Quantifying the Economic Impact of Removing Non-Tariff Measures: Tariff Equivalent Approach

Takamune FUJII and Mitsuyo ANDO

Abstract

Our study quantifies the economic impact of eliminating non-tariff measures in 13 APEC countries within the framework of GTAP simulation model, using the very preliminary estimates of tariff equivalents of NTMs. The three types of simulations are conducted for each APEC economy: a case with eliminating tariffs, a case with eliminating core NTMs, and a case with removing overall NTMs (core NTMs plus non-core NTMs). The results suggest that the removal of NTMs has a significant impact on the involved economies while the magnitude of the effect is smaller than that of removing tariffs. The results also suggest that the elimination of core NTMs has a larger effect on the welfare than that of removing non-core NTMs does.

KEYWORDS: Non-Tariff Measures (Core/Non-Core NTM), Tariff Equivalents of NTMs, Trade Liberalization, and APEC

1. Introduction

Tariffs are recognized to be an economically preferred form of protection and have been successfully reduced as a result of periodic rounds of multilateral trade negotiations. In contrast, non-tariff measures (NTMs) are in general not transparent to their price and other protective effects while they highly distort the behavior of producers and consumers, and thus trade patterns. In addition, there is no consensus on the range of NTMs since they cover all trade-distorting measures except tariffs, regardless of whether border type or internal type. These non-transparent and obscure features of NTMs make them difficult to control and monitor and thus have attracted governments and domestic industries that lobby for protection.

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As for the range of NTMs, there are several ways of NTM classifications proposed by UNCTAD, Deardorff and Stern (1998), and Baldwin (1970). While the classification of UNCTAD consists only of import distorting measures, those of Deardorff and Stern (1998) and Baldwin (1970) include, in addition to import related measures, export related and production related measures, and domestic regulations that can restrict trade. Table 1.1 shows the NTM classification of UNCTAD. This classification categorizes NTMs into seven types, that is, price control measures, financial control measures, auto-licensing measures, quantity control measures, monopolistic measures, technical measures, and miscellaneous measures. Among them, UNCTAD defines price control measures, financial control measures, and quantity control measures as core NTMs. Thus, we call other measures non core-NTMs.

With the growing interests in regionalism, many studies have analyzed the economic impact of trade liberalization through free trade agreements (FTAs) or regional integration within the framework of GTAP simulation model. In general, measuring NTMs is very difficult compared with tariffs, partly because of their wide diversity and vagueness as well as paucity of data (PECC, 2000). The support and protection data (SPD) in GTAP database also do not reflect enough information on the protection that NTMs provide for domestic producers.[1] Due to the lack of NTM data for the SPD, most studies have conducted the simulation of trade liberalization without considering the effects of eliminating NTMs.

However, to analyze the economic impact of trade liberalization, NTMs should be explicitly introduced, in addition to tariffs, in the simulation model. There are several reasons why the economic impact of NTMs has to be focused on and also be analyzed separately from those of tariffs. First of all, the protection induced by NTMs is not negligible at all or rather will be a growing problem for international trade in contrast with successful tariff reductions. Ando (2001), which studied the pervasiveness of NTMs in APEC countries by the type of measures and industry, claims that compared to developing countries, developed countries depend more heavily on NTMs, inclusive non-core NTMs, so as to compensate for lowering protection by tariffs. She also revealed that agriculture and food industry is commonly and effectively protected by NTMs in APEC countries. These facts indicate that NTMs are and continue to be certainly serious issues.[2]

Second, it is hard to imagine that an economy would practically reduce both tariffs and NTMs at the same time to realize the overall trade liberalization. As tariffs are visible and relatively easy to negotiate, they have been and will be reduced more easily. In contrast, as mentioned above, NTMs are not transparent to their protective effects despite of the serious distortion, and thus it

[1] As for the SPD, Gehlhar, et al. (1997) explain that despite their importance, data used in disaggregated multi-country general equilibrium models have not accurately and comprehensively incorporated most NTMs.

[2] She also found that some countries use various types of NTMs together in their protecting industries while others apply a few types to almost all items in their protecting industries. For instance, Japan applies all types of NTMs together though the frequency ratio of each measure is not so high. In contrast, countries such as Australia and Chile depend on a few types of NTMs but

would take more time to negotiate and reduce them. Moreover, because of such undesirable features of NTMs, governments and domestic industries lobbying for protection have shown an inclination toward them. Considering the practical process of trade liberalization, it must be helpful to recognize to what extent the removal of NTMs itself would have an impact on economies, compared to tariff elimination.

Third, the effects of removal of non-core NTMs as well as core NTMs should be analyzed. Core NTMs have been reduced particularly because the rules on the NTM use were strengthened by the Uruguay Round (Bosworth, 1999). However, their declining trend seems to give rise to greater attention to non-core NTMs, particularly technical measures such as technical regulations, sanitary and phytosanitary (SPS) regulations, and customs and administrative procedures. As mentioned above, developed countries tend to rely on non-core NTMs, in addition to core NTMs, to protect their protecting industries. Thus, it is critical to introduce both core NTMs and non-core NTMs explicitly into a simulation model to analyze the economic impact of trade liberalization.

Our study attempts to quantify the economic impact of eliminating NTMs within the framework of GTAP simulation model, using very tentative estimates of tariff equivalents of NTMs obtained by Ando and Fujii (2001). To understand the economic impact of removing NTMs, we conduct three types of simulation: a case with eliminating tariffs, a case with eliminating core NTMs, and a case with removing overall (core and non-core) NTMs. By comparing one result with the others, we identify not only the relative magnitude of economic impact between the case with removing NTMs and that with eliminating tariffs but also the relative magnitude of economic impact between the case with and without eliminating non-core NTMs.

The remaining sections are organized as follows: section 2 describes how the data of NTMs applicable to the simulation model can be constructed. Section 3 presents aggregation and experiment design to conduct three types of simulation. Then, the simulation results are described in section 4, and the conclusion is in section 5.

2. Data Construction of NTMs

As for NTM data, the UNCTAD database, Trade Analysis and Information System (TRAINS), is the only source of comprehensive information on NTMs. TRAINS provides the information on types of NTMs each country implement by Harmonized System (HS) commodity product categories (tariff lines). While such information is of use in identifying the incidence of NTMs, it is not applicable directly to the simulation model. Several steps are required to construct the data of NTMs comparable to tariffs, using the information available from TRAINS. This section, first, explains some drawbacks with this database and then briefly describes how the data of NTMs applicable to the simulation model can be constructed.

As is well known, there are some drawbacks with this database to be noted in employing

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apply to almost all items in their protecting industries.

the data. First, the reliance on data may be doubtful since the underlying information is reported by the government of each country and is not sent back to confirm its accuracy. In some cases, the information on NTMs that have already removed is still included (PECC, 2000). Second, because of no consensus on NTMs to be reported, the types of measures reported are inconsistent across countries. While some countries provide detailed information on NTMs, others understand almost nothing about or do not properly report NTM use. In the case of a country with only a few NTMs reported, the small number of incidence can not necessarily be interpreted as low protection by NTMs. Third, the database does not have enough information on the types of technical measures (except technical regulations). Thus, it is more difficult to identify the pervasiveness of such much less transparent measures.

To quantify the economic impact of the removal of NTMs, our study uses preliminary estimates of tariff equivalents of NTMs by type and industry, which were tentatively estimated by Ando and Fujii (2001). Table 2.1. presents the preliminary estimates of tariff equivalents in 13 APEC economies. To obtain them, the following three steps are required. The first step is to calculate the magnitude of price differential due to NTMs, focusing on the price differential between the c.i.f. price of the import and the domestic producer price of the domestic substitute. Let p_i^M and p_i^D be the price of the import and the domestic producer price of the domestic substitute in i industry ($i = 1, \cdots, 21$), respectively. PD_i^T stands for the magnitude of price differential due to both tariffs and NTMs in i industry. PD_i^T can be calculated as follows:

$$PD_i^T = 100 \times (p_i^D - p_i^M) / p_i^M .$$

Notice that critical assumption for this procedure is the homogeneity of imported goods and the domestic substitutes. PD_i^N stands for the magnitude of price differential due to only NTMs in i industry. Let t_i be the import tariff rate of i industry. Then, PD_i^N can be obtained by subtracting t_i from PD_i^T.

$$PD_i^N = PD_i^T - t_i .$$

The second step is to estimate price-distorting effect of each type of NTMs, using both PD_i^N obtained in the first step and frequency ratios of NTMs. The frequency ratio is the number of HS commodity product categories subject to NTMs, expressed as a percentage of the total number of product categories in each HS group. The types of NTMs are 1:price control measures, 3:

auto-licensing measures, 4:quantity control measures, 5:monopolistic measures, and 6:technical measures.[3] Denote by F_{ji} the frequency ratio of j type of NTMs in i industry ($j = 1,3,\cdots,6$). The base-case regression equation to obtain the parameters for transforming frequency measures into tariff equivalents is as follows:

$$PD_i^N = \alpha + \sum_j \hat{\beta}_j F_{ji}$$

where α stands for intercept and $\hat{\beta}_j$ the estimated coefficient of price-distorting effect of j type of NTMs. Notice that the price-distorting effect of j type of NTMs, β_j, is assumed to be common across industries. The preliminary estimates in Table 2.1. are calculated by using the estimated coefficients obtained from the regression analysis with additional control variable, income levels (GDP per capita).

The final step is to obtain tariff equivalents by type and industry, using $\hat{\beta}_j$ and F_{ji}. Denote by TE_{ji} tariff equivalent of j type of NTMs in i industry. By multiplying $\hat{\beta}_j$ by F_{ji}, TE_{ji} can be finally estimated.

$$TE_{ji} = \hat{\beta}_j F_{ji}.$$

Date descriptions for this process are as follows: the frequency ratios used in Ando and Fujii (2001) are from the Ando (2001), which calculated the ratios at HS 9-digit level.[4] The years of NTM data in the analysis are the latest when each country has reported information on NTMs. Notice that the latest years available from UNCTAD database vary from country to country. For example, the years are 2000 for Canada, 1994 for Singapore and Thailand, and 1996-1999 for other APEC economies.

Unit prices of goods and price differentials are obtained as follows: domestic producer unit prices in local currency are calculated by dividing values by quantities. Values of domestic production are available from United Nations (various years), *International Yearbook of Industrial Statistics* at ISIC 4-digit level. Quantities of domestic production are from the United Nations (1998), *Industrial Commodity Statistical Yearbook* at ISIC 6-digit level. As quantity data are based on more detailed classification, they are aggregated to be matched with production value data.[5] Notice that some quantity data are unable to be aggregated when their units are different from

[3] Figures of the type follow the UNCTAD classification.

[4] Ando (2001) calculated frequency ratios by type and industry as follows: first of all, measures reported by each country are classified into five types of NTMs as the above NTM classification since measures reported by each country are inconsistent among countries. Then, based on this typology, the number of HS tariff lines subject to NTMs is counted at HS 9-digit level. Finally, this number is divided by the total number of HS tariff lines.

[5] For Australia, Canada, Indonesia, Japan, Korea, and Singapore, the data are based on ISIC rev.3,

others.

Similarly, c.i.f. import unit prices in US dollars are calculated by dividing values by quantities. Values and quantities of imports are from United Nations (1998), *International Trade Statistics Yearbook* at SITC 4-digit level. As for Australia, Canada, and United States, unit values of imported goods in local currency are directly taken from JETRO (various years), *World Trade Atlas* (compiled national statistics of each country) at HS 4-digit level.

To calculate the price differentials between c.i.f. import prices and domestic producer prices, the sectors of SITC 4-digit code/HS 4-digit code are matched with those of ISIC 4-digit code. In the case of countries with import prices in US dollars, domestic producer prices in local currency are converted into US dollars by exchange rates (period average), which are from the World Bank (2001).

Import tariff rates at HS 2-digit level are simple average of HS 9-digit tariff lines, which are available from UNCTAD (1999), *TRAINS 1999 Winter Version (CD-ROM)* and UNCTAD (2001), *TRAINS 2001 Spring Version (CD-ROM)*.

In obtaining the magnitude of price differentials due to NTMs by subtracting tariff rates from that of price differentials due to both tariffs and NTMs, the sectors of ISIC 4-digit code are matched with HS 2-digit (97) commodity groups. Then, the price differentials due to NTMs at HS 2-digit level are simply averaged for the regression according to industry classification of frequency ratios of NTMs.

Due to the availability of NTM data, the years of unit values and those of import tariff rates are around those of NTM data.

3. Aggregation and Experiment Design

This section describes how our study aggregates the GTAP data (version 5) and conducts three types of experiments to estimate the economic impact of removing NTMs in APEC countries within the framework of GTAP model. Table 3.1. displays our aggregation of regions and commodities. To focus on APEC economies, regions are aggregated as follows: 1.Australia (AUS), 2.New Zealand (NZL), 3.China (CHN), 4.Japan (JPN), 5.Korea (KOR), 6.Indonesia (IND), 7.Malaysia (MYS), 8.Singapore (SGP), 9.Thaliand (THA), 10.Canada (CAN), 11.United States (USA), 12.Mexico (MEX), 13.Chile (CHL), 14.Other Asian Countries (OAS), 15.Europe (EUR), and 16.Rest of the World (ROW). Since the focus of our research is on analyzing the effects of eliminating NTMs in APEC economies, all regions except 13 APEC countries, other Asian countries and Europe are lumped together in the rest of the world.

As for commodities, the following aggregation is employed in order to incorporate tariff equivalent rates of NTMs into the GTAP simulation models: 1.live animal and animal products, 2.vegetables, 3.other agriculture, 4.wood products, 5.minerals, 6.vegetable and animal oil and fats,

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and for others the data are on ISIC rev.2.

7.food products, 8.textile, 9.leather, 10.pulp and paper products, 11.chemical products, 12.metal products, 13.transport equipment, 14.machinery products, 15.other manufacturing, and 16.services industry. Table 3.1. presents which commodities in the GTAP database are matched with product categories used in constructing NTM data.

With respect to factors, land and natural resources are lumped together as land, and skilled labor and unskilled labor as labor. Thus, there are three factors in our models, capital, land and labor.

Three types of experiments implemented with the GTAP data and the tentative tariff equivalent rates of NTMs are as follows: Experiment 1 (E1) presumes a case that each APEC country eliminates its tariffs, and Experiment 2 (E2) and Experiment 3 (E3) alternatively assume a case that each APEC country removes its NTMs. While E2 focuses on only core NTMs, E3 considers overall NTMs, that is, core NTMs plus non-core NTMs. For these experiments, we use the basic GTAP general equilibrium closure and default parameters. To compare with the results of E2 and E3, E1 removes ad valorem import tariffs (parameter tms) of each APEC country in only 13 industries with NTM data. Other parameters are not altered. Similarly, E2 and E3 remove core NTMs and overall NTMs of each APEC country in 13 industries, respectively. As NTM data are the rates of tariff equivalents, the removal of NTMs is operated as that of tariffs in the simulation.

By conducting these three types of experiments for each of 13 APEC countries, we will first observe how significantly the removal of NTMs influences the involved economies compared with that of tariffs. We will also see the relative magnitude of economic impact between the cases with and without eliminating non-core NTMs. Moreover, since three types of experiments are implemented for each APEC economy, we will find differences in the magnitude of economic impact of the trade liberalization in these countries.

4. Simulation Results

Table 4.1- Table 4.13 display the estimated changes in the economic welfare. Table 4.1 presents the results of three simulations on trade liberalization in Australia. Both cases of eliminating tariffs and NTMs in this country have a positive effect on the world welfare as a whole while there is a difference in the magnitude. The magnitude of the effect of removing NTMs is one-fifth times as large as that of tariffs. As for the two cases of NTMs with and without non-core NTMs, there is only a small difference between them. It implies that non-core NTMs do not have significant impact in this case.

Table 4.2 shows the results of simulations for New Zealand. Our simulation results indicate that elimination of trade barriers in this country has only a limited positive impact on its own welfare while a negative and relatively larger impact on Australian welfare. As for elimination of NTMs, the welfare effect on world economy is half as large as that of removing tariffs.

Table 4.3 shows the results for China. The removal of trade barrier in China has a significant positive impact on the world welfare. As for the magnitude, the effect of NTM

elimination on the world welfare is half as large as that of tariff elimination. The difference between the results with and without non-core NTMs is quite small.

The results for Japan are shown in Table 4.4. The tariff reduction in Japan is greatly beneficial to the welfare of world economy. In particular, China and two Oceanic countries enjoy considerable welfare gains through Japanese removal of tariffs. As for NTMs, while the removal of core NTMs decreases the world welfare as a whole, the total NTM reduction increases the world welfare. In both cases, surprisingly, the welfare in Japan deteriorates.

Table 4.5 displays the results for Korean cases. As Korean government reports only a little information on its NTM use and no information on non-core NTMs, we can not conduct the experiment regarding NTMs with non-core NTMs. The results of NTMs and tariffs indicate that the NTM reduction in Korea has a smaller impact on the world welfare than the tariff reduction does.

In the cases of Indonesia, Malaysia, and Thailand, whose results are shown in Tables 4.6, 4.7, and 4.9, respectively, the elimination of tariffs is quite beneficial to the own economy and to world economy as well. The elimination of NTMs also significantly improves the welfare not only in their economies but also in world economy as a whole. However, there are differences in the magnitude of the effect among them. In the case of Indonesia, the magnitude of the impact on its economy is quite small, and that on the world welfare is also relatively small. In contrast, the magnitude of the effect of removing NTMs in Malaysia and Thailand is large on the world welfare as well as on their own economies. Trade liberalization, that is, elimination of either tariffs or NTMs, in these two economies are very beneficial to the rest of Asian countries, especially to Japan. Japan can enjoy most of the welfare gain in the world from their trade liberalization.

The results for Singapore are presented in Table 4.8. As the level of trade protection in Singapore is low, the impact of trade liberalization on the world welfare is small in either case, whether tariffs or NTMs.

Table 4.10 shows the results for Canada. These results must be interpreted cautiously since the simulation accuracy is relatively low. They imply that world economy as well as Canada can enjoy the welfare increase through the removal of tariffs in Canada. In contrast, eliminating NTMs in this country brings a large welfare loss to both its own economy and world economy as a whole. This implies that NTM reduction in Canada is harmful to both Canadian welfare itself and world economic welfare.

The results for United States are displayed in Table 4.11. They suggest that trade liberalization in United States brings about serious welfare loss in its economy. However, more interestingly, the welfare in world economy as a whole significantly increases through either the removal of tariffs or NTMs in United States.

Table 4.12 shows the results for Mexico. Mexico's tariff reduction has a beneficial effect on the welfare in Mexico itself and all other regions except United States. The removing core NTMs in this country has a positive welfare effect on United States and world economy as a whole. When non-core NTMs are considered in addition to core NTMs, United States and world economy as a

whole significantly enjoy the welfare increase while other members of NAFTA (including Mexico itself) experience the small welfare loss.

The results for Chile are shown in Table 4.13. They imply that elimination of tariffs in Chile is harmful to its own welfare while beneficial to the world welfare. As for NTMs, the results of both cases (core NTMs and total NTMs) show the similar results of the case of tariffs though the magnitude of the effects are small.

In summary, the effect of eliminating NTMs is smaller than that of removing tariffs but is not negligible at all. In particular, the removal of core NTMs brings a larger welfare improvement. This suggests that policymakers should make effort to remove not only tariffs but also NTMs, particular core NTMs to promote trade liberalization in the world and to increase in the world welfare.

5. Conclusion

In this paper, we have quantified the economic impact of eliminating NTMs in 13 APEC economies within the framework of GTAP simulation model by using the very preliminary estimates of tariff equivalents of NTMs. Most of the previous studies analyzing the effects of trade liberalization did not introduce NTMs explicitly into the model due to the deficiency of NTM data in the GTAP database. Considering their pervasiveness and growing interests in them as a means of protecting domestic producers, however, the issues of NTMs should be focused on in the analysis of the economic impact of trade liberalization.

To recognize to what extent the removal of NTMs has an impact on the economies, we have conducted three types of experiments: each experiment assumes that each APEC country removes tariffs, or core NTMs, or both core and non-core NTMs. By comparing one result with the others, we have identified not only the relative magnitude of economic impact between the case of removing NTMs and that of tariffs but also the relative magnitude of economic impact between the case with and without non-core NTMs.

Our results suggest that eliminating NTMs in each APEC economy has a significant impact on the involved economies while the magnitude is smaller than that of the case with removing tariffs. We should make an effort to remove not only tariffs but also NTMs to promote trade liberalization and to improve the world welfare. They also suggest that the economic impact of eliminating core NTMs is larger than that of removing non-core NTMs. If the removal of non-core NTMs is difficult because of the high political costs, it would be a good option that we remove at least core NTMs to achieve welfare improvement sufficiently.

Our challenge to estimate the impact of removing NTMs is very preliminary and incomplete. Further analysis will be needed to improve our analysis. First of all, the tentative estimates of tariff equivalents of NTMs could be improved with a better matching process of calculating unit values and the price differentials. As Ando and Fujii (2001) discussed, several steps

are considered to improve the matching process. The first step is the process of matching value data of domestic production/imports with their quantity data to calculate unit values. The second step is the process of matching unit values of imports with those of the domestic substitutes to obtain price differentials. Due to the differences in unit between them, lots of information on unit values is omitted in the estimation. Moreover, because of the differences in statistical code between them, the quality of some price differentials may be doubtful. With the data of better quality and of more disaggregated, the matching process and the quality of both unit values and the price differentials would be improved.

The estimates could be also improved with more recent data. Due to the availability of NTM data, the years in the analysis are inconsistent across 13 APEC countries and are very old in some countries. Moreover, as for a few countries, the years of price differentials are inconsistent with (older than) those of NTMs due to the data deficiency of domestic production/international trade. Thus, if more recent data of them are available, these problems would be solved.

Another possibility to improve the estimates is to calculate, first, the price distorting effect of each type of NTMs by focusing on a specific country with well disaggregated data, for instance, Japan. And then, tariff equivalents of NTMs in other countries are also estimated with the estimated coefficients in that country.

As a further extension, the analysis of trade liberalization including NTMs in non-member countries of APEC would be very interesting.

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Table 1.1 The NTM Classification of UNCTAD

1. Price control measures

(1) Administrative pricing: minimum import prices

(2) Voluntary export price restraint

(3) Variable charges:

variable levies on imports, variable components, compensatory elements, flexible import fees

(4) Anti-dumping measures: anti-dumping investigations, anti-dumping duties, price undertakings

(5) Countervailing measures: countervailing investigations, countervailing duties, price undertakings

2. Finance control measures

(1) Advance payments requirements: advance import deposit, cash margin requirement, cash margin requirement, advance payment of customs duties, refundable deposits for sensitive product categories

(2) Multiple exchange rates

(3) Restrictive official foreign exchange allocation:

prohibition of foreign exchange allocation, bank authorization

(4) Regulations concerning terms of payment for imports

(5) Transfer delays, queuing

3. Automatic licensing measures

(1) Automatic license

(2) Import monitoring:

retrospective surveillance, prior surveillance, prior surveillance for sensitive product categories

(3) Surrender requirement

4. Quantity control measures

(1) Non-automatic licensing:

license with no specific ex-ante criteria, license for selected purchasers,

license for selected purchasers, prior authorization for sensitive product categories

license for specified use – linked with export trade, for purpose other than export

license linked with local production –

purchase of local goods, local content requirement, barter or counter trade

license linked with non-official foreign exchange –

external foreign exchange, importers own foreign exchange

license combined with or replaced by special import authorization,

(2) Import quotas (import restrictions):

global quotas – unallocated, - allocated to exporting economies, - unallocated

bilateral quotas, seasonal quotas, quotas linked with export performance,

quotas linked with purchase of local goods, quotas for sensitive product categories,
quotas for political reasons (embargo)

(3) Prohibition:

suspension of issuance licenses, seasonal prohibition, temporary prohibition,
import diversification, prohibition on the basis of origin,
prohibition for sensitive product categories, prohibition for political reasons (embargo)

(4) Export restraint arrangements:

voluntary export restraint arrangements, orderly marketing arrangements,
multi-fiber arrangement (MFA) -
quota agreement, consultation agreement, administrative cooperation agreement
export restraint arrangements on textiles outside MFA

(5) Enterprise-specific restrictions: selective approval of importers, enterprise-specific quota

5. Monopolistic measures

(1) Single channel for imports: state trading administration, sole importing agency, single channel for imports for sensitive product categories

(2) Compulsory national services: compulsory national insurance, compulsory national transport

6. Technical measures

(1) Technical regulations:

product characteristics requirements, marking (trademarks) requirements, labeling requirements packaging requirements, testing, inspection and quarantine requirements, information requirements, safety and industrial standards and regulations, health and sanitary regulations and quality standards, advertising and media regulations

(2) Pre-shipment inspection

(3) Special customs formalities:

custom valuation procedures, customs classification procedure, customs clearance procedures

(4) Obligation to return used product

(5) Obligation of recycling or reuse

7. Miscellaneous measures

(1) Marketable permits

(2) Public procurement

(3) Voluntary instruments: technical standards, voluntary agreements or covenants

(4) Product liability

(5) Subsidies

Table 2.1: Preliminary Estimates of Tariff Equivalents of NTMs

Australia	NTM1(%)	NTM3(%)	NTM4(%)	NTM5(%)	NTM6(%)	NTM(ALL)(%)	CoreNTMs(1+4)(%
1 Live animals and animal products	0.0	0.0	65.0	0.0	5.3	70.3	65.0
2 Vegetable products	0.0	0.0	10.7	0.0	5.3	16.0	10.7
3 Animal and vegetable oils and fats	0.0	0.0	0.0	0.0	5.3	5.3	0.0
4 Products of food industry;	19.7	0.0	0.0	0.0	5.3	25.0	19.7
5 Mineral products	0.0	0.0	0.0	0.0	0.3	0.3	0.0
6 Chemicals	0.0	0.0	21.9	0.0	0.5	22.5	21.9
7 Plastic and plastic materials,	22.9	0.0	0.0	0.0	0.0	22.9	22.9
8 Skin, raw material; leather, pelts,	0.0	0.0	62.6	0.0	0.0	62.6	62.6
9 Wood and wood products; charcoal,	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10 Wood pulp, vegetable pulp; paper and	16.3	0.0	0.0	0.0	0.0	16.3	16.3
11 Textiles	2.0	0.0	0.0	0.0	0.0	2.0	2.0
12 Footwear, head-dress, umbrellas,	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13 Rock products; gypsum, cement,	6.2	0.0	0.0	0.0	0.0	6.2	6.2
14 Precious stones and semi-precious stones,	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 Base metals and base metal products	3.4	0.0	91.6	0.0	0.0	95.1	95.1
16 Machinery; equipment and mechanism;	1.1	0.0	0.0	0.0	1.6	2.7	1.1
17 Surface, air, water transport means	4.4	0.0	43.7	0.0	0.0	48.1	48.1
18 Optical, photographic, cinematographic,	0.0	0.0	0.0	0.0	0.8	0.8	0.0
19 Firearms and munitions therefore	0.0	0.0	190.1	0.0	0.0	190.1	190.1
20 Various manufactured goods	0.0	0.0	3.8	0.0	0.1	3.9	3.8
21 Works of art, antiques, collections	0.0	0.0	0.0	0.0	0.0	0.0	0.0

New Zealand	NTM1(%)	NTM3(%)	NTM4(%)	NTM5(%)	NTM6(%)	NTM(ALL)(%)	CoreNTMs(1+4)(
1 Live animals and animal products	4.5	0.0	269.3	0.0	0.0	273.8	273.8
2 Vegetable products	0.0	0.0	269.3	0.0	2.9	272.2	269.3
3 Animal and vegetable oils and fats	0.0	0.0	134.7	0.0	0.0	134.7	134.7
4 Products of food industry;	20.6	0.0	70.1	0.0	3.5	94.2	90.7
5 Mineral products	0.0	0.0	18.0	0.0	0.0	18.0	18.0
6 Chemicals	0.0	0.0	118.1	0.0	0.6	118.7	118.1
7 Plastic and plastic materials,	0.0	0.0	3.5	0.0	0.4	3.9	3.5
8 Skin, raw material; leather, pelts,	0.0	0.0	102.7	0.0	0.0	102.7	102.7
9 Wood and wood products; charcoal,	0.0	0.0	143.5	0.0	0.1	143.7	143.5
10 Wood pulp, vegetable pulp; paper and	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11 Textiles	0.0	0.0	8.3	0.0	0.4	8.7	8.3
12 Footwear, head-dress, umbrellas,	458.6	0.0	2.3	0.0	4.0	464.9	460.9
13 Rock products; gypsum, cement,	23.4	0.0	7.5	0.0	0.0	30.9	30.9
14 Precious stones and semi-precious stones,	0.0	0.0	20.1	0.0	0.0	20.1	20.1
15 Base metals and base metal products	1.3	0.0	6.2	0.0	0.0	7.4	7.4
16 Machinery; equipment and mechanism;	3.6	0.0	4.3	0.0	4.3	12.2	7.9
17 Surface, air, water transport means	20.4	0.0	70.6	0.0	0.0	91.0	91.0
18 Optical, photographic, cinematographic,	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19 Firearms and munitions therefore	0.0	0.0	97.3	0.0	0.0	97.3	97.3
20 Various manufactured goods	5.3	0.0	42.3	0.0	0.4	48.1	47.6
21 Works of art, antiques, collections	0.0	0.0	0.0	0.0	0.0	0.0	0.0

China	NTM1(%)	NTM3(%)	NTM4(%)	NTM5(%)	NTM6(%)	NTM(ALL)(%)	CoreNTMs(1+4)(
1 Live animals and animal products	0.0	0.0	31.1	0.0	0.0	31.2	31.1
2 Vegetable products	19.5	0.0	16.9	-11.5	0.2	25.1	36.4
3 Animal and vegetable oils and fats	0.0	0.0	74.5	0.0	2.1	76.6	74.5
4 Products of food industry;	8.4	0.0	22.4	-19.8	0.3	11.2	30.8
5 Mineral products	43.5	0.0	11.6	0.0	0.7	55.9	55.1
6 Chemicals	0.0	0.0	23.6	0.0	0.0	23.6	23.6
7 Plastic and plastic materials,	17.4	0.0	13.9	0.0	0.5	31.8	31.3
8 Skin, raw material; leather, pelts,	0.0	0.0	0.0	0.0	1.0	1.0	0.0
9 Wood and wood products; charcoal,	9.0	0.0	42.9	0.0	0.2	52.1	51.9
10 Wood pulp, vegetable pulp; paper and	0.0	0.0	15.1	0.0	1.7	16.7	15.1
11 Textiles	2.9	0.0	12.8	-1.3	0.4	14.8	15.7
12 Footwear, head-dress, umbrellas,	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13 Rock products; gypsum, cement,	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14 Precious stones and semi-precious stones	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 Base metals and base metal products	0.0	0.0	41.1	0.0	1.6	42.7	41.1
16 Machinery; equipment and mechanism;	1.6	0.0	33.9	0.0	0.9	36.5	35.5
17 Surface, air, water transport means	0.0	0.0	81.7	0.0	1.2	82.8	81.7
18 Optical, photographic, cinematographic,	0.0	0.0	25.3	0.0	0.6	25.9	25.3
19 Firearms and munitions therefore	0.0	0.0	269.3	0.0	0.0	269.3	269.3
20 Various manufactured goods	0.0	0.0	0.0	0.0	0.4	0.4	0.0
21 Works of art, antiques, collections	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Japan	NTM1(%)	NTM3(%)	NTM4(%)	NTM5(%)	NTM6(%)	NTM(ALL)(%)	CoreNTMs(1+4)(
1 Live animals and animal products	51.6	-41.4	133.9	-123.0	5.2	26.4	185.6
2 Vegetable products	3.6	-51.7	13.0	-31.6	4.8	-61.9	16.6
3 Animal and vegetable oils and fats	0.0	0.0	19.7	0.0	4.8	24.5	19.7
4 Products of food industry;	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5 Mineral products	0.0	-54.8	3.9	-3.3	1.7	-52.5	3.9
6 Chemicals	1.0	0.0	24.4	-14.6	4.3	15.1	25.4
7 Plastic and plastic materials,	0.0	0.0	3.8	0.0	0.6	4.4	3.8
8 Skin, raw material; leather, pelts,	0.0	0.0	59.2	0.0	2.0	61.1	59.2
9 Wood and wood products; charcoal,	0.0	0.0	43.0	0.0	1.7	44.7	43.0
10 Wood pulp, vegetable pulp; paper and	0.0	0.0	0.0	0.0	0.8	0.8	0.0
11 Textiles	0.0	0.0	116.4	-3.3	0.0	113.1	116.4
12 Footwear, head-dress, umbrellas,	0.0	0.0	1.9	0.0	0.0	1.9	1.9
13 Rock products; gypsum, cement,	0.0	0.0	0.0	0.0	0.5	0.5	0.0
14 Precious stones and semi-precious stones,	0.0	0.0	0.0	0.0	0.2	0.2	0.0
15 Base metals and base metal products	42.4	0.0	97.4	0.0	0.2	140.1	139.8
16 Machinery; equipment and mechanism;	0.0	0.0	4.9	-0.7	0.2	4.4	4.9
17 Surface, air, water transport means	0.0	0.0	14.2	0.0	0.3	14.5	14.2
18 Optical, photographic, cinematographic,	0.0	0.0	1.7	0.0	1.1	2.8	1.7
19 Firearms and munitions therefore	0.0	0.0	269.3	0.0	2.3	271.6	269.3
20 Various manufactured goods	0.0	0.0	0.0	0.0	1.0	1.0	0.0
21 Works of art, antiques, collections	0.0	0.0	38.5	0.0	0.0	38.5	38.5

Korea	NTM1(%)	NTM3(%)	NTM4(%)	NTM5(%)	NTM6(%)	NTM(ALL)(%)	CoreNTMs(1+4)(
1 Live animals and animal products	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2 Vegetable products	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3 Animal and vegetable oils and fats	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4 Products of food industry;	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5 Mineral products	34.7	0.0	0.0	0.0	0.0	34.7	34.7
6 Chemicals	0.0	0.0	0.3	0.0	0.0	0.3	0.3
7 Plastic and plastic materials,	4.8	0.0	0.0	0.0	0.0	4.8	4.8
8 Skin, raw material; leather, pelts,	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9 Wood and wood products; charcoal,	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10 Wood pulp, vegetable pulp; paper and	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11 Textiles	10.5	0.0	0.0	0.0	0.0	10.5	10.5
12 Footwear, head-dress, umbrellas,	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13 Rock products; gypsum, cement,	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14 Precious stones and semi-precious stones,	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 Base metals and base metal products	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16 Machinery; equipment and mechanism;	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17 Surface, air, water transport means	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18 Optical, photographic, cinematographic,	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19 Firearms and munitions therefore	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20 Various manufactured goods	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21 Works of art, antiques, collections	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Indonesia	NTM1(%)	NTM3(%)	NTM4(%)	NTM5(%)	NTM6(%)	NTM(ALL)(%)	CoreNTMs(1+4)(
1 Live animals and animal products	0.0	-32.3	0.0	0.0	5.1	-27.3	0.0
2 Vegetable products	0.0	-32.5	0.0	0.0	4.5	-28.0	0.0
3 Animal and vegetable oils and fats	0.0	0.0	0.0	0.0	4.9	4.9	0.0
4 Products of food industry;	0.0	-28.0	22.2	0.0	0.8	-5.0	22.2
5 Mineral products	0.0	0.0	7.5	-11.4	0.2	-3.7	7.5
6 Chemicals	2.0	0.0	6.6	-2.7	0.4	6.3	8.6
7 Plastic and plastic materials,	0.0	0.0	5.3	0.0	0.1	5.4	5.3
8 Skin, raw material; leather, pelts,	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9 Wood and wood products; charcoal,	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10 Wood pulp, vegetable pulp; paper and	0.0	0.0	11.5	0.0	0.0	11.5	11.5
11 Textiles	0.0	-16.9	0.0	0.0	0.0	-16.9	0.0
12 Footwear, head-dress, umbrellas,	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13 Rock products; gypsum, cement,	0.0	0.0	1.5	0.0	0.0	1.5	1.5
14 Precious stones and semi-precious stones,	0.0	-38.2	0.0	0.0	0.0	-38.2	0.0
15 Base metals and base metal products	13.5	0.0	11.4	0.0	0.0	24.9	24.9
16 Machinery; equipment and mechanism;	0.0	0.0	3.7	0.0	0.0	3.7	3.7
17 Surface, air, water transport means	0.0	0.0	7.5	0.0	0.0	7.5	7.5
18 Optical, photographic, cinematographic,	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19 Firearms and munitions therefore	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20 Various manufactured goods	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21 Works of art, antiques, collections	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Malaysia	NTM1(%)	NTM3(%)	NTM4(%)	NTM5(%)	NTM6(%)	NTM(ALL)(%)	CoreNTMs(1+4)(
1 Live animals and animal products	0.0	0.0	86.0	0.0	1.0	87.0	86.0
2 Vegetable products	0.0	0.0	26.0	-17.0	2.8	11.9	26.0
3 Animal and vegetable oils and fats	0.0	0.0	11.3	0.0	0.0	11.3	11.3
4 Products of food industry;	0.0	0.0	27.2	-4.7	0.0	22.6	27.2
5 Mineral products	0.0	0.0	24.4	0.0	0.0	24.4	24.4
6 Chemicals	0.0	0.0	17.6	0.0	0.0	17.6	17.6
7 Plastic and plastic materials,	3.2	0.0	7.7	0.0	0.0	11.0	11.0
8 Skin, raw material; leather, pelts,	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9 Wood and wood products; charcoal,	0.0	0.0	76.8	0.0	0.0	76.8	76.8
10 Wood pulp, vegetable pulp; paper and	0.0	0.0	9.6	0.0	0.0	9.6	9.6
11 Textiles	0.0	0.0	10.1	0.0	0.0	10.1	10.1
12 Footwear, head-dress, umbrellas,	0.0	0.0	6.3	0.0	0.0	6.3	6.3
13 Rock products; gypsum, cement,	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14 Precious stones and semi-precious stones,	0.0	0.0	26.5	0.0	0.0	26.5	26.5
15 Base metals and base metal products	0.0	0.0	12.3	0.0	0.0	12.3	12.3
16 Machinery; equipment and mechanism;	0.0	0.0	14.6	0.0	0.2	14.9	14.6
17 Surface, air, water transport means	0.0	0.0	107.3	0.0	0.0	107.3	107.3
18 Optical, photographic, cinematographic,	0.0	0.0	4.8	0.0	0.0	4.8	4.8
19 Firearms and munitions therefore	0.0	0.0	269.3	0.0	0.0	269.3	269.3
20 Various manufactured goods	0.0	0.0	25.2	0.0	0.0	25.2	25.2
21 Works of art, antiques, collections	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Singapore	NTM1(%)	NTM3(%)	NTM4(%)	NTM5(%)	NTM6(%)	NTM(ALL)(%)	CoreNTMs(1+4)(
1 Live animals and animal products	0.0	-294.3	205.4	0.0	0.3	-88.6	205.4
2 Vegetable products	0.0	-543.3	149.9	0.0	0.0	-393.4	149.9
3 Animal and vegetable oils and fats	0.0	0.0	269.3	0.0	0.0	269.3	269.3
4 Products of food industry;	0.0	0.0	20.3	0.0	0.1	20.5	20.3
5 Mineral products	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6 Chemicals	0.0	0.0	101.7	0.0	0.0	101.7	101.7
7 Plastic and plastic materials,	0.0	0.0	1.1	0.0	0.0	1.1	1.1
8 Skin, raw material; leather, pelts,	0.0	0.0	49.9	0.0	0.0	49.9	49.9
9 Wood and wood products; charcoal,	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10 Wood pulp, vegetable pulp; paper and	0.0	0.0	21.0	0.0	0.0	21.0	21.0
11 Textiles	0.0	0.0	3.6	0.0	0.0	3.6	3.6
12 Footwear, head-dress, umbrellas,	0.0	0.0	18.0	0.0	0.0	18.0	18.0
13 Rock products; gypsum, cement,	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14 Precious stones and semi-precious stones,	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 Base metals and base metal products	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16 Machinery; equipment and mechanism;	0.0	0.0	12.2	0.0	0.5	12.7	12.2
17 Surface, air, water transport means	0.0	0.0	52.8	0.0	1.3	54.1	52.8
18 Optical, photographic, cinematographic,	0.0	0.0	18.3	0.0	0.0	18.3	18.3
19 Firearms and munitions therefore	0.0	0.0	269.3	0.0	0.0	269.3	269.3
20 Various manufactured goods	0.0	0.0	33.7	0.0	0.0	33.7	33.7
21 Works of art, antiques, collections	0.0	0.0	67.3	0.0	0.0	67.3	67.3

Thailand	NTM1(%)	NTM3(%)	NTM4(%)	NTM5(%)	NTM6(%)	NTM(ALL)(%)	CoreNTMs(1+4)(
1 Live animals and animal products	0.0	0.0	31.9	0.0	4.5	36.5	31.9
2 Vegetable products	0.0	0.0	13.1	-1.7	4.8	16.2	13.1
3 Animal and vegetable oils and fats	0.0	-1093.0	38.9	0.0	5.3	-1048.8	38.9
4 Products of food industry;	0.0	-166.9	25.7	-12.5	2.5	-151.2	25.7
5 Mineral products	0.0	0.0	18.7	0.0	0.7	19.3	18.7
6 Chemicals	0.0	0.0	2.3	0.0	2.6	4.8	2.3
7 Plastic and plastic materials,	0.0	0.0	0.0	0.0	0.2	0.2	0.0
8 Skin, raw material; leather, pelts,	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9 Wood and wood products; charcoal,	0.0	0.0	147.1	0.0	0.0	147.1	147.1
10 Wood pulp, vegetable pulp; paper and	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11 Textiles	0.0	0.0	88.6	0.0	0.0	88.6	88.6
12 Footwear, head-dress, umbrellas,	0.0	0.0	0.0	0.0	0.2	0.2	0.0
13 Rock products; gypsum, cement,	0.0	0.0	34.5	0.0	0.1	34.6	34.5
14 Precious stones and semi-precious stones,	0.0	0.0	20.7	0.0	0.0	20.7	20.7
15 Base metals and base metal products	0.0	0.0	3.8	0.0	0.0	3.8	3.8
16 Machinery; equipment and mechanism;	0.0	0.0	8.4	0.0	0.3	8.7	8.4
17 Surface, air, water transport means	0.0	0.0	72.6	0.0	0.3	72.9	72.6
18 Optical, photographic, cinematographic,	0.0	0.0	2.9	0.0	0.0	2.9	2.9
19 Firearms and munitions therefore	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20 Various manufactured goods	0.0	0.0	11.7	0.0	0.0	11.7	11.7
21 Works of art, antiques, collections	0.0	0.0	67.3	0.0	0.0	67.3	67.3

Canada	NTM1(%)	NTM3(%)	NTM4(%)	NTM5(%)	NTM6(%)	NTM(ALL)(%)	CoreNTMs(1+4)(%
1 Live animals and animal products	0.0	0.0	269.3	0.0	0.0	269.3	269.3
2 Vegetable products	0.0	0.0	263.7	0.0	0.0	263.7	263.7
3 Animal and vegetable oils and fats	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4 Products of food industry;	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5 Mineral products	0.0	0.0	5.0	0.0	0.0	5.0	5.0
6 Chemicals	0.0	0.0	9.8	0.0	0.2	9.9	9.8
7 Plastic and plastic materials,	0.0	0.0	0.0	0.0	0.2	0.2	0.0
8 Skin, raw material; leather, pelts,	0.0	0.0	189.6	0.0	0.0	189.6	189.6
9 Wood and wood products; charcoal,	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10 Wood pulp, vegetable pulp; paper and	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11 Textiles	0.0	0.0	105.8	0.0	0.0	105.8	105.8
12 Footwear, head-dress, umbrellas,	0.0	0.0	49.2	0.0	0.0	49.2	49.2
13 Rock products; gypsum, cement,	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14 Precious stones and semi-precious stones,	0.0	0.0	4.2	0.0	0.0	4.2	4.2
15 Base metals and base metal products	0.0	0.0	92.4	0.0	0.0	92.5	92.4
16 Machinery; equipment and mechanism;	0.0	0.0	0.0	0.0	0.1	0.1	0.0
17 Surface, air, water transport means	0.0	0.0	1.1	0.0	0.7	1.8	1.1
18 Optical, photographic, cinematographic,	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19 Firearms and munitions therefore	0.0	0.0	93.2	0.0	0.0	93.2	93.2
20 Various manufactured goods	0.0	0.0	19.2	0.0	0.0	19.2	19.2
21 Works of art, antiques, collections	0.0	0.0	0.0	0.0	0.0	0.0	0.0

USA	NTM1(%)	NTM3(%)	NTM4(%)	NTM5(%)	NTM6(%)	NTM(ALL)(%)	CoreNTMs(1+4)(%)
1 Live animals and animal products	17.2	0.0	0.9	0.0	516.7	534.8	18.1
2 Vegetable products	32.3	0.0	3.9	0.0	115.6	151.7	36.1
3 Animal and vegetable oils and fats	0.0	0.0	0.8	0.0	0.0	0.8	0.8
4 Products of food industry;	55.7	0.0	0.4	0.0	358.5	414.6	56.2
5 Mineral products	62.7	0.0	0.1	0.0	0.0	62.8	62.8
6 Chemicals	36.4	0.0	0.3	0.0	65.8	102.5	36.7
7 Plastic and plastic materials,	228.8	0.0	0.0	0.0	0.0	228.8	228.8
8 Skin, raw material; leather, pelts,	0.0	0.0	1.3	0.0	120.4	121.7	1.3
9 Wood and wood products; charcoal,	0.0	0.0	3.6	0.0	0.0	3.6	3.6
10 Wood pulp, vegetable pulp; paper and	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11 Textiles	26.1	0.0	0.7	0.0	263.5	290.3	26.9
12 Footwear, head-dress, umbrellas,	0.0	0.0	0.4	0.0	15.5	15.9	0.4
13 Rock products; gypsum, cement,	4.8	0.0	0.0	0.0	3.5	8.3	4.8
14 Precious stones and semi-precious stones,	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 Base metals and base metal products	342.3	0.0	0.0	0.0	2.7	344.9	342.3
16 Machinery; equipment and mechanism;	235.9	0.0	0.0	0.0	85.7	321.6	235.9
17 Surface, air, water transport means	145.5	0.0	0.0	0.0	320.1	465.6	145.5
18 Optical, photographic, cinematographic,	35.4	0.0	0.1	0.0	14.8	50.2	35.4
19 Firearms and munitions therefore	0.0	0.0	5.8	0.0	0.0	5.8	5.8
20 Various manufactured goods	10.4	0.0	0.2	0.0	65.9	76.6	10.6
21 Works of art, antiques, collections	0.0	0.0	0.8	0.0	0.0	0.8	0.8

Mexico	NTM1(%)	NTM3(%)	NTM4(%)	NTM5(%)	NTM6(%)	NTM(ALL)(%)	oreNTMs(1+4)(
1 Live animals and animal products	0.0	0.0	143.8	0.0	3.7	147.4	143.8
2 Vegetable products	0.0	0.0	20.3	0.0	4.5	24.8	20.3
3 Animal and vegetable oils and fats	0.0	0.0	65.3	0.0	1.6	66.9	65.3
4 Products of food industry;	0.0	0.0	56.5	0.0	4.7	61.1	56.5
5 Mineral products	0.0	0.0	36.7	0.0	0.2	36.9	36.7
6 Chemicals	0.0	-1.9	71.2	0.0	3.8	73.1	71.2
7 Plastic and plastic materials,	0.0	-17.2	4.2	0.0	0.7	-12.2	4.2
8 Skin, raw material; leather, pelts,	0.0	0.0	0.0	0.0	4.4	4.4	0.0
9 Wood and wood products; charcoal,	0.0	-30.8	0.0	0.0	3.0	-27.8	0.0
10 Wood pulp, vegetable pulp; paper and	0.0	0.0	0.0	0.0	0.8	0.8	0.0
11 Textiles	0.0	-27.2	0.2	0.0	5.2	-21.8	0.2
12 Footwear, head-dress, umbrellas,	0.0	-62.4	0.0	0.0	4.2	-58.2	0.0
13 Rock products; gypsum, cement,	0.0	-60.7	0.9	0.0	1.1	-58.7	0.9
14 Precious stones and semi-precious stones,	0.0	0.0	0.0	0.0	0.5	0.5	0.0
15 Base metals and base metal products	0.0	-19.7	2.3	0.0	1.0	-16.4	2.3
16 Machinery; equipment and mechanism;	0.0	0.0	3.8	0.0	0.9	4.8	3.8
17 Surface, air, water transport means	0.0	-7.1	61.8	0.0	0.7	55.4	61.8
18 Optical, photographic, cinematographic,	0.0	0.0	17.6	0.0	2.8	20.4	17.6
19 Firearms and munitions therefore	0.0	0.0	250.8	0.0	1.8	252.6	250.8
20 Various manufactured goods	0.0	-5.5	1.2	0.0	3.5	-0.8	1.2
21 Works of art, antiques, collections	0.0	0.0	0.0	0.0	2.2	2.2	0.0

Chile	NTM1(%)	NTM3(%)	NTM4(%)	NTM5(%)	NTM6(%)	NTM(ALL)(%)	CoreNTMs(1+4)(%)
1 Live animals and animal products	0.0	0.0	1.6	0.0	516.2	517.8	1.6
2 Vegetable products	4.9	0.0	2.5	0.0	520.1	527.4	7.4
3 Animal and vegetable oils and fats	707.1	0.0	0.1	0.0	480.9	1188.1	707.2
4 Products of food industry;	25.0	0.0	0.4	0.0	494.7	520.1	25.3
5 Mineral products	0.0	0.0	0.0	0.0	30.5	30.6	0.0
6 Chemicals	0.0	0.0	1.0	0.0	409.4	410.4	1.0
7 Plastic and plastic materials,	0.0	0.0	0.0	0.0	18.2	18.3	0.0
8 Skin, raw material; leather, pelts,	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9 Wood and wood products; charcoal,	0.0	0.0	0.1	0.0	417.5	417.6	0.1
10 Wood pulp, vegetable pulp; paper and	0.0	0.0	0.4	0.0	0.0	0.4	0.4
11 Textiles	0.0	0.0	0.0	0.0	30.2	30.2	0.0
12 Footwear, head-dress, umbrellas,	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13 Rock products; gypsum, cement,	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14 Precious stones and semi-precious stones,	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 Base metals and base metal products	0.0	0.0	0.0	0.0	2.6	2.7	0.0
16 Machinery; equipment and mechanism;	0.0	0.0	0.1	0.0	51.0	51.1	0.1
17 Surface, air, water transport means	0.0	0.0	1.5	0.0	0.0	1.5	1.5
18 Optical, photographic, cinematographic,	0.0	0.0	0.2	0.0	211.3	211.6	0.2
19 Firearms and munitions therefore	0.0	0.0	4.9	0.0	0.0	4.9	4.9
20 Various manufactured goods	0.0	0.0	0.0	0.0	11.6	11.6	0.0
21 Works of art, antiques, collections	0.0	0.0	1.7	0.0	74.6	76.2	1.7

1) The Type of NTMs
NTM1:Price control measures
NTM3:Automatic licensing measures
NTM4:Quantity control measures
NTM5:Monopolistic measures
NTM6:Technical measures

Source: Ando and Fujii (2001)

Table 3.1. Regional and Commodity Aggregation

Regional Aggregation	Commodity Aggregation	
	GTAP 5 classification	NTM classification
APEC Countries		
1. Australia (AUS)	1. Animal Products	
2. New Zealand (NZL)	Cattle et al.	Live Animals and Products
3. China (CHN)	Animal Products	
4. Japan (JPN)	Raw Milk	
5. Korea (KOR)	Cattle etc. Meat	
6. Indonesia (IND)	Meat Products	
7. Malaysia (MYS)	2. Vegetable	
8. Singapore (SGP)	Vegetables, Fruits, Nuts	Vegetable Products
9. Thailand (THA)	3. Other Agricultural Products	
10. Canada (CAN)	Paddy Rice	-
11. United States (USA)	Wheat	
12. Mexico (MEX)	Cereal Grains	
13. Chile (CHL)	Oil Seeds	
	Sugar Cane & Beet	
Other Regions	Crops nec.	
14. Other Asian Countries (OAS)	Forestry	
Hong Kong, Taiwan, and South Asia	Fishing	
15. Europe (EUR)	4. Wood	
All European countries including Central	Wood Products	Wood and Wood Products
and Eastern Europe	5. Minerals	
16. Rest of the World (ROW)	Coal	Mineral Products
All other countries	Oil	
	Gas	
	Minerals nec.	
	Mineral Products nec.	
	6. Vegetable and Animal Oil, Fats	
	Vegetable Oils and Fats	Animal and Vegetable Oil and Fats
	7. Food Products	
	Dairy Products	Products of Food
	Processed Rice	
	Sugar	
	Food Products nec.	
	Beverages and Tobacco	
	8.Textile	
	Wool and Silk	Textiles
	Textiles	
	Wearing Apparel	
	9. Leather	
	Leather Products	Skin, Raw Materials
	10. Paper Products	
	Paper Products and Publishing	Wood Pulp, Paper
	11. Chemical Products	
	Petroleum and Coal Products	Chemicals
	Chemical, Rubber et al.	
	12. Metal Products	
	Ferrous Metal	Base Metals and Metal Products
	Metals nec.	
	Metal Products	
	13. Transportation Equipment	
	Motor Vehicle and Parts	Surface, Air, Water Transport Means
	Transport Equipment nec.	
	14. Machinery Products	
	Electronic Equipment	Machinery
	Other Machinery and Eq.	
	15. Other Manufacturing	
	Manufactures nec.	Various Manufacturing Goods
	16. Services Industry	
	Electricity and Gas	-
	Water	
	Construction	
	Trade	
	Transport nec.	
	Air Transport	
	Sea Transport	
	Communication	
	Financial Services	
	Insurance	
	Business Services	
	Recleation and Other Services	
	PubAdmin/Defence/Health/Education	
	Dwellings	

Table 4.1-Table 4.13: The Estimated Changes in the Economic Welfare

Table 4.1: Simulation Results for Australia

Welfare Effect

	Tariff Elimination	Core NTM Elimination	Total NTM Elimination
1 AUS	-325.15	-93.13	-95.39
2 NZL	-77.59	-17.49	-18.19
3 CHN	237.72	13.45	13.83
4 JPN	315.75	108.9	110.18
5 KOR	153.66	56.53	56.86
6 IDN	18.08	2.79	2.88
7 MYS	15.21	3.33	3.46
8 SGP	-8.86	2.18	2.05
9 THA	20.52	2.51	3.05
10 CAN	-3.56	-1.01	-0.98
11 USA	-49.28	-22.17	-21.72
12 MEX	0.36	-0.04	-0.04
13 CHL	-2.57	-1.22	-1.19
14 OAS	68.28	21.33	21.64
15 EUR	191.37	62.6	64.19
16 ROW	-25.51	-21.48	-21.37
Total	528.4	117.09	119.27

Table 4.2: Simulation Results for New Zealand

Welfare Effect

	Tariff Elimination	Core NTM Elimination	Total NTM Elimination
1 AUS	-133.73	-87.85	-88.94
2 NZL	-3.28	7.45	7.03
3 CHN	43.52	3.96	4.17
4 JPN	138.57	105.1	106
5 KOR	23.84	17.23	17.41
6 IDN	2.62	1.48	1.49
7 MYS	0.41	1.47	1.47
8 SGP	2.58	1.85	1.89
9 THA	-0.4	-0.86	-0.87
10 CAN	3	6.03	6.07
11 USA	-27.57	-27.33	-26.97
12 MEX	1.56	1.24	1.24
13 CHL	0.16	0.58	0.62
14 OAS	16.44	7.73	7.81
15 EUR	70.67	41.18	42.05
16 ROW	-8.2	-3.38	-3.41
Total	130.2	75.89	77.08

Table 4.3: Simulation Results for China

Welfare Effect

	Tariff Elimination	Core NTM Elimination	Total NTM Elimination
1 AUS	70.95	2.83	0.54
2 NZL	9.41	-1.01	-2.38
3 CHN	-3643.33	228.13	100.93
4 JPN	4365.24	1736.22	1744.31
5 KOR	1415.64	303.8	285.95
6 IDN	-155.24	-50.04	-57.4
7 MYS	-5.53	-17.98	-25.89
8 SGP	357.85	114.91	108.26
9 THA	313.14	23.05	-20.72
10 CAN	32.35	3.69	4.37
11 USA	1446.77	262.96	207.83
12 MEX	-122.24	-28.5	-26.09
13 CHL	22.4	0.88	1.19
14 OAS	2448.75	490.69	481.3
15 EUR	1618.75	486.45	424.8
16 ROW	-448.97	-134.54	-116.99
Total	7725.95	3421.52	3110.03

Table 4.4: Simulation Results for Japan
Welfare Effect

	Tariff Elimination	Core NTM Elimination	Total NTM Elimination
1 AUS	2095.4	8.89	19.77
2 NZL	1707.33	-0.3	5.13
3 CHN	1351.66	1182.32	1045.96
4 JPN	186.53	-4991.79	-484.52
5 KOR	224.76	564.83	144.15
6 IDN	312.39	99.51	99.96
7 MYS	164.91	69.75	56.21
8 SGP	75.51	28.26	14.07
9 THA	918.41	500.52	76.11
10 CAN	-10.09	143.04	-5.87
11 USA	447.37	-89.49	-117.13
12 MEX	-66.51	80.76	-3.55
13 CHL	41.76	-8.68	-8.53
14 OAS	394.1	220.02	197.72
15 EUR	-400.93	-258.6	39.33
16 ROW	224.02	289.64	120.69
Total	7666.61	-2161.32	1199.49

Table 4.5: Simulation Results for Korea
Welfare Effect

	Tariff Elimination	Core NTM Elimination	Total NTM Elimination
1 AUS	20.18	-15	-15
2 NZL	33.96	0.3	0.3
3 CHN	550.29	29.42	29.42
4 JPN	589.81	20.3	20.3
5 KOR	-676.76	-27.62	-27.62
6 IDN	81.24	-6.39	-6.39
7 MYS	39.89	-4.47	-4.47
8 SGP	79.82	1.07	1.07
9 THA	-12.76	1.53	1.53
10 CAN	0.89	-4.91	-4.91
11 USA	410.53	-2.21	-2.21
12 MEX	2.25	0.18	0.18
13 CHL	29.96	-1.59	-1.59
14 OAS	238.93	10.08	10.08
15 EUR	243.79	-15.25	-15.25
16 ROW	318.28	68.2	68.2
Total	1950.3	53.63	53.63

Table 4.6: Simulation Results for Indonesia
Welfare Effect

	Tariff Elimination	Core NTM Elimination	Total NTM Elimination
1 AUS	19.64	-0.18	-1.54
2 NZL	11.29	1.1	-0.16
3 CHN	-48.09	-4.03	-3.82
4 JPN	-228.88	12.85	7.05
5 KOR	805.94	35.24	33.74
6 IDN	2484.28	135.84	137.15
7 MYS	97.27	8.14	2.44
8 SGP	-2.52	-0.53	-1.11
9 THA	28.63	4.83	0.96
10 CAN	12.36	-0.21	0.38
11 USA	-23.15	-3.95	-9.93
12 MEX	-5.71	-0.07	0.1
13 CHL	1.95	-0.78	-1.23
14 OAS	-17.73	-0.56	-0.63
15 EUR	-99.35	-3.53	-7.97
16 ROW	29.14	-4.28	-1.97
Total	3065.08	179.9	153.48

Table 4.7: Simulation Results for Malaysia
Welfare Effect

	Tariff Elimination	Core NTM Elimination	Total NTM Elimination
1 AUS	-10.13	-18.95	-19.78
2 NZL	0.01	-1.74	-1.83
3 CHN	15.15	-59.85	-60.48
4 JPN	785.81	794.54	794.47
5 KOR	-98.71	-76.61	-77.2
6 IDN	31.69	-5.94	-6.07
7 MYS	218.35	644.96	646.52
8 SGP	453.52	87.65	86.25
9 THA	92.27	1.89	-1.63
10 CAN	3.84	-3.97	-3.65
11 USA	-342.19	-341.34	-340.83
12 MEX	-1.74	3.52	3.51
13 CHL	-1.9	0.22	0.15
14 OAS	138.28	2.71	-1.16
15 EUR	-48.14	-78.75	-77.95
16 ROW	-54.13	-66.19	-66.67
Total	1181.99	882.15	873.65

Table 4.8: Simulation Results for Singapore
Welfare Effect

	Tariff Elimination	Core NTM Elimination	Total NTM Elimination
1 AUS	7.43	4.23	1.14
2 NZL	5.24	4.06	0.69
3 CHN	2.93	4.04	0.28
4 JPN	0.59	-2.32	0.35
5 KOR	1.07	0.27	0.19
6 IDN	1.46	-0.19	0.32
7 MYS	3.25	-12.47	1.89
8 SGP	-29.15	-19.22	-4.4
9 THA	-0.21	2.4	-0.2
10 CAN	0.23	-0.54	0.1
11 USA	1.1	3.22	0.02
12 MEX	0.16	-0.24	0.05
13 CHL	1.63	0.21	0.3
14 OAS	6.85	4.65	1.03
15 EUR	-10.47	-4.56	-1.77
16 ROW	13.3	6.01	2.17
Total	5.41	-10.46	2.15

Table 4.9: Simulation Results for Thailand
Welfare Effect

	Tariff Elimination	Core NTM Elimination	Total NTM Elimination
1 AUS	-7.83	-4.7	-7.53
2 NZL	5.81	-0.9	-2.89
3 CHN	75.57	16.67	12.86
4 JPN	1346.47	623.53	609.31
5 KOR	69.51	1.57	-0.7
6 IDN	36.18	12.44	7.81
7 MYS	107.95	0.93	-3.28
8 SGP	259.27	50.71	44.69
9 THA	150.86	574.82	565.52
10 CAN	10.41	14.51	14.1
11 USA	-181.05	-188.59	-196.99
12 MEX	-4.65	1.58	1.96
13 CHL	1.52	1.04	0.14
14 OAS	252.94	90.65	82.68
15 EUR	154.56	162.19	144.4
16 ROW	-336.08	-66.79	-81.8
Total	1941.44	1289.68	1190.26

Table 4.10: Simulation Results for Canada

Welfare Effect

	Tariff Elimination	Core NTM Elimination	Total NTM Elimination
1 AUS	-14.25	-37.56	-37.54
2 NZL	269.67	-31.54	-31.54
3 CHN	326.83	242.03	242.11
4 JPN	376.22	-75.35	-73.47
5 KOR	87.34	-4.52	-4.32
6 IDN	27.97	39.58	39.57
7 MYS	12.52	142.86	142.84
8 SGP	-2.12	-47.06	-47.07
9 THA	-10.31	6.08	6.04
10 CAN	44.27	-8368.83	-8367.96
11 USA	-544.45	2433.53	2430.23
12 MEX	-73.69	-142.89	-143.01
13 CHL	19.95	-1.16	-1.14
14 OAS	317.13	217.4	217.49
15 EUR	784.35	-36.04	-35
16 ROW	46.99	-14.42	-14.22
Total	1668.42	-5677.89	-5676.97

Table 4.11: Simulation Results for United States

Welfare Effect

	Tariff Elimination	Core NTM Elimination	Total NTM Elimination
1 AUS	189.04	122.61	128.71
2 NZL	140.12	73.71	79.17
3 CHN	1918.84	1614.23	1644.3
4 JPN	1632.4	2185.45	2220.59
5 KOR	489.87	364.34	375.54
6 IDN	475.29	323.58	331.94
7 MYS	97.31	49.3	51.12
8 SGP	30.31	-24.37	-23.56
9 THA	411.81	240.03	249.32
10 CAN	-805.58	-1117.84	-1119.33
11 USA	-7780.21	-6892.79	-7076.19
12 MEX	-937.67	-933.67	-950.57
13 CHL	78.86	83.79	85.46
14 OAS	2209.12	1591.95	1642.15
15 EUR	2514.82	2672.33	2708.16
16 ROW	3427.66	2193.02	2293.25
Total	4091.98	2545.66	2640.06

Table 4.12: Simulation Results for Mexico

Welfare Effect

	Tariff Elimination	Core NTM Elimination	Total NTM Elimination
1 AUS	23.59	3.71	3.63
2 NZL	41.53	17.7	19.58
3 CHN	80.1	-33.41	-34.56
4 JPN	236.31	30.08	16.34
5 KOR	128.74	-8.73	-8.96
6 IDN	33.39	-4.42	-4.36
7 MYS	23.96	-3.17	-3.04
8 SGP	26.82	0.93	0.79
9 THA	12.54	-5.11	-4.88
10 CAN	22.14	-42.48	-44.56
11 USA	-1382.16	227.19	289.8
12 MEX	493.8	24.12	-20.25
13 CHL	68.62	22.25	22.73
14 OAS	149.42	-9.71	-12.12
15 EUR	746.79	141.36	123.68
16 ROW	443.74	86.89	79.04
Total	1149.31	447.22	422.85

Table 4.13: Simulation Results for Chile

Welfare Effect

	Tariff Elimination	Core NTM Elimination	Total NTM Elimination
1 AUS	-2.93	-0.6	-0.76
2 NZL	1.94	0.4	0.56
3 CHN	27.96	0.02	0.08
4 JPN	29.5	9.53	10.54
5 KOR	28.77	6.83	7.35
6 IDN	2.58	0.07	0.07
7 MYS	1.84	0.36	0.4
8 SGP	3.36	0.71	0.82
9 THA	2.35	-0.36	-0.32
10 CAN	0.71	1.41	1.47
11 USA	34.08	1.16	2.75
12 MEX	27.88	6.73	7.38
13 CHL	-265.16	-42.44	-50.57
14 OAS	18.51	1.4	1.71
15 EUR	55.5	13.46	15.78
16 ROW	179.13	52.03	59.9
Total	146.05	50.72	57.15