Quantitive Analysis on the Impact of China-New Zealand FTA on Both Sides' Economies

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In the global trend of regional economic integration, China officially signed the China-New Zealand Free Trade Agreement with New Zealand on April 7, 2008, making New Zealand the first developed country having such pact with China. Applying GTAP model, this paper makes a computable general equilibrium analysis on the impact of China-New Zealand FTA's construction on both sides' economies from aspects of sectoral trade balance and the social welfare. The result indicates that, each industry's output of China suffers little impact; the economic impact on New Zealand are greater than that on China; China's social welfare will experience certain positive impact while New Zealand's national welfare improve significantly.

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1. Introduction:

It is generally recognized that international trade is a positive-sum game or a situation in which all countries can benefit. Many governments strongly support unrestricted free trade even though they have been unwilling to unilaterally lower their trade barriers for fear that other nations might not follow suit. By eliminating tariffs, subsidies, import quotas and the like, it ensures that trade flows as smoothly, predictably and freely as possible.

The likely net benefits of an FTA have been confirmed by the economic modeling work undertaken in this paper. This suggests that bilateral trade between China and New Zealand will grow significantly, that welfare gains will flow to both the Chinese and New Zealand economies, and that there will be positive impacts for many sectors in both China and New Zealand.

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The article is structured as follow. After this introduction, section 2 introduces the history of the negotiating and subscribing the agreement processes of two countries. Section 3 makes a brief literature review in the research of the field. Section 4 describes the GTAP model used in the analysis, followed by simulation results in section 5. Lastly, section 6 concludes the paper.

2. China-New Zealand Free Trade Agreement

New Zealand's business ties with China date back to the early 19th century, starting with the seal skin trade to Guangzhou and later the arrival of Chinese migrants coming for the gold rush. Both New Zealand and China are committed to strengthening the multilateral system and promoting regional economic development. Both are members of the World Trade Organization (WTO) and the Asia Pacific Economic Cooperation Forum (APEC).

The decision to begin negotiations on a bilateral free trade agreement came in November 2004 following a joint feasibility study which determined that there would be demonstrable benefit to both countries in entering an FTA. Fifteen rounds of negotiation were then held between late 2004 and late 2007. New Zealand and China signed a Trade and Economic Cooperation Framework in 2004 to provide a mechanism for managing this vital and dynamic part of the bilateral relationship. The Framework also provided the basis for the Free Trade Agreement negotiations. The FTA was signed on 7 April 2008 in Beijing. It was ratified through the New Zealand Parliamentary process in July 2008 and entered into force on 1 October 2008. The signing of a high quality, comprehensive and balanced Free Trade Agreement in April 2008 represents "the fourth first" in a series of milestone agreements between New Zealand and China in the trade and economic area. The other "firsts" in the relationship have been: New Zealand was the first Western country to conclude a bilateral agreement with China on its accession to the World Trade Organization, in August 1997. New Zealand was the first developed economy to recognize China's status as a market economy in April 2004. New Zealand was the first developed country to enter into FTA negotiations with China, announced in November 2004.

The FTA is also the first comprehensive FTA China has concluded covering goods, services and investment as a ‘single undertaking’ from the outset of the agreement. The FTA provides a platform for enhanced regulatory cooperation to facilitate trade and reduce associated transactions costs in both goods and services trade. The FTA also provides a framework for resolving trade issues that might arise between the two countries in the future. In addition to the FTA China and New Zealand have also concluded legally binding agreements on labour and environment. The strong performance of two way trade at a time of

global economic crisis, reflected in an overall 25% increase, was welcomed.

3. Literature Review

The part, is of literature review, summarizes the researches on China-New Zealand economic free zone and reviews the studies on bilateral trade between the two countries. All these provide a theoretical basis and a reference for analysis methodology.

New Zealand Ministry of Foreign Affairs and Trade (2004) studied that over the next 20 years the FTA is expected to lift New Zealand exports to China by between 20 and 39 percent, over and above what would be the case without an agreement. In cash, that represents between $260 million and $400 million a year. The estimates from a joint study report by China's Ministry of Commerce and New Zealand's Ministry of Foreign Affairs and Trade indicate China's gains over the same period are expected to be between US$40 million and $70 million.

Drawing support from the theory of FTA and the covering APG model, FAN Ying (2005) founded that the China-New Zealand FTA will bring about the remarkable static (mainly including trade creation, welfare increase and smuggling decrease) and dynamic (mainly including GDP increase, productivity promotion and FDI creation) effects. Such integration comprising countries of different location will be very helpful to stimulate the comparative and competitive advantages resulting from their natural endowments，and to give a impetus to the common prosperities.

ZHU Ying (2006) studied that building of the free trade area will produce positive effects on goods trade, services trade and investment. Especially for China, there is strategic significance to build the free trade area between the two countries because the free trade area will help China to break the restriction of U.S, the European Economic Community and other countries on Chinese imports.

ZHANG Han, NIE Ying (2008) generalized summarily the trade value and commodities structure between China and New Zealand and systematically analyzed their trade intensity and complementary relationship. It got the following conclusions: China and New Zealand have very closer partnership. The agricultural products from New Zealand are vital to China as well as China’s Manufactures play an important role in New Zealand’s import. But the relationship has reduced in some sort. It also found the trade between China and New Zealand is very complementarily related among different industries in a long time.

Roger Bowden and Hui Huang (2009) studied that the terms of the agreement, and the negotiations leading up to it, show clear signs of a Chinese development strategy shifting orientation towards the export of services, such as those relating to infrastructure construction and tourism, and the financial services required in support. The origins and mechanism of this type of trade are explored in terms of a model of endogenous growth that internalizes social spending on infrastructure to become a source of financial value, which in turn leads to the accumulation of exportable human capital services.

Based on the Factor Endowments Theory, ZOU Chao and YIN Xiuyan (2009) made an empirical analysis on the characteristic of China-New Zealand cargo trade by using trade intensity index, symmetric revealed comparative advantage index, Comparative Advantage Index, etc. It showed that the characteristic of bilateral trade, complementary and inter-industry trade, high concentration.

However, these studies above can not make a comprehensive measure the overall the quantitative economic effects of the new free trade area will lead to by using the GTAP model. This paper employs GTAP model to study the impact of China-New Zealand free trade agreement on the development of both economies.

4. Methodology and Model:

4.1 Methodology: GTAP Model

This study employs the Global Trade Analysis Project (GTAP) model. The GTAP model has been widely used to assess the impact of trade liberalization. The standard GTAP model is a multi-region, multi-sector, computable general equilibrium model, with perfect competition and constant returns to scale. Bilateral trade is handled via the Armington assumption (Hertel, 1997). The GTAP model is used together with the GTAP database. The database, like the model, captures different individual and composites of countries.

4.2 Geographical and sectoral aggregations

In this exposition, Version 6 of the database is utilized. This base year for this version for GTAP model is 2001 and recognizes 87 regions as well as 57 sectors and 5 factors of production. Thus, for each of the individual or composite region, there are 57 sectors whose data is captured in the overall GTAP database.

Based on the GTAP database the paper aggregates it into 14 region and 10

commodities for this study, viz. a 14-region and 10-sector GTAP model used here. (See Table 1 and Table 2)

Table 1 Geographical aggregation for simulation

No.	Aggregated regions	Comprising
1	China (mainland)	China (mainland)
2	New Zealand	New Zealand
3	Hong Kong, China	Hong Kong, China
4	Taiwan, China	Taiwan, China
5	Japan	Japan
6	South Korea	South Korea
7	South East Asia	Thailand, Indonesia, Malaysia, Singapore, Philippines, Vietnam and other South East Asian countries
8	Australia	Australia
9	North America Free Trade Area	U.S., Canada and Mexico
10	EU	27 EU countries, Swiss and other countries in European Free Trade Area
11	Russia	Russia
12	Latin America	All Latin American countries
13	South Asia	India, Bangladesh, Sri Lanka and other countries in South Asia
14	ROW	Other countries expect for the countries above

Source: form author's data

Table 2 Sectoral aggregation for simulation

No.	Aggregated sectors	Specific sectors involved
1	Raw milk	Raw milk
2	Dairy products	Dairy products
3	Coarse grains	Coarse grains
4	Sugar	Sugar
5	Meat and meat products	Meat: cattle, sheep, goats, horse and meat products
6	Beverages and tobacco	Beverages and tobacco products
7	Other foods	Other foods and agricultural products
8	Oil	Oil
9	Manufacturing	Manufacturing except for the oil industry
10	Services	All services

Source: form author's data

4.3 Simulation design

To analyze the impacts of this policy shock and assess the effect of the FTA on the China and New Zealand economies in 2015, two scenarios are designed. In the simulation of scenario 1, China-New Zealand FTA Effects are studied, which can provide effects of the policy shock according to the FTA; while simulating scenario 2, combined effects of China-New Zealand FTA and multilateral trade policy reforms of Doha Round are analyzed, which are compatible with the main objectives of the Doha agenda. Two scenarios are listed as follows:

Scenario 1, China-New Zealand FTA. The FTA provides for elimination over time of tariffs on 96 percent of New Zealand's current exports to China. Remaining tariffs will be phased out by 1 January 2019. The FTA also includes a reciprocal Most Favored Nation (MFN) clause that applies in specified sectors: environmental services, construction, agriculture and forestry, engineering, integrated engineering, computer and related services, and tourism.

Scenario 2, Implements of China-New Zealand FTA and multilateral trade policy reforms of Doha Round. With the enforcement of China-New Zealand FTA, three quantifiable measures of trade policy reforms are taken into consideration: the tariff reduction according to Swiss Formula; removal of export subsidies from all countries; reduction of domestic support measures for agricultural products from all developed countries.

Of course, the complexity of the actual China-New Zealand FTA cannot be captured by a simple scenario formula. However, inasmuch as the real agreement is a (complex) combination of these scenarios we can expect to draw some interesting conclusions by comparing these scenarios.

5. The findings:

Using the GTAP simulation model, we propose a quantitative assessment of the potential impacts of the implementations of free trade described above on welfare of the two countries and on sectoral trade balance of China in 2015.

5.1 Impacts on welfare

As shown in table 3, the implement of China-New Zealand FTA will make the New Zealand national welfare to increase (a net welfare gain equal to $301.76 millions in the scenario 1), followed by mainland China (a net welfare gain

equal to $52.67 millions in the scenario 1). Other countries will basically have welfare losses; the largest region is the North American Free Trade Area, followed by Australia, the European Union and Japan.

The main beneficiaries of the comprehensive reform program (scenario 2) are Japan, ROW, Latin America, Russia, Australia and Hong Kong. North American Free Trade Area, EU, South Korea, South Asia, China, New Zealand, ASEAN and Taiwan will have net losses of national welfare. That's the reason just to explain rapid progress of signing free trade agreements of China and the slow progress of multilateral trade reform of WTO.

Table 3 Impacts of two scenarios on welfare (in millions of US dollars)

Regions	Scenario 1	Scenario 2
China (mainland)	52.67	-13680.9
New Zealand	301.76	-845.06
Hong Kong, China	-7.71	1831.66
Taiwan, China	-6.13	-8457.36
Japan	-49.66	65310.87
South Korea	-12.63	-38750.8
South East Asia	-19.92	-9978.81
Australia	-69.15	6032.44
North America Free Trade Area	-121.63	-2055951
EU	-56.71	-1191037
Russia	1.56	13483.33
Latin America	-17.94	26530.01
South Asia	-6.41	-32724.7
ROW	-7.62	275574.9

Source: form author's data

5.2 Impacts on sectoral trade balance of China

To simulate the situation of abolition of tariff barriers between China and New Zealand in 2015, China have little influences with the trade balance of sectors from FTA, excepting for the dairy products (with deficits equal to $78.20 millions in the scenario 1) and other foods (with deficits equal to $86.72 millions in the scenario 1).

In Scenario 2, with elimination of export subsidies and domestic support measures and import tariffs cut, the influences of various sectors in China are different. Manufacturing and oil industry will increase trade deficits. This shows that a comprehensive impact of implements of China-New Zealand FTA and multilateral trade policy reforms of Doha Round is larger than the simulation result of China-New Zealand FTA.

Table 4 Changes in trade balance of various sectors of China (in millions of US dollars)

Sectors	Scenario 1	Scenario 2
Raw milk	0.06	-1.35
Dairy products	-78.20	-118.41
Coarse grains	-0.03	-79.69
Sugar	-0.08	-23.57
Meat and meat products	-28.35	-61.89
Beverages and tobacco	-0.83	-185.94
Other foods	-86.72	-5781.72
Oil	-14.04	-19906.79
Manufacturing	27.92	-30363.41
Services	-31.13	-9231.98

Source: form author's data

6. Summary and Conclusions

Our analysis justifies the idea that a free trade agreement between two countries of different development has to come along with a progressive process of tariff dismantling for the most strategic sectors so as to limit the adjustment costs.

With the implement of the FTA, China would experience a gain of economic welfare in 2015 (a net welfare gain equal to $52.67 millions in the scenario 1), and have little influences with the trade balance of sectors from FTA. While with comprehensive effects of China-New Zealand FTA and multilateral trade policy reforms of Doha Round, China will experience a loss of economic welfare (a net welfare loss equal to $13680.9 millions in the scenario 2), and the influences of various sectors in China are different. Dairy products and other foods of China in 2015 will increase trade deficits.

Simultaneously, for New Zealand, the implement of China-New Zealand FTA will make the New Zealand national welfare to increase (a net welfare gain equal to $301.76 millions in the scenario 1), While with comprehensive effects of China-New Zealand FTA and multilateral trade policy reforms of Doha Round, New Zealand will have net losses of national welfare (a net welfare loss equal to $845.06 millions in the scenario 2).

However, these figures must be considered cautiously. A more precise evaluation would require a dynamic simulation and a comparison of full liberalization with a scenario closer to the actual agreement.

There are several attractiveness of regional trade agreements, namely, the

quickness to conclude, the new territories to enter into, and the political or geopolitical considerations. Due to these factors, regional economic integration and cooperation have benefited all member countries. As globalization opens an ever-wider array of opportunities, regional economic cooperation is playing an essential role in powering overall output, employment, and profits for the countries inside the integration.

China has been supporting the strengthening of the multilateral trading system represented by the WTO. China will take some effective measures to further tackle the existing conflict and can overcome any difficulties on the road ahead. China's socialist market economy system and its fundamental policies of reform and opening-up match with the basic principles of the multilateral trading system and China's endeavor in taking part in regional economic integration will contribute to the stability and prosperity of the region as well as the whole world.

End notes

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References:

Andersion,K.,Huang J.K.and Iannchovichina,E., (2002), Impact of China's WTO Accession on Rural-urban Income Inequality, Paper Presented to the Australian Agricultural and Resource Economics Society 2002 Conference,Canberra,13-15 Febrary.

FAN Ying. (2005), On the Prospect of the China-New Zealand Free Trade Areas, *China Foreign Affairs Review*, Vol. 5, No.83, pp.84-91.

Huang J.,S.Rozelle S. & M.Chang. (2004), Tracking Distortions in Agriculture: China and Its Accession to the World Trade Organization, *The World Bank Economic Review*, Vol.18, No.1, pp 59-84.

Hertel,T.W. (1997), *Global Trade Analysis Modeling and Applications*, University Press, New York.

LI Li , SHAO Jia-bing & CHEN Xun. (2008) Quantitive Analysis on the Impact of China-New Zealand FTA on Both Sides' Economies, *Journal of International Trade,* Vol. 3, No.3, pp.49-54.

New Zealand Ministry of Foreign Affairs and Trade. (2004), *A Joint Study Report on a Free Trade Agreement between China and New Zealand*. http://www.mfat.govt.nz/

New Zealand Ministry of Foreign Affairs and Trade. (2004), *Key Outcomes: New Zealand-China Free Trade Agreement*. http://chinafta.govt.nz:

Oxford Economic Forecasting, (2006), Trade Liberalization and CAP Reform in the EU, *Economic Outlook*

PENG Xiu-fen,(2009), Impact of China-New Zealand Free Trade Agreement

on the Development of Chinese Dairy Industry, *Journal of International Trade,* Vol. 1, No.1, pp.54-60.

Micheal R. Czinktota. (2004), *Fundamentals of International Business*, Peking University Press, Beijing, 2004, pp 109.

Roger Bowden & Hui Huang. (2009) Infrastructure, growth and trade: the signaling content of China's free trade agreements, Global Economy Journal, Vol. 9, Iss. 2, Article3.

W.L.Charles, Hill .(2007), *International Business*, McGraw- Hill /Irwin, 2007, pp 11-12.

Walmsley T.L V.D.Betina and A.M.Robert, (2000), A Base Case Scenario for the Dynamic Model, Center for Global Trade Analysis, Purdue University, West Lafayette.

WANG Yan-hong. (2009), Analysis on the Effects and Economic Profits of the Sino-New Zealand FTA, *Asia-pacific Economic Review*, Vol.3, No.3, pp 48-51.

ZHANG Han & NIE Ying. (2008), Goods Trade between China and New Zealand: Development and Prospect, *Journal of International Trade*, Vol. 9, No.9, pp.52-57.

ZhAO Lei. (2007), *Research on Sino-New Zealand Agricultural Trade*, published Ph.D Dissertation, Jilin University, Jilin.

ZHU Ying. (2006), Discussion on the Economic Effects of the Free Trade Area between China and New Zealand, *Journal of International Business*, Vol. 3, No.3, pp.49-53.

ZOU Chao &YIN Xiuyan. (2009) Empirical Analysis on the Characteristics of China-Newland Cargo Trade, *Journal of Beijing City University*, Vol. 6, No.94, pp.42-49.