.0	0.2	2
Miscellaneous manufactures	0.2	138	0.0	0.2	0
Services	**0.1**	**2340**	**0.0**	**0.1**	**3**
Communication	0.2	75	0.0	0.1	0
Financial services nec	0.2	106	0.0	0.1	0

Source: Policy simulation.

[a] Measured in 2005 US dollars.

Note: The output deviations in this table are measured in industry value added that may not add up to the total deviation of GDP in Table 5.1. Unlike industry value added, GDP includes indirect taxes.

Table 6.1

Effects of Services trade liberalisation

Full liberalization in 2006

Percentage deviations from baseline, 2015

	Australia	China
Macroeconomic indicators		
Real GDP (%)	0.15	0.19
Real GDP (US$million)	1199	5948
Real GNP (%)	0.1	0.2
Real GNP (US$million)	1114	4982
Real Consumption (%)	0.1	0.2
Export volumes (%)	0.1	0.2
Import volumes (%)	0.1	0.1
Terms of Trade (%)	0.0	-0.1
Capital stock (%)	0.1	0.1
Real wage (%)	0.2	0.1
Volumes of investment flows		
Australian investment in China (%)	8.4	n.a.
Australian investment in China (US$million)	240	n.a.
Chinese investment in Australia (%)	n.a.	4.0
Chinese investment in Australia (US$million)	n.a.	111
Investment from the Rest of the World (%)	0.1	0.2
Investment from the Rest of the World (US$million)	576	1621
Volumes of trade flows		
Australian imports from China (%)	0.3	n.a.
Australian imports from China (US$million)	73	n.a.
Chinese imports from Australia (%)	n.a.	0.2
Chinese imports from Australia (US$million)	n.a.	45
Output of aggregated sectors		
Agriculture	0.1	0.1
Mining	0.1	0.2
Manufacturing	0.1	0.2
Services	0.2	0.2

Source: Policy simulation.

Table 6.2

Effects of Services trade liberalisation
Full liberalization in 2006:
AUSTRALIA: Industry results*
2015

	Output Percentage deviation from baseline %	Output Deviation from baseline US$million	Employment Percentage deviation from baseline %	Imports from China Percentage deviation from baseline %	Imports from China Deviation from baseline in Volumes [a] US$ million
Agriculture	**0.1**	**14**	**0.0**	**0.1**	**0**
Wheat	0.0	1	0.0	n.s.	0
Cereal grains nec	0.1	1	0.1	n.s.	0
Oil seeds	0.1	0	0.0	n.s.	0
Wool, silk-worm cocoons	0.1	4	0.1	n.s.	0
Mining	**0.1**	**44**	**0.0**	**0.3**	**1**
Minerals nec	0.1	20	0.1	0.3	0
Manufacturing	**0.1**	**108**	**0.1**	**0.2**	**57**
Meat products nec	0.1	0	0.0	n.s.	0
Dairy products	0.1	1	0.0	n.s.	0
Sugar	0.1	0	0.0	n.s.	0
Food products nec	0.1	3	0.0	0.1	0
Textiles (incl. lightly-processed wool)	0.1	3	0.1	0.2	4
Wearing apparel	0.1	0	0.1	0.2	3
Chemical, rubber, plastic prods	0.1	12	0.1	0.3	11
Ferrous metals	0.1	4	0.1	0.3	0
Non-ferrous metals	0.2	12	0.1	0.3	1
Motor vehicles and parts	0.2	12	0.1	0.4	1
Machinery and equipment nec	0.1	9	0.1	0.2	6
Miscellaneous manufactures	0.1	1	0.0	0.2	6
Services	**0.2**	**1054**	**0.0**	**0.6**	**14**
Communication	0.2	44	0.0	0.5	1
Financial services nec	0.2	73	0.0	0.4	0

Source: Policy simulation.

Note: In the body of the table "n.s." means not significant because the value of the underlying trade flow is negligible.

[a] Measured in 2005 US dollars.

Note: The output deviations in this table are measured in industry value added that may not add up to the total deviation of GDP in Table 6.1. Unlike industry value added, GDP includes indirect taxes.

Table 6.3

Effects of Services trade liberalisation
Full liberalization in 2006:
CHINA: Industry results

2015

	Output Percentage deviation from baseline %	Output Deviation from baseline US$million	Employment Percentage deviation from baseline %	Imports from Australia Percentage deviation from baseline %	Imports from Australia Deviation from baseline in volumes [a] US$ million
Agriculture	**0.1**	**445**	**0.2**	**0.2**	**8**
Wheat	0.1	10	0.1	0.1	0
Cereal grains nec	0.1	11	0.1	0.1	1
Oil seeds	0.1	14	0.2	0.2	0
Wool, silk-worm cocoons	0.1	5	0.2	0.2	6
Mining	**0.2**	**154**	**0.2**	**0.2**	**9**
Minerals nec	0.2	63	0.2	0.2	8
Manufacturing	**0.2**	**2048**	**0.1**	**0.2**	**25**
Meat products nec	0.1	11	0.1	0.2	0
Dairy products	0.2	2	0.2	0.1	0
Sugar	0.1	1	0.1	0.1	0
Food products nec	0.1	21	0.1	0.2	0
Textiles (incl. lightly-processed wool)	0.2	149	0.1	0.2	4
Wearing apparel	0.1	109	0.1	0.1	0
Chemical, rubber, plastic prods	0.2	279	0.2	0.2	2
Ferrous metals	0.2	102	0.2	0.2	1
Non-ferrous metals	0.3	46	0.2	0.3	11
Motor vehicles and parts	0.3	68	0.2	0.2	0
Machinery and equipment nec	0.2	288	0.2	0.2	2
Miscellaneous manufactures	0.2	147	0.1	0.2	0
Services	**0.2**	**3592**	**-0.1**	**0.2**	**4**
Communication	0.2	113	-0.1	0.1	0
Financial services nec	0.2	155	-0.1	0.1	0

Source: Policy simulation. [a] Measured in 2005 US dollars.

Note: The output deviations in this table are measured in industry value added that may not add up to the total deviation of GDP in Table 6.1. Unlike industry value added, GDP includes indirect taxes.

Table 7.1

Effects of all three aspects of an FTA

Full liberalization in 2006

Percentage deviations from baseline, 2015

	Australia	China
Macroeconomic indicators		
Real GDP (%)	0.37	0.39
Real GDP (US$million)	3007	12175
Real GNP (%)	0.5	0.3
Real GNP (US$million)	3616	9329
Real Consumption (%)	0.5	0.3
Export volumes (%)	0.9	0.5
Import volumes (%)	1.5	0.4
Terms of Trade (%)	0.6	-0.2
Capital stock (%)	0.4	0.3
Real wage (%)	0.8	0.4
Volumes of investment flows		
Australian investment in China (%)	16.7	n.a
Australian investment in China (US$million)	477	n.a
Chinese investment in Australia (%)	n.a	11.4
Chinese investment in Australia (US$million)	n.a	318
Investment from the Rest of the World (%)	0.4	0.4
Investment from the Rest of the World (US$million)	2042	3172
Volumes of trade flows		
Australian imports from China (%)	7.8	n.a
Australian imports from China (US$million)	2126	n.a
Chinese imports from Australia (%)	n.a	15.1
Chinese imports from Australia (US$million)	n.a	3280
Output of aggregated sectors		
Agriculture	1.3	0.2
Mining	0.5	0.4
Manufacturing	0.5	0.5
Services	0.3	0.4

Source: Policy simulation.

Table 7.2

Impact of FTA on growth rates of real GDP

Full liberalisation in 2006

Average annual growth rates of real GDP, 2005-2015, Per cent

	Baseline	Removal of border protection on merchandise trade	Investment facilitation	Services trade liberalisation	All three aspects of the FTA
Australia	3.349	3.361 (0.012)	3.361 (0.011)	3.365 (0.016)	3.388 (0.039)
China	6.669	6.674 (0.006)	6.685 (0.016)	6.689 (0.021)	6.711 (0.042)

Sources: Policy simulation.

* The numbers in the brackets show changes (relative to baseline) in average annual growth rates of real GDP due to an Australia-China FTA.

Table 7.3

Effects of all three aspects of an FTA

Full liberalization in 2006

Deviations from baseline, 2015

	Impact on Australia			Impact on China		
	Output %	Output US$mn	Employ-ment %	Output %	Output US$mn	Employ-ment %
Agriculture	**1.3**	**287**	**1.4**	**0.2**	**758**	**0.1**
Wheat	0.5	10	0.3	0.2	15	0.0
Cereal grains nec	0.5	6	0.4	0.1	12	-0.1
Oil seeds	2.2	4	2.6	0.2	21	0.0
Wool, silk-worm cocoons	7.3	225	9.3	-4.5	-176	-6.7
Mining	**0.5**	**167**	**0.1**	**0.4**	**286**	**-0.7**
Minerals nec	1.0	127	0.6	0.2	64	-0.3
Manufacturing	**0.5**	**399**	**0.1**	**0.5**	**4940**	**0.2**
Meat products nec	0.5	3	0.5	0.3	25	0.0
Dairy products	0.2	4	-0.1	-0.1	-1	-0.4
Sugar	1.9	15	1.7	-0.2	-1	-0.7
Food products nec	0.3	12	0.0	0.3	46	-0.1
Textiles (incl. lightly-processed wool)	3.4	104	3.0	0.6	544	0.3
Wearing apparel	-5.3	-35	-11.9	0.6	559	0.2
Chemical, rubber, plastic prods	0.4	36	0.1	0.5	638	0.3
Ferrous metals	0.3	10	0.0	0.5	219	0.2
Non-ferrous metals	1.8	114	1.5	0.2	41	-0.1
Motor vehicles and parts	-0.3	-21	-0.6	0.6	146	0.3
Machinery and equipment nec	0.5	46	0.3	0.4	598	0.2
Miscellaneous manufactures	-1.1	-9	-1.6	0.4	374	0.1
Services	**0.3**	**2057**	**0.0**	**0.4**	**6596**	**-0.1**
Communication	0.2	50	-0.2	0.4	211	-0.2
Financial services nec	0.3	134	-0.1	0.4	291	-0.1

Source: Policy simulation.

Note: The output deviations in this table are measured in industry value added that may not add up to the total deviation of GDP in Table 7.1. Unlike industry value added, GDP includes indirect taxes.

Table 7.4

Effects of all three aspects of an FTA on merchandise trade

Full liberalization in 2006

Deviations from baseline, 2015

	Australian imports from China		Chinese imports from Australia	
	Per cent	US$ million[a]	Per cent	US$ million[a]
Agriculture	**2.1**	**1**	**16.6**	**677**
Wheat	n.s.	0	20.8	34
Cereal grains nec	n.s.	0	1.1	5
Oil seeds	n.s.	0	61.9	27
Wool, silk-worm cocoons	n.s.	0	19.5	499
Mining	**1.2**	**4**	**7.0**	**318**
Minerals nec	2.4	1	6.8	285
Manufacturing	**8.5**	**2083**	**20.7**	**2329**
Meat products nec	n.s.	0	12.6	16
Dairy products	n.s.	0	27.3	68
Sugar	n.s.	0	40.5	69
Food products nec	5.3	11	34.2	78
Textiles (incl. lightly-processed wool)	9.4	232	17.6	367
Wearing apparel	24.8	522	93.2	46
Chemical, rubber, plastic prods	8.0	279	33.6	252
Ferrous metals	4.2	4	10.8	43
Non-ferrous metals	9.2	20	20.0	820
Motor vehicles and parts	32.2	57	117.3	17
Machinery and equipment nec	4.2	99	13.4	135
Miscellaneous manufactures	5.6	154	61.1	13

Source: Policy simulation.

Note: In the body of the table "n.s." means not significant because the value of the underlying trade flow is negligible.

[a] Measured in 2005 US dollars.

Table 8.1

Phase-in between 2006-2010 versus full liberalization in 2006: present value of gains from 2006-2015

US$ million

	Removal of border protection on merchandise trade		Investment facilitation		Services trade liberalisation	
	Full liberalisation in 2006	Phase-in between 2006-2010	Full liberalisation in 2006	Phase-in between 2006-2010	Full liberalisation in 2006	Phase-in between 2006-2010
Australia real GDP	4748	3536	5457	4181	7510	5765
Australia real GNP	9289	7325	5170	4009	7292	5688
China real GDP	8913	7011	24799	19750	30098	24300
China real GNP	5291	4179	20889	16646	26259	21346

Sources: Policy simulation.
Note: The values in the table are in 2005 US dollars.

Table 8.2

Total effects of all three aspects of an Australia-China FTA: present value of gains from 2006-2015

US$ million

	Full liberalisation in 2006	Phase-in between 2006-2010
Australia real GDP	17715	13482
Australia real GNP	21751	17023
China real GDP	63810	51062
China real GNP	52438	42171

Source: Policy simulation.

Note: the values in the table are in 2005 US dollars.

Table 8.3

Removing tariff equivalents on merchandise trade
Phase-in between 2006 and 2010:
Effects on macroeconomic indicators and aggregated sectors

Deviations from baseline, 2015

	Australia	China
Macroeconomic indicators		
Real GDP (%)	0.12	0.05
Real GNP (%)	0.22	0.02
Real Consumption (%)	0.21	0.02
Export volumes (%)	0.6	0.2
Import volumes (%)	1.3	0.2
Terms of Trade (%)	0.6	-0.1
Capital stock (%)	0.2	0.1
Real wage (%)	0.5	0.1
Volumes of investment flows		
Australian investment in China (%)	0.1	n.a
Chinese investment in Australia (%)	n.a	0.3
Investment from the Rest of the World (%)	0.2	0.1
Volumes of trade flows		
Australian imports from China (%)	7.3	n.a
Chinese imports from Australia (%)	n.a	14.6
Output of aggregated sectors		
Agriculture (%)	1.1	-0.1
Mining (%)	0.2	0.0
Manufacturing (%)	0.2	0.1
Services (%)	0.0	0.0

Source: Policy simulation.

n.a. not applicable.

Table 8.4

Removing tariff equivalents on merchandise trade
Phase-in between 2006 and 2010:
AUSTRALIA: Industry results

Deviation from baseline, 2015

	Output Percentage deviation from baseline %	Employment Percentage deviation from baseline %	Imports from China Percentage deviation from baseline %	Imports from China Volumes [a] US$ million
Agriculture	**1.1**	**1.4**	**1.8**	**1**
Wheat	0.4	0.4	n.s.	0
Cereal grains nec	0.4	0.4	n.s.	0
Oil seeds	2.1	2.7	n.s.	0
Wool, silk-worm cocoons	6.7	8.9	n.s.	0
Mining	**0.2**	**0.1**	**0.6**	**2**
Minerals nec	0.6	0.6	1.8	1
Manufacturing	**0.2**	**0.0**	**8.1**	**1985**
Meat products nec	0.4	0.6	n.s.	0
Dairy products	0.07	-0.07	n.s.	0
Sugar	1.8	1.7	n.s.	0
Food products nec	0.2	0.1	5.1	10
Textiles (incl. lightly-processed wool)	3.3	2.9	9.0	224
Wearing apparel	-5.2	-12.1	24.5	517
Chemical, rubber, plastic prods	0.2	0.01	7.4	260
Ferrous metals	0.1	0.0	3.7	4
Non-ferrous metals	1.4	1.3	8.6	19
Motor vehicles and parts	-0.6	-0.8	31.8	56
Machinery and equipment nec	0.3	0.2	3.8	90
Miscellaneous manufactures	-1.3	-1.6	5.2	145

Source: Policy simulation.

Note: In the body of the table "n.s." means not significant because the value of the underlying trade flow is negligible.

[a] Measured in 2005 US dollars.

Table 8.5

Removing tariff equivalents on merchandise trade
Phase-in between 2006 and 2010:
CHINA: Industry results
Deviation from baseline, 2015

	Output Percentage deviation from baseline %	Employment Percentage deviation from baseline %	Imports from Australia Percentage deviation from baseline %	Imports from Australia Volumes [a] US$ million
Agriculture	**-0.1**	**-0.1**	**15.8**	**642**
Wheat	-0.1	-0.2	20.7	34
Cereal grains nec	-0.1	-0.2	0.9	4
Oil seeds	-0.1	-0.2	62.2	28
Wool, silk-worm cocoons	-5.2	-7.6	18.4	470
Mining	**0.0**	**-0.9**	**6.2**	**281**
Minerals nec	-0.2	-0.5	6.4	269
Manufacturing	**0.1**	**0.0**	**20.4**	**2297**
Meat products nec	0.0	0.0	12.4	16
Dairy products	-0.5	-0.6	27.3	68
Sugar	-0.4	-0.8	40.6	69
Food products nec	0.0	-0.1	34.3	78
Textiles (incl. lightly-processed wool)	0.3	0.1	17.4	362
Wearing apparel	0.4	0.1	95.7	47
Chemical, rubber, plastic prods	0.1	0.0	33.5	251
Ferrous metals	0.1	0.0	10.5	42
Non-ferrous metals	-0.2	-0.4	19.5	800
Motor vehicles and parts	0.1	0.1	120.6	17
Machinery and equipment nec	0.1	0.0	13.2	133
Miscellaneous manufactures	0.1	0.0	61.7	13

Source: Policy simulation.

[a] Measured in 2005 US dollars.

Table 8.6

Effects of Investment liberalization

Phase-in between 2006 and 2010

Deviations from baseline, 2015

	Australia	China
Macroeconomic indicators		
Real GDP (%)	0.11	0.15
Real GNP (%)	0.1	0.1
Real Consumption (%)	0.1	0.1
Export volumes (%)	0.1	0.2
Import volumes (%)	0.1	0.1
Terms of Trade (%)	0.0	-0.1
Capital stock (%)	0.1	0.1
Real wage (%)	0.1	0.1
Volumes of investment flows		
Australian investment in China (%)	7.3	n.a.
Chinese investment in Australia (%)	n.a.	6.1
Investment from the Rest of the World (%)	0.1	0.1
Volumes of trade flows		
Australian imports from China (%)	0.2	n.a.
Chinese imports from Australia (%)	n.a.	0.2
Output of aggregated sectors		
Agriculture (%)	0.1	0.1
Mining (%)	0.1	0.2
Manufacturing (%)	0.1	0.2
Services (%)	0.1	0.1

Source: Policy simulation.

Table 8.7

Effects of Services trade liberalisation

Phase-in between 2006 and 2010

Deviations from baseline, 2015

	Australia	China
Macroeconomic indicators		
Real GDP (%)	0.15	0.19
Real GNP (%)	0.1	0.2
Real Consumption (%)	0.1	0.2
Export volumes (%)	0.2	0.2
Import volumes (%)	0.1	0.1
Terms of Trade (%)	0.0	-0.1
Capital stock (%)	0.1	0.1
Real wage (%)	0.2	0.1
Volumes of investment flows		
Australian investment in China (%)	7.2	n.a.
Chinese investment in Australia (%)	n.a.	3.4
Investment from the Rest of the World (%)	0.1	0.2
Volumes of trade flows		
Australian imports from China (%)	0.2	n.a.
Chinese imports from Australia (%)	n.a.	0.2
Output of aggregated sectors		
Agriculture (%)	0.1	0.1
Mining (%)	0.1	0.2
Manufacturing (%)	0.1	0.2
Services (%)	0.2	0.2
Communication (%)	0.2	0.2
Banking (%)	0.2	0.2

Source: Policy simulation.

Table 8.8

Effects of all three aspects of an FTA

Phase-in between 2006 and 2010

Deviations from baseline, 2015

	Australia	China
Macroeconomic indicators		
Real GDP (%)	0.37	0.39
Real GNP (%)	0.5	0.3
Real Consumption (%)	0.5	0.3
Export volumes (%)	0.9	0.5
Import volumes (%)	1.4	0.4
Terms of Trade (%)	0.5	-0.2
Capital stock (%)	0.4	0.3
Real wage (%)	0.8	0.4
Volumes of investment flows		
Australian investment in China (%)	14.6	n.a
Chinese investment in Australia (%)	n.a	9.8
Investment from the Rest of the World (%)	0.4	0.4
Volumes of trade flows		
Australian imports from China (%)	7.7	n.a
Chinese imports from Australia (%)	n.a	15.0
Output of aggregated sectors		
Agriculture (%)	1.3	0.2
Mining (%)	0.4	0.4
Manufacturing (%)	0.5	0.5
Services (%)	0.3	0.4

Source: Policy simulation.

Table 8.9

Effects of all three aspects of an FTA
Phase-in between 2006 and 2010
Percentage deviations from baseline, 2015

	Impact on Australia		Impact on China	
	Output	Employment	Output	Employment
Agriculture	**1.3**	**1.4**	**0.2**	**0.1**
Wheat	0.5	0.4	0.1	0.0
Cereal grains nec	0.6	0.5	0.1	-0.1
Oil seeds	2.2	2.8	0.2	0.0
Wool, silk-worm cocoons	6.9	9.1	-4.9	-7.4
Mining	**0.4**	**0.2**	**0.4**	**-0.7**
Minerals nec	0.9	0.7	0.2	-0.3
Manufacturing	**0.5**	**0.1**	**0.5**	**0.2**
Meat products nec	0.5	0.6	0.3	0.0
Dairy products	0.2	-0.1	-0.2	-0.4
Sugar	2.0	1.7	-0.2	-0.8
Food products nec	0.3	0.0	0.3	-0.1
Textiles (incl. lightly-processed wool)	3.5	3.0	0.6	0.3
Wearing apparel	-5.1	-12.0	0.6	0.2
Chemical, rubber, plastic prods	0.4	0.2	0.5	0.3
Ferrous metals	0.3	0.1	0.5	0.2
Non-ferrous metals	1.8	1.6	0.2	-0.1
Motor vehicles and parts	-0.2	-0.5	0.6	0.3
Machinery and equipment nec	0.6	0.3	0.4	0.2
Miscellaneous manufactures	-1.1	-1.6	0.4	0.1
Services	**0.3**	**-0.1**	**0.4**	**-0.1**
Communication	0.2	-0.2	0.4	-0.2
Financial services nec	0.3	-0.1	0.4	-0.1

Source: Policy simulation.

Table 9.1

All three aspects of an FTA

Impact on the Rest of the World:

Percentage deviation from baseline, 2015

	Removing border protection on merchandise trade	Investment liberalisation	Services trade liberalisation	All three aspects of an FTA
Macroeconomic indicators				
Real GDP	0.0	0.0	0.0	0.0
Real GNP	0.0	0.0	0.0	0.0
Investment flows				
ROW investment in Australia	0.2	0.1	0.1	0.5
ROW investment in China	0.1	0.2	0.3	0.6
Australian investment in ROW	0.0	0.0	0.0	0.0
Chinese investment in ROW	0.0	0.0	0.0	0.0
Trade flows				
Australian imports from China	7.3	0.2	0.3	7.8
Australian imports from ROW	0.1	0.0	0.1	0.2
Chinese imports from Australia	14.8	0.2	0.2	15.1
Chinese imports from ROW	-0.1	0.1	0.1	0.1
ROW imports from Australia	-1.6	0.1	0.1	-1.3
ROW imports from China	0.1	0.2	0.2	0.4

Source: Policy simulation.

Table 9.2

Removing border protection on merchandise trade: Trade diversion and creation

Deviations from baseline, 2015

	Percentage deviation from baseline %	Deviation in Volumes measured in 2005 US dollars US$million
Australian imports from China	7.3	1995
Australian imports from ROW	0.1	184
Chinese imports from Australia	14.8	3197
Chinese imports from ROW	-0.1	-1323
ROW imports from Australia	-1.6	-2096
ROW imports from China	0.1	1167
Total		**3123**

Source: Policy simulation.