# Chapter 3

# Impacts of NTMs on Trade and Welfare: A Case Study on ASEAN

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# CHAPTER 3

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## 1. Introduction

NTMs may affect positively or negatively on quantity and/or price of traded goods. According to the United Nations Conference on Trade and Development (UNCTAD) (2015) classification, all NTMs are grouped into 16 chapters according to their characteristics. The first distinction is whether a NTM is an import related or export related measure. Within the import related NTMs, the second distinction separates them into technical or non-technical measures. The taxonomy of NTMs under the UNCTAD–Multi-Agency Support Team (MAST) goes beyond the 16 chapters to divide each chapter's branch into sub-chapters. Given the wide array of NTMs, as discussed in Chapter 2, it is not hard to see why the economic effect of NMTs is complex, therefore ambiguous, as they may act together, generating positive or negative impact when aggregated.

The Economic Research Institute for ASEAN and East Asia (ERIA) and UNCTAD have taken a lead in the formidable task of gathering and classifying information on NTMs in ASEAN countries and creating a publicly accessible database (asean.i-tip.org). Using this newly developed database, Ing and Cadot (2017) attempt to estimate ad valorem equivalents of NTMs for Association of Southeast Asian Nations (ASEAN) countries. Once the ad valorem equivalents are estimated they can be used for counterfactual experiments conducted with applied economic models. It should be noted that the ambiguity of NTMs' economic effect may persist even when the ad valorem equivalents are estimated. Despite this persistence, Ing and Cadot (2017) can be a desirable approach to quantitatively studying the economic effect of NTMs when the country coverage expands beyond ASEAN in subsequent studies.

An alternative approach would be to narrow the definition of NTMs. According to the OECD, 'non-tariff measures are measures other than normal tariffs which have the effect of restricting trade between nations.[1] In this study, we assume that the NTMs' trade-restricting effect can be indirectly captured by fixed costs, which deter firms from entering the market. Given this assumption, we have two main objectives in this study.

[1] http://www.oecd.org/tad/ntm/

First, we quantitatively estimate the fixed costs for the ASEAN countries by implementing a heterogeneous firms model of international trade. Second, we conduct experimental simulations for the welfare effect of lowering the fixed costs, by using the computable general equilibrium (CGE) model with heterogeneous firms. However, with this assumption, we forgo the potentially positive effect of introducing NTMs. For example, some ASEAN countries may lack a measure to protect the natural environment, or to establish safety standards, or to protect workers, and so on. If the country were to set up a new measure, this would have economic benefits, despite the potential effect of restricting trade. In this study, we do not consider the inception of such policy measures.

To obtain quantitative estimates of the fixed costs, we introduce a heterogeneous firms module into our CGE model, by following the recent development in CGE modeling. Dixon and Rimmer (2011) propose an encompassing model of different trade specifications such as Armington (1969), Krugman (1980) and Melitz (2003), and in this paper we referred to as the AKME module. Stimulated by their work, Oyamada (2013) developes a prototype global CGE model incorporating the AKME module, and Oyamada (2014) investigates the properties of the AKME module focusing on preference parameters. More recently, Dixon et al. (2016) conduct a thorough analysis on their own AKME module. Dixon et al. (2016) and Oyamada (2014) are amongst a few studies that introduced the AKME module into the CGE model. Amongst the handful of studies, Balistreri and Rutherford (2012) examine the difference in trade specifications on CGE simulation outcomes. We introduce the AKME module into the standard GTAP model (Hertel 1997 and McDougall 2003), following the modeling strategy in Dixon and Rimmer (2011) and Oyamada (2013).

We obtain three different kinds of fixed cost by calibrating the CGE model with heterogeneous firms. They are the fixed costs of entry, of domestic sales, and of exporting. All firms bear the first fixed cost of starting up their business to enter the market. Some firms are productive enough to make a profit in the domestic market or in foreign markets. Thus, given the fixed costs and their productivity level, not all the firms are able to sell domestically or internationally. These fixed costs have the effect of restricting trade between countries, so we may indirectly capture the correspondence to the NTMs' economic effect. Once the fixed costs are obtained, we conduct experimental simulations for the welfare effect, by asking what happens if the fixed costs of domestic sales and of exporting are lowered.

We applied this methodology to the ASEAN countries' manufacturing industry. The ASEAN countries have been lowering import tariffs even before the establishment of the ASEAN Economic Community (AEC) in 2015. As a destination of their exports and a source of their imports, ASEAN has become increasingly important to the member countries (Table 3.1). Given the AEC's tariff reduction, it can be argued that the relative importance of NTMs has been increasing. Also, as production networks or the global value chain has spread in the region, it can be interesting to explore how the fixed costs, as a proxy for the NTMs, affect them if they were lowered within the ASEAN countries.

For this purpose, we provide a brief overview of the AKME module and the CGE model in the next section, followed by a description of the database and simulation settings. After reporting the results, a summary concludes the study. The preliminary result shows that the lowered fixed costs has profound effects on trade and welfare.

There are several caveats in this study that should be noted with caution. First, because we do not have access to the NTM data as this study is conducted, we cannot establish the quantitative link between fixed costs and NTMs to gauge their share of the fixed costs. Second, potential benefits of introducing NTMs are ignored as we focus on the trade-restricting nature of the NTMs. Third, as we describe later in this chapter, simulation experiments are designed for the aggregated manufacturing sector. Given these caveats, the results on trade and welfare effects presented in this chapter should be considered as illustrative outcomes based on experiments with a prototype CGE model.

Table 3.1. Total Export and Import, and Shares of ASEAN, 2011 (billion USD, %)

| | Export (USD) | ASEAN (%) | Import (USD) | ASEAN (%) |
|---|---|---|---|---|
| Brunei Darussalam | 9.2 | 10.7 | 5.2 | 31.4 |
| Cambodia | 10.1 | 8.3 | 12.1 | 49.8 |
| Indonesia | 209.2 | 14.7 | 205.1 | 24.3 |
| Lao PDR | 3.3 | 36.4 | 5 | 58.1 |
| Malaysia | 239 | 19.1 | 225.2 | 27.8 |
| The Philippines | 68 | 12.4 | 91.9 | 20.2 |
| Singapore | 302.4 | 25.5 | 275.6 | 15.5 |
| Thailand | 248.5 | 18.4 | 262.6 | 14.7 |
| Viet Nam | 97.3 | 12.4 | 131.6 | 16.5 |

Source: Author's calculation, based on Aguiar et al. (2016).

## 2. Model

Following Dixon and Rimmer (2011) and Oyamada (2013), we develop a CGE model of global trade with heterogeneous firms. The salient features in this version of the model are the treatment of domestic market and the agent based import sourcing.

### 2.1. AKME Module's System of Equations

We briefly describes the AKME module implemented in a CGE model. In region $s$ the good $X_s$ is an aggregate of domestically supplied good $D_s$ and imported good $Q_{rs}$ from region $r$, shown in Equation (3.1).

$$X_s = \theta_s \left( \delta_s \widetilde{N_s} D_s^{\frac{\sigma-1}{\sigma}} + \sum_r \delta_{rs} \widetilde{N_{rs}} Q_{rs}^{\frac{\sigma-1}{\sigma}} \right)^{\frac{\sigma}{\sigma-1}} \tag{3.1}$$

A constant elasticity of substitution (CES) function is used for the aggregation, with substitution elasticity $\sigma > 1$, scaling parameter $\theta_s$, and the CES weight $\delta_s$ for the domestic good and $\delta_{rs}$ for the imported good. The number of firms suppling their goods in region $s$ is $\widetilde{N_s}$, and the ones exporting their goods from region $r$ to $s$ is $\widetilde{N_{rs}}$.

The price index dual to the CES aggregate of good $X_s$ is defined in Equation (3.2), where price $p_s$ corresponds to the domestic good $D_s$ and tariff-inclusive price $(1-\tau_{rs})p_{rs}$ for the imported good $Q_{rs}$ with the bilateral tariffs $\tau_{rs}$.

$$P_s = \left(\delta_s^{\sigma}\widetilde{N_s}p_s^{1-\sigma} + \sum_r \delta_{rs}^{\sigma}\widetilde{N_{rs}}\{(1+\tau_{rs})p_{rs}\}^{1-\sigma}\right)^{\frac{1}{1-\sigma}} \tag{3.2}$$

Each firm produces a different variety of the good by using composite input $Z_r$ and paying fixed cost to set up the business in region $r$, $H_r$. Additionally, firms selling their products to domestic market $r$ incur another fixed cost $F_r$, whereas exporting firms face fixed costs $F_{rs}$ to serve foreign markets. Firms set the profit maximising markup price $p_r$ for domestic market and $p_{rs}$ for foreign markets, given their productivity $\varphi$ and price of the composite input $\boldsymbol{p}_r$, where $\eta = -1/\sigma$ in Equation (3.3) and (3.4).

$$p_r = \left(\frac{1}{1+\eta}\right)\frac{\boldsymbol{p}_r}{\varphi_r} \tag{3.3}$$

$$p_{rs} = \left(\frac{1}{1+\eta}\right)\frac{\boldsymbol{p}_r}{\varphi_{rs}} \tag{3.4}$$

The unit input price is determined by the balance of output volumes and the composite input $Z_r$ net of fixed costs in Equation (3.5).

$$\widetilde{N_r}\frac{D_r}{\varphi_r} + \sum_s \widetilde{N_{rs}}\frac{Q_{rs}}{\varphi_{rs}} = Z_r - \widetilde{N_r}F_r - \sum_s \widetilde{N_{rs}}F_{rs} - N_r H_r \tag{3.5}$$

The proportion of firms in region $r$ supplying to domestic market $E_r$ and to foreign market $E_{rs}$ is related to the average productivities of the firms in the corresponding market, respectively $\varphi_r$ and $\varphi_{rs}$ (Equation (3.6) and (3.7)).

$$E_r = \left(\frac{\gamma}{\gamma-\sigma+1}\right)^{\frac{\gamma}{\sigma-1}}\varphi_r^{-\gamma} \tag{3.6}$$

$$E_{rs} = \left(\frac{\gamma}{\gamma-\sigma+1}\right)^{\frac{\gamma}{\sigma-1}}\varphi_{rs}^{-\gamma} \tag{3.7}$$

Each firm's productivity level is drawn from the Pareto distribution with the shape parameter $\gamma$. The firm's products supplied to domestic $D_r$ and/or abroad $Q_{rs}$ relative to the corresponding fixed cost $F_r$ or $F_{rs}$ are associated with the average productivities (Equation (3.8) and (3.9)).

$$\varphi_r = \frac{\gamma - \sigma + 1}{\gamma(\sigma - 1)} \left( \frac{D_r}{F_r} \right) \tag{3.8}$$

$$\varphi_{rs} = \frac{\gamma - \sigma + 1}{\gamma(\sigma - 1)} \left( \frac{Q_{rs}}{F_{rs}} \right) \tag{3.9}$$

Number of firms $N_r$ is determined in Equation (3.10), equating total value of fixed costs to total value of products adjusted by substitution elasticity.

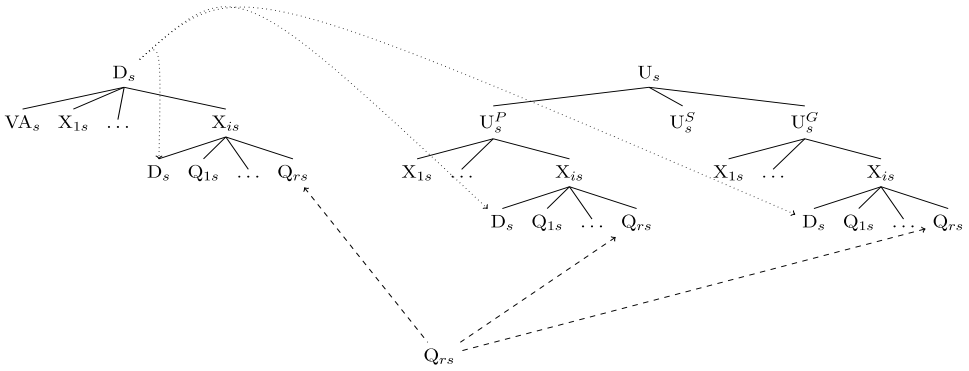
$$\boldsymbol{p}_r \left( \widetilde{N_r} F_r + \sum_s \widetilde{N_{rs}} F_{rs} + N_r H_r \right) = -\eta \left( \widetilde{N_r} p_r D_r + \sum_s \widetilde{N_{rs}} p_{rs} Q_{rs} \right) \tag{3.10}$$

The system of equations (3.1) through (3.10) are incorporated into a CGE model.

## 2.2. CGE model

The AKME module is incorporated into a CGE model of global trade, namely the standard GTAP model (Hertel (1997) and McDougall (2003)). Modified for the incorporation, structure of the model is summarised in Figure 3.1. Tree at the lefthand side is for domestic producers' nested demand structure. For the production of $D_s$ , the value added composite $VA_s$ and intermediate inputs $X_{is}$ form a input composite by the Leontief production function, where $i \in I$ for the traded goods. The value added composite by CES function is made up of skilled and unskilled labor, capital and specific factors such as land and natural resources, which all of them are exogenously given.

Figure 3.1. Schematic View of the Model Structure




Source: Author.

Domestically produced good $D_s$ is supplied to producers for intermediate input use, to private household for consumption, and to government household for public expenditure. Recall from Equation (3.1), domestically supplied good $D_s$ is aggregated with imported goods $Q_{rs}$ to form the composite good $X_{is}$.

In the right-hand tree, representative household's utility $U_s$, the basis of welfare measure, is derived from sub-utilities of private household $U_s^P$, government household $U_s^G$ and savings $U_s^S$, via the Cobb–Douglas-type function. The private household's utility is, then, determined by the constant difference elasticity function of the composite goods $X_{is}$, whereas for the government household utility by the CES function. Because of the non-homotheticity in private household's utility, the adjustment to sift distribution parameter of expenditure is introduced by following McDougall (2003).

## 3. Data and Simulation Experiments

We rely on the database, the Global Trade Analysis Project (GTAP) Data Base version 9.2 (Aguiar et al., 2016), to calibrate the fixed costs as well as to curry out simulations for the welfare effect of lowering the fixed costs. The GTAP Database stores vast economic information covering 57 industrial sectors for 141 regions. Because the focus of this study is on the ASEAN countries and for experimental purpose, we aggregate the database to three sectors and 10 regions (see Appendix Table A.1 and A.2). We assume that producers in primary sector (Prim) and services sector (Srvc) are under the perfect competition and their production technologies are constant returns to scale. Primary sector employs the specific factors of production such as land and natural resources. We also assume that firms in the manufacturing sector (Mnfc) are operating under the imperfect competition, and the AKME module is applied to this sector. As for the regional aggregation, the database has all the ASEAN member countries except for Myanmar. Key parameters used in the AKME module are substitution elasticity $\sigma$ and $\gamma$, and they are set at 3.4 and 5.0 for all regions, taken from Aguiar et al. (2016) and Balistreri et al. (2011). The value of extensive margin is set at 0.6, following Zhai (2008) for the calibration. Number of firms in each region is normalised to be unity for the calibration.

As a result, we obtain share of fixed costs in total cost as reported in Table 3.2. Given the region-generic parameter values, there are not much variations in the calibrated share of fixed costs on average. It is around 10 percent in the total cost for a firm to set up business or start operating in the ASEAN countries ($H_r$). Having established the business, a firm may incur further fixed cost to supply domestically ($F_r$), which amount to about 4 to 8 percent. Or a firm may run up 11 to 14 percent fixed costs to export ($F_{rs}$) additionally if it serves all foreign markets.

Table 3.2. Share of Fixed Costs in Total Cost on Average (%)

| | $H$ | $F$ | sum $F_{rs}$ |
|---|---|---|---|
| Brunei Darussalam | 9.9 | 7.4 | 12.9 |
| Cambodia | 10.0 | 5.4 | 13.7 |
| Indonesia | 10.0 | 8.5 | 10.6 |
| Lao PDR | 10.3 | 4.2 | 12.7 |
| Malaysia | 10.0 | 5.6 | 13.3 |
| The Philippines | 10.2 | 6.0 | 11.6 |
| Singapore | 9.9 | 3.9 | 15.7 |
| Thailand | 10.0 | 5.7 | 13.1 |
| Viet Nam | 10.2 | 5.7 | 12.6 |

$H$ = cost of set up business, $F$ = fixed cost to domestic supply, sum $F_{rs}$ = fixed cost to export
Source: Author's computation.

With the estimated fixed costs, it is possible to conduct a set of simulation experiments to examine the effect of lowering the fixed costs. There are three simulation experiments to implement in this study, and they are;

S1 Lower the fixed cost to export $\boldsymbol{F_{rs}}$

S2 Lower the fixed cost to domestic sales $\boldsymbol{F_{r}}$

S3 All of the above (S1+S2) at the same time.

We assume these experiments applied to the ASEAN countries, and that the degree of lowering the fixed cost is set to be 20 percent.[2] We can think of the ASEAN Economic Community reducing the barriers to trade for the intra-regional trade. All the simulations are implemented by using the GEMPACK economic modeling software (Harrison and Pearson 1996).

## 4. Simulation Results

Table 3.3 reports the simulation results on the ASEAN countries' manufacturing export volume change. Because of the lowered fixed cost to export to ASEAN, it is clear that all manufacturing export volume increase (S1). However, the large changes in export volume to ASEAN are explained as their export destinations are shifted from the rest of world to the ASEAN countries. When the fixed cost to domestic sales is reduced (S2), similar shifts are observed for all ASEAN countries, this time from export to domestic markets, resulted in falls in export volume both in ASEAN and total, except for Brunei Darussalam. The reduced fixed cost to

[2] The degree of reduction in the fixed cost is set arbitrary. Following the studies in reduction of NTBs, it is possible to carry out simulation experiments with a range, for example, from 7 percent (Hayakawa and Kimura, 2014), 20 percent (Petri and Plummer, 2016), to 50 percent (Francois et al., 2011).

domestic sales generates more profit for firms in Brunei Darussalam, and the increased profit attracts more firms to enter domestic market and export to the rest of world. This effect of new entrants outweighs the negative export volume change to ASEAN, for the total export volume change in Brunei Darussalam (5.0). As the two reductions in fixed costs are combined together (S3), the effects on manufacturing export volume are mixed, depending on which effect of lowering fixed cost dominates others.

Table 3.3 Effect of Lowering Fixed Costs on Manufacturing Export Volume (%)

| | ASEAN | | | Total | | |
|---|---|---|---|---|---|---|
| | S1 | S2 | S3 | S1 | S2 | S3 |
| Brunei Darussalam | 33.5 | -0.8 | 30.6 | 19.5 | 5.0 | 22.8 |
| Cambodia | 22.2 | -15.4 | 4.1 | 3.3 | -8.8 | -5.5 |
| Indonesia | 20.1 | -17.9 | -1.0 | 3.9 | -11.4 | -8.1 |
| Lao PDR | 11.5 | -15.1 | -3.6 | 3.8 | -11.8 | -7.2 |
| Malaysia | 16.7 | -12.6 | 2.2 | 1.9 | -6.1 | -4.6 |
| The Philippines | 17.0 | -18.4 | -3.8 | 1.2 | -11.9 | -10.7 |
| Singapore | 16.6 | -6.6 | 9.0 | 5.5 | -0.9 | 4.0 |
| Thailand | 16.5 | -17.3 | -2.8 | 2.0 | -11.6 | -9.6 |
| Viet Nam | 18.7 | -18.8 | -2.8 | 1.1 | -12.1 | -10.9 |

Note: S1: lower $F_{rs}$, S2: lower $F_r$, S3: S1+S2
Source: Author's simulation results.

Table 3.4 reports the results on manufacturing import volume. Import volumes increase as the fixed costs to export from the ASEAN countries are decreased (S1). The more firms export, the more demands for intermediate inputs and primary factor inputs to support the increased production activities. This derived demand for intermediate inputs explains the increased import of intermediate inputs. The rise in primary factor demands is translated into higher income, which also explains the import volume increase with higher consumption of imported goods. As the fixed cost to domestic sales is lowered, then shift towards domestic market diminishes the import volume (S2). The magnitude of negative impacts are outstanding for most of the ASEAN countries. Number of firms in Singapore and Brunei Darussalam are significantly increased. Total effects on import volume (S3) can be seen as a combination of the two simulation experiments.

Welfare effects are reported in Table 3.5. The logic to explain the welfare gains from lowering the fixed costs is following. The less a manufacturing firm incurs the fixed costs to export and to sell domestically, the more firms will enter into the markets. Although output per firm decreases because of the new entrants, aggregate sales and export volume increase. This indicates that more variety of goods becomes available and it contributes to higher sub-utilities, thereby leading to the overall welfare gain. It implies that the preference for variety dominates the price increase which is caused by the entry of firms with lower productivity. However, due to the higher prices, there is an exception found in Lao PDR's small negative welfare result in S2.

Table 3.4. Effect of Lowering Sunk Costs on Manufacturing Import Volume (%)

| | ASEAN | | | Total | | |
|---|---|---|---|---|---|---|
| | S1 | S2 | S3 | S1 | S2 | S3 |
| Brunei Darussalam | 13.8 | -12.5 | -0.6 | 2.2 | -11.2 | -9.4 |
| Cambodia | 17.2 | -13.8 | 2.1 | 6.3 | -8.7 | -2.6 |
| Indonesia | 15.6 | -11.8 | 2.3 | 3.1 | -10.8 | -7.7 |
| Lao PDR | 19.8 | -15.3 | 3.3 | 11.3 | -10.8 | 0.3 |
| Malaysia | 16.6 | -11.3 | 3.9 | 4.4 | -9.6 | -5.4 |
| The Philippines | 17.6 | -13.3 | 2.3 | 4.2 | -9.9 | -6.0 |
| Singapore | 18.6 | -15.0 | 1.3 | 6.1 | -10.0 | -4.3 |
| Thailand | 18.2 | -13.2 | 2.8 | 4.6 | -10.8 | -6.6 |
| Viet Nam | 16.7 | -11.4 | 3.9 | 2.7 | -7.5 | -4.8 |

Note: S1: lower $F_{rs}$, S2: lower $F_r$, S3: S1+S2
Source: Author's simulation results.

Table 3.5. Effect of Lowering Sunk Costs on Welfare (%)

| | S1 | S2 | S3 |
|---|---|---|---|
| Brunei Darussalam | 0.5 | 1.0 | 1.5 |
| Cambodia | 2.4 | 0.6 | 2.8 |
| Indonesia | 0.3 | 2.2 | 2.4 |
| Lao PDR | 2.4 | -0.1 | 2.1 |
| Malaysia | 1.4 | 4.1 | 5.3 |
| The Philippines | 0.3 | 1.5 | 1.7 |
| Singapore | 3.1 | 3.0 | 5.7 |
| Thailand | 1.5 | 3.5 | 4.8 |
| Viet Nam | 0.7 | 3.2 | 3.8 |

Note: S1: lower $F_{rs}$, S2: lower $F_r$, S3: S1+S2
Source: Author's simulation results.

## 5. Summary

We assumed that the trade-restricting effect of NTMs can be indirectly captured by fixed costs which prevent firms from entering into market. Given this assumption, we estimated the fixed costs to entry, domestic sales, and export for the ASEAN countries' manufacturing industry, by calibrating the CGE model with heterogeneous firms. Adopted the country-generic parameter value, we obtained the fixed costs that are similar in terms of the share in total cost for the ASEAN countries. However, these fixed costs have the effect of restricting trade between countries as revealed in the experimental simulations of lowering them. Profound total trade volume effects are observed for reducing the fixed cost to export, and exports within ASEAN significantly rise. On the other hand, the lowered fixed cost to domestic sales has large negative impact on trade volume. As for the overall welfare gain, the lowered fixed costs lead to higher welfare for nearly all the cases for ASEAN countries.

Several limitations to this study warrant further investigation, not to mention the ongoing development on the CGE model with heterogeneous firms. The relation between NTMs and the fixed costs can be further reviewed with burgeoning literature as presented in this book. There is a scope for the region specific parameters to be utilised for future study. Also, it would be interesting to consider the economic effect of lowering fixed cost to entry, which is not included in this study.

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# Appendix

Table A.1. Sectoral Aggregation

| No. | Sector | GTAP 57 sectors |
|---|---|---|
| 1 | Prim | Paddy rice; Wheat; Cereal grains nec; Vegetables, fruit, nuts; Oil seeds; Sugar cane, sugar beet; Plant-based fibers; Crops nec; Cattle, sheep, goats, horses; Animal products nec; Raw milk; Wool, silk-worm cocoons; Forestry; Fishing; Coal; Oil; Gas; Minerals nec; Meat: cattle, sheep, goats, horse; Meat products nec; Vegetable oils and fats; Dairy products; Processed rice; Sugar; Food products nec; Beverages and tobacco products. |
| 2 | Mnfc | Textiles; Wearing apparel; Leather products; Wood products; Paper products, publishing; Petroleum, coal products; Chemical, rubber, plastic prods; Mineral products nec; Ferrous metals; Metals nec; Metal products; Motor vehicles and parts; Transport equipment nec; Electronic equipment; Machinery and equipment nec; Manufactures nec. |
| 3 | Srvc | Electricity; Gas manufacture, distribution; Water; Construction; Trade; Transport nec; Sea transport; Air transport; Communication; Financial services nec; Insurance; Business services nec; Recreation and other services; PubAdmin/ Defence/ Health/ Educat; Dwellings. |

Source: Author's aggregation.

Table A.2. Regional Aggregation

| No. | Region | GTAP 141 regions |
|---|---|---|
| 1 | Brunei | Brunei Darussalam. |
| 2 | Cambodia | Cambodia. |
| 3 | Indonesia | Indonesia. |
| 4 | LaoPDR | Lao People's Democratic Republ. |
| 5 | Malaysia | Malaysia. |
| 6 | Philippines | Philippines. |
| 7 | Singapore | Singapore. |
| 8 | Thailand | Thailand. |
| 9 | VietNam | Viet Nam. |
| 10 | RestofWorld | Australia; New Zealand; Rest of Oceania; China; Hong Kong; Japan; Korea; Mongolia; Taiwan; Rest of East Asia; Rest of Southeast Asia; Bangladesh; Nepal; Pakistan; Sri Lanka; Rest of South Asia; Canada; United States of America; Mexico; Rest of North America; Argentina; Bolivia; Brazil; Chile; Colombia; Ecuador; Paraguay; Peru; Uruguay; Venezuela; Rest of South America; Costa Rica; Guatemala; Honduras; Nicaragua; Panama; El Salvador; Rest of Central America; Dominican Republic; Jamaica; Puerto Rico; Trinidad and Tobago; Caribbean; Austria; Belgium; Cyprus; Czech Republic; Denmark; Estonia; Finland; France; Germany; Greece; Hungary; Ireland; Italy; Latvia; Lithuania; Luxembourg; Malta; Netherlands; Poland; Portugal; Slovakia; Slovenia; Spain; Sweden; United Kingdom; Switzerland; Norway; Rest of EFTA; Albania; Bulgaria; Belarus; Croatia; Romania; Russian Federation; Ukraine; Rest of Eastern Europe; Rest of Europe; Kazakhstan; Kyrgyzstan; Tajikistan; Rest of Former Soviet Union; Armenia; Azerbaijan; Georgia; Bahrain; Iran Islamic Republic of; Israel; Jordan; Kuwait; Oman; Qatar; Saudi Arabia; Turkey; United Arab Emirates; Rest of Western Asia; Egypt; Morocco; Tunisia; Rest of North Africa; Benin; Burkina Faso; Cameroon; Cote d'Ivoire; Ghana; Guinea; Nigeria; Senegal; Togo; Rest of Western Africa; Central Africa; South Central Africa; Ethiopia; Kenya; Madagascar; Malawi; Mauritius; Mozambique; Rwanda; Tanzania; Uganda; Zambia; Zimbabwe; Rest of Eastern Africa; Botswana; Namibia; South Africa; Rest of South African Customs ; Rest of the World. |

Source: Author's aggregation.