UNIVERSITY OF WAIKATO

Hamilton

New Zealand

New Zealand and Indian Trade in Agricultural and Manufactured Products: An Empirical Analysis

Sayeeda Bano and Frank Scrimgeour

Working Paper in Economics 26/17

October 2017

Corresponding Author
Sayeeda Bano
School of Accounting, Finance
and Economics
University of Waikato
Private Bag 3105
Hamilton
NEW ZEALAND, 3240

Email: sbano@waikato.ac.nz

Frank Scrimgeour
School of Accounting, Finance
and Economics
University of Waikato
Private Bag 3105
Hamilton
NEW ZEALAND, 3240

Email: scrim@waikato.ac.nz

Abstract

This study examines and presents a model of manufactured and agricultural exports from New Zealand to India and the world and from India to New Zealand. Our findings show that a country's population, GDP, GDP per capita and exchange rate are important causal factors that influence both New Zealand's and India's agricultural and manufactured exports. Our findings also demonstrate that New Zealand agricultural exports are highly elastic with respect to average population, showing that a one percent increase in the average population/or market size can increase New Zealand agricultural exports to India by six percent. This is contrary to the conventional wisdom about low elasticity pessimism with respect to agricultural products. These results have policy implications in the context of trade negotiations between New Zealand and India at the bilateral level and the Regional Comprehensive Economic Partnership (RCEP) in which both New Zealand and India are participating.

Key Words

international trade
agricultural exports
manufactured exports
India-New Zealand Free Trade Agreement FTA
RCEP

JEL Classification

F01, F02, F10, F13, F14, Q1

Acknowledgements

This paper**,** for the 2017 New Zealand Agricultural and Resource Economics Society Conference, Rotorua, New Zealand, is an extension of Bano (1986) (NZIER) and Bano and Scrimgeour (2015). We acknowledge the support of the Department of Economics and Waikato Management School. Any errors and omissions are our own.

1. Introduction

New Zealand and India are seeking to negotiate a free trade agreement but negotiations are proceeding slowly. The question arises as to what extent there is potential for an increase in trade between the two nations. Predicting the benefits from trade agreements is notoriously difficult. Countries have their areas of advantage but comparative advantage and other forms of advantage change over time in response to production and consumptions technologies, changes in incomes and changes in government policies. This is particularly challenging in the context of New Zealand (NZ) and India where one is a large country and one is a small country; one has a relatively high mean per capita income and one has a low per capita income; one has exports dominated by agriculture and one has exports dominated by manufactured goods. Further, the global increase in the trade of services is important.

Despite the differences there are commonalities between the two countries that facilitate trade. They both have British Commonwealth connections. The English language is the common language of trade. Further, there are strong cultural linkages associated with cricket, the Himalayas, Sir Edmund Hilary and related themes.

This study seeks to lay a platform for consideration of trade potential by three contributions. First, it reviews historic trade patterns between the two countries. Following a review of the literature it then proceeds to analyse the trade in agriculture and manufacture products, and identify key determinants of exports from the two countries to each other and to the world. The paper is organized into six sections as follows. Section 2 provides context and overview of New Zealand's and India's trade in both agriculture and manufacturing sectors; Section 3 presents a brief literature review; Section 4 discusses the methodology and data sources; Section 5 presents and analyses the estimated results and Section 6 concludes.

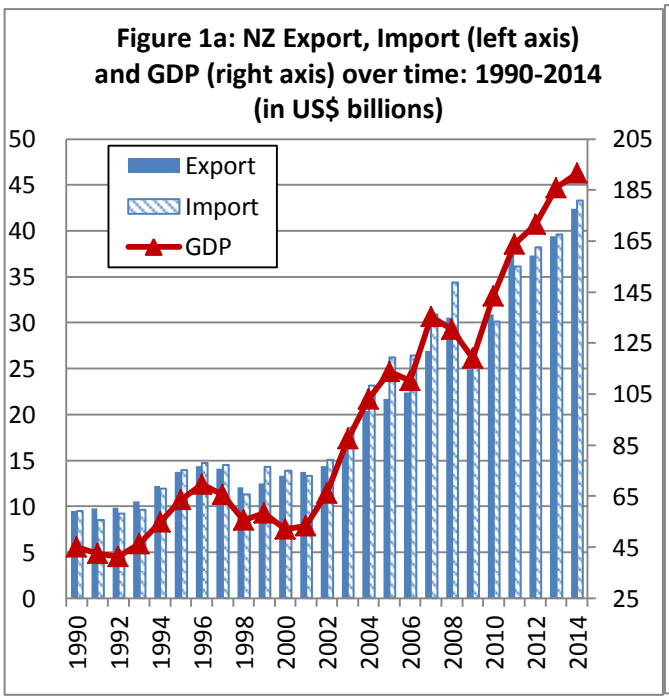
2. Context: New Zealand-India Trade

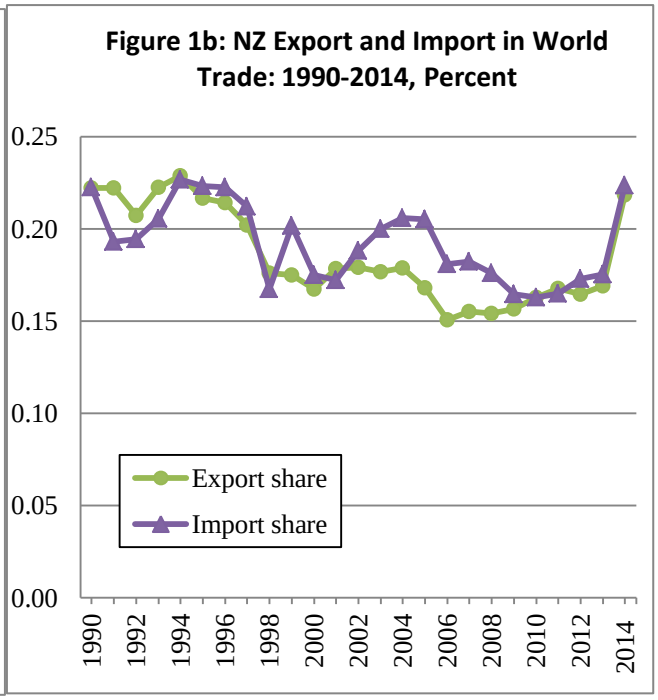
The current study recognizes the historical context and trajectory of agricultural and manufactured exports and imports. New Zealand's total exports and imports have been increasing and moving toward the same direction as GDP [See Figure 1a]. During 1990-1994, the exports were greater than the imports in most of the periods. From 2002 to 2009, imports were greater than the exports. Simultaneously, NZ GDP increased significantly from around US$ 60 billion in 2002 to US$ 130 billion in 2007. More recently, both exports and imports increased significantly during 2009-2014. Correspondingly, GDP increased by nearly US$ 70 billion in the same period. However, NZ export and import share in world trade shown a decreasing trend over the period although the trade and the GDP have obtained a favorable growth [See Figure 1b]. This is probably influenced by the high-speed growth of trade in developing countries, such as, India and China.

Overall, NZ's export, import and GDP growth had positive growth in most of the periods, except in 1991, 1997, 1998, 2000, 2002, and 2009 [See Figure 1c]. Especially, they had the most significant growth in 2002-2004. In contrast, they also had negligible growth in 2001, 2006 and 2002. More recently in 2014, both export and imports have experienced a significant growth, reaching to about 10 percent.

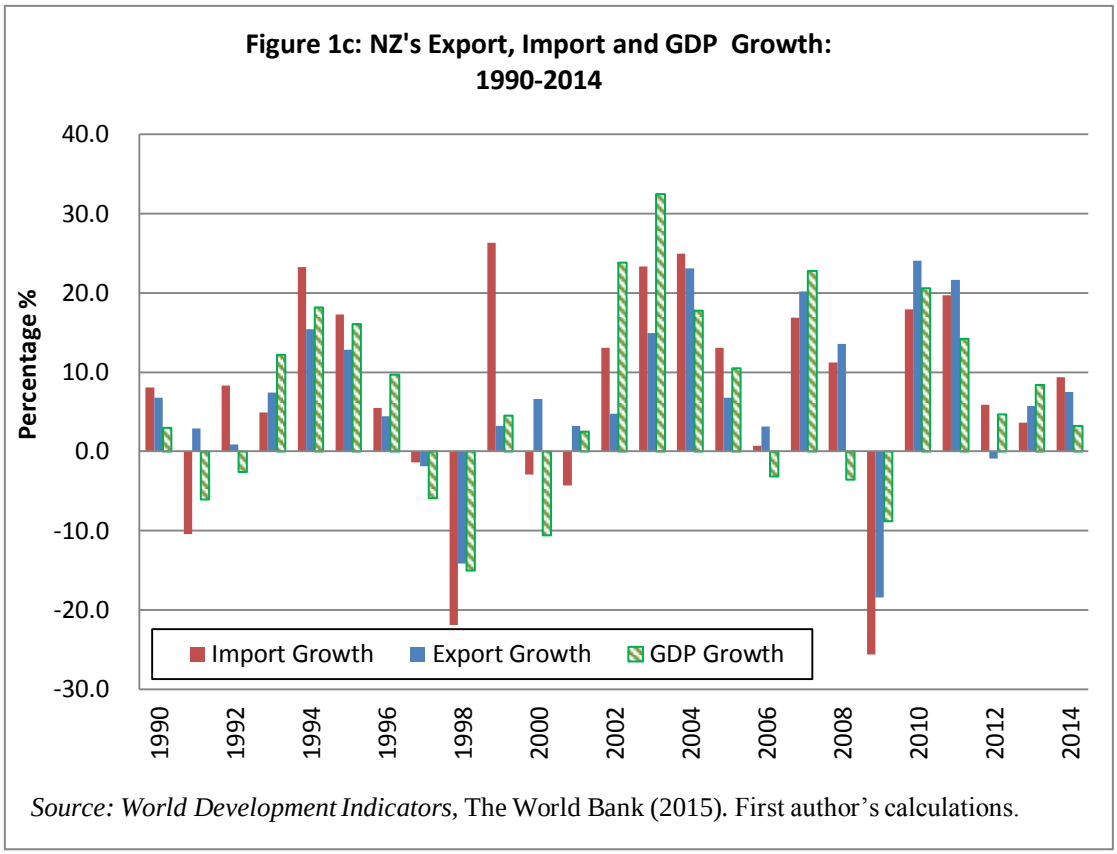
India's export, import and GDP have experienced a similar growth in 1988-2013 [See Figure 2a]. The imports have been greater than the exports in all the periods. Even recently, the gap between exports and imports has been increasing. GDP, during the same period, has increased by US$ around 1600 billion, which is five times greater than NZ's growth in GDP. This shows a very strong increase in India's economy. In addition, the growth in India's export, import and GDP tend to be steady since 2011. In terms of Indian export and import share in world trade, it is unsurprising that India's export and import have obtained a significant growth even comparing with the growth of trade in the world [See Figure 2b].

India's export, import and GDP had positive growth in most of the periods, except in 1991, 1993, 1998, 2001, 2009 and the most recent years- 2012-2014 [See Figure 2c]. The year between 2003 and 2008 was the most prosperous period for India's economic growth. Export, import and GDP had significant increase in this period. Especially, the import growth was dominating in the overall economy growth. Since the financial crisis, India's economy has recovered significantly- both export and import have achieved a growth at around 30 percent in 2010 and 2011. However, the growth of economy has been reducing since that.

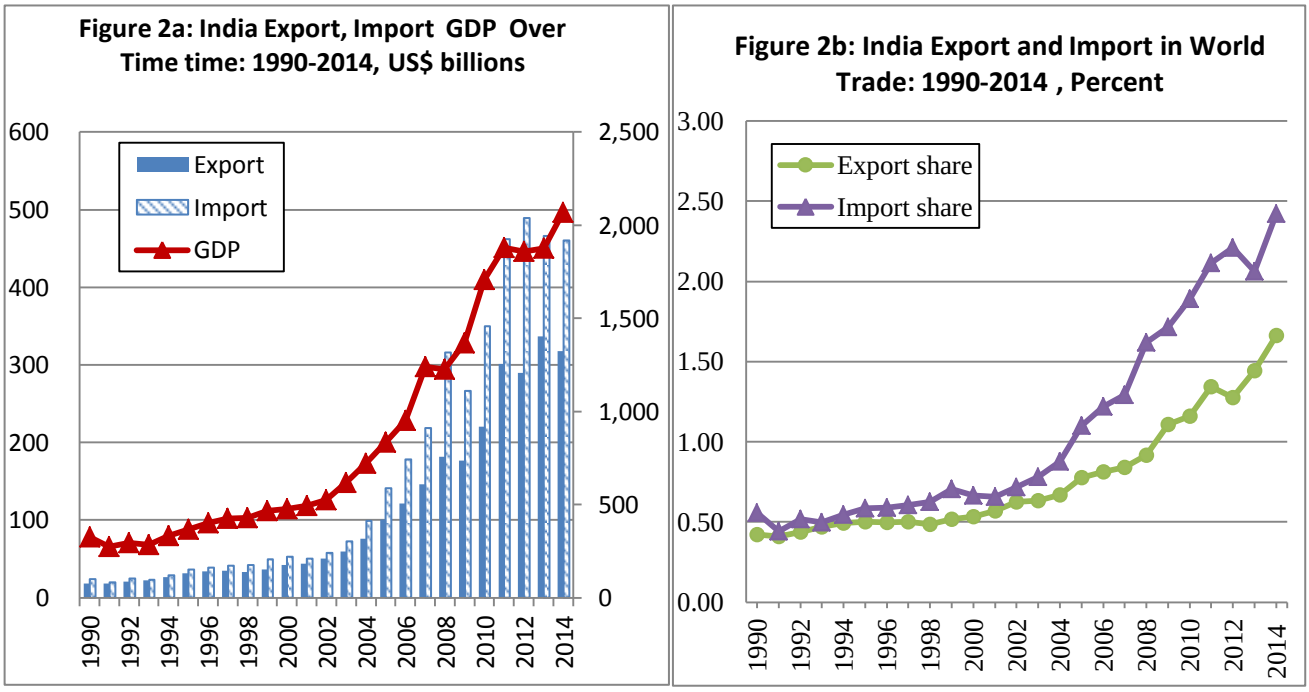




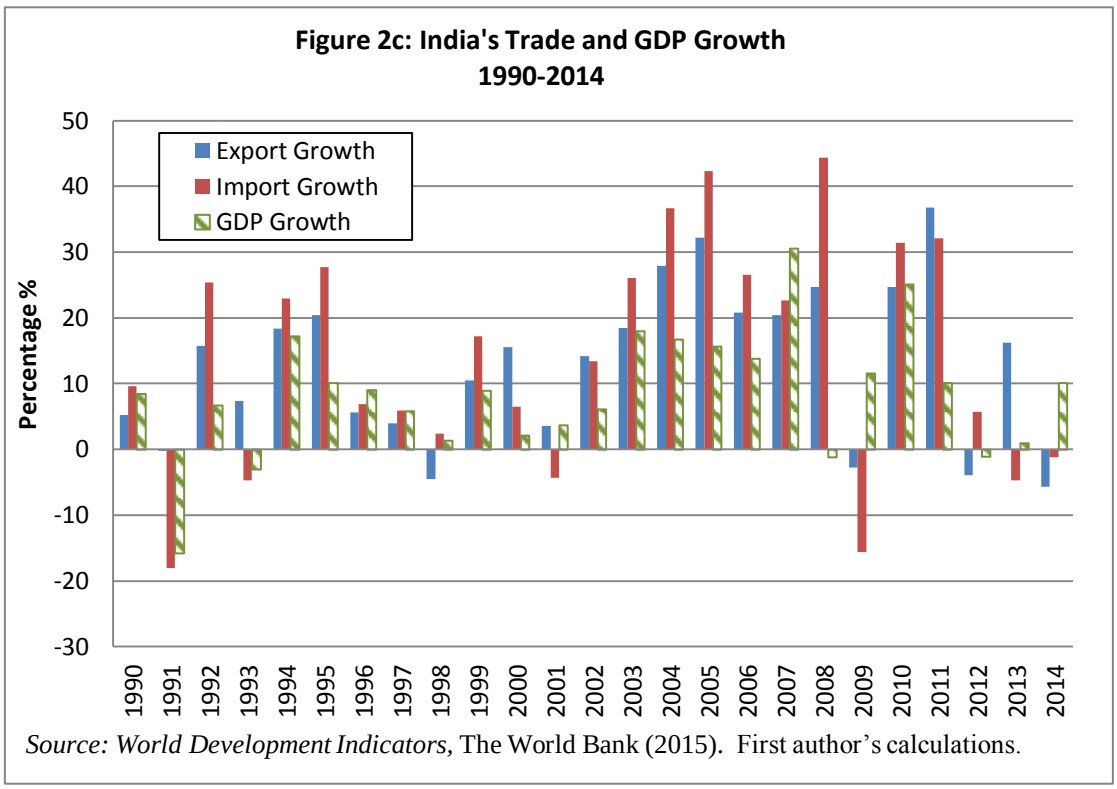
Source: World Development Indicators, The World Bank (2015). First author's calculations.



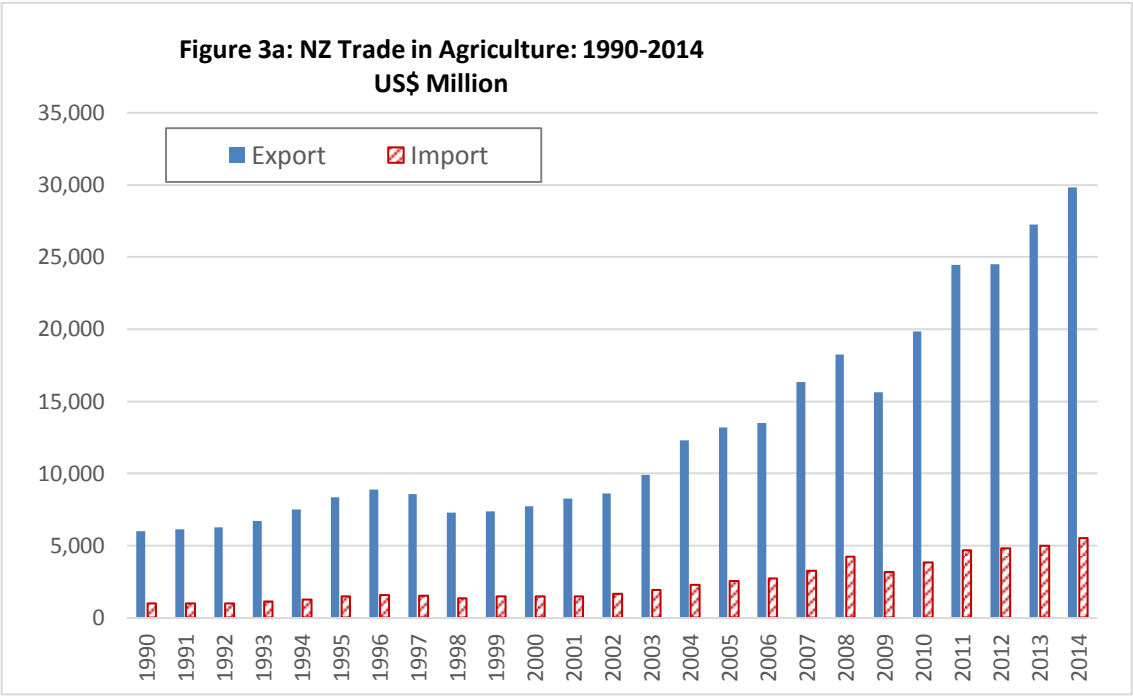
Source: World Development Indicators, The World Bank (2015). First author's calculations.



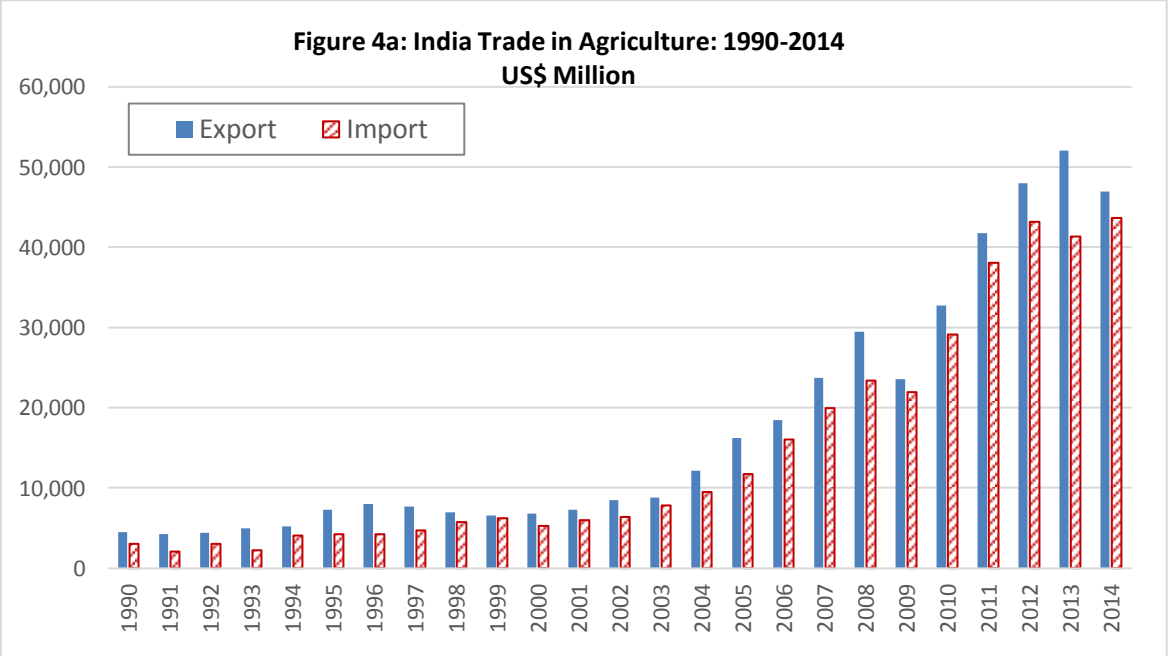
Source: World Development Indicators, The World Bank (2015). First author's calculations.

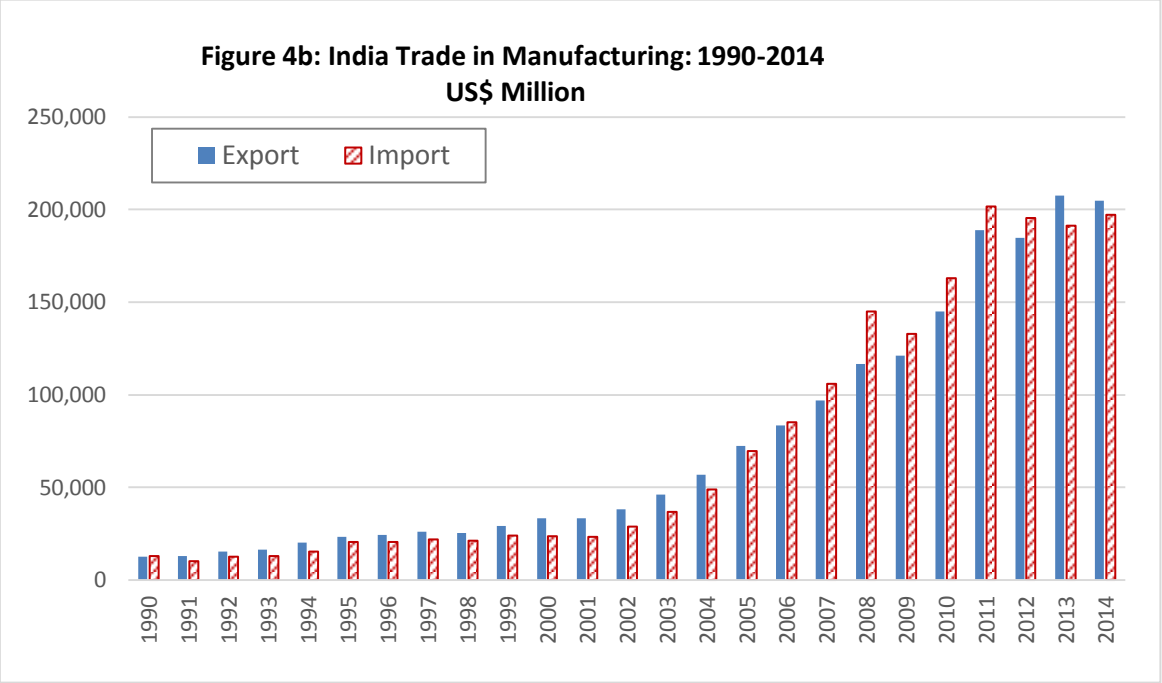


Source: World Development Indicators, The World Bank (2015). First author's calculations.



Source: UN Comtrade Database (2015). First author's calculations.





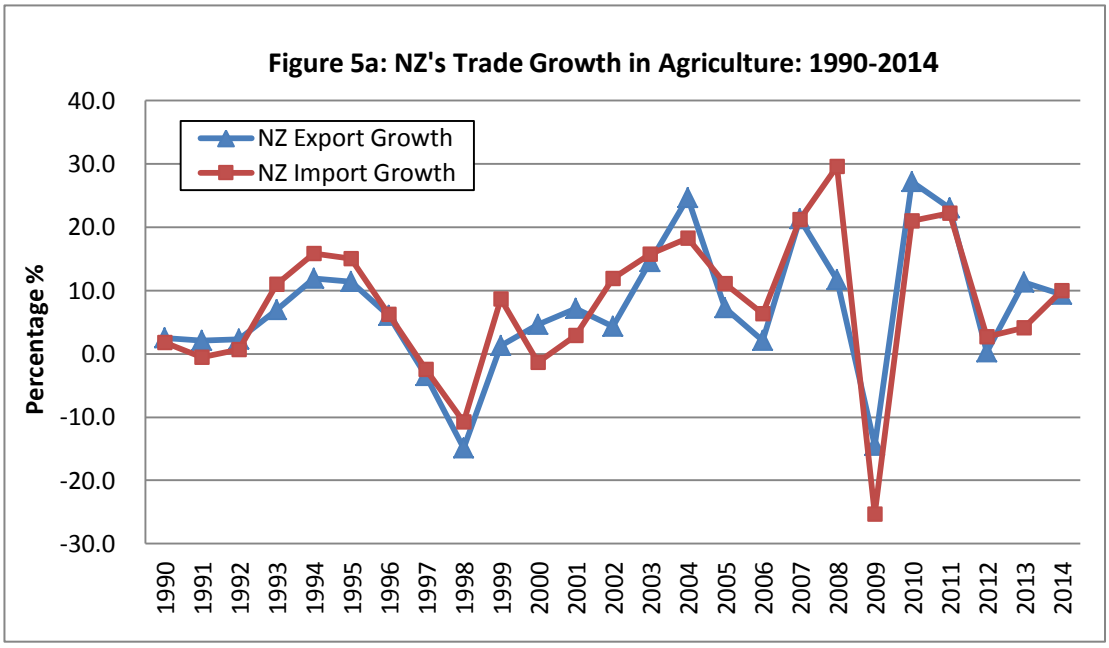
Source: UN Comtrade Database (2015). First author's calculations.

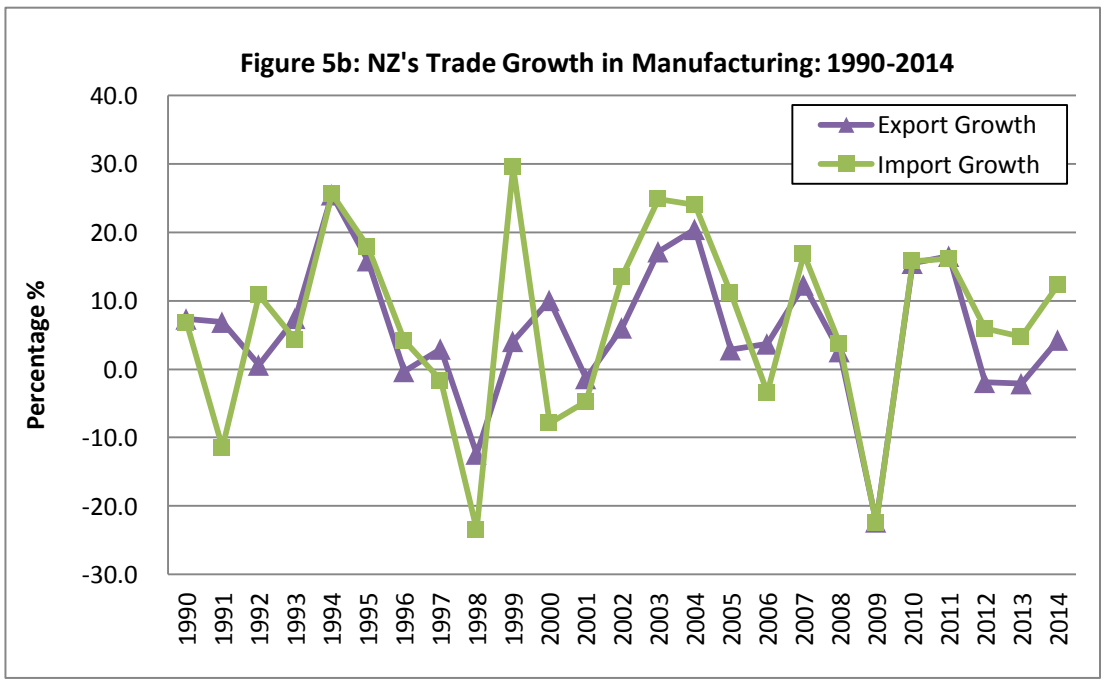
Figure 3a and 3b show NZ's trade in agriculture and manufacturing over time. Obviously, NZ has been acquiring a significant trade surplus in agriculture, while has been suffering from a trade deficit in the manufacturing. To be more specifically, NZ's export in agriculture has increased by nearly US$ 22 billion from 1988 to 2014. In comparison, the imports have increased by only US$ 3 billion. In terms of manufacturing, NZ's imports increased by the similar value as the exports in agriculture. Moreover, it can be seen from these two figures that the trade deficit obtained from the agriculture has been greater than the deficit suffered from the manufacturing, as for NZ. This also proves the dominating status of agriculture industry in NZ economy.

Figure 4a and 4b show India trade in agriculture and manufacturing over time, respectively. It can be seen that India has obtained trade surplus in both of the industries (in most of the years). To compare Figure 4a with 4b, we can find that India has more advantage in agriculture than in manufacturing since it had obtained greater surplus in agriculture than in manufacturing. Especially, the imports were greater than the exports in manufacturing in some periods, such as, 2006-2012.

The growth in NZ agricultural and manufactured exports and imports are shown in Figures 5a-5b. There was higher growth in NZ imports relative to exports between 1989 and 1998; then an increase in both imports and exports between 1999 and 2008. After that, both imports and exports increased significantly from nearly 20 percent to 22 percent in 2009-2011. More recently, both imports and exports had a slight increase from 2012 to 2014. Specifically, there is a higher rate of increase in the exports than in imports.

New Zealand manufacturing imports experienced dramatic fluctuations over the period – more so than for exports. Export growth is peaked at 25 percent in 1994; Import growth is peaked at 30 percent in 1999. The exports and imports moved toward the same direction over the period. More recently, both recovered from the great growth reduction in 2009 to a high growth rate of 15 percent in 2010 and 2011. After that, the high growth rates in manufacturing trade have been decreasing with a more dramatic reduction in the exports than the imports from 2012 to 2014. (Comprehensive data Table and Figs are available on request from the authors).

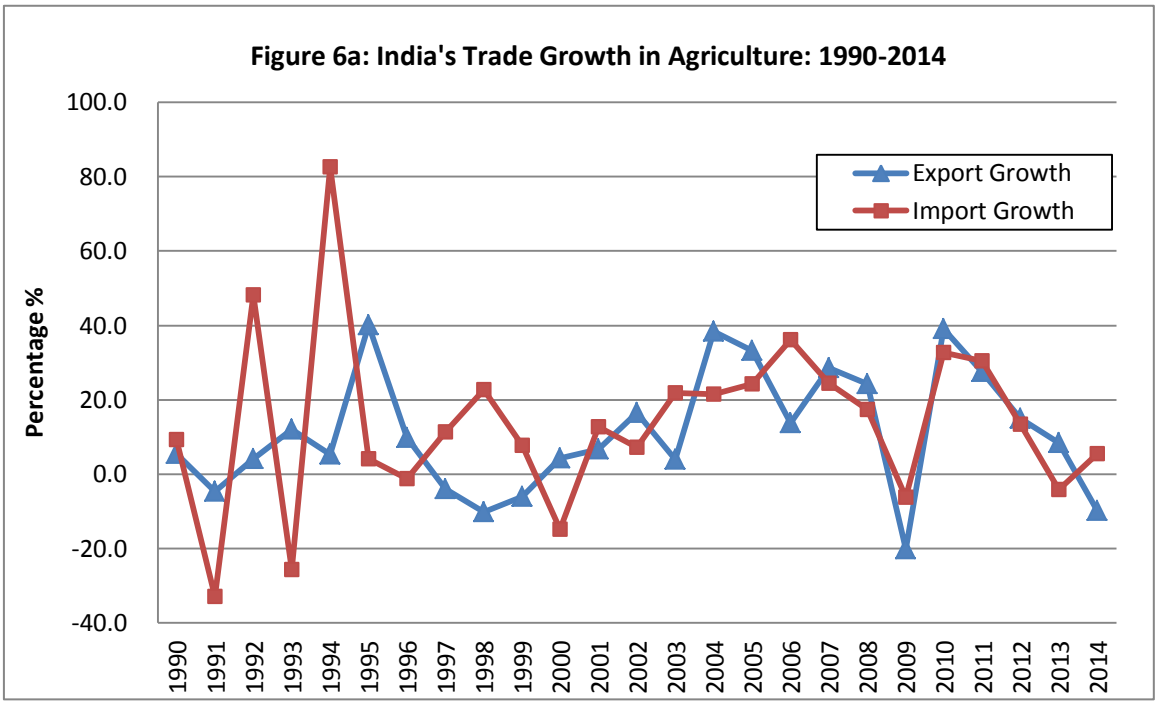




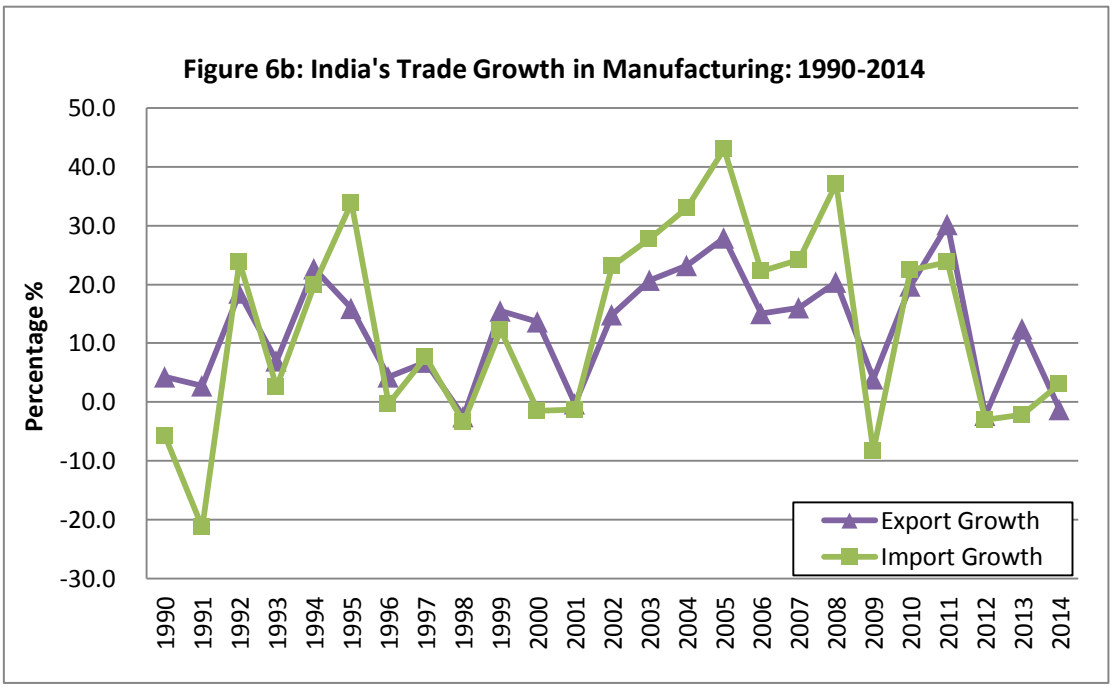
Source: UN Comtrade Database (2015). First author's calculations.

The Indian history is equally important [See Figures 6a and 6b]. Indian agriculture exports fluctuated significantly between 1989 and 1998; it then increased from -5 percent to 28 percent in the period 1999-2008. Agriculture import growth remained relatively consistent, comparing with the exports. Recently, both imports and exports improved from the negative growth in 2009 to high-speed growth rate of around 38 percent in 2010. After that, both imports and exports have been declining to a low growth rate. This is true especially in the imports. There was negative growth rate for imports in 2013.

Indian manufacturing imports fluctuated significantly over the period while the exports remained relatively constant. The exports of India manufactured goods grew at a positive rate throughout the period while the imports experienced a dramatic growth reduction at a rate of -20 percent in 1991. More recently, both imports and exports recovered from the great growth reduction in 2009 to a high growth rate of more than 20 percent in 2011. After that, the high growth rates of imports and exports decreased to a negative growth again in 2012. The same happened again in 2014- the growth rate of India manufacturing export was negative in 2014.



Source: UN Comtrade Database (2015). First author's calculations.



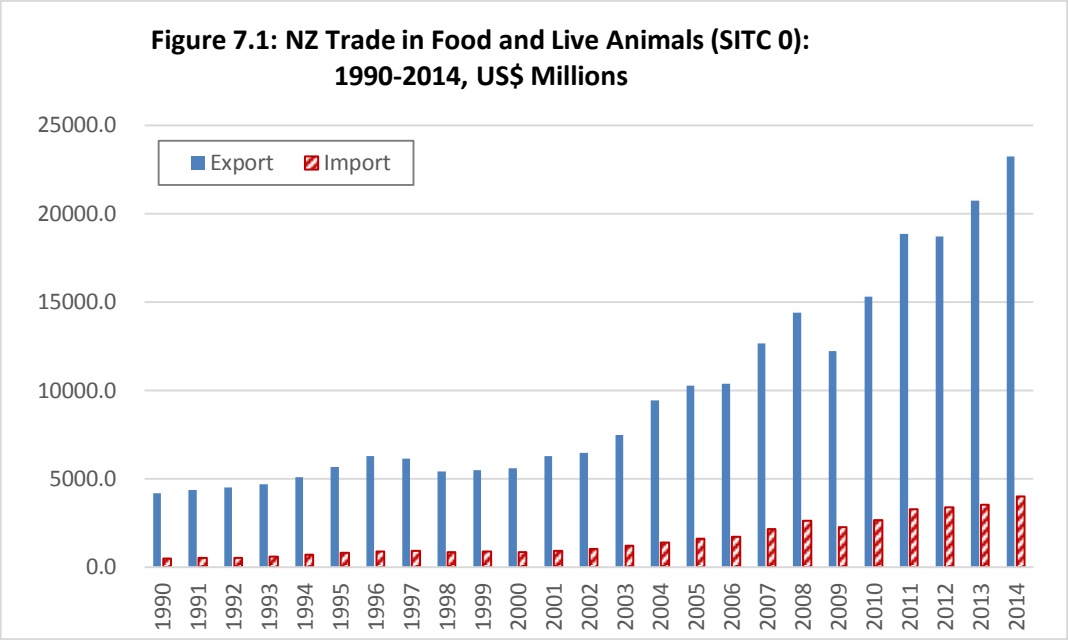
Source: UN Comtrade Database (2015). First author's calculations.

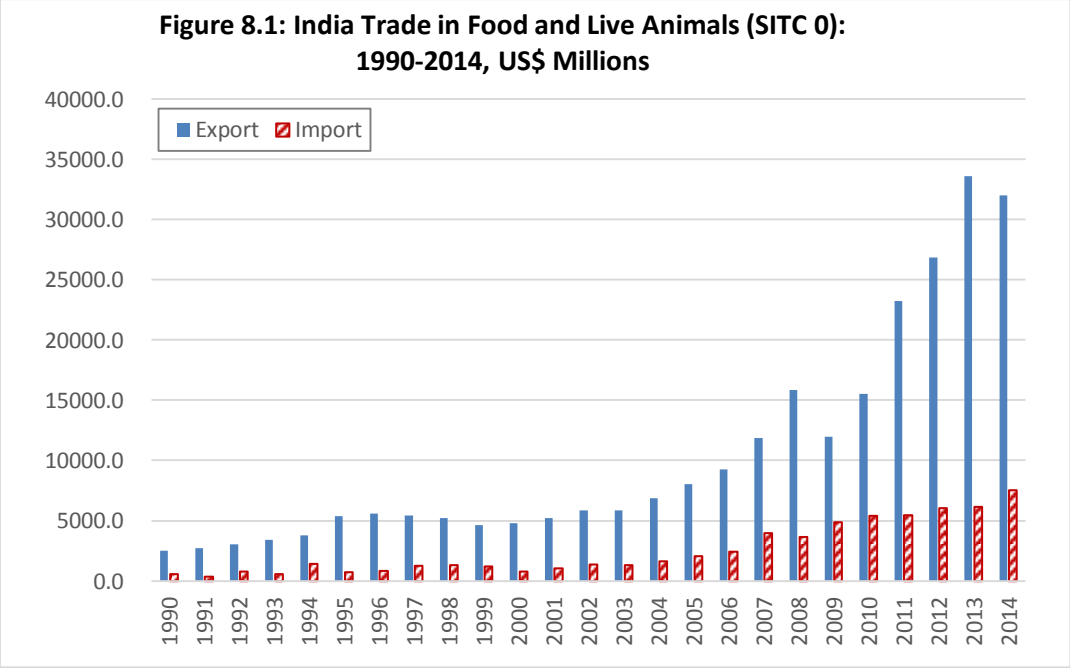
Figure 7.1 shows NZ trade in Food and Live Animals (SITC 0). It can be seen that the exports in this sector have increased by US$ 17 billion from 1988 to 2014. The total increase in agriculture sectors was US$ 22 billion that we mentioned before [See Figure 3a]. Therefore, it is easily to conclude that the major growth in agriculture is contributed by the great increase in Food and Live Animals. In addition, it can be noticed that the greatest imports in this sector were below US$ 5 billion over the period. This also confirms that exports in Food and Live animals dominated in the agricultural trade.

In Table A6.1 [See Appendix], both imports and exports had a great reduction in 2009 with a decreasing rate of -15 percent. Exports had three significant growths, 2002-2004, 2006-2007 and 2009-2010 respectively. The imports experienced the similar trend with the exports. More recently, both imports and exports improved significantly from less than 5 percent to more than 10 percent in 2014.

In comparison, Figure 8.1 shows India trade in Food and Live Animals (SITC 0). It is unsurprising that India also shown a strong growth in its exports in this sector. On the one hand, the exports have increased by US$ 30 billion during 1988-2013. Recently, the exports even peaked at US$ 33 billion in 2013. The imports, on the other hand, remained relatively constant in recent years. In 2014, the exports experienced a slight decrease to US$31 billion.

In Table A7.1 [See Appendix], there are more fluctuations in the India's imports than in the exports. The imports had two great growths, 1991-2992 and 1993-1994 respectively. The highest growth was at nearly 140 percent in 1994. Recently, the imports and exports in this sector moved toward the opposite direction with a decrease in the exports and an increase in the imports in 2010-2014.





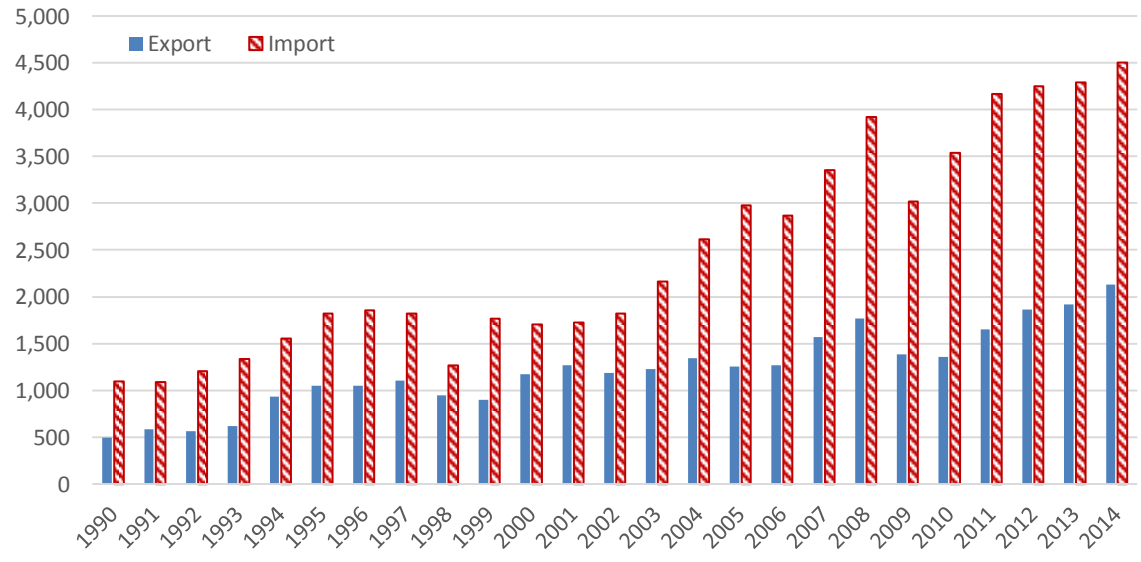
Source: UN Comtrade Database (2015). First author's calculations.

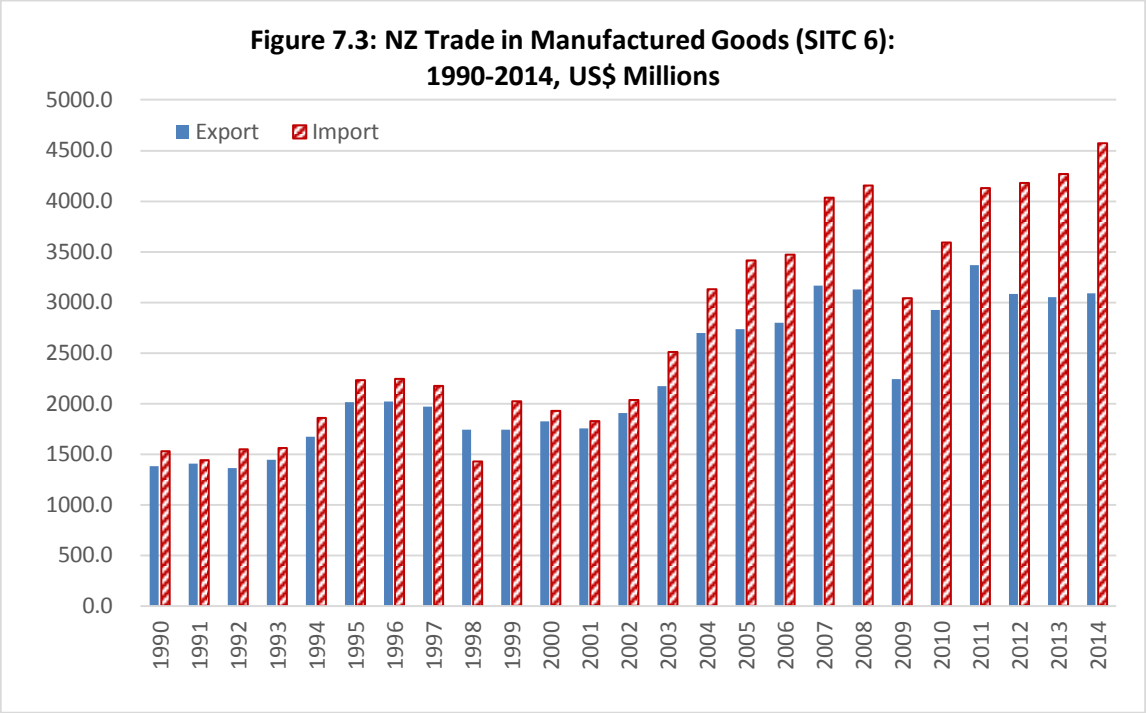
Figure 7.2 shows NZ's export and import in Chemicals (SITC 5). Obviously, the imports in this sector were greater than the exports all the time, showing an increase in trade deficit over the period. Recently, the imports of chemicals even amounted at US$ 4.5 billion in 2014. In Table A6.2 [See Appendix], most of imports and exports are fluctuated between -20 percent and 30 percent over the period. The exports had a more significant growth than the imports in 1989-1998. The average growth of imports and exports are around 10 percent from 1999 to recent years. Moreover, both imports and exports moved toward the same direction and had an average of 10 percent in 2010-2014.

Figure 7.3 shows that NZ's export and imports in Manufactured Goods (SITC 6) have been moving toward the same direction over the period. Specifically, the imports were slightly greater than the exports during 1988-2002. Since then, the difference between the exports and the imports has been increasing gradually. In 2014, the trade deficit in this sector was even peaked at US$ 1.5 billion. In Table A6.3 [See Appendix], the exports and the imports have been experiencing the similar trend over the period. However, the fluctuations in imports are more significant than in exports in 1997-2000. The imports had a great reduction at -35 percent in 1998. After that, there is a great import-growth at 41 percent in 1999. More recently, both imports and exports moved toward the same direction. In addition, the exports had a higher growth than the imports in 2010, 2013 and 2014, while also had a greater reduction than the imports in 2012.

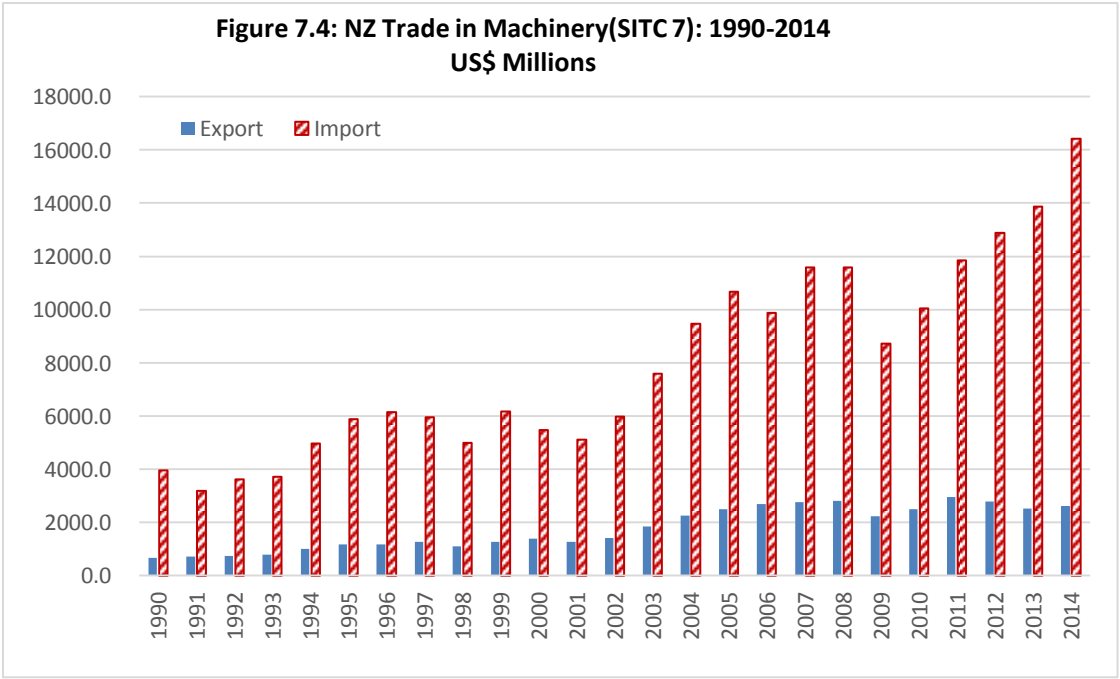
NZ's exports in Machinery (SITC 7) were greater than the imports over the period 1988-2014, which suggesting a big trade deficit obtained by NZ [See Figure 7.4]. Moreover, the trade deficit has shown an increasing trend recently. The exports in this sector were amounted to nearly US$ 14 billion in 2014. In comparison, the exports remained relatively steady. In Table A6.4 [See Appendix], there are no big differences between the fluctuations in imports and in exports. However, the growth in machinery and equipment had the most unstable trends comparing with the other sectors included in the manufacturing. Recently, the imports had an increase from a negative growth in 2009 to an average of 15 percent in 2010-2014. In comparison, the exports have been suffering from a negative growth since 2012.

Figure 7.2: NZ Trade in Chemicals (SITC 5): 1990-2014 US$ Millions





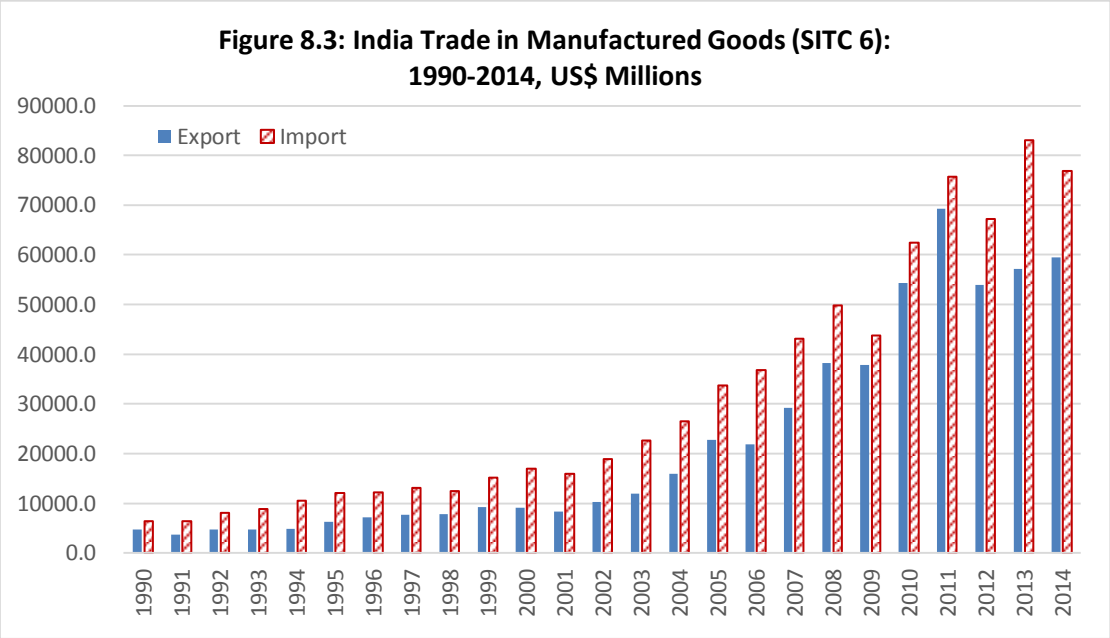
Source: UN Comtrade Database (2015). First author's calculations.

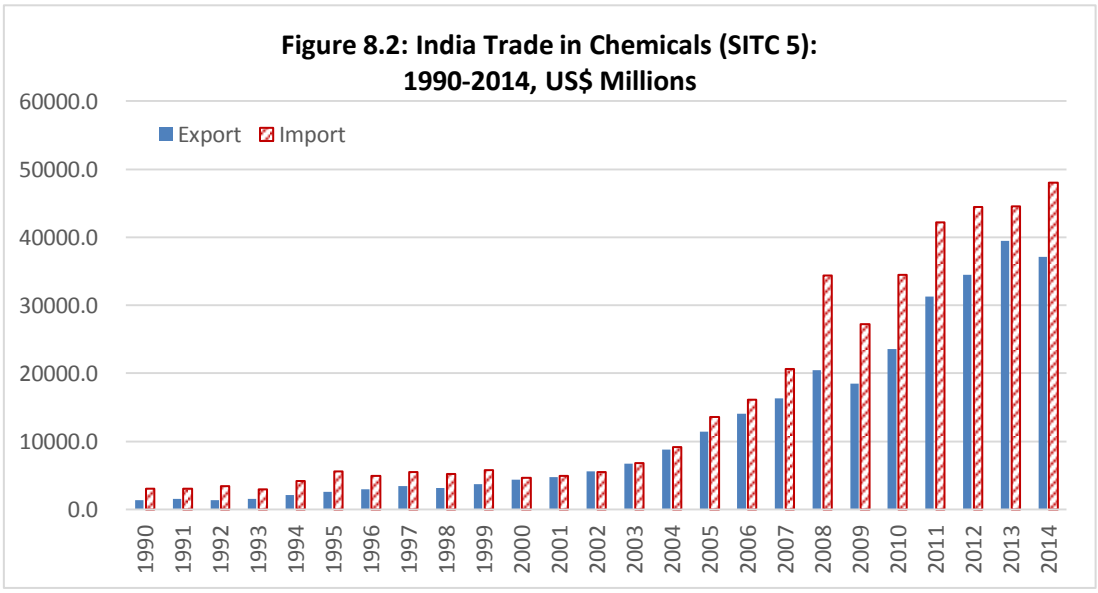


Source: UN Comtrade Database (2015). First author's calculations.

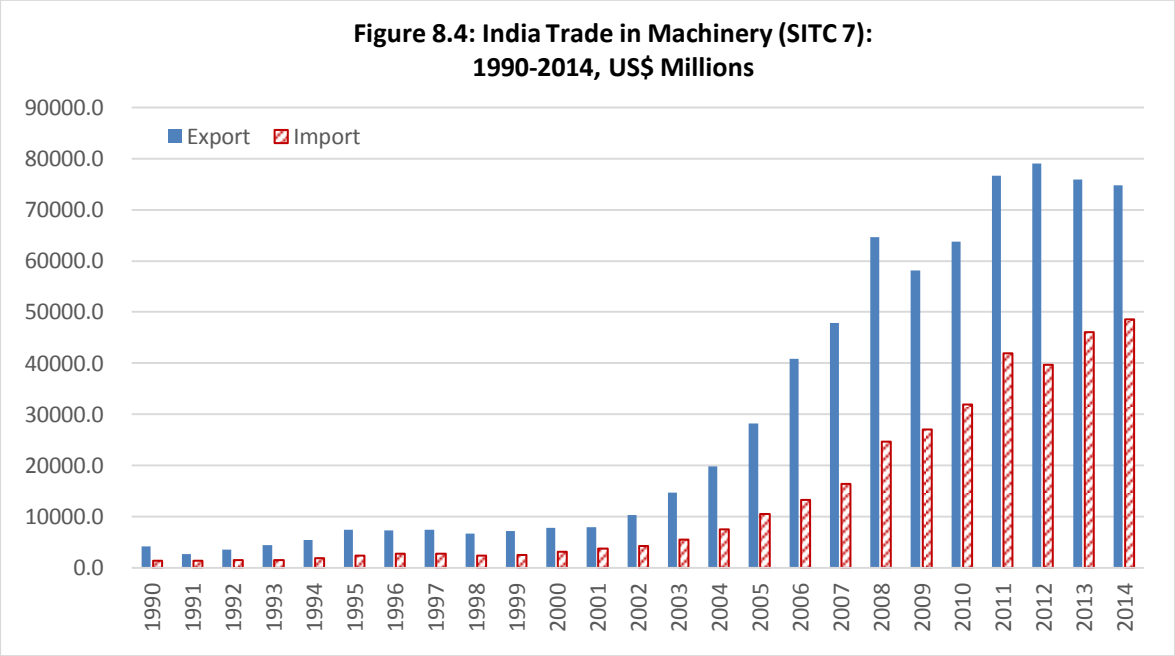
Figures 8.2, 8.3 and 8.4 a show India's export and import in Chemicals (SITC 5), Manufactured Goods (SITC 6) and Machinery (SITC 7), respectively. Overall, India has obtained a trade surplus in Manufactured Goods, while suffered from a trade deficit in both Chemicals and Machinery sectors. In addition, both export and import in the three sectors have been increasing gradually since 2000s.

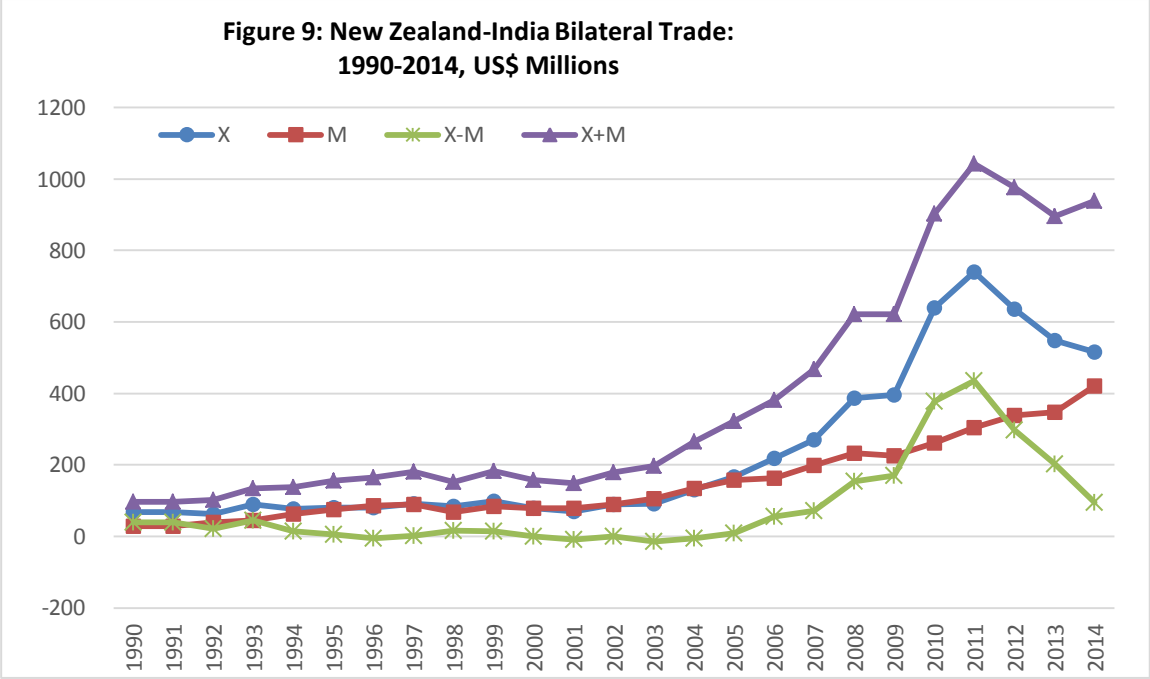
Figure 9 shows NZ's bilateral trade with India over time. It can be seen that NZ exports to India were greater than NZ imports from India all the time, which suggesting an advantage in trade for NZ. In comparison, the imports from India increased gradually even in 2012 and 2014, in which exports decreased by around US$200 million. Overall, NZ's bilateral trade with India has been improving significantly since 2004. NZ's bilateral trade with India in agriculture over time is shown in Figure 10. It is unsurprising that NZ still shown great advantage in its agricultural exports. The exports to India are peaked at around US$350 million in 2010. After that, the exports have been reducing by more than US$50 million from 2011 to 2013. In contrast, NZ imports from India in agriculture increased gradually to US$50 million in 2013.



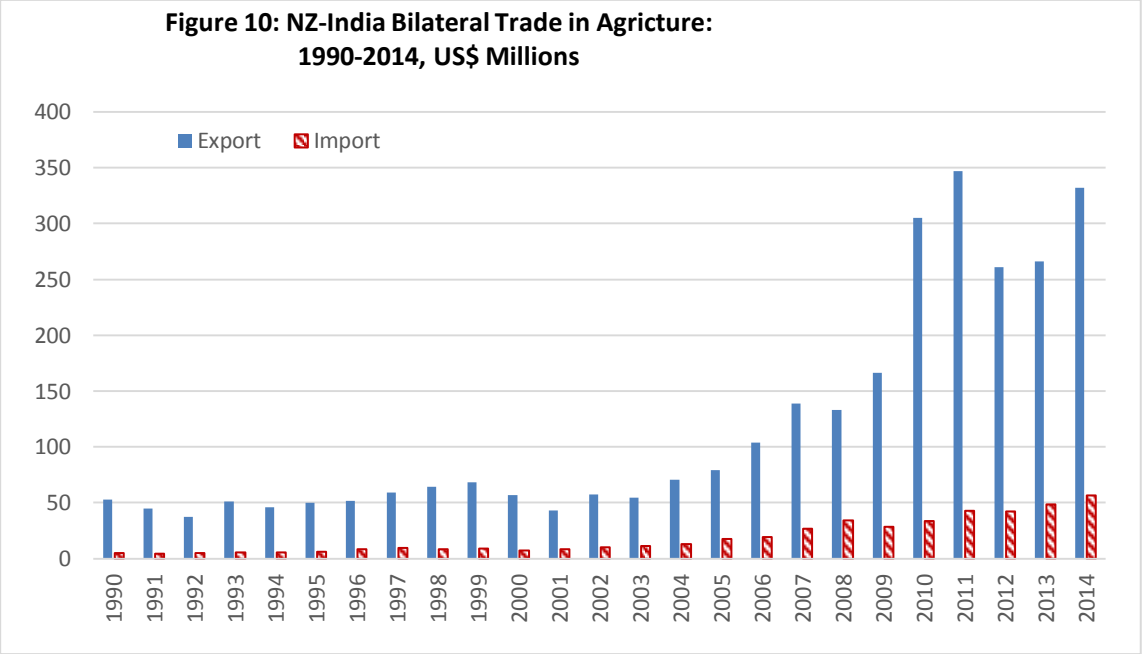


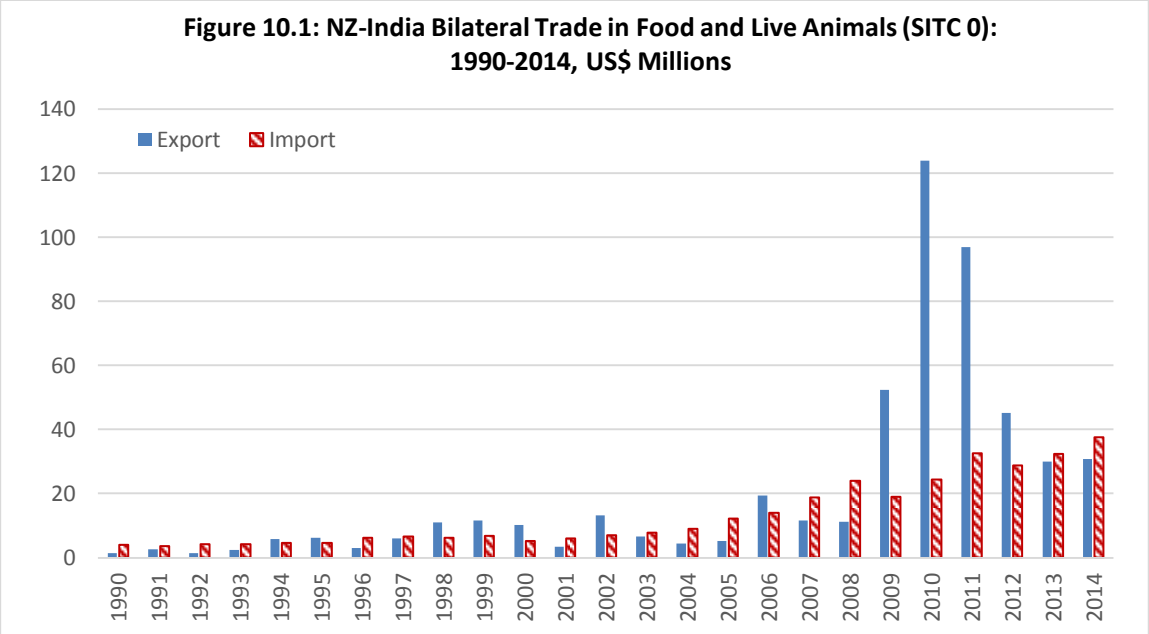
Source: UN Comtrade Database (2015). First author's calculations.





Source: UN Comtrade Database (2015). First author's calculations.





Source: UN Comtrade Database (2015). First author's calculations.

Specifically, Figure 10.1 shows NZ's bilateral trade with India in Food and Live Animals. Exports were greater than the imports especially in 2009-2012 (post-global financial crisis period). It is interesting to note that NZ even experienced a trade deficit with India in some periods, such as, in 1989-1993 and 2003-2008. NZ has also suffered from a deficit in 2013 and 2014. This indicates that NZ had no extremely strong advantage in Food and Live Animals sector- the biggest sector of NZ agriculture, when it is trading with one of the biggest agricultural country in the world- India.

NZ imports of food and animal products from India tend to be steady over the period, while the exports to India fluctuated significantly- it ranged from nearly -100 percent to 280 percent [See Figure 10.1]. The exports also achieved three dramatic growths in 2002, 2006 and 2009 respectively. More recently, both imports and exports achieved a significant increase from a negative growth to a positive growth in 2012-2014.

Figure 11: NZ-India Bilateral Trade in Manufacturing: 1990-2014, US$ Millions

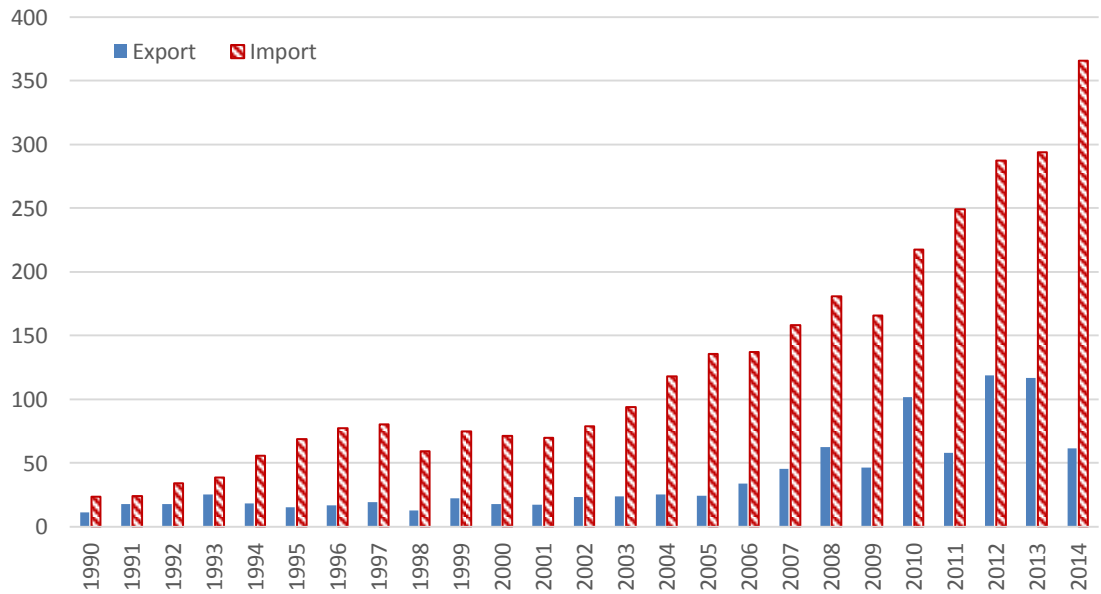
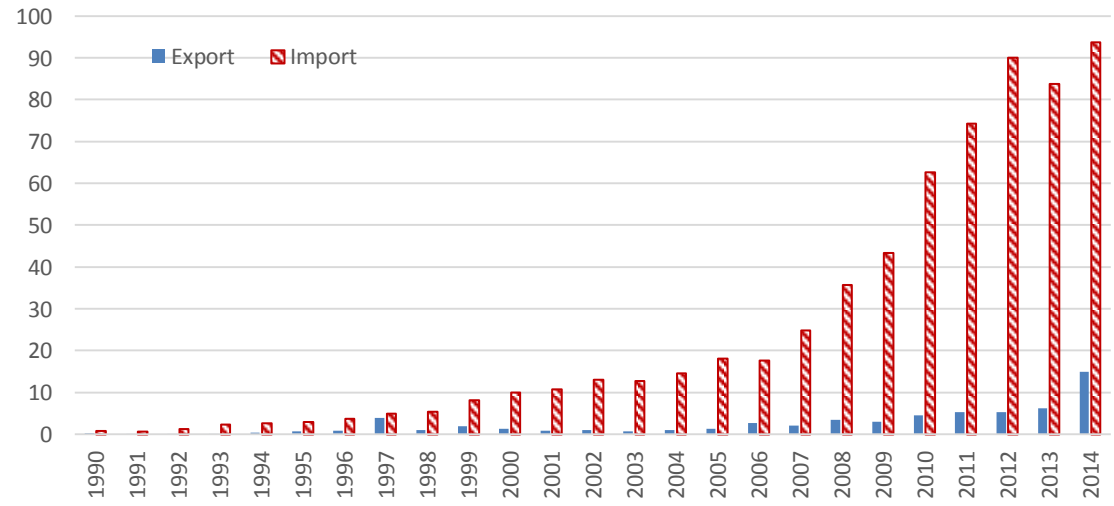
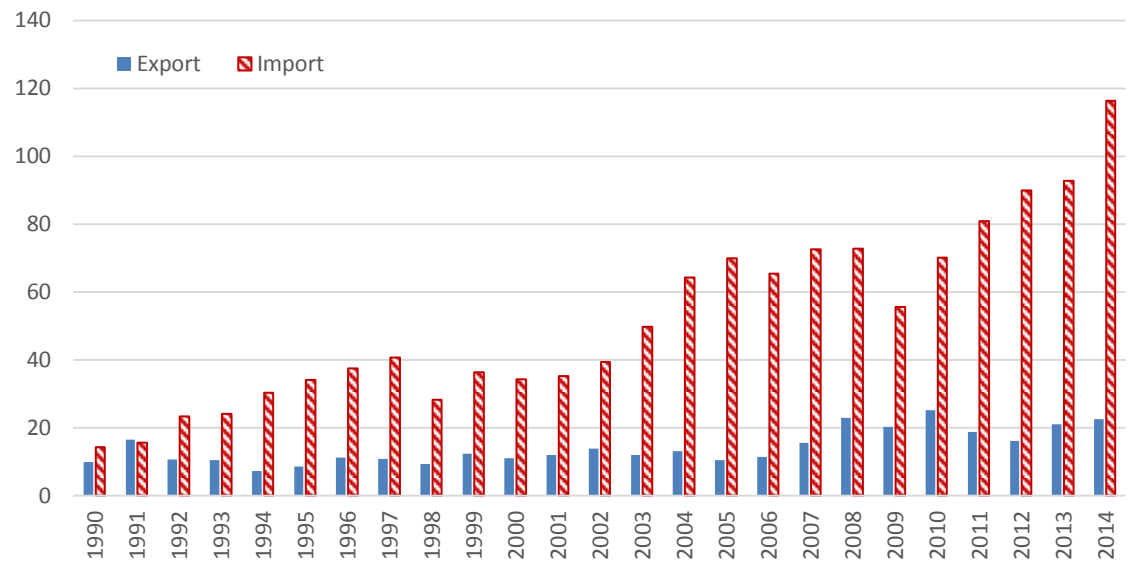


Figure 11.1: NZ-India Bilateral Trade in Chemicals (SITC 5): 1990-2014, US$ Millions



Source: UN Comtrade Database (2015). First author's calculations.

Figure 11.2: NZ-India Bilateral Trade in Manufactured Goods (SITC 6): 1990-2014, US$ Millions



Source: UN Comtrade Database (2015). First author's calculations.

Figure 11.3: NZ-India Bilateral Trade in Machinery (SITC 7): 1990-2014, US$ Millions

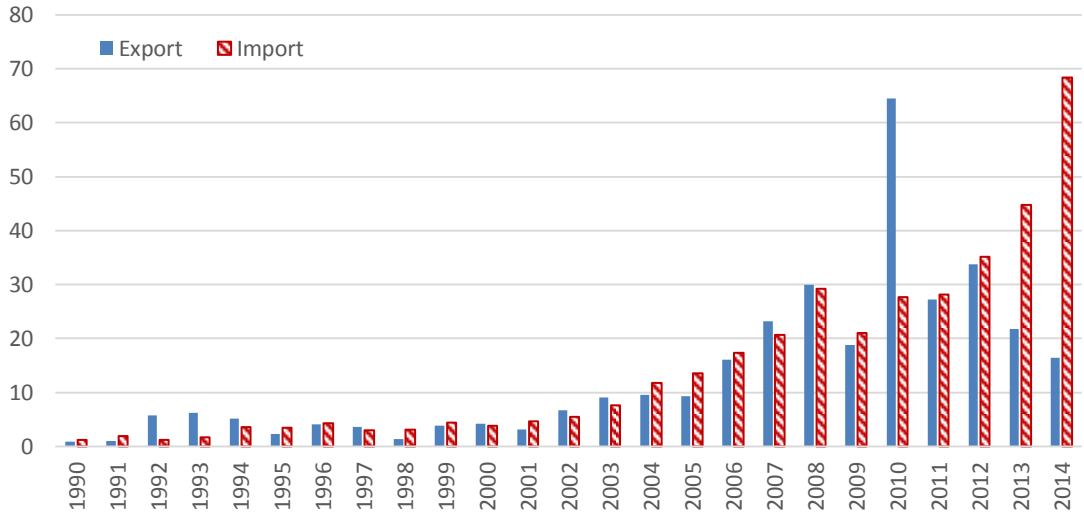


Figure 11 shows NZ's bilateral trade with India in manufacturing. In this sector, NZ suffered from a big trade deficit over time. In addition, the findings demonstrate that the increase in imports was greater than the exports leading to bilateral sectoral trade imbalance. Figure 11.1, 11.2 and 11.3 show NZ bilateral trade with India in Chemicals (SITC 5), Manufactured Goods (SITC 6) and Machinery (SITC 7), respectively. It can be observed from these figures that NZ has been suffering from large trade deficit in

Chemicals and Manufactured Goods especially. In Machinery, both imports and exports moved toward the same direction, and there is no big difference between them can be observed over the period. In addition, it is interesting that NZ's exports in Machinery to India were peaked at US$ 65 million in 2010, in which the imports were amounted to US$ 28 million.

3. Literature Review

Recent relevant literature was surveyed to identify papers that offer insights on issues of potential importance with regard to NZ-India trade. Papers were selected pertaining to Indian exports, and Indian involvement in the export of agricultural and manufactured products.

Armstrong (2015) analyzed the economic integration of the East and South Asian economies in the global economy, including an analysis of India-Pakistan relations. This paper used a variation of the Anderson and van Wincoop (2003) gravity model to measure trade performance and to reflect endowment structures between economies. The findings suggest that Pakistan has trade potential with the world, on average. Pakistan-India trade does not reflect potential growth. Similarly, India has higher trade potential, on average, than in the bilateral relationship with Pakistan. Overall, India's trade with East Asia is closer to potential than its trade with the rest of South Asia. The author argued, the methodology applied in this paper would be difficult to include variables that would help explain India-Pakistan trade is so much lower than expected. The author argued that a decrease in political distance, tariffs or an increase in measure of economic freedom, would help better bilateral trade performance between India and Pakistan. SAARC does not seem to have significant trade growth between them.

Bhattacharyay and Mukhopadhyay (2015) conducted research to investigate economic partnership between India and Japan, including an examination of the benefits and challenges of the 2011 Comprehensive Economic Partnership Agreement (CEPA) between them. They presented and analysis of the economy-wide impact and their role in both regional and global integration. For empirical analysis, this study used the trade intensity index (TII) to examine whether the value of trade between two countries is greater or smaller than the expected on the basis of their importance in world trade. The findings reveal that the CEPA had a strong positive impact on bilateral trade between India and Japan. Specifically, Japanese exports to India increased at a faster rate than India's exports to Japan. Most importantly, the authors found that there is a significant potential for trade expansion between two countries since India's trade with Japan almost has been very small compared with that with other countries. Therefore, they concluded that India and Japan should maximize the benefit of economic complementarities of both countries.

Fukase and Martin (2015) explored the economic implications of a potential FTA between India and the U.S., using an applied general equilibrium model. The potential influence of an FTA are hypothesized by the authors and are evaluated at 100 percent and 50 percent Ad Valorem Equivalent (AVE) tariff reduction for goods and services. The key

findings include a positive impact on both India and the U.S. Specifically, this study found that the U.S. is likely to gain largely through terms of trade improvement for its goods and services as the initial protection in India is particular high. India can also obtain gains from exports expansion and growth in output, especially in the textiles and apparel sectors. In addition, the authors highlighted a number of limitations and related issues may be subjects for future research. For instance, they suggested that future studies could use the actual liberalization schedules along with updated data, include more refined aggregators of trade distortions, and address the distributional consequences of trade liberalization.

Pathania (2013) investigated the relationship between the export composition of India's international trade and its impact on economic growth. The study period was 1996 to 2011. Multi- variable regression analysis was used to identify the significance of different export sectors. The model estimated using the ordinary least square (OLS) technique found that exports from a range of sectors had a positive and statistically significant impact on economic growth but exports of manufactured goods has very high, positive and significant impact on economic growth in India during the period 1996-97 to 2011-12.

Kumar and Singh (2015) examined exports of Indian manufactured goods for the period from 1990-91 to 2011-12. The study show that performance of Indian manufacturing improved during the study period. Shares of manufactured products and exports in GDP have increased during the period. The growth rate of manufactured products and exports improved. The findings also reveal that inward FDI has significantly contributed to foster the manufactured exports performance of India.

Abidi, Halepoto, Chandio and Shaikh (2013), explored the Pak-India Trade reforms and its impact on the economy of Pakistan. The data were collected from secondary sources and analyzed using GEN-STAT software. The study revealed that Pakistan gained benefit from agricultural trade with India. The results indicated that positive economic circumstances facilitate the development of trade flows between Pakistan and selected blocs.

Price (2012) investigated the performance of New Zealand manufacturing firms. Findings show that the experience of New Zealand manufacturing industry during and after the 2008-09 recession was influenced by three main factors: world demand, domestic demand, and the exchange rate. Exports to Australia experienced the additional benefit of a relatively low and stable exchange rate. Looking ahead, it anticipated manufacturing activity being influenced by a considerable increase in domestic construction activity, centered on, but not limited to, the post-earthquake repairs and reconstruction of Christchurch.

Global agricultural trade has flourished in the period 2010 to 2015. Growing purchases by China and other Asian countries have been important. Meade, Muhammad and Rada (2011), explored the place of developing and middle-income countries as increasingly

important export markets for high-value agricultural products due to population, urbanization, and income growth. As income rises, consumers purchase more higher-value foods, including meat products. This results in an increase of US agricultural exports (and potentially increase export revenue for New Zealand). This paper emphasizes that future demand for agricultural products will increasingly come from developing countries (for example, China and India), which have seen much higher income growth as a group than developed countries.

International trade in agricultural products has long been influenced by tariffs and other restrictions. Hence negotiations to reduce these barriers are important. Konduru, Kim and Paggi (2014) analyzed the impact of KOREA-US FTA on the agricultural exports from the US with an example of table grapes. The paper calculated preference indices for various agricultural imports from the US and rest of the world before and after the free trade agreement between the USA and Korean agricultural markets. The results show that the KOREA-US FTA definitely created opportunities for exporters of agricultural products from California. The other major finding of this study is the advantage that the U.S. exporters may obtain due to the degree of preference that will be given to them compared to exporters from other countries. It is difficult to quantify this advantage as it also depends on the marketing strategies of the exporters and not just on the trade policies of the exporting countries.

The current Trans Pacific Partnership negotiations cast a shadow over all trade negotiations in the region. Yeboah, Shaik and Agyekum (2015) examined the potential effect of a TPP agreement on U.S agricultural trade using panel VAR and IRF models. A system of three VAR equations was developed for the three endogenous variables agricultural trade, real exchange rate, and the price ratio of imports to exports. In addition, the future pattern of trade was determined using the IRF curves. The study found that a unit shock in price ratios because of the TPP agreement leads to agricultural trade creation for U.S in the short run but in the long run, leads to more trade diversion than trade creation.

Trade liberalization does not just affect the traditionally recognized and large agricultural exporting nations. De Silva *et al.* (2013), study provides a quantitative assessment of the trade policy impacts on agricultural sector growth in Sri Lanka based on the national data from 1960 to 2010. The Ordinary Least Square (OLS) method and the multiple regression models were employed to investigate whether the trade policy reforms increase the agricultural sector growth or not. The results suggest that trade liberalization enhanced agricultural sector growth and eventually lead to improved agricultural productivity in Sri Lanka. Moreover, this analysis concludes that the trade openness, investment, interest rates and Free Trade Agreements are significant factors that are positively related to agricultural sector growth. This research also confirms that the agricultural sector growth has made an important contribution to accelerate the economic growth in post-liberalization period in Sri Lanka.

Trade liberalization potentially has environmental and social consequences. Cook, Carrasco, Paini and Fraser (2011), provides a demonstration of how a comprehensive economic framework, which takes into account both the gains from trade and the costs of invasive species outbreaks, can inform decision-makers when making quarantine decisions. An empirical estimation was made of the economic welfare consequences for Australia of allowing quarantine-restricted trade in New Zealand apples to take place. The results suggest the returns to Australian society from importing New Zealand apples are likely to be negative. The price differential between the landed product with SPS measures in place and the autarkic price is insufficient to outweigh the increase in expected damage resulting from increased fire blight risk. Consequently, this empirical analysis does not support the opening up of this trade. However, it should be noted that the results are sensitive to key underlying assumptions.

4. Methodology

The analysis models exports as a function of fundamental economic variables in the tradition of Bano (1986). The hypothesis is that all the coefficients of the variables are positive. In other words, it can be expected that the average GDP, Population, GDP per capita, historical values and exchange rate have the positive effects on both of country's total trade and country's bilateral trade with partners.

The dependent variable used in each case is the value of New Zealand's (or India's) manufacturing or agricultural exports to the trading partners- the World or India (or New Zealand) in current US millions. These values were obtained from The World Development Indicators database. Population data was also taken from The World Development Indicator database. GDP per capita (or GDP/Population) was calculated by the authors, according to the data obtained from The World Development Indicator database.

The exchange rate was measured by the Official Exchange Rate taken from The World Development database. According to the World Bank (2015), the Official Exchange Rate is the exchange rate determined by national authorities or to the rate determined in the legally sanctioned exchange market. It is calculated as an annual average based on monthly averages (U.S. dollar against the local currency). FDI was taken from UNCTAD Statistics, which are measured by FDI inflows in US$ millions. New Zealand (or India) itself is excluded when the world is regarded as the trading partner of New Zealand (or India). For instance, New Zealand (or India) exports to the World means that New Zealand (or India) exports to the countries in the world excluding itself (or rest of the world).

Each model was estimated in logarithms in order to identify the marginal effects (or elasticities) of each determinants on country's exports. The following five regressions were used when country *i*-New Zealand (or India) is trading with country *j*-the World:

(1.1) $log(X_{ij}) = \alpha + \beta_1 log(Average\ GDP_{ij}) + \beta_2 \log(Exchange\ Rate_i) + \varepsilon$

(2.1) $log(X_{ij}) = \alpha + \beta_1 log(Average\ POP_{ij}) + \beta_2 \log(Exchange\ Rate_i) + \varepsilon$

(3.1) $log(X_{ij}) = \alpha + \beta_1 log(Average\ GDP_{ij}/POP_{ij}) + \beta_2 \log(Exchange\ Rate_i) + \varepsilon$

(4.1) $log(X_{ij}) = \alpha + \beta_1 log(Average\ FDI_{ij}) + \beta_2 \log(Exchange\ Rate_i) + \varepsilon$

(5.1) $log(X_{ij(t)}) = \alpha + \beta_1 \log(X_{ij(t-1)}) + \beta_2 \log(Exchange\ Rate_i) + \varepsilon$

The following five regressions were used when country *i*-New Zealand (or India) is trading with country *j*-India (or New Zealand):

(1.2) $log(X_{ij}) = \alpha + \beta_1 log(Average\ GDP_{ij}) + \beta_2 \log(Exchange\ Rate_i) + \beta_3 \log(Exchange\ Rate_j) + \varepsilon$

(2.2) $log(X_{ij}) = \alpha + \beta_1 log(Average\ POP_{ij}) + \beta_2 \log(Exchange\ Rate_i) + \beta_3 \log(Exchange\ Rate_j) + \varepsilon$

(3.2) $log(X_{ij}) = \alpha + \beta_1 log(Average\ FDI_{ij}) + \beta_2 \log(Exchange\ Rate_i) + \beta_3 \log(Exchange\ Rate_j) + \varepsilon$

(4.2) $log(X_{ij}) = \alpha + \beta_1 log(Average\ FDI_{ij}) + \beta_2 \log(Exchange\ Rate_i) + \beta_3 \log(Exchange\ Rate_j) + \varepsilon$

(5.2) $log(X_{ij(t)}) = \alpha + \beta_1 \log(X_{ij(t-1)}) + \beta_2 \log(Exchange\ Rate_i) + \beta_3 \log(Exchange\ Rate_j) + \varepsilon$

5. Results and Analysis

The results are presented in Tables 1 to 8. The results consistently show significant results for both equations estimated and the variables selected. Columns (1) to (5) in each table present the estimated coefficient and its related standard error of each variable used in equations. The significance of coefficient was given by t-statistics, which tell us whether a variable (e.g. GDP or Population) has statistically significant predictive capability in the presence of the other variables, that is, whether it adds something to the equation. The standard errors of the regression coefficients are shown in parentheses.

Table 1 reports total NZ manufacturing exports to the world as a function of the dependent variables. In regressions 1 to 5, nearly all the determinants have strong effects on manufacturing exports. Specifically, the log of average population of NZ and the world has the greatest impacts on manufacturing exports, comparing with the impacts of other determinants: an increase in average population of one percent tends to increase the manufacturing exports from NZ to the world by around 3.8 percent, while a one percent increase in other determinants tend to increase the exports by less than 1.34 percent. Therefore, New Zealand manufacturing export is the most elastic with respect to the changes in average population. In comparison, manufacturing exports tends to be inelastic (0.4 percent) with respect to average FDI.

Table 2 reports total Indian manufacturing exports to the world as a function of the dependent variables. All the determinants have more significant effects on Indian manufacturing exports to the world, comparing with NZ exports. Once again, the log of average population between India and the world is positively correlated with Indian exports, which is consistent with the hypothesis. An increase in average population of 1 percent tends to increase Indian manufacturing exports to the world by 11.84 percent. This result also confirmed the high elasticity of India manufacturing exports with respect to population. Other determinants, such as average GDP and GDP per capita between India and the world also have significantly positive effects on Indian manufacturing exports at a level of 1 percent. That is to say, India manufacturing exports are also highly elastic with respect to GDP and GDP per capita. However, the effects of exchange rate tend to be ambiguous on total Indian manufacturing exports. The coefficient of exchange rate is below 1 percent in regressions of Table 2, indicating an inelasticity of India manufacturing exports with respect to exchange rate.

Table 1: Determinants of New Zealand Manufacturing Exports to the World

	Dependent Variable: log (Total NZ Manufacturing Exports)				
Regressor	(1)	(2)	(3)	(4)	(5)
Log(Av. GDP)	0.996***				
	(0.064)				
Log(Av. POP)		3.787***			
		(0.195)			
Log(Av. GDP/POP)			1.342***		
			(0.082)		
Log(Av. FDI)				0.397***	
				(0.034)	
Log(Exports(-1))					0.890***
					(0.059)
Log(Exchange Rate_NZ)	0.086	-0.363***	0.899***	-0.743***	-0.197
	(0.155)	(0.113)	(0.182)	(0.167)	(0.138)
Intercept	-8.156	-21.640	-4.579	3.900	1.091
	(1.116)	(1.590)	(0.847)	(0.458)	(0.543)
R squared	0.94	0.96	0.95	0.90	0.95
F-Stat	181.302	278.247	198.338	106.245	195.073
Observations	26	26	26	26	26

Standard errors are in parentheses. *Significant at 10%; **Significant at 5%; ***Significant at 1%.

Table 3 reports that coefficients are strongly positive of most determinants when total New Zealand agricultural exports to the world are used as the dependent variable. Especially, the log of average population between New Zealand and the world has the strongest effects on total New Zealand agriculture exports once again, confirming the high elasticity of agriculture with respect to population. An increase in average population of one percent tends to increase the exports of New Zealand agriculture by 3.697 percent,

which is greater than its effects on NZ manufacturing exports to the world. Overall, the coefficients of all the determinants remain the similar level as they are used to measure total New Zealand manufacturing exports. However, the log of New Zealand exchange rate tends to be negatively correlated with its agricultural exports to the world, which is significant at around 1 percent but inconsistent with the hypothesis.

Table 2: Determinants of Indian Manufacturing Exports to the World

	Dependent Variable: log(Total Indian Manufacturing Exports)				
Regressor	(1)	(2)	(3)	(4)	(5)
Log(Av. GDP)	2.222***				
	(0.065)				
Log(Av. POP)		11.835***			
		(0.431)			
Log(Av. GDP/POP)			2.499***		
			(0.085)		
Log(Av. FDI)				0.806***	
				(0.187)	
Log(Exports(-1))					1.022***
					(0.032)
Log(Exchange Rate_Ind)	0.012	-0.897***	0.299***	0.454	-0.041
	(0.073)	(0.119)	(0.077)	(0.432)	(0.089)
Intercept	-26.660	-82.951	-10.757	-1.207	0.039
	(0.894)	(3.148)	(0.511)	(1.358)	(0.211)
R squared	0.99	0.98	0.99	0.80	0.99
F-Stat	1653.925	1078.199	1246.09	46.68	1364.316
Observations	26	26	26	26	25

Standard errors are in parentheses; *Significant at 10%; **Significant at 5%; ***Significant at 1%.

Table 4 reports the log of average population between India and the world has the most significant effects on total Indian agricultural exports. The positive coefficient 11.6 suggests that a one percent increase in average population would increase total Indian agricultural exports by 11.6 percent. Similarly, the coefficients of the log of average GDP, GDP per capita, FDI and its previous values are positively affect Indian agricultural exports. In addition, the effects of the log of Indian exchange rate tend to be negatively correlated with Indian agricultural exports, which is inconsistent with the hypothesis.

Comparing Table 3 with Table 4, it is observed that all the determinants have more impacts on India's exports to the world than NZ with larger coefficients/or higher elasticity on the determinants of India-world trade.

Table 3: Determinants of New Zealand Agricultural Exports to the World

	Dependent Variable: log(Total NZ Agricultural Exports)				
Regressor	(1)	(2)	(3)	(4)	(5)
Log(Av. GDP)	0.999***				
	(0.038)				
Log(Av. POP)		3.697***			
		(0.182)			
Log(Av. GDP/POP)			1.332***		
			(0.060)		
Log(Av. FDI)				0.367***	
				(0.042)	
Log(Exports(-1))					0.975***
					(0.063)
Log(Exchange Rate_NZ)	-0.556***	-1.033***	0.235*	-1.436***	-0.239
	(0.090)	(0.106)	(1.132)	(0.207)	(0.162)
Intercept	-7.216	-19.920	-3.487	5.295	0.402
	(0.656)	(1.485)	(0.615)	(0.567)	(0.638)
R squared	0.98	0.97	0.98	0.89	0.96
F-Stat	730.462	430.144	517.602	90.689	288.672
Observations	26	26	26	26	25

Standard errors are in parentheses; *Significant at 10%; **Significant at 5%; ***Significant at 1%.

Table 4: Determinants of Indian Agricultural Exports to the World

	Dependent Variable: log(Total Indian Agricultural Exports)				
Regressor	(1)	(2)	(3)	(4)	(5)
Log(Av. GDP)	2.251***				
	(0.079)				
Log(Av. POP)		11.588***			
		(0.811)			
Log(Av. GDP/POP)			2.543***		
			(0.085)		
Log(Av. FDI)				0.755***	
				(0.202)	
Log(Exports(-1))					1.041***
					(0.056)
Log(Exchange Rate_Ind)	-0.422***	-1.244***	-0.139*	0.146	-0.051
	(0.089)	(0.224)	(0.077)	(0.465)	(0.135)
Intercept	-26.948	-81.042	-10.901	-0.808	-0.088
	(1.086)	(5.929)	(0.514)	(1.464)	(0.373)
R squared	0.99	0.95	0.99	0.70	0.97
F-Stat	867.333	227.773	957.354	27.456	355.31
Observations	26	26	26	26	26

Standard errors are in parentheses; *Significant at 10%; **Significant at 5%; ***Significant at 1%.

Bilateral exports in manufacturing sectors between New Zealand and India are then used as the dependent variables and reported in Tables 5 and 6. The log of average population between New Zealand and India has the most significant effects on New Zealand and Indian exports in the two industries. In Table 5, a one percent increase in the average population has a positive effect of 4.025 percent increase in New Zealand manufacturing exports to India. Similarly in Table 6, a one percent increase in the average population tends to increase Indian manufacturing exports to New Zealand by around 3.85 percent. In contrast, New Zealand exchange rate has the least effects on New Zealand manufacturing exports to India. Most importantly, all the determinants have a stronger impact on Indian manufacturing exports to New Zealand than their influence on New Zealand manufacturing exports to India. This is reasonable since India has a relatively larger size of economy than New Zealand.

Table 5: Determinants of New Zealand's Manufacturing Exports to India

	Dependent Variable: Log(NZ's Manufacturing Exports to India)				
Regressor	(1)	(2)	(3)	(4)	(5)
Log(Av. GDP)	0.651**				
	(0.271)				
Log(Av. POP)		4.025*			
		(2.058)			
Log(Av. GDP/POP)			0.979		
			(0.662)		
Log(Av. FDI)				0.281*	
				(0.148)	
Log(Exports(-1))					0.440*
					(0.216)
Log(Exchange Rate_NZ)	-0.752	-1.160*	-0.469	-1.272*	-1.283**
	(0.717)	(0.666)	(1.203)	(0.637)	(0.616)
Log(Exchange Rate_Ind)	0.782**	0.369	0.903*	0.723	0.815*
	(0.360)	(0.614)	(0.457)	(0.460)	(0.429)
Intercept	-7.536	-22.740	-8.842	-1.047	-0.466
	(2.773)	(11.071)	(5.269)	(0.830)	(0.667)
R squared	0.81	0.79	0.78	0.79	0.78
F-Stat	31.017	28.331	26.07	28.016	24.367
Observations	26	26	26	26	26

Standard errors are in parentheses; *Significant at 10%; **Significant at 5%; ***Significant at 1%.

Comparing Table 3 with Table 1, it can be seen that there is no big difference between the effects of the determinants on New Zealand's manufacturing and agricultural exports to the world. The similar results can be found in India's trade with the world when comparing Table 4 with Table 2. The possible reason is that the effects of determinants on country's trade with the world in different sectors cannot be differentiated when country's trade is measured at an aggregate level (for example, the rest of the world as a whole). Therefore, it can be expected that there could be some differences in sectors explained by the determinants when country trading with an individual partner other than the world as a whole.

Table 6: Determinants of India's Manufacturing Exports to New Zealand

	Dependent Variable: Log(India's Manufacturing Exports to NZ)				
Regressor	(1)	(2)	(3)	(4)	(5)
Log(Av. GDP)	0.575***				
	(0.107)				
Log(Av. POP)		3.850***			
		(0.861)			
Log(Av. GDP/POP)			1.080***		
			(0.290)		
Log(Av. FDI)				0.249***	
				(0.067)	
Log(Exports(-1))					0.680***
					(0.142)
Log(Exchange Rate_NZ)	-0.983***	-1.276***	-0.375	-1.443***	-0.839**
	(0.282)	(0.279)	(0.527)	(0.287)	(0.337)
Log(Exchange Rate_Ind)	1.066***	0.619**	1.042***	1.013***	0.475
	(0.142)	(0.257)	(0.200)	(0.207)	(0.278)
Intercept	-6.517	-21.530	-9.359	-0.784	0.113
	(1.090)	(4.631)	(2.309)	90.374)	(0.458)
R squared	0.97	0.96	0.96	0.96	0.96
F-Stat	239.011	194.941	165.355	165.291	175.89
Observations	26	26	26	26	25

Standard errors are in parentheses; *Significant at 10%; **Significant at 5%; ***Significant at 1%.

Tables 7 and 8 measure the effects of determinants on the agricultural trade between New Zealand and India. In Table 7, nearly all the determinants affect New Zealand agricultural exports to India significantly, except the exchange rates of New Zealand and India. Specifically, the log of average population has the strongest influence on New Zealand agricultural exports to India. A one percent increase in the average population can increase New Zealand agricultural exports to India by 6.6 percent. In contrast, the log of average population has a more significant effect on Indian agricultural exports to New Zealand - around 7.25 percent [See Figure 8].

The log of average GDP per capita has the second strongest effects on both New Zealand and Indian exports. A one percent increase in average GDP per capita tends to increase their exports by 0.97-1.97 percent. Moreover, Indian exchange rate tends to be positively correlated with Indian exports in both of manufacturing and agriculture sectors, which is consistent with the hypothesis. However, the estimated coefficients of New Zealand exchange rates are remaining negative and inconsistent with the hypothesis. Overall, three determinants: average GDP, Population and GDP per capita have the strongest effects on both of NZ and Indian exports. Moreover, they have more obvious impacts on both NZ and Indian agricultural sectors than on their manufacturing sectors.

Table 7: Determinants of New Zealand Agricultural Exports to India

26 Observations, Except (5)

	Dependent Variable: log(NZ Agricultural Exports to India)				
Regressor	(1)	(2)	(3)	(4)	(5)
Log(Av. GDP)	1.038***				
	(0.152)				
Log(Av. POP)		6.603***			
		(1.374)			
Log(Av. GDP/POP)			1.742***		
			(0.487)		
Log(Av. FDI)				0.337**	
				(0.121)	
Log(Exports(-1))					0.827***
					(0.118)
Log(Exchange Rate_NZ)	-0.264	-0.872*	0.490	-1.422**	-0.667*
	(0.402)	(0.445)	(0.885)	(0.521)	(0.353)
Log(Exchange Rate_Ind)	-0.151	-0.861**	-0.069	0.060	0.144
	(0.202)	(0.410)	(0.336)	(0.376)	(0.181)
Intercept	-8.205	-33.438	-11.708	2.103	0.624
	(1.555)	(7.388)	(3.874)	(0.679)	(0.560)
R squared	0.92	0.87	0.84	0.81	0.92
F-Stat	80.665	50.468	37.277	30.767	77.91

Standard errors are in parentheses; *Significant at 10%; **Significant at 5%; ***Significant at 1%.

Table 8: Determinants of Indian Agricultural Exports to New Zealand

26 Observations

	Dependent Variable: Log(Indian Agricultural Exports to NZ)				
Regressor	(1)	(2)	(3)	(4)	(5)
Log(Av. GDP)	1.020***				
	(0.136)				
Log(Av. POP)		7.246***			
		(1.067)			
Log(Av. GDP/POP)			2.103***		
			(0.375)		
Log(Av. FDI)				0.193	
				(0.128)	
Log(Exports(-1))					0.695***
					(0.085)
Log(Exchange Rate_NZ)	-0.306	-0.727**	1.087	-1.852***	-0.962***
	(0.358)	(0.345)	(0.681)	(0.550)	(0.251)
Log(Exchange Rate_Ind)	0.471**	-0.439	0.314	1.057**	0.681***
	(0.180)	(0.318)	(0.259)	(0.397)	(0.176)
Intercept	-12.407	-41.267	-18.923	-2.332	-1.280
	(1.387)	(5.736)	(2.982)	(0.717)	(0.482)
R squared	0.96	0.95	0.93	0.86	0.97
F-Stat	157.402	135.467	104.76	43.541	210.643

Standard errors are in parentheses; *Significant at 10%; **Significant at 5%; ***Significant at 1%.

Tables 9 and 10 are a summary of the empirical results, specifically, a comparison of New Zealand export determinants with those of India.

Table 9: Comparison of New Zealand Export Determinants

NZ Manufacturing Exports to the World Larger coefficients for Average: GDP; GDP/CAP; FDI, POP	NZ Manufacturing Exports to India Larger coefficients for: POP; ER_{NZ}
NZ Agriculture Exports to the World Larger coefficients for Average; GDP/CAP; X(-1); ER_{NZ}	NZ Agriculture Exports to India Larger coefficients for Average: GDP; POP; GDP/CAP; FDI

Table 10: Comparison of Indian Export Determinants

India Manufacturing Exports to the World Larger coefficients for Average: GDP; POP; GDP/CAP; FDI; XR_{Ind}; X-(1)	India Manufacturing Exports to NZ Larger coefficients for: FDI; ER_{Ind}; ER_{NZ}
Larger coefficients for Average: GDP; POP; GDP/CAP; FDI; XR_{Ind}; X-(1)	Larger coefficients for average: GDP; POP; GDP/CAP; X(-1)

6. Some Observations

New Zealand manufacturing and agriculture moved toward the same direction as GDP [Figure 1a]. Specifically, manufacturing growth is higher than the GDP and agricultural growth in 1989-1998. After that, both agriculture and manufacturing increased significantly in 1999-2004. During the last decade (2004-2014), agriculture growth was the most significant success as for New Zealand. Moreover, the growth rates in the GDP and the agriculture have been increasing slightly from 2011 to 2013. In comparison, the manufacturing suffered from a small growth reduction from 5 percent to 3 percent in the same period. During the one year from 2013 to 2014, both GDP and agriculture growth decreased with a higher reduction of 8 percent in GDP than that of 1 percent in agriculture. In terms of manufacturing, there is an increase of 8 percent in growth rate during the same year.

In India, the trends in manufacturing, agriculture and GDP moved toward the same direction, except the period of 1998-2001 and 2003-2006 [Figure 1b]. In 1998-2001, the trade in the agriculture decreased, whereas both GDP and manufacturing increased. In 2003-2006, both agriculture and manufacturing increased, while GDP growth decreased. In comparison with New Zealand, India's GDP growth was much higher and has experienced more fluctuations. More recently, the growth in agriculture obtained the most significant increase from -15 percent to 37 percent (nearly 52 percent increase) from 2009 to 2010. After that, the growth rates in GDP and the manufacturing decreased sharply until 2012, while the agriculture continued decreasing recently. Both manufacturing and GDP improved slightly from 2012 to 2014, while the agriculture has been decreasing in the same period.

In terms of the share of New Zealand agriculture trade in GDP, the exports share had the larger proportion in GDP than the imports for New Zealand, which is around 14 percent [See Figure 2a]. The import share in GDP has been increasing gradually from 2 percent to 3 percent over the period. The exports and imports together contribute around 16 percent to New Zealand's GDP. In comparison, both of the shares of India agriculture export and import in GDP increased gradually since 1988 [See Figure 2b]. The export share in GDP is higher than the import over the period, which is increased from around 2 percent to 5 percent. Recently, the share of agricultural imports and exports increased gradually from 2009 to 2014.

In the New Zealand manufacturing industry, the share of export and import in GDP were peaked at different levels in 1999 (22 percent for imports and 10 percent for exports) [See Figure 3a]. In other words, the manufacturing imports in GDP contributed more share than the exports. The exports and imports together contributed around 25 percent to New Zealand's GDP, which is higher than the share of manufacturing in GDP. Recently, the share of manufacturing trade has been decreasing slightly from 2008 to 2014. In contrast, there is no big difference in the shares of manufacturing exports and imports in India's GDP [See Figure 3b]. Both of them increased gradually from less than five percent to more than 10 percent over the period. The manufacturing exports and

imports together contributed more than 20 percent in recent years. Moreover, the shares of the imports and the exports moved toward the opposite direction from 2012 to 2013, while toward the same direction from 2013 to 2014.

7. Summary and Conclusions

This study examined and presented a model of New Zealand's and India's exports in agriculture and manufactured sectors to the world and each other. Using the data collected from The World Bank, UNCTAD Database and UN Comtrade Database from 1990 to 2014, we provided an overview of both countries' trade and economy. We also estimated the effects of various determinants of trade between New Zealand and India and between New Zealand and the World empirically.

We found that both New Zealand and India have obtained a favorable growth in trade with the world. In comparison with New Zealand, India has experienced a more significant increase in both exports and imports. In terms of the bilateral trade between the two countries, both exports and imports increased significantly during 1990-2014. Moreover, both New Zealand and India have huge advantage in exporting agricultural products (especially in Food and Live Animals- SITC 0) with each other. In addition, New Zealand did not show big potential in the trade of manufacturing (except in Machinery-SITC 7) with India. In contrast, India's trade in Manufactured Goods (SITC 6) was dominated in the manufacturing trade with both New Zealand and the World. However, despite the recent trade growth bilateral trade between New Zealand and India bellows potential.

Using the OLS regressions, we found that country's GDP, Population and GDP per capita are the most important factors to explain the variations in country's trade. When we compare New Zealand's manufacturing and agricultural exports to the world and India's manufacturing and agricultural exports to the world, we found that all the factors have greater effects on India's exports than New Zealand's exports. When we estimate the bilateral trade between the two countries, we found that GDP and Population have the most significant and positive explanatory power in both sectors, which is consistent with the trade theory. In addition, the results indicate that FDI inflows have more influence in both countrys' manufacturing sectors than in agricultural industries. However, these effects are negligible and sometimes insignificant in comparison with the impacts of GDP and Population on trade.

When we compare determinants of New Zealand manufacturing exports to the world with NZ manufacturing exports to India we find larger coefficients for POP and ER_{NZ} associated with India and a larger coefficients for GDP, GDP/CAP and FDI associated with the world.

When we compare determinants of NZ agriculture exports to the world with NZ agriculture exports to India we find larger coefficients for GDP/CAP, X(-1) and ER_{NZ} associated with the world, while larger coefficients for GDP, POP and GDP/CAP associated with India.

When we compare determinants of NZ manufacturing exports to the world with NZ agriculture exports to the world we find larger coefficients for POP, GDP/CAP and FDI associated with manufacturing and larger coefficients for GDP, X(-1) and ER_{NZ} associated with agriculture.

When we compare determinants of NZ manufacturing exports to India with NZ agriculture exports to India we find larger coefficients for ER_{NZ} associated with manufacturing and a larger coefficient for GDP, POP, GDP/CAP and FDI associated with agriculture.

When we compare determinants of India manufacturing exports to the world with India manufacturing exports to NZ we find larger coefficients for GDP, POP, GDP/CAP, FDI, XR_{Ind} and X-(1) associated with the world.

When we compare determinants of India agriculture exports to the world with India agriculture exports to NZ we find larger coefficients for GDP, POP, GDP/CAP, FDI, XR_{Ind} and X-(1) associated with the world.

When we compare determinants of India manufacturing exports to the world with India agriculture exports to the world we find larger coefficients for POP and FDI associated with manufacturing, while larger coefficients for GDP, GDP/CAP and X(-1) associated with agriculture.

When we compare determinants of India manufacturing exports to NZ with India agriculture exports to NZ we find larger coefficients for FDI, ER_{Ind} and ER_{NZ} associated with manufacturing though a larger coefficient for GDP, POP, GDP/CAP and X(-1) is associated with agriculture.

In conclusion, this paper shows the responsiveness of manufactured exports and agricultural exports to GDP of the two economies, world income, the weighted average official exchange rate and FDI inflows.

Clearly both countries have to face the reality that there is a global community and there are alternative destinations to where exports can be attracted. A trade agreement between the two countries has potential given the complementarities of production and the anticipated economic growth in both countries. However, the negotiation challenges may be symbolic of wider communication challenges and differing objective functions which may constrain trade development. Finally, reader should recognize the analysis is based on recent history but we should expect export elasticities to change through time in response to changes in the economies of the nations and their trading partners.

References

Abidi, A. R., Halepoto, A. H., Chandio, F. R., and Shaikh, F. M. (2013). Pak-India Trade Relationship Based on Gravity Modeling: Issues and Challenges. *Journal of Asian Business Strategy*, 3(11), 301-305.

Armstrong, S. P. (2015). East and South Asia: Managing Difficult Bilateral Relations and Regional Integration Globally. *Asian Economic Journal*, 29(4), 303-324.

Bano, Sayeeda, (1986). Determinants of Manufactured Exports. Working Paper No. 86/20, New Zealand Institute of Economic Research, Wellington, New Zealand.

Bano, S. and Scrimgeour, F. (2015). Economic Cooperation between New Zealand and India: Exploring the Trade Potential in Agricultural and Manufactured Products. Paper presented at the International Trade and Finance Association 25th International Conference, Florida. U.S.A. May.

Bhattacharyay, B. N., and Mukhopadhyay, K. (2015). A comprehensive economic partnership between India and Japan: Impact, prospects and challenges. *Journal of Asian Economics*, 39, 94-107.

Castalia Strategic Advisers. New Zealand Manufacturing Sector: Its Dynamics and Competitiveness. Report for Manufacturing NZ, a division of Business NZ, February 2014.

Cook, D. C., Carrasco, L. R., Paini, D. R., and Fraser, R. W. (2011). Estimating the social welfare effects of New Zealand apple imports. *Australian Journal of Agricultural and Resource Economics*, 55(4), 599-620.

De Silva, N., Malaga, J. E., and Johnson, J. W. (2013). Trade liberalization effects on agricultural production growth: The case of Sri Lanka. In presentation at the Southern Agricultural Economics Association. Annual (SAEA) Meeting, Orlando, Florida (pp. 2-5).

Fukase, E., and Martin, W. J. (2015). Economic implications of a potential free trade agreement between India and the United States. *World Bank Policy Research Working Paper*, (7212).

Konduru, S., Kim, T. H., Paggi, M. (2014).Implications of the US- South Korea Free Trade Agreement on Agricultural Exports from the US. *International Journal of Economics* 01, 03 (2014): 59-70. MIR Center for Socio- Economic Research.

Kumar, D., and Singh, D. (2015). Foreign Direct Investment and Export Performance of Indian Manufacturing.*Sai Om Journal of Commerce and Management: A Peer Reviewed National Journal* (Online ISSN 2347-7563), 2(2), 1-5.

Meade, B., Muhammad, A., and Rada, N. (2011). Income Growth in Developing Countries Can Increase US Agricultural Exports. *Amber Waves*, 9, 18-25.

Pathania, R. (2013). Composition of exports of Indian foreign trade and its impact on economic growth. *Asian Journal of Research in Social Sciences and Humanities*, 3(4), 193-204.

Price, G. (2012). Building a picture of New Zealand manufacturing (No.AN2012/11). Reserve Bank of New Zealand.

Yeboah, O. A., Shaik, S., and Agyekum, A. F. (2015). Potential Impact of TPP Trade Agreement on US Bilateral Agricultural Trade: Trade Creation or Trade Diversion? In 2015 Annual Meeting, January 31-February 3, 2015, Atlanta, Georgia (No. 196849). Southern Agricultural Economics Association

New Zealand Ministry of Foreign Affairs and Trade (2016, 2015, 2014).

New Zealand Statistics (2015, 2014).

UN COMETRADE (2015). United Nations Commodity Trade Database.

UN COMETRADE (2014). United Nations Commodity Trade Database.

UNCTAD Database (2014). The United Nations Conference on Trade and Development Database.

UNCTAD Database (2015). The United Nations Conference on Trade and Development Database.

World Bank Databank (2015). World Development Indicators.

Appendix A

Table A1: New Zealand's Trade and Growth 1988-2014

Trade in US$ Millions

Year	Export	Growth %	Import	Growth %	Total Trade	Growth %
1988	8,806.9		7,305.1		16,112.0	
1989	8,867.3	0.7	8,775.0	20.1	17,642.3	9.5
1990	9,469.9	6.8	9,483.5	8.1	18,953.3	7.4
1991	9,745.5	2.9	8,496.8	-10.4	18,242.3	-3.8
1992	9,830.0	0.9	9,205.0	8.3	19,034.9	4.3
1993	10,558.2	7.4	9,654.7	4.9	20,212.9	6.2
1994	12,185.5	15.4	11,901.4	23.3	24,086.9	19.2
1995	13,745.4	12.8	13,957.6	17.3	27,703.1	15.0
1996	14,354.3	4.4	14,724.2	5.5	29,078.4	5.0
1997	14,085.9	-1.9	14,518.5	-1.4	28,604.4	-1.6
1998	12,087.5	-14.2	11,334.6	-21.9	23,422.1	-18.1
1999	12,473.9	3.2	14,318.3	26.3	26,792.3	14.4
2000	13,297.4	6.6	13,904.4	-2.9	27,201.8	1.5
2001	13,729.7	3.3	13,306.9	-4.3	27,036.6	-0.6
2002	14,382.4	4.8	15,044.2	13.1	29,426.6	8.8
2003	16,526.9	14.9	18,557.4	23.4	35,084.3	19.2
2004	20,344.0	23.1	23,192.6	25.0	43,536.6	24.1
2005	21,728.5	6.8	26,232.0	13.1	47,960.6	10.2
2006	22,409.2	3.1	26,424.4	0.7	48,833.5	1.8
2007	26,930.9	20.2	30,890.4	16.9	57,821.3	18.4
2008	30,578.0	13.5	34,367.3	11.3	64,945.3	12.3
2009	24,932.6	-18.5	25,565.9	-25.6	50,498.5	-22.2
2010	30,931.9	24.1	30,157.8	18.0	61,089.7	21.0
2011	37,633.2	21.7	36,111.3	19.7	73,744.4	20.7
2012	37,304.7	-0.9	38,242.7	5.9	75,547.4	2.4
2013	39,443.6	5.7	39,619.2	3.6	79,062.8	4.7
2014	42,397.7	7.5	43,331.1	9.4	85,728.8	8.4

Source: World Development Indicators, The World Bank (2015). *Authors' calculations.*

Table A2: New Zealand GDP and Trade Growth: 1988-2014

Trade and GDP in US$ Millions

Year	GDP	Growth %	Manufacturing	Growth %	Agriculture	Growth %
1988	45,112		8,555		6,863	
1989	43,803	-2.9	9,927	16.0	6,829	-0.5
1990	45,098	3.0	10,615	6.9	6,993	2.4
1991	42,345	-6.1	9,928	-6.5	7,113	1.7
1992	41,234	-2.6	10,688	7.7	7,260	2.1
1993	46,266	12.2	11,241	5.2	7,805	7.5
1994	54,668	18.2	14,112	25.5	8,776	12.4
1995	63,437	16.0	16,554	17.3	9,822	11.9
1996	69,564	9.7	17,024	2.8	10,420	6.1
1997	65,475	-5.9	16,967	-0.3	10,078	-3.3
1998	55,641	-15.0	13,537	-20.2	8,643	-14.2
1999	58,176	4.6	16,436	21.4	8,851	2.4
2000	52,012	-10.6	15,947	-3.0	9,172	3.6
2001	53,306	2.5	15,365	-3.7	9,762	6.4
2002	66,021	23.9	17,075	11.1	10,294	5.4
2003	87,440	32.4	20,913	22.5	11,809	14.7
2004	102,986	17.8	25,712	22.9	14,593	23.6
2005	113,791	10.5	27,953	8.7	15,735	7.8
2006	110,205	-3.2	27,523	-1.5	16,168	2.8
2007	135,295	22.8	31,803	15.5	19,612	21.3
2008	130,459	-3.6	32,874	3.4	22,489	14.7
2009	118,953	-8.8	25,499	-22.4	18,780	-16.5
2010	143,467	20.6	29,498	15.7	23,681	26.1
2011	163,841	14.2	34,278	16.2	29,103	22.9
2012	171,461	4.7	35,577	3.8	29,291	0.6
2013	185,788	8.4	36,635	3.0	32,241	10.1
2014	191,732	3.2	40,421	10.3	35,297	9.5

Source: United Nations Comtrade Database (2015). *Authors' calculations.*

Table A3: New Zealand and Indian Trade in Agriculture and Manufacturing 1988-2014

US$Millions

	NZ Agriculture		NZ Manufacturing		India Agriculture		India Manufacturing	
Year	Export	Import	Export	Import	Export	Import	Export	Import
1988	5,997.4	866.1	2,513.9	6,041.5	3,387.7	3,378.1	9,839.4	11,542.4
1989	5,863.1	965.9	2,665.1	7,262.4	4,210.0	2,782.9	12,097.2	13,578.4
1990	6,009.7	983.4	2,860.0	7,755.0	4,443.6	3,042.7	12,616.3	12,785.7
1991	6,135.0	978.3	3,057.7	6,870.2	4,238.7	2,039.6	12,959.3	10,070.7
1992	6,274.9	985.3	3,076.3	7,611.4	4,410.2	3,023.3	15,359.1	12,475.5
1993	6,711.3	1,093.9	3,305.1	7,936.2	4,944.3	2,245.5	16,435.1	12,798.2
1994	7,509.0	1,267.1	4,146.6	9,965.8	5,211.2	4,102.1	20,161.2	15,357.7
1995	8,364.2	1,458.0	4,803.9	11,749.6	7,299.1	4,268.3	23,363.9	20,555.3
1996	8,871.3	1,549.2	4,786.1	12,237.8	8,011.6	4,215.5	24,353.5	20,505.2
1997	8,566.6	1,511.5	4,924.9	12,042.0	7,695.4	4,693.3	25,994.8	22,078.7
1998	7,293.7	1,349.4	4,316.3	9,220.6	6,917.8	5,760.4	25,343.6	21,317.7
1999	7,384.7	1,466.6	4,492.8	11,943.5	6,505.4	6,205.7	29,274.9	23,932.0
2000	7,724.9	1,446.7	4,943.8	11,003.5	6,789.3	5,289.9	33,284.5	23,581.6
2001	8,274.2	1,488.1	4,877.1	10,487.6	7,248.7	5,965.8	33,194.3	23,296.9
2002	8,629.2	1,664.9	5,171.2	11,903.3	8,447.7	6,401.7	38,134.6	28,691.3
2003	9,882.1	1,926.8	6,059.5	14,853.7	8,780.3	7,800.9	46,053.2	36,664.1
2004	12,314.4	2,278.7	7,298.1	18,413.8	12,156.0	9,477.9	56,732.0	48,753.8
2005	13,204.2	2,530.7	7,503.7	20,449.1	16,186.4	11,770.3	72,538.5	69,734.7
2006	13,476.1	2,691.8	7,779.1	19,744.0	18,422.7	16,020.1	83,495.4	85,209.6
2007	16,350.5	3,261.7	8,739.2	23,063.5	23,692.8	19,928.2	96,893.3	105,808.6
2008	18,262.3	4,226.9	8,963.6	23,910.6	29,460.4	23,399.7	116,676.6	145,094.5
2009	15,622.4	3,157.1	6,964.2	18,534.7	23,548.4	21,961.6	121,237.8	132,985.8
2010	19,860.3	3,821.0	8,041.4	21,456.9	32,736.9	29,151.0	145,120.1	162,908.2
2011	24,432.5	4,670.2	9,369.9	24,908.1	41,730.1	38,027.1	188,889.2	201,656.3
2012	24,493.1	4,797.5	9,192.8	26,384.5	47,983.2	43,147.7	184,563.6	195,513.7
2013	27,248.3	4,992.8	9,002.7	27,632.4	52,062.9	41,371.5	207,499.1	191,278.1
2014	29,808.4	5,488.8	9,381.6	31,039.2	46,939.1	43,681.0	204,831.4	197,123.8

Source: UN Comtrade Database (2015).

Table A4.1: New Zealand's Trade in Food and Live Animals (SITC 0) 1988-2014

US$ Millions

Year	Export	Growth %	Import	Growth %
1988	3712.5		435.9	
1989	3832.6	3.2	515.8	18.3
1990	4174.4	8.9	494.1	-4.2
1991	4349.1	4.2	514.9	4.2
1992	4512.7	3.8	515.6	0.1
1993	4693.7	4.0	584.8	13.4
1994	5085.0	8.3	697.2	19.2
1995	5648.1	11.1	816.8	17.2
1996	6265.9	10.9	889.6	8.9
1997	6147.5	-1.9	903.9	1.6
1998	5400.3	-12.2	830.8	-8.1
1999	5478.9	1.5	885.4	6.6
2000	5589.6	2.0	851.3	-3.9
2001	6287.5	12.5	897.5	5.4
2002	6444.8	2.5	1023.5	14.0
2003	7474.6	16.0	1198.6	17.1
2004	9427.9	26.1	1381.3	15.2
2005	10267.0	8.9	1605.8	16.3
2006	10353.7	0.8	1709.1	6.4
2007	12646.4	22.1	2128.6	24.5
2008	14374.1	13.7	2620.4	23.1
2009	12200.1	-15.1	2264.7	-13.6
2010	15302.7	25.4	2652.3	17.1
2011	18857.0	23.2	3261.3	23.0
2012	18705.4	-0.8	3383.0	3.7
2013	20732.3	10.8	3531.0	4.4
2014	23232.5	12.1	4006.5	13.5

Source: United Nations Comtrade Database (2015).
Authors' calculations.

A4.2: NZ's Trade in Chemicals (SITC 5) 1988-2014

US$ Millions

Year	Export	Growth %	Import	Growth %
1988	438.6		957.2	
1989	451.6	3.0	1077.8	12.6
1990	492.9	9.2	1096.3	1.7
1991	587.6	19.2	1087.9	-0.8
1992	566.3	-3.6	1208.8	11.1
1993	621.7	9.8	1340.3	10.9
1994	935.5	50.5	1554.5	16.0
1995	1048.5	12.1	1823.4	17.3
1996	1049.8	0.1	1855.9	1.8
1997	1103.1	5.1	1823.1	-1.8
1998	948.3	-14.0	1269.9	-30.3
1999	897.3	-5.4	1769.2	39.3
2000	1174.5	30.9	1708.8	-3.4
2001	1271.9	8.3	1728.9	1.2
2002	1186.4	-6.7	1821.9	5.4
2003	1228.9	3.6	2162.2	18.7
2004	1347.2	9.6	2614.4	20.9
2005	1254.1	-6.9	2975.5	13.8
2006	1270.1	1.3	2867.4	-3.6
2007	1568.6	23.5	3357.3	17.1
2008	1766.5	12.6	3918.8	16.7
2009	1381.9	-21.8	3020.1	-22.9
2010	1360.3	-1.6	3536.1	17.1
2011	1652.4	21.5	4168.8	17.9
2012	1864.8	12.9	4251.8	2.0
2013	1921.2	3.0	4292.2	1.0
2014	2129.1	10.8	4505.8	5.0

Source: United Nations Comtrade Database (2015).
Authors' calculations.

Table A4.3: NZ's Trade in Manufactured Goods (SITC 6) 1988-2014

Trade in US$ Millions, Growth in Percent

Year	Export	Growth %	Import	Growth %
1988	1283.1		1361.9	
1989	1354.8	5.6	1501.4	10.2
1990	1384.0	2.2	1525.0	1.6
1991	1406.8	1.6	1438.9	-5.6
1992	1364.3	-3.0	1544.6	7.3
1993	1443.1	5.8	1561.5	1.1
1994	1669.3	15.7	1853.9	18.7
1995	2011.9	20.5	2228.6	20.2
1996	2022.8	0.5	2241.8	0.6
1997	1971.3	-2.5	2171.2	-3.2
1998	1742.8	-11.6	1428.4	-34.2
1999	1741.8	-0.1	2022.9	41.6
2000	1825.0	4.8	1923.6	-4.9
2001	1754.6	-3.9	1823.6	-5.2
2002	1908.1	8.7	2035.9	11.6
2003	2170.7	13.8	2504.5	23.0
2004	2696.7	24.2	3129.4	24.9
2005	2734.4	1.4	3414.2	9.1
2006	2801.5	2.5	3466.1	1.5
2007	3167.4	13.1	4031.2	16.3
2008	3124.5	-1.4	4153.1	3.0
2009	2244.6	-28.2	3040.5	-26.8
2010	2925.2	30.3	3587.4	18.0
2011	3364.9	15.0	4129.9	15.1
2012	3085.5	-8.3	4178.8	1.2
2013	3048.7	-1.2	4264.5	2.1
2014	3090.3	1.4	4572.0	7.2

Source: United Nations Comtrade Database (2015).
Authors' calculations.

Table A4.4: NZ's Trade in Machinery (SITC 7) 1988-2014

Trade in US$ Millions, Growth in Percent

Year	Export	Growth %	Import	Growth %
1988	515.3		2782.7	
1989	588.1	14.1	3626.0	30.3
1990	668.4	13.7	3956.3	9.1
1991	722.9	8.2	3188.2	-19.4
1992	734.8	1.6	3631.4	13.9
1993	785.9	7.0	3721.2	2.5
1994	1001.9	27.5	4973.3	33.6
1995	1176.3	17.4	5886.6	18.4
1996	1174.8	-0.1	6164.9	4.7
1997	1280.4	9.0	5963.0	-3.3
1998	1102.7	-13.9	5001.6	-16.1
1999	1273.4	15.5	6189.3	23.7
2000	1397.2	9.7	5478.7	-11.5
2001	1268.0	-9.2	5118.5	-6.6
2002	1410.4	11.2	5994.6	17.1
2003	1839.1	30.4	7602.1	26.8
2004	2249.3	22.3	9478.9	24.7
2005	2495.6	11.0	10668.5	12.5
2006	2684.0	7.5	9896.0	-7.2
2007	2752.6	2.6	11602.6	17.2
2008	2814.8	2.3	11604.2	0.0
2009	2234.9	-20.6	8739.0	-24.7
2010	2488.8	11.4	10052.4	15.0
2011	2961.2	19.0	11858.7	18.0
2012	2792.1	-5.7	12887.8	8.7
2013	2534.9	-9.2	13879.6	7.7
2014	2608.9	2.9	16437.1	18.4

Source: United Nations Comtrade Database (2015).
Authors' calculations.

Table A5.1: India's Trade in Food and Live Animals (SITC 0) 1988-2014

Trade in US$ Millions, Growth in Percent

Year	Export	Growth %	Import	Growth %
1988	2173.1		1023.3	
1989	2525.3	16.2	608.1	-40.6
1990	2500.2	-1.0	569.1	-6.4
1991	2728.3	9.1	387.3	-31.9
1992	3046.3	11.7	806.7	108.3
1993	3384.2	11.1	607.5	-24.7
1994	3752.9	10.9	1423.7	134.4
1995	5351.2	42.6	768.9	-46.0
1996	5586.5	4.4	861.7	12.1
1997	5439.8	-2.6	1278.5	48.4
1998	5198.1	-4.4	1361.1	6.5
1999	4617.6	-11.2	1209.4	-11.1
2000	4764.6	3.2	790.7	-34.6
2001	5212.6	9.4	1089.5	37.8
2002	5834.3	11.9	1363.0	25.1
2003	5866.4	0.6	1346.7	-1.2
2004	6858.9	16.9	1631.2	21.1
2005	8016.6	16.9	2097.8	28.6
2006	9258.3	15.5	2445.1	16.6
2007	11851.1	28.0	3986.3	63.0
2008	15860.7	33.8	3688.0	-7.5
2009	11948.0	-24.7	4878.1	32.3
2010	15494.3	29.7	5427.1	11.3
2011	23227.8	49.9	5477.1	0.9
2012	26842.0	15.6	6066.5	10.8
2013	33565.5	25.0	6153.1	1.4
2014	31969.4	-4.8	7576.6	23.1

Source: United Nations Comtrade Database (2015).

Authors' calculations.

Table A5.2: India's Trade in Chemicals (SITC 5) 1988-2014

Trade in US$ Millions, Growth in Percent

Year	Export	Growth %	Import	Growth %
1988	831.1		2584.1	
1989	1241.3	49.4	3117.1	20.6
1990	1330.4	7.2	3076.4	-1.3
1991	1510.0	13.5	3101.8	0.8
1992	1391.8	-7.8	3468.5	11.8
1993	1545.3	11.0	3001.6	-13.5
1994	2155.2	39.5	4213.0	40.4
1995	2580.5	19.7	5617.0	33.3
1996	3009.2	16.6	4960.7	-11.7
1997	3418.4	13.6	5461.8	10.1
1998	3108.7	-9.1	5245.3	-4.0
1999	3680.7	18.4	5745.5	9.5
2000	4342.5	18.0	4680.2	-18.5
2001	4746.7	9.3	4900.0	4.7
2002	5562.1	17.2	5527.2	12.8
2003	6763.3	21.6	6848.6	23.9
2004	8840.2	30.7	9177.5	34.0
2005	11433.2	29.3	13560.8	47.8
2006	14113.8	23.4	16093.1	18.7
2007	16363.4	15.9	20642.9	28.3
2008	20454.1	25.0	34383.2	66.6
2009	18522.0	-9.4	27232.0	-20.8
2010	23576.8	27.3	34449.3	26.5
2011	31257.1	32.6	42238.3	22.6
2012	34502.4	10.4	44501.6	5.4
2013	39430.1	14.3	44567.4	0.1
2014	37117.7	-5.9	48052.0	7.8

Source: United Nations Comtrade Database (2015).

Authors' calculations.

Appendix B

Table B1.1: New Zealand's Bilateral Trade with India in Agricultural Sectors 1988-2013

US$ Millions

Year	Export	Import
1988	35.78	3.94
1989	37.66	6.18
1990	53.03	5.08
1991	45.03	4.65
1992	37.60	5.36
1993	50.88	5.96
1994	45.81	5.94
1995	49.88	6.40
1996	51.59	8.42
1997	59.04	9.56
1998	64.37	8.51
1999	68.33	9.09
2000	57.09	7.50
2001	43.14	8.69
2002	57.34	10.36
2003	54.62	11.42
2004	70.46	13.36
2005	79.16	17.99
2006	104.05	19.35
2007	138.72	27.01
2008	133.29	34.35
2009	166.05	28.58
2010	304.94	33.96
2011	346.80	43.04
2012	260.99	42.56
2013	266.21	48.94
2014	332.26	57.05

Source: United Nations Comtrade Database (2015).

Table B1.2: New Zealand's Bilateral Trade with India in Manufacturing Sectors 1988-2013

US$ Millions

Year	Export	Import
1988	7.08	21.59
1989	3.50	25.44
1990	11.32	23.65
1991	17.63	24.34
1992	17.90	34.47
1993	25.08	38.89
1994	18.03	56.12
1995	15.42	69.07
1996	16.70	77.34
1997	19.27	80.27
1998	12.58	59.44
1999	22.18	75.07
2000	17.88	71.43
2001	17.24	70.12
2002	23.31	79.02
2003	23.73	93.84
2004	25.27	117.99
2005	24.10	135.66
2006	33.59	137.20
2007	45.15	158.61
2008	62.18	181.08
2009	46.44	165.74
2010	101.63	217.86
2011	57.99	249.31
2012	118.61	287.32
2013	116.49	293.83
2014	61.49	365.72

Source: United Nations Comtrade Database (2015).

Table B2.1: NZ Bilateral Trade with India in Food and Live Animals (SITC 0) 1988-2014

Trade in US$ Millions, Growth in Percent

Year	Export	Growth %	Import	Growth %
1988	7.49		3.24	
1989	0.93	-87.5	4.82	48.8
1990	1.45	55.0	3.92	-18.7
1991	2.51	73.0	3.66	-6.8
1992	1.44	-42.7	4.23	15.7
1993	2.43	69.1	4.18	-1.2
1994	5.78	138.1	4.50	7.8
1995	6.16	6.6	4.64	3.1
1996	3.01	-51.2	6.17	32.9
1997	6.08	102.1	6.59	6.9
1998	10.97	80.6	6.26	-5.0
1999	11.58	5.5	6.79	8.5
2000	10.28	-11.2	5.29	-22.2
2001	3.44	-66.6	6.04	14.3
2002	13.27	286.1	7.05	16.7
2003	6.56	-50.5	7.83	11.0
2004	4.39	-33.1	9.07	15.8
2005	5.12	16.6	12.24	35.0
2006	19.40	278.8	13.89	13.5
2007	11.58	-40.3	18.70	34.6
2008	11.11	-4.0	23.91	27.9
2009	52.42	371.6	18.99	-20.6
2010	123.96	136.5	24.43	28.6
2011	96.92	-21.8	32.55	33.2
2012	45.20	-53.4	28.85	-11.4
2013	30.00	-33.6	32.29	11.9
2014	30.79	2.6	37.55	16.3

Source: United Nations Comtrade Database (2015).

Authors' calculations.

Table B2.2: NZ Bilateral Trade with India in Chemicals (SITC 5) 1988-2014

Trade in US$ Millions Growth in Percent

Year	Export	Growth %	Import	Growth %
1988	0.54		1.00	
1989	0.43	-19.7	0.88	-12.3
1990	0.28	-35.7	0.86	-2.0
1991	0.06	-79.7	0.74	-14.4
1992	0.13	131.1	1.25	70.4
1993	0.08	-36.6	2.35	88.0
1994	0.35	317.1	2.71	15.3
1995	0.75	114.9	3.00	10.4
1996	0.86	14.9	3.71	23.6
1997	3.92	357.5	4.98	34.5
1998	1.00	-74.4	5.45	9.3
1999	1.91	90.5	8.21	50.8
2000	1.32	-30.9	9.96	21.3
2001	0.84	-36.5	10.87	9.1
2002	1.01	20.0	13.16	21.1
2003	0.74	-26.1	12.76	-3.0
2004	0.95	27.7	14.60	14.4
2005	1.37	44.0	18.11	24.0
2006	2.69	96.7	17.72	-2.1
2007	2.12	-21.4	24.89	40.4
2008	3.42	61.6	35.78	43.8
2009	3.04	-11.2	43.46	21.5
2010	4.54	49.5	62.69	44.2
2011	5.23	15.2	74.27	18.5
2012	5.26	0.6	90.04	21.2
2013	6.24	18.6	83.77	-7.0
2014	14.88	138.5	93.68	11.8

Source: United Nations Comtrade Database (2015).

Authors' calculations.

Table B2.3: NZ Bilateral Trade with India in Manufactured Goods (SITC 6) 1988-2014

Trade in US$ Millions, Growth in Percent

Year	Export	Growth %	Import	Growth %
1988	6.0		13.8	
1989	1.8	-69.2	15.1	8.8
1990	9.9	442.2	14.2	-5.9
1991	16.5	65.7	15.6	9.9
1992	10.6	-35.8	23.3	49.4
1993	10.4	-1.4	24.0	3.1
1994	7.3	-30.0	30.3	26.2
1995	8.7	18.6	34.0	12.3
1996	11.2	29.0	37.5	10.3
1997	10.9	-2.3	40.7	8.5
1998	9.3	-15.0	28.3	-30.4
1999	12.3	32.4	36.4	28.4
2000	11.1	-9.6	34.2	-5.9
2001	11.9	7.3	35.2	2.8
2002	13.8	15.7	39.3	11.9
2003	12.0	-13.1	49.7	26.5
2004	13.1	9.4	64.2	29.1
2005	10.6	-19.3	69.8	8.8
2006	11.4	7.7	65.4	-6.3
2007	15.7	37.2	72.6	10.9
2008	22.9	46.3	72.7	0.2
2009	20.3	-11.4	55.5	-23.6
2010	25.2	24.4	70.1	26.3
2011	18.8	-25.4	80.7	15.1
2012	16.2	-14.2	89.9	11.4
2013	21.1	30.9	92.8	3.2
2014	22.6	7.0	116.3	25.3

Source: United Nations Comtrade Database (2015).

Authors' calculations.

Table B2.4: NZ Bilateral Trade with India in Machinery (SITC 7) 1988-2014

Trade in US$ Millions, Growth in Percent

Year	Export	Growth %	Import	Growth %
1988	0.4		0.9	
1989	1.0	150.7	0.8	-15.4
1990	0.9	-7.1	1.2	53.7
1991	1.0	11.3	2.0	67.4
1992	5.7	464.8	1.2	-37.7
1993	6.2	8.8	1.7	39.4
1994	5.2	-16.1	3.6	109.2
1995	2.4	-54.6	3.4	-4.3
1996	4.1	71.9	4.3	25.7
1997	3.6	-12.1	3.0	-29.6
1998	1.4	-61.6	3.2	3.4
1999	3.9	184.1	4.5	41.2
2000	4.2	6.7	3.8	-13.9
2001	3.1	-26.0	4.6	21.0
2002	6.6	116.2	5.6	20.0
2003	9.0	36.0	7.6	36.4
2004	9.5	5.2	11.7	54.8
2005	9.3	-2.2	13.5	15.4
2006	16.1	72.8	17.4	28.5
2007	23.2	44.6	20.7	19.1
2008	30.0	29.2	29.2	41.0
2009	18.8	-37.3	21.0	-28.1
2010	64.4	242.5	27.7	31.9
2011	27.3	-57.7	28.2	1.6
2012	33.8	23.8	35.2	24.9
2013	21.8	-35.5	44.8	27.4
2014	16.4	-24.7	68.4	52.6

Source: United Nations Comtrade Database (2015).

Authors' calculations.

Appendix C

Table C1: Determinants of New Zealand's Trade with the World

US$ Millions, Except Exchange Rate

Year	Average GDP	Average POP	Average GDP/POP	Average FDI	NZ ER	NZ X_Ag(-1)	NZ X_Ma(-1)
1988	9537897	2551	8736	82244	1.5		
1989	10009481	2595	8564	98966	1.7	5997	2514
1990	11259629	2639	8902	103241	1.7	5863	2665
1991	11820705	2683	8258	76837	1.7	6010	2860
1992	12654346	2724	8158	83168	1.9	6135	3058
1993	12871293	2766	8800	110245	1.9	6275	3076
1994	13844613	2807	10013	126654	1.7	6711	3305
1995	15321413	2849	11320	170215	1.5	7509	4147
1996	15650577	2890	12023	193377	1.5	8364	4804
1997	15606517	2931	11316	243401	1.5	8871	4786
1998	15544726	2972	9905	352666	1.9	8567	4925
1999	16120444	3012	10258	545806	1.9	7294	4316
2000	16642006	3051	9466	706826	2.2	7385	4493
2001	16543367	3090	9543	419167	2.4	7725	4944
2002	17167325	3129	11100	313797	2.2	8274	4877
2003	19280063	3168	13895	301104	1.7	8629	5171
2004	21705927	3206	15977	367729	1.5	9882	6060
2005	23482286	3245	17375	497516	1.4	12314	7298
2006	25440026	3284	17035	738156	1.5	13204	7504
2007	28663926	3323	20304	1000022	1.4	13476	7779
2008	31429000	3362	19947	907430	1.4	16351	8739
2009	29769640	3402	18151	611069	1.6	18262	8964
2010	32608422	3442	21153	710911	1.4	15622	6964
2011	36069794	3482	23767	847970	1.3	19860	8041
2012	36757112	3522	24549	664035	1.2	24433	9370
2013	37796470	3562	26073	725489	1.2	24493	9193

Source: World Development Indicators, The World Bank; UNCTAD Stat (2015).

Table C2: Determinants of India's Trade with the World

US$ Millions, Except Exchange Rate

Year	Average GDP	Average POP	Average GDP/POP	Average FDI	India ER	India X_Ag(-1)	India X_Ma(-1)
1988	9666236	2966	2048	82212	13.9		
1989	10138197	3019	2103	98875	16.2	3388	9839
1990	11400385	3072	2318	102517	17.5	4210	12097
1991	11936954	3124	2356	76029	22.7	4444	12616
1992	12780360	3174	2483	82750	25.9	4239	12959
1993	12990257	3225	2478	109405	30.5	4410	15359
1994	13983786	3275	2640	125832	31.4	4944	16435
1995	15472994	3325	2877	169865	32.4	5211	20161
1996	15815688	3375	2909	192680	35.4	7299	23364
1997	15785360	3424	2872	244251	36.3	8012	24353
1998	15731276	3473	2825	353069	41.3	7695	25995
1999	16324789	3522	2901	546419	43.1	6918	25344
2000	16854305	3570	2953	707947	44.9	6505	29275
2001	16763691	3618	2907	422199	47.2	6789	33285
2002	17396298	3665	2983	316028	48.6	7249	33194
2003	19545521	3712	3321	302217	46.6	8448	38135
2004	22015227	3760	3704	369505	45.3	8780	46053
2005	23842498	3807	3982	500485	44.1	12156	56732
2006	25859482	3854	4283	745695	45.3	16186	72539
2007	29215629	3900	4840	1011725	41.3	18423	83495
2008	31975818	3948	5188	929012	43.5	23693	96893
2009	30392850	3995	4943	629047	48.4	29460	116677
2010	33390918	4042	5438	724409	45.7	23548	121238
2011	36927923	4091	5940	863994	46.7	32737	145120
2012	37600753	4138	5961	675032	53.4	41730	188889
2013	38641975	4186	6045	739096	58.6	47983	184564

Source: World Development Indicators, The World Bank; UNCTAD Stat (2015).

Table C3: Determinants of New Zealand's Trade with India

US$ Millions, Except Exchange Rate

Year	Average GDP	Average POP	Average GDP/POP	Average FDI	NZ ER	India ER	NZ-India X_Ag(-1)	NZ-Ind X_Ma(-1)	India-NZ X_Ag(-1)	India-NZ X_Ma(-1)
1988	173452	419	7051	124	1.5	14				
1989	172518	427	6815	343	1.7	16	36	7.1	3.9	14.9
1990	185853	436	6960	961	1.7	18	38	3.5	3.3	18.4
1991	158594	445	6213	883	1.7	23	53	11.3	2.3	18.9
1992	167248	454	6000	670	1.9	26	45	17.6	2.7	20.9
1993	165230	462	6630	1372	1.9	30	38	17.9	2.9	31.1
1994	193841	471	7728	1795	1.7	31	51	25.1	2.7	30.4
1995	215018	480	8826	2500	1.5	32	46	18.0	4.5	48.9
1996	234675	488	9525	3222	1.5	35	50	15.4	4.1	54.5
1997	244318	497	8871	2768	1.5	36	52	16.7	6.4	57.5
1998	242191	506	7505	2229	1.9	41	59	19.3	7.5	62.0
1999	262522	514	7812	1555	1.9	43	64	12.6	7.5	47.1
2000	264310	523	6970	2467	2.2	45	68	22.2	8.0	53.9
2001	273630	532	7102	2446	2.4	47	57	17.9	6.8	52.0
2002	294995	540	8604	3398	2.2	49	43	17.2	6.8	52.7
2003	352898	549	11139	3208	1.7	47	57	23.3	9.0	54.0
2004	412286	557	12923	4001	1.5	45	55	23.7	8.6	72.6
2005	474003	566	14133	4652	1.4	44	70	25.3	9.2	77.7
2006	529661	574	13583	12789	1.5	45	79	24.1	12.9	97.0
2007	686997	582	16533	13647	1.4	41	104	33.6	14.8	101.1
2008	677278	589	15801	25556	1.4	44	139	45.1	18.7	107.5
2009	742163	597	14355	17679	1.6	48	133	62.2	25.4	173.4
2010	925963	605	17132	13933	1.4	46	166	46.4	18.6	189.3
2011	1021971	613	19366	20166	1.3	47	305	101.6	22.8	163.9
2012	1015103	621	20091	13199	1.2	53	347	58.0	28.6	200.6
2013	1031293	628	21527	14593	1.2	59	261	118.6	34.2	252.6

Source: World Development Indicators, The World Bank; UNCTAD Stat (2015).

Table C4: New Zealand GDP and Trade Growth 1988-2014

Trade and GDP, US$ Millions

Year	GDP	Growth %	Manu	Growth %	Agri	Growth %
1988	45112		8555		6863	
1989	43803	-2.9	9927	16.0	6829	-0.5
1990	45098	3.0	10615	6.9	6993	2.4
1991	42345	-6.1	9928	-6.5	7113	1.7
1992	41234	-2.6	10688	7.7	7260	2.1
1993	46266	12.2	11241	5.2	7805	7.5
1994	54668	18.2	14112	25.5	8776	12.4
1995	63437	16.0	16554	17.3	9822	11.9
1996	69564	9.7	17024	2.8	10420	6.1
1997	65475	-5.9	16967	-0.3	10078	-3.3
1998	55641	-15.0	13537	-20.2	8643	-14.2
1999	58176	4.6	16436	21.4	8851	2.4
2000	52012	-10.6	15947	-3.0	9172	3.6
2001	53306	2.5	15365	-3.7	9762	6.4
2002	66021	23.9	17075	11.1	10294	5.4
2003	87440	32.4	20913	22.5	11809	14.7
2004	102986	17.8	25712	22.9	14593	23.6
2005	113791	10.5	27953	8.7	15735	7.8
2006	110205	-3.2	27523	-1.5	16168	2.8
2007	135295	22.8	31803	15.5	19612	21.3
2008	130459	-3.6	32874	3.4	22489	14.7
2009	118953	-8.8	25499	-22.4	18780	-16.5
2010	143467	20.6	29498	15.7	23681	26.1
2011	163841	14.2	34278	16.2	29103	22.9
2012	171461	4.7	35577	3.8	29291	0.6
2013	185788	8.4	36635	3.0	32241	10.1
2014	191732	3.2	40421	10.3	35297	9.5

Source: United Nations Comtrade Database (2015). Authors' calculations.

Table C5: New Zealand Share of Agricultural Trade in GDP
1988-2014

Trade and GDP in US$ Millions, Share in Percent

		Agriculture					
Year	GDP	Export	Share	Import	Share	Trade	Share
1988	45112	5997	13.3	866	1.9	6863	15.2
1989	43803	5863	13.4	966	2.2	6829	15.6
1990	45098	6010	13.3	983	2.2	6993	15.5
1991	42345	6135	14.5	978	2.3	7113	16.8
1992	41234	6275	15.2	985	2.4	7260	17.6
1993	46266	6711	14.5	1094	2.4	7805	16.9
1994	54668	7509	13.7	1267	2.3	8776	16.1
1995	63437	8364	13.2	1458	2.3	9822	15.5
1996	69564	8871	12.8	1549	2.2	10420	15.0
1997	65475	8567	13.1	1512	2.3	10078	15.4
1998	55641	7294	13.1	1349	2.4	8643	15.5
1999	58176	7385	12.7	1467	2.5	8851	15.2
2000	52012	7725	14.9	1447	2.8	9172	17.6
2001	53306	8274	15.5	1488	2.8	9762	18.3
2002	66021	8629	13.1	1665	2.5	10294	15.6
2003	87440	9882	11.3	1927	2.2	11809	13.5
2004	102986	12314	12.0	2279	2.2	14593	14.2
2005	113791	13204	11.6	2531	2.2	15735	13.8
2006	110205	13476	12.2	2692	2.4	16168	14.7
2007	135295	16351	12.1	3262	2.4	19612	14.5
2008	130459	18262	14.0	4227	3.2	22489	17.2
2009	118953	15622	13.1	3157	2.7	18780	15.8
2010	143467	19860	13.8	3821	2.7	23681	16.5
2011	163841	24433	14.9	4670	2.9	29103	17.8
2012	171461	24493	14.3	4797	2.8	29291	17.1
2013	185788	27248	14.7	4993	2.7	32241	17.4
2014	191732	29808	15.5	5489	2.9	35297	18.4

Source: United Nations Comtrade Database (2015). Authors' calculations.

Table C6: New Zealand Share of Manufacturing Trade in GDP
1988-2014

Trade and GDP in US$ Millions, Share in Percent

				Manufacturing			
Year	GDP	Export	Share	Import	Share	Trade	Share
1988	45112	2514	5.6	6042	13.4	8555	19.0
1989	43803	2665	6.1	7262	16.6	9927	22.7
1990	45098	2860	6.3	7755	17.2	10615	23.5
1991	42345	3058	7.2	6870	16.2	9928	23.4
1992	41234	3076	7.5	7611	18.5	10688	25.9
1993	46266	3305	7.1	7936	17.2	11241	24.3
1994	54668	4147	7.6	9966	18.2	14112	25.8
1995	63437	4804	7.6	11750	18.5	16554	26.1
1996	69564	4786	6.9	12238	17.6	17024	24.5
1997	65475	4925	7.5	12042	18.4	16967	25.9
1998	55641	4316	7.8	9221	16.6	13537	24.3
1999	58176	4493	7.7	11943	20.5	16436	28.3
2000	52012	4944	9.5	11004	21.2	15947	30.7
2001	53306	4877	9.1	10488	19.7	15365	28.8
2002	66021	5171	7.8	11903	18.0	17075	25.9
2003	87440	6060	6.9	14854	17.0	20913	23.9
2004	102986	7298	7.1	18414	17.9	25712	25.0
2005	113791	7504	6.6	20449	18.0	27953	24.6
2006	110205	7779	7.1	19744	17.9	27523	25.0
2007	135295	8739	6.5	23063	17.0	31803	23.5
2008	130459	8964	6.9	23911	18.3	32874	25.2
2009	118953	6964	5.9	18535	15.6	25499	21.4
2010	143467	8041	5.6	21457	15.0	29498	20.6
2011	163841	9370	5.7	24908	15.2	34278	20.9
2012	171461	9193	5.4	26384	15.4	35577	20.7
2013	185788	9003	4.8	27632	14.9	36635	19.7
2014	191732	9382	4.9	31039	16.2	40421	21.1

Source: United Nations Comtrade Database (2015). Authors' calculations.

Table C7: India GDP and Trade Growth: 1988-2014

Trade and GDP in US$ Millions

Year	GDP	Growth %	Manu	Growth %	Agri	Growth %
1988	301791		21382		6766	
1989	301234	-0.2	25676	20.1	6993	3.4
1990	326608	8.4	25402	-1.1	7486	7.1
1991	274842	-15.8	23030	-9.3	6278	-16.1
1992	293262	6.7	27835	20.9	7434	18.4
1993	284194	-3.1	29233	5.0	7190	-3.3
1994	333014	17.2	35519	21.5	9313	29.5
1995	366600	10.1	43919	23.7	11567	24.2
1996	399787	9.1	44859	2.1	12227	5.7
1997	423160	5.8	48074	7.2	12389	1.3
1998	428741	1.3	46661	-2.9	12678	2.3
1999	466867	8.9	53207	14.0	12711	0.3
2000	476609	2.1	56866	6.9	12079	-5.0
2001	493954	3.6	56491	-0.7	13214	9.4
2002	523969	6.1	66826	18.3	14849	12.4
2003	618356	18.0	82717	23.8	16581	11.7
2004	721586	16.7	105486	27.5	21634	30.5
2005	834215	15.6	142273	34.9	27957	29.2
2006	949117	13.8	168705	18.6	34443	23.2
2007	1238700	30.5	202702	20.2	43621	26.6
2008	1224097	-1.2	261771	29.1	52860	21.2
2009	1365372	11.5	254224	-2.9	45510	-13.9
2010	1708459	25.1	308028	21.2	61888	36.0
2011	1880100	10.0	390546	26.8	79757	28.9
2012	1858745	-1.1	380077	-2.7	91131	14.3
2013	1876797	1.0	398777	4.9	93434	2.5
2014	2066902	10.1	401955	0.8	90620	-3.0

Source: United Nations Comtrade Database (2015). Authors' calculations.

Appendix D

Table D1: India Share of Agricultural Trade in GDP 1988-2014

Trade and GDP in US$ Millions, Share in Percent

		Agriculture					
Year	GDP	Export	Share	Import	Share	Trade	Share
1988	301791	3388	1.1	3378	1.1	6766	2.2
1989	301234	4210	1.4	2783	0.9	6993	2.3
1990	326608	4444	1.4	3043	0.9	7486	2.3
1991	274842	4239	1.5	2040	0.7	6278	2.3
1992	293262	4410	1.5	3023	1.0	7434	2.5
1993	284194	4944	1.7	2246	0.8	7190	2.5
1994	333014	5211	1.6	4102	1.2	9313	2.8
1995	366600	7299	2.0	4268	1.2	11567	3.2
1996	399787	8012	2.0	4215	1.1	12227	3.1
1997	423160	7695	1.8	4693	1.1	12389	2.9
1998	428741	6918	1.6	5760	1.3	12678	3.0
1999	466867	6505	1.4	6206	1.3	12711	2.7
2000	476609	6789	1.4	5290	1.1	12079	2.5
2001	493954	7249	1.5	5966	1.2	13214	2.7
2002	523969	8448	1.6	6402	1.2	14849	2.8
2003	618356	8780	1.4	7801	1.3	16581	2.7
2004	721586	12156	1.7	9478	1.3	21634	3.0
2005	834215	16186	1.9	11770	1.4	27957	3.4
2006	949117	18423	1.9	16020	1.7	34443	3.6
2007	1238700	23693	1.9	19928	1.6	43621	3.5
2008	1224097	29460	2.4	23400	1.9	52860	4.3
2009	1365372	23548	1.7	21962	1.6	45510	3.3
2010	1708459	32737	1.9	29151	1.7	61888	3.6
2011	1880100	41730	2.2	38027	2.0	79757	4.2
2012	1858745	47983	2.6	43148	2.3	91131	4.9
2013	1876797	52063	2.8	41372	2.2	93434	5.0
2014	2066902	46939	2.3	43681	2.1	90620	4.4

Source: United Nations Comtrade Database (2015). Authors' calculations.

Table D2: India Share of Manufacturing Trade in GDP 1988-2014

Trade and GDP

US$ Millions, Share in Percent

				Manufacturing			
Year	GDP	Export	Share	Import	Share	Trade	Share
1988	301791	9839	3.3	11542	3.8	21382	7.1
1989	301234	12097	4.0	13578	4.5	25676	8.5
1990	326608	12616	3.9	12786	3.9	25402	7.8
1991	274842	12959	4.7	10071	3.7	23030	8.4
1992	293262	15359	5.2	12475	4.3	27835	9.5
1993	284194	16435	5.8	12798	4.5	29233	10.3
1994	333014	20161	6.1	15358	4.6	35519	10.7
1995	366600	23364	6.4	20555	5.6	43919	12.0
1996	399787	24353	6.1	20505	5.1	44859	11.2
1997	423160	25995	6.1	22079	5.2	48074	11.4
1998	428741	25344	5.9	21318	5.0	46661	10.9
1999	466867	29275	6.3	23932	5.1	53207	11.4
2000	476609	33285	7.0	23582	4.9	56866	11.9
2001	493954	33194	6.7	23297	4.7	56491	11.4
2002	523969	38135	7.3	28691	5.5	66826	12.8
2003	618356	46053	7.4	36664	5.9	82717	13.4
2004	721586	56732	7.9	48754	6.8	105486	14.6
2005	834215	72539	8.7	69735	8.4	142273	17.1
2006	949117	83495	8.8	85210	9.0	168705	17.8
2007	1238700	96893	7.8	105809	8.5	202702	16.4
2008	1224097	116677	9.5	145094	11.9	261771	21.4
2009	1365372	121238	8.9	132986	9.7	254224	18.6
2010	1708459	145120	8.5	162908	9.5	308028	18.0
2011	1880100	188889	10.0	201656	10.7	390546	20.8
2012	1858745	184564	9.9	195514	10.5	380077	20.4
2013	1876797	207499	11.1	191278	10.2	398777	21.2
2014	2066902	204831	9.9	197124	9.5	401955	19.4

Source: United Nations Comtrade Database (2015). Authors' calculations.