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ASEAN FOOD AND BEVERAGE ALLIANCE

NUTRITION LABELLING ON PREPACKAGED FOOD:
IMPACT ON TRADE IN ASEAN

SUPPORTED BY

FIA FOOD INDUSTRY ASIA

DEVELOPED BY

UNIVERSITY OF MALAYA

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EXECUTIVE SUMMARY

This study assesses the impact of nutrition labelling in the prepackaged food (PPF) sector in the member countries of the Association of Southeast Asian Nations (ASEAN). For this purpose, the study adopts a two-fold (macro-micro) approach to the evaluation and impact of mandatory, non-harmonised nutrition labelling on intra-ASEAN exports. The macro-analysis sets the background of the study. It involves an analysis of the export performance and regulatory framework of the PPF sector for the period 2000-2015. This is followed by a micro-impact assessment of nutrition labelling to identify the complexity of the regulations in a regional context, the key business compliance costs and trade distortion effects of this measure through a firm-level survey and a country-case study conducted in 2017.

The PPF sector is a promising segment of the foodstuffs industry in regional trade; it recorded a higher annual average growth rate (15.11% for the period 2000-2015) and a higher share of intra-regional exports in global exports (56.1% in 2015), relative to foodstuffs.

The PPF sector is found to be highly regulated; 42.75% of the total public non-tariff measures (NTMs) in ASEAN is from this sector. Labelling for technical barriers to trade (TBT) reasons (B31) is prominent in the PPF sector, accounting for approximately 20.08% of the TBT regulations. Since labelling is a generic requirement for foodstuffs, the export coverage ratios for products affected by the B31 measure in the PPF sector by country-subsector-pairs are found in most cases to be close to 100%.

It is therefore more meaningful to inspect the regulatory distance for labelling across country-pairs to identify differences, if any, in the regulatory framework for the PPF sector. The B31 regulations are found to be somewhat similar across ASEAN for PPF, relative to foodstuffs in general. Despite the closer regulatory distance in specific trading pairs, nuanced differences in the labelling requirements prevail across the region. Specifically, regulatory incoherence is evident from the breakdown of the seven core elements of nutrition labelling (nutrition labelling falls under B31). The non-harmonised labelling regulation and the high export coverage of labelling would therefore have profound implications for export performance of PPF.

Accordingly, the empirical results from the study confirm the lacklustre export performance of the PPF sector. Unexhausted trade potentials (with a low average trade efficiency score of 0.22) are evident in regional PPF trade. Empirical results therefore suggest that policy instruments beyond tariffs, such as NTMs and other behind-the-border barriers to trade, may indeed explain the existing trade inefficiencies in this sector.

Taken together, the macro-findings for ASEAN that relate to the high incidence of labelling, differences in regulatory distance for labelling between the AMS, regulatory incoherence in nutrition labelling and the low trade efficiency in PPF, justify the subsequent micro-firm-level analysis of the impacts of nutrition labelling per se in the PPF sector.

The market survey and interviews/ direct discussions with 26 food exporters in ASEAN, reveal nutrition (function) claims and nutrition reference values (NRVs) in the region are cited by many exporters to be more complex than the Codex benchmark. Importantly, the inconsistencies in regulations are noted even for the established markets in ASEAN, such as Malaysia, Thailand, the Philippines and Indonesia. Multiple costs are incurred in complying with nutrition labelling due to an introduction or change in legislative requirement in the ASEAN export market. Apart from the impact on business compliance costs, complex nutrition labelling schemes are found to distort trade through product price increases and/or market- and product losses. This confirms that though nutrition labelling is a NTM, it can turn out to be a NTB when the complexity of the regulation increases to the point of limiting trade.

Not all firms surveyed support nutrition labelling be made mandatory on PPF in ASEAN. However, all firms want some form of consistency in nutritional labelling, and therefore support the alignment of the guidelines with Codex and the harmonisation of the guidelines on grounds that common labelling schemes are needed to reduce compliance costs and address the existing information overload on nutrition for consumers for some food products.

It is recognised that a single nutrition label may not be practical for the region, and more importantly, consensus from regulators in ASEAN is needed to move forward the harmonisation process.

In this regard, the study forwards selective intervention to move ahead with the harmonisation of mandatory guidelines and streamlining of voluntary measures. This includes a three-step approach. First, adopting a standard format, aligned to Codex, and identifying the minimum requirements within the basic nutrient list of Codex that should be made mandatory. Second, streamlining NRVs as a priority. Third, adopting consensus for the remaining elements: a standardised NIP format/design; a common declaration list of carbohydrates, and list of minerals and vitamins; a common tolerance limit (based on necessity), rounding rules and decimal point conditions that are acceptable by all ASEAN Member States; a common list of claims and criteria for nutrition (functional) claims.

The above recommendations suggest that: (a) not all elements of nutrition labelling can be made mandatory and harmonised; (b) even within those elements that should be mandatory, they need to be done sequentially, that is to align with the Codex guidelines before the identification of the mandatory requirements; and (c) a common consensus, list or criteria for the remaining voluntary guidelines be followed by MRAs. Finally, ASEAN should also nurture bottom-up rapprochement especially in dealing with the harmonisation or streamlining of technical requirements. Representation from the food industry in regional working groups is essential to inform the discussion on the complexity of the regulations, the extent of incoherence in the regulations, and more importantly on the minimum similarities in the requirements that would benefit the industry and facilitate regional trade.

1. INTRODUCTION

1.1 BACKGROUND

Regulatory heterogeneity is identified as a challenge for increasing trade, harmonising standards, and ultimately creating a single integrated Association of Southeast Asian Nations (ASEAN) market, which was a major objective in the formation of the ASEAN Economic Community (AEC) in 2015. A significant number of non-tariff measures (NTMs)[1], including non-tariff barriers (NTBs) (Chaponniere and Lautier, 2016; Sally, 2014; RSIS, 2013), remain in the food sector for two reasons. First, these products attract a higher level of regulation in the name of food safety or food security (Duval and Feyler, 2016; Chaponniere and Lautier, 2016). Second, there are diverse national standards and regulations pertaining to this sector (Pettman, 2013; USAID, 2013; Noraini, 2014). The ASEAN Member States (AMS) are found to arbitrarily adopt and implement food control systems under sanitary and phytosanitary (SPS) measures (ASEAN Secretariat, 2016).

Likewise, one diverse technical regulation that governs the food and beverage industry is nutrition labelling. The labelling regulations across the AMS rest on the different International Guidelines followed by Member countries when preparing national regulations. Kasapila and Sharifudin (2011) point out that for food and nutrition labelling, Singapore, Malaysia, Brunei, Lao PDR, Vietnam and Cambodia have followed the Codex[2] guidelines in preparing their regulations. Conversely, Thailand and the Philippines, to some extent have adapted the United States (US) nutrition labelling guidelines. Even within those Member countries that adopt Codex, there are differences in the regulatory regime. Malaysia made nutrition labelling mandatory for energy, protein, carbohydrate, fat and total sugars for foods that are commonly consumed (prepared cereal food, bread and milk products, canned meat, fish, vegetable, canned fruit and fruit juices, salad dressing and mayonnaise) and for various types of beverages in 2005 (AFBA, 2014; Kasapila and Sharifudin, 2011; see also Pettman, 2013). Nutrition labelling is also mandatory in the Philippines, and also in Thailand[3] for certain food items. For other ASEAN countries that follow the Codex guidelines, nutrition labelling is voluntary; if nutrition and/or health claims are made on food packaging or if the food is for a special purpose (diabetic and fortified foods), nutrition labelling would then be mandatory.

Variances in nutrition labelling (requirements and format) within the region will indeed pose difficulties to exporters. It represents increased compliance costs to firms as they have to pay multiple product adoption costs that are related to many national standards. Further, it is uncertain whether these costs are necessary as some of the more stringent/complex labelling guidelines in specific markets may be used solely as discriminatory NTBs (Rimpeekool et al., 2015). In this respect, harmonisation (at least at the regional level and at the minimum, see Corazon and Cabrera, 2008) is necessary to preclude multiple compliance costs and arrest discriminatory/protective regulations. However, to inform the debate on the importance of regulatory convergence[4] for nutritional labelling, it is crucial to assess the (trade) impact of non-harmonised nutritional labelling on the industry.

1.2 OBJECTIVES

The objectives of the project are to:

A. Trace the export performance and regional market orientation of the prepackaged food and beverage industry in the AMS;

B. Profile and compare the regulatory landscape on nutrition labelling for prepackaged food and beverage industry in the AMS;

C. Assess the impacts of nutrition labelling on exporters of the prepackaged food and beverage industry in the AMS; and

D. Provide implications for the harmonisation of nutrition labelling for the prepackaged food and beverage industry in ASEAN.

[1] The NTMs aim to ensure food safety and animal and plant health; they also extend to other quality and technical aspects of food products.
[2] The Codex Alimentarius is significantly relevant for international food trade, as the food standard (both product and process) issues cover specific raw and processed materials characteristics, food hygiene, pesticides, residues, contaminants and labelling and sampling methods.
[3] Thailand's first nutrition label law was promulgated in 1998 (Rimpeekool et al., 2015).
[4] The regulatory rapprochement includes coordination, mutual recognition or harmonisation. Coordination refers to actions to narrow any significant differences between national-level food safety regulations. Mutual recognition involves the acceptance of different forms of food safety regulation amongst countries as 'equivalent'. Harmonisation involves the standardisation of all food safety regulations (Henson and Caswell, 1999: Hooker, 1999).

1.3 KEY FEATURES AND SCOPE

A key feature of the project is the assessments of the impact of labelling requirements in AMS on regional exporters. The core focus of this project is on the nutrition labelling costs to firms, which entails the compliance cost segment. This is identified based on the various costs incurred by exporters that can be established and benchmarked to the average firm. Qualitative discussion of the potential indirect impacts of nutrition labelling on related stakeholders are provided as a secondary review to the macro-level assessment of labelling in general. To carry out the study, the following procedures will be undertaken:

- To design an appropriate methodology (involving firm-level survey and interview) for the study;
- To conduct fieldwork in Malaysia (firm-level survey/ interview) with selected exporters; and
- To undertake the macro- and micro-level assessments.

The assessment will emphasise the importance of moving forward with the harmonisation process of nutritional labelling at the regional level. It will also inform policymakers on the implications of nutrition labelling for compliance costs from the exporters' perspective. This project will forward specific interventions for regulatory convergence based on segments of the industry and appropriate benchmarking of nutritional labelling.

The study focuses solely on the prepackaged food and beverages (PPF) sector, which covers nine product groups from the harmonised system (HS) at the 2-digit level, HS04, HS09 and HS16-HS22 (see Appendix Table 1). However, for purposes of comparison with PPF, the secondary data analysis will also consider the overall food sector. The latter includes 16 product groups (HS02-HS03, HS05-HS08, HS10-HS22; excluding the non-food groups of HS5, HS6 and HS14). The secondary data analysis for the study spans the period of 2000-2015 (latest data available consistently for all the AMS at the time of the study).

1.4 OUTLINE OF PROJECT ACTIVITY

We adopted a four-phase project approach for a period of ten months (2 January 2017 – 30 November 2017). The first phase involved working with the Food Industry Asia (FIA, Singapore) and the ASEAN Food and Beverage Alliance (AFBA) to identify stakeholders to secure data needed. To understand the current state of development and challenges for regional exporters of the PPF industry, industry associations and Ministries/ Agencies were engaged to provide some insights. The output of the first phase were the agreed framework of study and the general regulatory framework of the PPF industry.

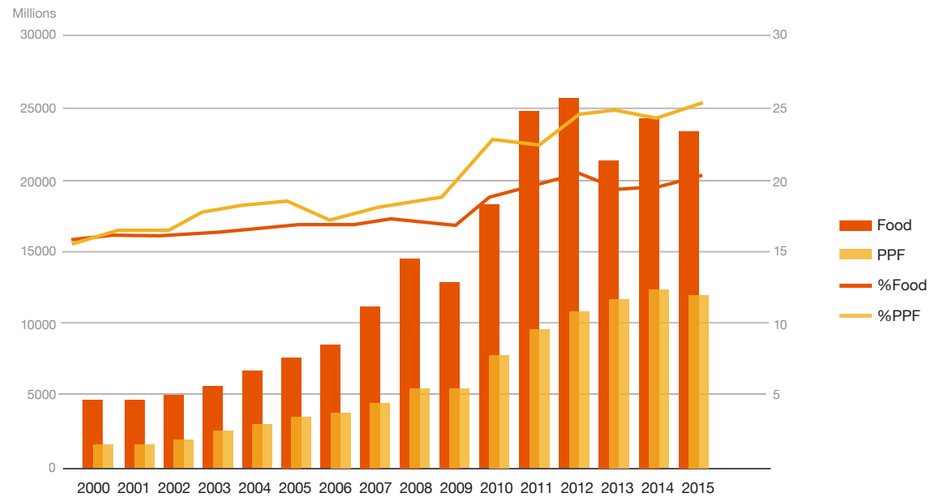
The second phase involved preliminary fact-finding mission by the study team, including the compilation of raw data needed for the study. This included data through firm-level surveys and interviews. The third and fourth phases involved data analysis, report preparation and final submission.

2. PREPACKAGED FOOD EXPORTS IN ASEAN

2.1 EXPORT PATTERNS

Intra-regional ASEAN exports of food products have grown from US$4,247 million in 2000 to US$23,988 million in 2015. PPF represented approximately 49.5% of total food exports in ASEAN in 2015. On average, PPF grew marginally higher than total food trade at 15.1% per annum over the period of review. The share of intra-regional exports to global exports for PPF has also been consistently higher than that for total food trade. In 2015, the shares of intra-regional exports in global exports for PPF and foodstuffs were 25.3% and 20.7% respectively (see Figure 2.1). The statistics presented above suggest the relative importance of PPF in total food trade for the region (Lwin et al., 2017). It is claimed that the move towards the AEC had increased intra-ASEAN trade, largely due to the increase in processed food trade (RSIS, 2013).

Figure 2.1: ASEAN – Intra-Regional Exports in Food, 2000-2015 (US$ million)



Note: (1) PPF – prepackaged food and beverages. (2) The left axis represents intra-regional exports (US$ million) and the right axis represents the share of intra-regional exports in global exports (%).

Source: Calculated from UN COMTRADE.

The product- and market concentration of intra-regional food exports can be appraised from Table 2.2. No distinct shifts were observed in intra-regional export market shares of the individual AMS economies. Thailand, followed by Singapore and Malaysia, remained as core regional players in the exports of PPF.

2.2 POLICY CONCERNS

Efforts have been underway to streamline the various regulatory standards in the food sector under the AEC, as this sector was first identified for harmonisation in 2004. ASEAN has several bodies[5] dealing with food safety (RSIS, 2013). The ASEAN Consultative Committee for Standards and Quality (ACCSQ), namely its Prepared Foodstuff Products Working Group (PFPWG), oversees the harmonisation and convergence of food safety and quality standards.

[5] These bodies include the ASEAN Expert Group on Food Safety (AEGFS), the ASEAN Task Force on Codex (ATFC), the ASEAN Consultative Committee on Standards and Quality (ACCSQ) and the ASEAN Sub-Committee on Food Science and Technology (SCFST).

Following which, several initiatives have been launched. The ASEAN Food Reference Laboratories (AFRLs), which coordinates and monitors food testing activities, supports the ASEAN Common Principles of Food Control System (ACPFCS). The ASEAN Risk Assessment Centre (ARAC) tasked with risk assessment activities, recognises the importance of the 'risk' approach for the harmonisation of standards. Though the above initiatives are all necessary for pushing the harmonisation agenda, it is important to recognise that complete harmonisation may not be practical or politically feasible[6]. It is thus unsurprising to note that the harmonisation of standards among Member States remains slow and patchy, to date (USAID, 2013; The Star, 1 June 2015).

Table 2.2: ASEAN: Product and Market Concentration of Intra-Regional Exports in Food (%)

	2000	2005	2010	2015
HS Code	Product Concentration			
HS-02	0.74	0.41	0.62	1.26
HS-03	10.53	6.42	4.59	6.36
HS-07	2.60	2.41	2.84	2.59
HS-08	5.07	3.48	2.38	4.44
HS-10	2.42	13.02	14.03	8.85
HS-11	12.08	2.12	2.12	2.70
HS-12	1.39	1.57	0.83	0.69
HS-13	0.29	0.29	0.16	0.22
HS-15	15.56	19.52	25.84	16.78
HS-04	4.96	5.95	3.40	2.40
HS-09	8.03	2.69	2.65	4.24
HS-16	4.72	2.00	1.45	1.92
HS-17	8.95	8.78	8.71	6.97
HS-18	1.52	1.89	2.26	3.02
HS-19	5.84	9.16	7.85	9.04
HS-20	2.65	1.91	1.41	1.65
HS-21	5.89	8.20	8.28	11.76
HS-22	6.75	10.16	10.59	15.10
Total	100.00	100.00	100.00	100.00
PPF	49.32	50.74	46.58	56.10
Malaysia	25.01	23.10	22.96	18.10
Singapore	18.64	25.35	22.98	25.35
Thailand	32.54	33.98	35.44	33.13
Philippines	3.58	5.19	2.82	1.35
Indonesia	12.89	9.34	10.41	13.96
Brunei	0	0	0	0.02
Cambodia	0.12	0.02	0.05	0.23
Lao PDR	0	0	0.34	1.78
Myanmar	0	0	0.09	0.14
Vietnam	7.23	3.01	4.90	5.93

Note: (1) PPF – prepackaged food and beverages. (3) See Appendix Table 1 for product description.

Source: Calculated from UN COMTRADE.

[6] For example, in the case of Indonesia, Severino and Thuzar (2016) claim that the general pace of standard harmonisation is affected by the government's perception on how harmonisation will benefit industrial development.

Importantly, the numerous standards and regulations and the diversity of the food sector need to be accounted for. As such, harmonisation of specific regulations in specific sectors would make more sense (Devadason, 2016). Further, while harmonisation of standards is often done through benchmarking with international standards, Member States need to also realise that improving regulatory practices region-wide may in turn help Member States overcome difficulties in adhering to international standards (RSIS, 2013; AFBA, 2012). ASEAN Members have therefore begun to recognise the desirability of having common measures (see also Alemanno, 2015) amidst the growing volume of food trade. In this regard, ASEAN Members have expressed their intention to use global food standards[7] as a basis for harmonisation efforts (AFBA, 2012).

Specific to labelling of prepackaged foodstuffs is the 2005 ASEAN Common Principles and Requirement for Labelling of Prepackaged Food (ACPRLPF), which was developed by the PFPWG and endorsed by the ACCSQ. In 2016, the ASEAN General Standards for the Labelling of Prepackaged Food replaced the 2005 document. The 2016 standard, based on the Codex General Standard for the Labelling of Prepackaged Food (CODEX STAN 1-1985), includes regional requirements for labelling to provide some direction for Member countries to align their national food and nutrition regulations. However, there has not been much progress in this regard (Lwin et al., 2017; AFBA, 2012) as the AMS have their respective national standards on nutrition labelling and are at different development phases of national food regulations and/or adopting the Codex guidelines.

[7] Organisations that are working to harmonise regulations in the food sector include Codex Alimentarius Commission (CAC), the World Trade Organisation (WTO), Food and Agricultural Organisation (FAO), World Health Organization (WHO), the International Standardisation Organisation (ISO), Global Harmonisation Initiative (GHI) and International Union of Food Science and Technology (IUFoST). Of these, the Codex Alimentarius is significantly relevant for international food trade, as the food standard (both product and process) issues cover specific raw and processed materials characteristics, food hygiene, pesticides, residues, contaminants and labelling and sampling methods.

3. REGULATORY LANDSCAPE FOR PREPACKAGED FOOD IN ASEAN

3.1 DATA AND MEASURES

We apply a new and comprehensive database to provide an in-depth assessment of NTMs in the food sector. The database that is applied was jointly constructed by the Economic Research Institute for ASEAN and East Asia (ERIA) and the United Nations Conference on Trade and Development (UNCTAD). The ERIA-UNCTAD (2016)[8] database allows us to detail the diverse types of NTMs for the various subsectors of food based on acts and regulations that prescribe the conditions for importing food products into the AMS. They are based on the classification of import measures by UNCTAD (2013), which includes 15 chapters, comprising technical and non-technical measures (see Appendix Table 2). This classification is more comprehensive and detailed than the measures depicted in the dated ASEAN database (2012)[9]. The detailed information from the ERIA-UNCTAD database on the products covered by NTMs are at the internationally comparable 6-digit level of the HS (harmonised system) codes, which also allows us to assess the trade incidence of NTMs in the food sector with greater accuracy.

Based on this new database, several measures are adopted to profile the labelling requirements for TBT reasons (which is also referred to as "B31") in the food sector. They include regulatory intensity/ incidence and regulatory distance. The following details these measures.

To measure the regulatory intensity or NTM incidence of B31, we calculate the export coverage ratio[10] (ECR) and the frequency ratio (FR) for the products covered by this measure. The dataset at the HS6-digit level covers 838 product items. The yearly (t) coverage ratios with each partner country j are then calculated as the export share of product items (HS6-digit level) covered by B31 in the product group category k (HS2-digit level). The ECR (and FR) reflects the relative value (number of transactions) of affected exports, varies between 0% (no coverage) and 100% (all products covered) and is expressed as follows:

$$(1)\quad ECR_{kt} = \frac{\sum Dst\ Vst}{\sum Vst} * 100$$

where
s = the product item of the HS6-digit level
k = the product category of the HS2-digit level
Dst = a dummy variable for the product item s with B31 in year *t*
(1 if there is a B31 measure in the partner country and 0 otherwise)
Vs = reporter country exports of product item s in year *t*

and

$$(2)\quad FR_{kt} = \frac{\sum Dst\ Nst}{\sum Nst} * 100$$

where
Ns = a dummy variable that is equal to 1 if there is an export of product s in year t and 0 otherwise.

[8] The consultants for this study were engaged in this one-year ERIA-UNCTAD project to compile NTMs for Malaysia. The database was launched on 14 April 2016 and is available at http://asean.i-tip.org/?platform=hootsuite
[9] The ASEAN database broadly categorises NTMs for the food sector into certificates of approval and technical regulations, and the measures compiled relate only to specific products at the 4-digit HS level of aggregation. Available at: http://asean.org/?static_post=non-tariff-measures-database
[10] The ECR indicates the extent of B31 coverage on exports. It does not convey information concerning specific effects of B31 on prices, production, consumption, or export volumes.

Apart from the inventory measures above, regulatory distance, introduced by Cadot et al. (2015), is also applied to determine the difference between the NTM (more specifically the labelling requirements) regimes of bilateral country-pairs. Simply put, it examines whether two countries impose the same NTM on the same commodities. In this analysis, if two countries apply B31 on product item s at the HS6-digit, then the regulatory difference is RDIs = 0; and RDIs = 1, otherwise. We then use the following formula to calculate the regulatory distance (Dij) between the two countries.

$$(3)\quad D_{ij} = \frac{sum\ of\ RDIs}{count\ of\ RDIs}$$

3.2 NON-TARIFF MEASURES

Table 3.1 presents the public (mandatory) NTMs in the food sector, and for the PPF sector. It is clear that the food sector is highly regulated (Devadason et al., 2016) in most of the AMS, with the exception for Lao PDR. Though 81.3% of public NTMs in Malaysia originate from the food sector, the number of NTMs in Malaysia is still lower than that for Thailand. Thailand records the highest number (567 measures) of NTMs in food. Ando and Fuji (2002) also noted that in terms of tariff equivalent (ad valorem equivalents, AVEs), the highest AVEs were registered in Thailand, with 596.6% in animal and vegetable oils and 132.4% in food products, owing mostly to technical measures. A similar story emerges here. For all AMS, technical measures, mainly sanitary and phytosanitary (SPS) and TBTs (see also Fugazza, 2013, for developing countries) dominate in terms of the NTM-type in the food sector. For Malaysia, Singapore and Brunei, the number of TBTs are in fact higher than the number of SPS measures in the food sector. The same trends observed for the overall food sector hold in the case of PPF.

Table 3.1: ASEAN - Public NTMs in the Food Sector

	NTM Chapters								
	Technical Measures			Non-Technical Measures					
	A	B	C	D	E	F	G-O		
Country	SPS	TBT	PSI	CTPM	QC	PC	Others	Total	% of Total Public NTMS
	Food								
Malaysia	222	253	2		4	6		487	81.30
Singapore	119	169			1	13		302	65.23
Thailand	396	145	1		15	9	1	567	56.03
Philippines	100	91	12		20	16	6	245	41.32
Indonesia	106	54	21		4	2	3	190	38.08
Brunei	150	211	1		1	6		369	78.85
Cambodia	36	40			1	8		85	49.42
Lao PDR	27	20	3		1	11		62	29.67
Myanmar	38	13	2		3	4		60	43.80
Vietnam	112	25	1			2	6	146	54.28
Total	1,306	1,021	43		50	77	16	2,513	56.84
	Prepackaged Food (HS04, HS09, HS16-HS22)								
Malaysia	179	204	1		2	5		391	65.28
Singapore	89	142			1	11		243	52.48
Thailand	336	118			3	6		463	45.75
Philippines	67	42	6		10	13	3	141	22.09
Indonesia	57	38	11		3	2	1	112	22.44
Brunei	120	163			1	6		290	61.97
Cambodia	36	32			1	7		76	44.19
Lao PDR	22	5	2			10		39	18.66
Myanmar	12	5	1		1	1		20	14.60
Vietnam	88	18	1			2	6	115	42.75
Total	1,006	767	22		22	63	10	1,890	42.75

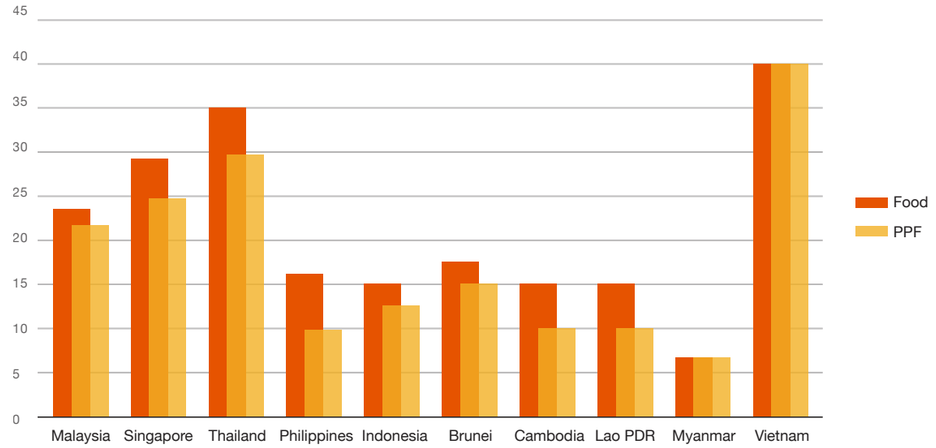
Note: (1) The NTMs refer to import measures (Appendix Table 2) in force that apply to all members. (2) SPS – sanitary and phytosanitary measures; TBT – technical barriers to trade; PSI – pre-shipment inspection and other formalities; QC - non automatic licensing, quotas, prohibitions and quantity control measures other than for SPS or TBT reasons; PC - price control measures, including additional taxes and charges; Others – finance measures, measures affecting competition, trade related investment measures, distribution restrictions, restrictions on post sales services, subsidies, government procurement restrictions, intellectual property and rules of origin. (3) The food sector refers to the 18 groups of the HS2-digit listed in Appendix Table 1.

Source: Derived from ERIA-UNCTAD (2016).

Given that nutrition labelling is a TBT measure, it is important to consider the incidence of labelling for TBT reasons (B31)[11] in the food sector. Figure 3.1 presents the importance of B31 within the TBT chapter[12] for the individual AMS. Approximately 23.5% of the TBTs in the food sector in ASEAN is from sub-chapter B31[13]. The shares of B31 in total TBT measures for PPF and food are highest for Vietnam, at 40% each respectively, which are also higher than the ASEAN averages. The prominence of B31 in the regulatory framework of TBTs are also notable for Thailand, Singapore and Malaysia.

[11] The ERIA-UNCTAD (2016) database is based on the UNCTAD (2013) classification, and does not distinguish finer levels of NTMs such as nutrition labelling within B31. In this respect, B31 is taken as indicative of nutrition labelling.
[12] The TBT chapter has 9 sub-chapters (B1-B9) (UNCTAD, 2013). Within those sub-chapters, the measures are further distinguished into 18 sub-groups up to two levels.
[13] The vast majority of labelling notifications to the WTO relate to processed food ((OECD, 2003).

Figure 3.1: ASEAN - Labelling Requirements for TBT Reasons in the Food Sector (% of TBT measures)



Note: (1) Labelling requirements for TBT reason refer to measure B31. (2) The food sector refers to the 18 groups of the HS2-digit listed in Appendix Table 1. (3) PPF – prepackaged food (HS16-H22).

Source: Derived from ERIA-UNCTAD (2016).

The importance of the B31 measure can also be appraised from the ECR[14], as shown in Table 3.2. There is almost 100% coverage for B31 across all the subsectors for the various country-pairs, with the exception for a few cases. Though the importing countries apply the B31 measure without discrimination, the ECR differs depending on the product composition of bilateral trade.

Table 3.2: ASEAN7* – Export Coverage Ratios for Labelling Requirements for TBT Reasons in the Prepackaged Food (%)

Country-Pair	HS16	HS17	HS18	HS19	HS20	HS21	HS22
SGP-MY	100.00	100.00	99.83	100.00	99.85	100.00	98.76
THA-MY	85.75	0.05	100.00	0.52	36.90	54.67	95.20
PHL-MY	100.00	71.05	0.40	0.01	7.23	58.90	96.62
IDN-MY	47.92	11.82	0.91	100.00	100.00	100.00	100.00
VNM-MY	4.34	0.04	100.00	100.00	100.00	100.00	78.28
BRN-MY	100.00	100.00	100.00	99.85	100.00	100.00	100.00
MY-SGP	89.34	19.80	22.69	84.07	89.22	100.00	100.00
THA-SGP	95.94	3.91	99.99	89.16	81.50	100.00	100.00
IDN-SGP	41.61	74.33	9.65	58.02	85.59	100.00	100.00
PHL-SGP	100.00	32.30	38.55	94.77	99.44	100.00	100.00
BRN-SGP	100.00	0.00	100.00	100.00	100.00	99.99	100.00
VNM-SGP	47.47	33.43	100.00	88.37	83.51	100.00	100.00

[14] In want of space, the FR is not reported as the results are similar to that of ECR computations.

Table 3.2 contd.

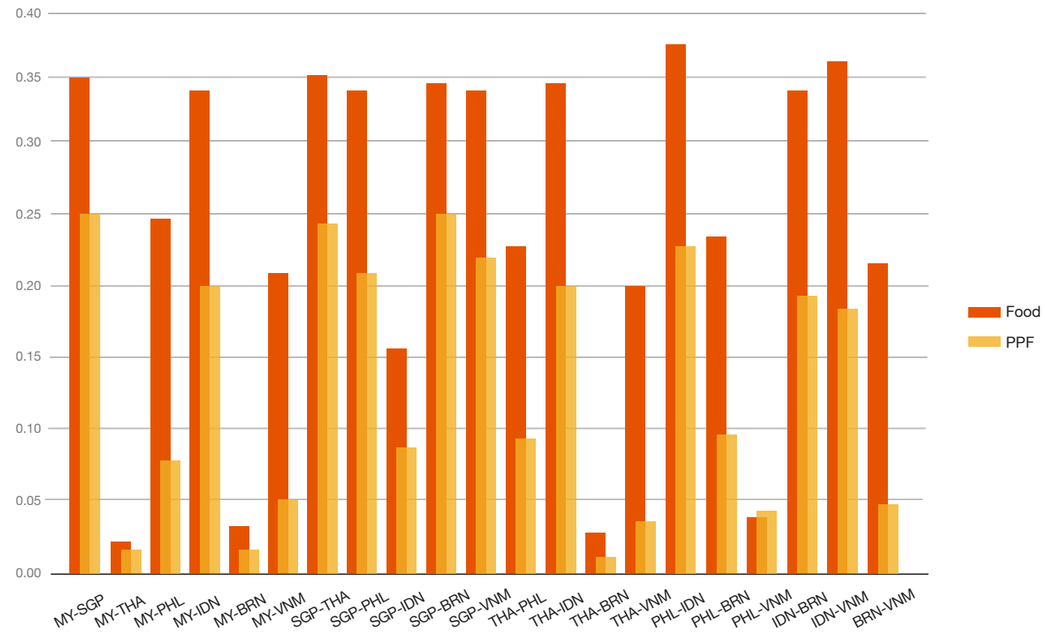
Country-Pair	HS16	HS17	HS18	HS19	HS20	HS21	HS22
MY-THA	100.00	100.00	100.00	100.00	99.93	100.00	100.00
SGP-THA	100.00	100.00	100.00	100.00	100.00	100.00	100.00
PHL-THA	9.14	100.00	100.00	100.00	99.29	100.00	100.00
IDN-THA	100.00	100.00	100.00	100.00	100.00	100.00	100.00
BRN-THA	0.00	0.00	0.00	0.00	0.00	0.00	100.00
VNM-THA	0.00	0.00	0.00	100.00	25.72	0.00	0.00
MY-PHL	100.00	100.00	100.00	100.00	96.23	100.00	100.00
SGP-PHL	100.00	100.00	100.00	100.00	100.00	100.00	100.00
THA-PHL	100.00	100.00	100.00	100.00	99.37	100.00	100.00
IDN-PHL	100.00	100.00	100.00	100.00	100.00	100.00	100.00
BRN-PHL	100.00	100.00	100.00	100.00	100.00	100.00	100.00
VNM-PHL	100.00	100.00	0.00	100.00	68.32	100.00	100.00
MY-IDN	100.00	100.00	100.00	100.00	99.71	100.00	100.00
SGP-IDN	100.00	100.00	100.00	100.00	96.93	100.00	95.44
THA-IDN	100.00	100.00	100.00	100.00	99.68	100.00	100.00
PHL-IDN	30.06	100.00	100.00	100.00	77.80	100.00	100.00
BRN-IDN	0.00	0.00	0.00	0.00	0.00	100.00	100.00
VNM-IDN	100.00	100.00	0.00	100.00	99.90	100.00	100.00
MY-BRN	100.00	100.00	100.00	100.00	99.43	100.00	100.00
SGP-BRN	100.00	100.00	100.00	100.00	97.85	100.00	100.00
THA-BRN	100.00	100.00	100.00	100.00	99.21	100.00	100.00
PHL-BRN	100.00	100.00	100.00	100.00	92.42	100.00	100.00
IDN-BRN	51.81	100.00	100.00	100.00	100.00	100.00	100.00
VNM-BRN	0.00	100.00	0.00	100.00	100.00	100.00	0.00
MY-VNM	100.00	100.00	100.00	100.00	99.56	100.00	100.00
SGP-VNM	100.00	100.00	100.00	100.00	98.72	100.00	100.00
THA-VNM	100.00	100.00	100.00	100.00	99.64	100.00	100.00
PHL-VNM	100.00	100.00	100.00	100.00	100.00	100.00	100.00
IDN-VNM	100.00	100.00	100.00	100.00	99.75	100.00	100.00
BRN-VNM	0.00	0.00	0.00	0.00	0.00	100.00	0.00

Note: (1) *ASEAN7 excludes Cambodia, Lao PDR and Myanmar. (2) Labelling requirements for TBT reason refer to measure B31. (3) PPF – prepackaged food (HS04, HS09, HS16-H22). (4) Based on equation (1). (4) MY – Malaysia; SGP – Singapore; THA – Thailand; PHL- Philippines; IDN – Indonesia; BRN – Brunei; CAM – Cambodia; MYA – Myanmar; LAO – Lao PDR; VNM – Vietnam.

Source: Derived from ERIA-UNCTAD (2016).

Figure 3.2 suggests that regulatory distance in terms of labelling requirements for TBT reasons (B31) is smaller for PPF relative to the overall food sector for all country-pairs. The only exception is for Philippines-Vietnam, where the labelling regime in both countries appear more dissimilar for PPF relative to the food sector. Overall, the distance for the labelling framework for Malaysia-Thailand, Malaysia-Brunei and Thailand-Brunei is small relative to the other country-pairs in ASEAN.

Figure 3.2: ASEAN7* – Regulatory Distance of Labelling Requirements for TBT Reasons in the Food Sector



Note: (1) *ASEAN7 excludes Cambodia, Lao PDR and Myanmar. (2) Labelling requirements for TBT reason refer to measure B31. (3) The food sector refers to the 18 groups of the HS2-digit listed in Appendix Table 1. (4) PPF – prepackaged food (HS04, HS09, HS16-H22). (5) MY – Malaysia; SGP – Singapore; THA – Thailand; PHL- Philippines; IDN – Indonesia; BRN – Brunei; CAM – Cambodia; MYA – Myanmar; LAO – Lao PDR; VNM – Vietnam.(6) Based on equation (3).

Source: Derived from ERIA-UNCTAD (2016).

Regulatory distance varies between the PPF subsectors as gleaned from Table 3.3. The regulatory distance is zero for HS16 (preparation of meat, fish or crustaceans, molluscs, etc.), suggesting that a similar requirement is imposed on all product items within this product group in the various bilateral country pairs. Conversely, the regulatory distance, in relative terms, is found to be relatively high for HS17 (sugars and sugar confectionary), namely for Singapore's trade with all the other six ASEAN countries (Malaysia, Thailand, Philippines, Indonesia, Brunei and Vietnam). Worth noting here is that the HS17 is also a sub-sector that over time, had lost its position as the largest segment contributing to intra-regional exports in PPF (see Table 2.2.). Likewise, regulatory distance is also somewhat high for HS09, specifically for Singapore's trade with Malaysia, Thailand and Brunei; and Indonesia's trade with Malaysia, Thailand, Philippines and Brunei.

Though closer regulatory distance for labelling requirements in the PPF relative to the overall food sector may indeed make it easier to have a mutual recognition agreement (MRA) and/or harmonise the labelling requirement, there is still no empirical evidence to justify that a smaller regulatory distance will be associated with enhanced trade. More importantly, a similar labelling measure (B31) in two countries do not reflect nuanced differences in the labelling requirements within that particular measure. This is illustrated in the next section.

Table 3.3: ASEAN7* – Regulatory Distance of Labelling Requirements for TBT Reasons for Prepackaged Food, by Subsectors

Country-Pair	HS04	HS09	HS16	HS17	HS18	HS19	HS20	HS21	HS22	PPF
MY-SGP	0.1212	1.0000	0.0000	0.8824	0.0000	0.1053	0.0192	0.0000	0.1364	0.2581
MY-THA	0.0909	0.0000	0.0000	0.0000	0.0000	0.0526	0.0192	0.0000	0.0000	0.0206
MY-PHL	0.1212	0.0513	0.0000	0.3529	0.0000	0.1053	0.0385	0.0000	0.1364	0.0776
MY-IDN	0.1212	0.9231	0.0000	0.0588	0.3333	0.0526	0.0192	0.0625	0.1364	0.2016
MY-BRN	0.0909	0.0000	0.0000	0.0000	0.0000	0.0526	0.0192	0.0000	0.0000	0.0203
MY-VNM	0.1212	0.0513	0.0000	0.0000	0.1818	0.0526	0.0385	0.0000	0.1364	0.0560
SGP-THA	0.0303	1.0000	0.0000	0.8824	0.0000	0.0526	0.0192	0.0000	0.1364	0.2439
SGP-PHL	0.0000	0.1795	0.0000	0.8182	0.5455	0.0000	0.0000	0.0000	0.0000	0.2194
SGP-IDN	0.0000	0.0513	0.0000	0.8462	0.0000	0.0526	0.0192	0.0625	0.0909	0.0878
SGP-BRN	0.1212	1.0000	0.0000	0.8824	0.0000	0.0526	0.0192	0.0000	0.1364	0.2540
SGP-VNM	0.0000	0.1795	0.0000	0.8824	0.1818	0.0526	0.0000	0.0000	0.0000	0.2254
THA-PHL	0.0303	0.0513	0.0000	0.3529	0.5455	0.0526	0.0192	0.0000	0.1364	0.0806
THA-IDN	0.0303	0.9487	0.0000	0.2353	0.0000	0.0000	0.0000	0.1667	0.3000	0.2054
THA-BRN	0.0909	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0122
THA-VNM	0.0303	0.0513	0.0000	0.0000	0.1818	0.0000	0.0192	0.0000	0.1364	0.0366
PHL-IDN	0.0000	0.8974	0.0000	0.5882	0.5455	0.0526	0.0192	0.0625	0.0909	0.2295
PHL-BRN	0.1212	0.0513	0.0000	0.3529	0.5455	0.0526	0.0192	0.0000	0.1364	0.0920
PHL-VNM	0.0000	0.0000	0.0000	0.3529	0.3636	0.0526	0.0000	0.0000	0.0000	0.0451
IDN-BRN	0.1212	0.9487	0.0000	0.2353	0.0000	0.0000	0.0000	0.0625	0.1364	0.1976
IDN-VNM	0.0000	0.8974	0.0000	0.2353	0.1818	0.0000	0.0192	0.0625	0.0909	0.1829
BRN-VNM	0.1212	0.0513	0.0000	0.0000	0.1818	0.0000	0.0192	0.0000	0.1364	0.0480

Note: (1) *ASEAN7 excludes Cambodia, Lao PDR and Myanmar. (2) Labelling requirements for TBT reason refer to measure B31. (3) The food sector refers to the 18 groups of the HS2-digit listed in Appendix Table 1. (4) PPF – prepackaged food (HS04, HS09, HS16-H22). (5) MY – Malaysia; SGP – Singapore; THA – Thailand; PHL- Philippines; IDN – Indonesia; BRN – Brunei; CAM – Cambodia; MYA – Myanmar; LAO – Lao PDR; VNM – Vietnam. (6) Based on equation (3).

Source: Derived from ERIA-UNCTAD (2016).

3.3 VARIANCES IN NUTRITION LABELLING

Regulatory incoherence in nutrition labelling has been widely acknowledged. AFBA (2014) identified nutrition labelling as the most significant barrier faced by the industry for food trade in ASEAN. AFBA listed core variances in nutrition labelling as follow: variances in mandatory and voluntary labelling requirements; variances in nutrition information panel (NIP) formats and nutrition reference values (NRVs); and different minimum and maximum limits for vitamins and minerals; and variances in tolerance levels (see also Tee et al. 2002; Rimpeekool et al., 2015).

It is therefore important to examine the different requirements in the individual AMS for the seven core elements of nutrition labelling as depicted in Table 3.4. For the variances in each element across the AMS, refer to Appendix Table 3. There is a great deal of variation in the core nutrients that shall be declared on the NIP. The requirements range from four core nutrients (energy plus the three basic nutrients of protein, carbohydrate and fat), such as in Malaysia, to 10, such as in the Philippines. In addition to the basic nutrients, the most commonly required nutrients are saturated fat, sodium/salt, sugar, trans fat, cholesterol and dietary fibre. Some countries, such as the Philippines and Thailand, require the declaration of vitamins (A, B1 and B2) and minerals (iodine, iron and calcium). These different regulations require different mixes of nutrients.[15]

[15] NRVs may be used for purposes beyond claims, and claims substantiation will require more than NRVs.

The NIP also lists the nutrients required with the quantity of the nutrient, usually in grams or millilitres, alongside. An additional requirement included in all regulations is the use of a reference unit, which is the quantity of each nutrient relative to a specific reference unit printed adjacent to the nutrient list. Three reference units are used: per 100g/ per 100ml, per serving, and as a percentage of NRV/ recommended daily intake/ amount (RDI/RDA)/ recommended energy and nutrient intake (RENI). Appendix Table 3 shows again wide variation in the reference unit adopted by different countries. Apart from that, some countries require more than one unit, particularly Malaysia and Thailand. The different NRVs are most likely to pose challenges to the industry, especially if the percentage NRV is required to be declared on the NIP. For example, for a product containing 10 mg of vitamin C, the different NRVs set by different AMS will result in the following differences in values for the declaration of the percentage of vitamin C in the NIP:

Country	NRV	10mg of Vitamin C as a % of NRV
Brunei	30mg	33.3
Malaysia	60mg	16.7
Philippines	75mg	13.3
Singapore	30mg	33.3
Thailand	60mg	16.7

Inter-country differences as detailed above in nutrition labelling create budget issues for companies (Gautier, 2010; OECD, 2003) as they have to conform to labelling requirements that differ across national market; exporters have to produce and pay for different labels and compliance procedures. These additional costs can be so considerable that they prevent some exporters from competing in the market and reduce trade. It is also noted that nutrition labelling, which is mainly for consumer information, may have more impact on trade than quality labelling (OECD, 2003). Hence, nutrition labelling may constitute potential NTBs (ILSI, 2014).

Though much has been said about the restrictive nature of nutrition labelling, there has been no study, to the best of our knowledge, that documents the trade, price and specialisation effects of this regulation in the ASEAN context. ASEAN, to date, has largely focused on the sub-chapter A22 (restricted use of certain substances in foods and feeds and their contact materials), while the issue of labelling has taken a back seat. The importance of having common labelling schemes are evidenced by a recent declaration that, “on average, it costs food companies up to US$6,000 to update the label for each product or SKU (stock keeping unit)” (Bode, 2017). Further, there are reasons to believe that there is already existing information overload on nutrition for consumers for some food products. In this regard, micro-evidence is needed to inform the debate on the impacts of nutrition labelling as general trends in labelling requirements mask the nuanced differences in the nutrition labelling regulatory framework across AMS.

Table 3.4: Core Elements of Nutrition Labelling

Elements of Nutrition Labelling	Description	Codex Guidelines
Core Nutrient List	"Core" nutrients are nutrients that require mandatory declaration wherever nutrient declaration is applied.	Energy, protein, carbohydrate, fat, saturated fat, sodium/ salt, total sugars.
Nutrition Information Panel (NIP) Format	The expression of nutrient content in the food product as amount per 100ml/100g, per serving size etc.	Either per 100 g / per 100 ml OR per serving.
Nutrient Reference Values (NRVs)	NRVs are a set of numerical values for the purpose of nutrition labelling and relevant claims. They are used as references when declaring the percentage of a particular nutrient against the recommended intake of that nutrient.	For example, the NRVs prescribed for the following nutrients are: Vitamin A: 800 µg Calcium: 1000mg Protein: 50g
Declaration of Carbohydrates	This refers to the expression of carbohydrates, and if dietary fibres and sugars are required to be declared as a subset of carbohydrates.	Codex guidelines recommend that in instances where the type of carbohydrate is declared, this declaration should follow immediately after the declaration of the total carbohydrate content, e.g.: "Carbohydrate … g, of which sugars … g, 'x' … g" where 'x' represents the specific name of any other carbohydrate constituent.
Declaration of Minerals & Vitamins	The requirement(s) for declaring the presence of vitamins and/or minerals, e.g. if the content of that particular vitamin and/or mineral exceeds a certain amount.	Vitamins to be declared if claims have been made and if they are present in amounts not less than 5% NRV per 100 g / 100 ml / serving. Only vitamins and minerals for which recommended intakes have been established and/or which are of nutritional importance should be declared.
Tolerance Level & Compliance	Tolerance limits refer to analytical values of the nutrient content as compared to the value claimed, e.g. for certain nutrients, the analytical value of the nutrient content shall be between 80 – 120% of the content claimed (i.e. tolerance of ±20%).	Not specified in Codex.
Nutrition Claims, Nutrient Function Claims & Other Function Claims	Nutrition claim: Any representation which states, suggests or implies that a food has particular nutritional properties Nutrient function claim: A nutrition claim that describes the physiological role of the nutrient in growth, development and normal functions of the body. Other function claim: Refers to specific beneficial effects of the consumption of foods in the context of the total diet on normal functions or biological activities of the body.	Under Codex, the only nutrition claims permitted are those relating to energy, protein, carbohydrate, and fat and components thereof, fibre, sodium and vitamins and minerals for which NRVs have been established.

Source: FIA (2017).

4. MACRO-LEVEL ANALYSIS

4.1 DATA DESCRIPTION AND SOURCES

Exports (X) are compiled from the UN Comtrade database at the HS2-digit level for all food products. The dataset covers the nine PPF groups at the HS2-digit level (see Appendix Table 1). Data for the gross domestic product (GDP) and GDP per capita (GDPPC) were sourced from the World Development Indicators (WDI) database of the World Bank (2017a). Tariffs (TR) imposed by Malaysia on each product group at the HS6-digit level are taken from the database of the United Nations Conference on Trade and Development (UNCTAD) Trade Analysis Information System (TRAINS) within the World Integrated Trade Solution (WITS) developed by the World Bank (2017b). It is the simple average tariff rates of HS6-digit subheading products. Data for the real effective exchange rate (REER), sourced from the Bruegel (2017) dataset, are measured as the real value of a country's currency against the basket of 67 trading partners. Data for geographical distance (DIST), based on the average distance between the capitals of country pairs and the information for country-pair common language (CL), country-pair contiguity (BORDER) and landlocked economy (LANDLOCKED) are extracted from the Centre d'Etudes Prospectives et d'Informations Internationales (CEPII, 2017) database. All values for X, GDP, GDPPC and REER are expressed in 2010 constant US dollars.

4.2 EMPIRICAL STRATEGY

The Stochastic Frontier Analysis (SFA) approach, which is widely used with the gravity equation, is employed to identify trade potentials and trade inefficiencies. The study adopts the Aigner et al. (1977) and Meeuen and van den Broeck (1977) SFA. The SFA estimates a production frontier indicating the maximum output that is produced given certain level of inputs. A fully efficient unit operates at the frontier, and those inefficient units operate at a point within the frontier signifying a shortfall between the observed and the maximum possible levels of output. In a similar vein, the SFA can be used to define the trade frontier, whereby an inefficient trade performance indicates that actual trade performance falls short of the maximum or the frontier level of trade. The analysis is based on the gravity model of trade[16] in the form of SFA as follows:

$$(4) \quad X_{ij}^{t} = f(GDP_{i}^{t}, GDP_{j}^{t}, GDPPC_{i}^{t}, DIST_{ij}, X_{ij}^{t}, Z_{ij}) \exp(v_{ij}^{t}) \exp(-u_{ij}^{t})$$

where X_{ij}^{t} are the bilateral trade flows between countries *i* and *j* at time *t*; GDP_{i}^{t} and GDP_{j}^{t} are the economic size of both countries; $GDPPC_{i}^{t}$ and $GDPPC_{j}^{t}$ are the per capita income levels of the reporter (exporter) and partner (importer) countries, respectively, that capture the wealth potentials and subsequently the consumption strength of the countries; $DIST_{ij}$ is the distance between the two partner countries; X_{ij}^{t} is the time-varying trade-stimulating/resisting variables; and Z_{ij} is the time invariant explanatory variables. The error term of the gravity model comprises two components, namely v_{ij}^{t} representing statistical noise due to measurement error and one-sided inefficiency element represented by u_{ij}^{t} that measures the trade performance. v_{ij}^{t} follows a normal distribution while u_{ij}^{t} is assumed to be distributed independently of the random error and the regressors.

The one-sided inefficiency representing the technical inefficiency is a non-negative random variable. It denotes the degree to which actual trade levels deviate from the potential or maximum trade performance. A zero value of u_{ij}^{t} indicates the inefficiency term reduces to the random noise component where the actual and potential trade levels equals. While a non-zero value of u_{ij}^{t} indicates that there is a deviation of actual and potential trade providing scope for trade integration. This deviation can be due to multilateral resistances, which is often unobservable and difficult to quantify. In other words, it can be the combined effects of inherent economic distance bias or behind-the-border constraints that is specific to the exporting countries with respect to the particular importing countries. The estimate of the total error variance is represented by $\sigma^2=\sigma_u^2+\sigma_v^2$, while the estimate of the ratio of the standard deviation of the inefficiency component to the standard deviation of the idiosyncratic components is represented by $\lambda=\sigma_u/\sigma_v$. If λ is significant then it signifies the use of SFA since it assesses the degree of inefficiency relative to random error. In addition, testing the presence of trade efficiency (TE) requires the one-sided likelihood ratio (LR) test to be performed on the null hypothesis, $H_0:\sigma_u^2=0$ against the alternative hypothesis, $H_1:\sigma_u^2>0$. If one fails to reject the null hypothesis, then the SFA model reduces to an ordinary least squares (OLS) model. The point estimates of the TE for each bilateral partner can be computed as $TE_{ij}^{t}=\exp(-u_{ij}^{t})$. The estimated TE ranges between zero to unity. TE with a unity value implies that the actual and potential trade levels coincide and values moving towards zero indicates that there is a scope to raise actual trade levels to the maximum levels, for example a lower efficiency level.

[16] There are various specifications of the gravity model in the literature. In this study we adopted the gravity specification of Gros and Gonciarz (1996), Nilson (2000) and Ravishankar and Stack (2014).

The full gravity stochastic frontier model specification of export determinants between the ASEAN members for the PPF sector is specified below. The dataset constitutes a three-dimensional (the cross-section comprises country-pair-product group) panel framework covering two-way export flows and spanning the period of 2000-2015. The number of observations is 12,096 (90 country-pairs x 9 product groups x 16 years). The specified model is:

$$(5)\quad X_{ij}^{t} = \beta_0 + \beta_1 GDP_i^t + \beta_2 GDP_j^t + \beta_3 GDPPC_i^t + \beta_4 GDPPC_j^t + \beta_5 DIST_{ij} + \beta_6 TR_j^t + \beta_7 REER_j^t + \beta_8 CL_{ij} + \beta_9 BORDER_{ij} + \beta_{10} LANDLOCKED_{ij} + v_{ij}^t - u_{ij}^t$$

where, TR_j^t, $REER_i^t$, CL_{ij}, $BORDER_{ij}$ and $LANDLOCKED_{ij}$, are tariff rates, real effective exchange rates, common language, border sharing (contiguity) and landlocked economy, respectively. *TR* and *REER* are time-variant explanatory variables, while the vector of time-invariant explanatory variables includes *CL*, *BORDER* and *LANDLOCKED*. Other definitions of the explanatory variables follow the equation (4). All the explanatory variables, except for dummies, *TR* and *REER*, are transformed into the logarithmic form.

The level of *GDP* of both exporting and importing countries is supposed to positively affect its exports. It captures economies of scale or the size effect. The higher the *GDP*, the larger the exports flows, given that a greater division of labour and specialisation becomes feasible under a larger scale of operation. Likewise, the higher the *GDPPC*, the higher the export flows. The third core argument of the gravity model is the *DIST* variable. *DIST* remains important for considerations of transport costs (Egger, 2000), transaction costs (Bergstrand, 1985; Edmonds et al., 2008) and timeliness in delivery (Rojid, 2006), and is therefore included in the estimation. In fact, *DIST* and *TRF* denote the trade resistance factors in the model. Thus, the expectations are for $\beta_5 < 0$ (Tinbergen, 1962; Poyhonen, 1963) and $\beta_6 < 0$. Conversely, an increase in *REER* would make goods cheaper relative to those of foreign partners, and thus encourage exports. Therefore, the coefficient of *REER* is expected to have a positive sign on exports.

There are also three dummies incorporated in equation (5) to control for the omitted variable effects, namely *CL*, *BORDER* and *LANDLOCKED*, on export flows. The dummy variables for *CL* and *BORDER* take a value of 1 if both the trading partners share these common features and 0 otherwise. Common language measures cultural distance. The argument is that trade partners with a common language can communicate easily to establish business relationships and have lower transaction costs. Thus, the expectations are for common language and common border or adjacency to facilitate trade. Landlocked is another dummy, which takes the value of 1 for countries with no sea nor ocean access; only Lao PDR in the sample. Landlocked countries have a certain disadvantage, since they cannot easily use ship transport for their goods. The expected sign for β_{10} is thus negative.

4.3 EMPIRICAL RESULTS

4.3.1 MODEL ESTIMATES AND TRADE EFFICIENCY

Appendix Table 4 presents the estimated gravity SFA model[17] for PPF exports. Equations (5a) and (5b) are the estimated results without and with time dummies, respectively. The model supports the use of SFA given that the LR test favours the SFA estimation. In this regard, inefficiency is important, and, estimating using the OLS will result in biasedness. Based on Appendix Table 4, in all cases, the λ is statistically significant indicating that the ratio of standard deviation of inefficiency to standard deviation of the random component is significant. In other words, the level of trade inefficiency is 2.81-2.98.

The core gravity arguments, *GDP*, *GDPPC* and *DIST*, provide the expected results based on the direction and significance of the coefficient estimates. The *GDP* estimates are positive and significant on exports suggesting that larger countries trade more. Unlike that of *GDP*, the higher wealth potentials of the partner country ($GDPPC_j$) do not matter for food trade in ASEAN. Both distance ($DIST_{ij}$) and tariffs (TRF_j) constrain export flows. Despite the progressive trade liberalisation in ASEAN, whereby most tariffs have reached below 5%, the food sector to some extent remains protected. The coefficient signs for *CL* and *BORDER* dummies correspond with theoretical predictions as they are found to be a significant enablers of food trade (see also Duval and Feyler, 2016). There is however no evidence of significant export reducing effect from remoteness ($LANDLOCKED_{ij}$) of an economy, as Lao PDR is not a major player in intra-regional exports of PPT.

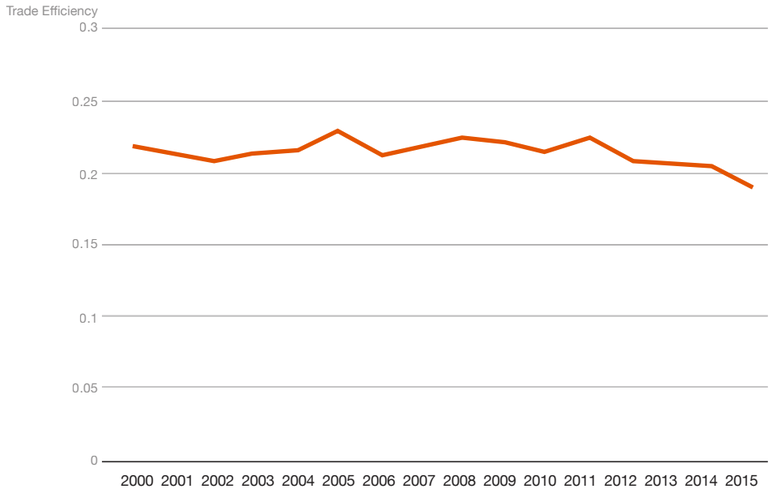
Given that the predictive model of Appendix Table 4 reflects potential trade under frictionless conditions, discrepancies between actual and potential trade volumes can be taken to be indicative of behind-border-constraints or trade barriers. Additionally, since tariffs (*TR*) are included explicitly in the model, inefficiencies can be considered partly due to NTMs, apart from other constraints. On average, the derived TE[18] for the PPF sector based on the SFA analysis in Appendix Table 4 is somewhat low at 0.22. This suggests that policy instruments beyond tariffs, such as NTMs and other behind-the-border constraints could be restrictive in ASEAN. If ASEAN aims to further enhance trade efficiency, it should consider revisiting the behind-border constraints (such as labelling since it potentially impacts a large portion of trade; see OECD, 2003), especially for the PPF sector.

4.3.2 TRADE EFFICIENCY FOR SUBSECTORS OF PREPACKAGED FOOD

For the PPF sector, the average TE is also derived by bilateral country-pair and by product for the entire period of 2000-2015. Figure 4.1 provides the average TE estimates for PPF. As expected, the efficiency of PPF exports in ASEAN have remained somewhat low over the period of review, with scores ranging between 0.18 and 0.24. This concurs with other studies on lower trade efficiency in foodstuffs relative to other manufactures (Tamini, et al., 2016). The (average) scores have only declined marginally between 2000 and 2015 despite the increase in intra-ASEAN exports of PPF (see Figure 2.1).

[17] This is an unbalanced panel.
[18] The efficiency score ranges from zero to unity. Scores nearing unity indicate higher efficiency.

Figure 4.1: ASEAN - Average Trade Efficiency for Prepackaged Food, 2000-2015



Source: Derived from SFA.

Table 4.1 reports the TE scores for bilateral trade in PPF. It would be inappropriate to make any strong deductions from the individual country-pair scores, nevertheless, few observations are worth noting. There is substantial variation in TE in PPF trade within ASEAN members, which may suggest that even if behind border constraints are equally applicable to all exporting countries, that is, the partner countries do not discriminate between the sources of imports, exporters (reporters) are affected differently depending on the product structure of exports, resulting in different levels of efficiency. Most country-pairs exhibit low levels of TE. The TE of Thailand, Vietnam and Singapore with their ASEAN trading partners, relatively, is much higher than for other country-pairs. In contrast, the TE scores are the lowest for Brunei and Myanmar as reporter countries to the other partner ASEAN countries. ASEAN members have not achieved their potentials to export in PPF as the TE scores are generally below 0.5.

Table 4.1: ASEAN, Average Bilateral Trade Efficiency for Prepackaged Food, 2000-2015

No.	Country-Pair	TE	No.	Country-Pair	TE	No.	Country-Pair	TE
1	BRN-CAM	-	37	MY-BRN	0.2987	73	THA-BRN	0.2020
2	BRN-IDN	0.0029	38	MY-CAM	0.1625	74	THA-CAM	0.3478
3	BRN-LAO	-	39	MY-IDN	0.1682	75	THA-IDN	0.2210
4	BRN-MY	0.0699	40	MY-LAO	0.0829	76	THA-LAO	0.3161
5	BRN-MYA	0.0000	41	MY-MYA	0.1577	77	THA-MY	0.2166
6	BRN-PHL	0.0053	42	MY-PHL	0.2940	78	THA-MYA	0.2491
7	BRN-SGP	0.0365	43	MY-SGP	0.2355	79	THA-PHL	0.3226
8	BRN-THA	0.0079	44	MY-THA	0.1681	80	THA-SGP	0.3204
9	BRN-VNM	0.0044	45	MY-VNM	0.2866	81	THA-VNM	0.2693
10	CAM-BRN	0.1238	46	MYA-BRN	-	82	VNM-BRN	0.0815
11	CAM-IDN	0.1407	47	MYA-CAM	0.0441	83	VNM-CAM	0.3590
12	CAM-LAO	0.5051	48	MYA-IDN	0.0993	84	VNM-IDN	0.1659
13	CAM-MY	0.1627	49	MYA-LAO	-	85	VNM-LAO	0.0994
14	CAM-MYA	0.2486	50	MYA-MY	0.1836	86	VNM-MY	0.3237
15	CAM-PHL	0.5911	51	MYA-PHL	0.0252	87	VNM-MYA	0.1635
16	CAM-SGP	0.2124	52	MYA-SGP	0.1204	88	VNM-PHL	0.3029
17	CAM-THA	0.1680	53	MYA-THA	0.0493	89	VNM-SGP	0.3871
18	CAM-VNM	0.1205	54	MYA-VNM	0.0411	90	VNM-THA	0.2642
19	IDN-BRN	0.1378	55	PHL--CAM	0.1312			
20	IDN-CAM	0.0379	56	PHL--LAO	0.0493			
21	IDN-LAO	0.0749	57	PHL--MYA	0.0343			
22	IDN-MY	0.1187	58	PHL--VNM	0.1963			
23	IDN-MYA	0.0406	59	PHL-BRN	0.1356			
24	IDN-PHL	0.2417	60	PHL-IDN	0.1740			
25	IDN-SGP	0.2020	61	PHL-MY	0.2573			
26	IDN-THA	0.1675	62	PHL-SGP	0.2445			
27	IDN-VNM	0.1844	63	PHL-THA	0.2385			
28	LAO-BRN	-	64	SGP-BRN	0.3604			
29	LAO-CAM	0.4156	65	SGP-CAM	0.2069			
30	LAO-IDN	0.2397	66	SGP-IDN	0.2275			
31	LAO-MY	0.2216	67	SGP-LAO	0.1405			
32	LAO-MYA	0.1823	68	SGP-MY	0.1457			
33	LAO-PHL	0.1537	69	SGP-MYA	0.2992			
34	LAO-SGP	0.1617	70	SGP-PHL	0.3085			
35	LAO-THA	0.3262	71	SGP-THA	0.2439			
36	LAO-VNM	0.3010	72	SGP-VNM	0.2856			

Note: (1) There are 90 bilateral country-pairs (reporter-partner) for the ten ASEAN members as the study considers two-way export flows in the estimations. (2) The TE scores are averaged for the period of 2000-2015. (3) – indicates inadequate data (due to zero export flows) to estimate TE. (4) MY – Malaysia; SGP – Singapore; THA – Thailand; PHL- Philippines; IDN – Indonesia; BRN – Brunei; CAM – Cambodia; MYA – Myanmar; LAO – Lao PDR; VNM – Vietnam.

Source: Derived from SFA.

Product wise, trade efficiency remains low for all the sub-sectors of the PPF. Namely, HS09 (coffee, tea, mate and spices), HS20 (preparation of vegetable, fruit, nuts or other parts of plants), HS16 (preparation of meat, fish or crustaceans, molluscs, etc.) and HS18 (cocoa and cocoa preparations) are subsectors of PPF with comparatively lower efficiency scores (see Table 4.2). Interestingly, relatively higher efficiency scores are noted in HS22 (beverages, spirits and vinegar) and HS21 (miscellaneous edible preparations).

Table 4.2: ASEAN – Average Trade Efficiency for Prepackaged Food, by Subsectors

HS Code	Product Description	TE
04	Dairy products; birds' eggs; natural honey; edible products, nes.	0.2289
09	Coffee, tea, mate and spices	0.1669
16	Preparation of meat, fish or crustaceans, molluscs, etc.	0.1380
17	Sugars and sugar confectionery	0.2357
18	Cocoa and cocoa preparations	0.1127
19	Preparation of cereal, flour, starch/milk; pastry cooks' products	0.3091
20	Preparation of vegetable, fruit, nuts or other parts of plants	0.1568
21	Miscellaneous edible preparations	0.2820
22	Beverages, spirits and vinegar	0.3019
	Total (Average)	0.2189

Note: The TE scores are averaged for the period of 2000-2015.

Source: Derived from SFA.

4.4 LIMITATIONS OF MACRO-LEVEL ANALYSIS

There are some limitations that are worth mentioning so that the empirical results based on secondary data analysis are interpreted with caution.

(i) The NTM database (ERIA-UNCTAD, 2016) does not provide specific information on nutrition labelling per se. As such, the macro-level empirical analysis is based on B31 (labelling requirements for TBT reasons) since nutrition labelling is a TBT measure and therefore a sub-component of B31.

(ii) Since labelling in general (B31) is a mandatory requirement for most PPF products, the coverage ratio for this measure is almost 100% for this sector. As such, it is not meaningful to incorporate the coverage ratio as an explicit variable in the gravity SFA analysis.

The macro-level analysis, though aggregative in nature, is however useful to set the background of the study. To investigate further the impacts of a specific measure like nutrition labelling, a micro-level (firm-level) study is necessary. This is taken up in the next section.

4.5 SUMMARY OF KEY FINDINGS

The macro level findings of the study can be summarised below:

- The PPF sector is a promising segment of the foodstuffs industry in regional trade; it recorded a higher annual average growth rate and a higher share of intra-regional exports in global exports relative to foodstuffs. Thailand, followed by Singapore and Malaysia remained as the core regional players in terms of export market shares.
- The PPF sector is highly regulated; labelling for TBT reasons (B31) is prominent in the PPF sector.
- Nuanced differences in the labelling requirements prevail across the region. Specifically, regulatory incoherence is evident from the breakdown of the seven core elements of nutrition labelling (nutrition labelling falls under B31).
- Unexhausted trade potentials are evident in regional PPF trade suggesting that policy instruments beyond tariffs, such as NTMs and other behind-the-border barriers to trade, may indeed explain the existing trade inefficiencies in this sector.

5. MICRO-LEVEL ANALYSIS

5.1 RESEARCH DESIGN

The study examined the implications of nutrition labelling, identified through a market survey (see Appendix Table 5[19]) of food exporters and trade associations in ASEAN and direct discussions/ interviews with two selected firms and government officials from two Ministries/ Government Agencies in Malaysia. The information solicited through the survey and interviews centre on the complexity of the elements of nutrition labelling and the business (financial) compliance costs incurred by exporters to forward specific interventions for regulatory convergence within the ASEAN region.

Given a combination of concerns expressed (particularly for, and by SMEs) and the need to ensure that the business costs of implementing any scheme are fully considered, the study adopted a comprehensive approach to most aspects of compliance costs. The following costs (initial/ recurring) were assumed to arise from any nutrition-labelling scheme and were included in the survey: administrative costs; testing costs; re-labelling costs; networking costs; transportation costs and inventory costs.

The total sample of PPF exporters for the study is 26; 24 are respondents of the market survey and the remaining two firms were sourced for interviews/ direct discussion. All firms are categorised as large firms, as many of the SMEs[20] are domestic oriented and do not have the adequate export experience to provide reliable information on issues related to nutrition labelling. The two firms located in Malaysia that were selected for direct discussions are exporters of product categories of HS22 (isotonic drinks, flavoured drinks, soya bean milk, iced tea, fruit juices, mineral water, sodas, and energy drinks) and HS19 (assorted biscuits, wafer rolls, crackers). They were selected on the following bases:

- Categories HS22 and HS19 are Malaysia's two dominant sectors in terms of her contribution to intra-regional exports of PPF, with shares of 37.9% and 27.2% respectively;
- They are established local firms (many years in operation) and market leaders with multiple export destinations in the region.
- Given the small sample size of 26 food exporters from the survey and interview, the study will combine the feedback obtained from both sources. The key findings of the study are summarised in the next section.

5.2 SURVEY FINDINGS

5.2.1 COMPLEXITY OF REGULATIONS

Most ASEAN countries, with the exception of Thailand and the Philippines that have drafted their nutrition labelling regulations very similar to those of the Nutrition Labelling and Education Act of the United States (Tee et al., 2002), follow the Codex Guidelines on nutrition labelling. Even then, countries that follow Codex are at different levels of adopting or aligning to Codex. With the exception for the core nutrient list, declaration of carbohydrates and declaration of minerals and vitamins, most exporters find the four remaining elements of nutrition labelling to be more complex than the Codex guidelines (see Table 5.1). Nutrition claims (including function claims), followed by NRVs, appear to pose major problems to exporters in the region given the highest responses for the categories of 'more complex (ratings of 4 and 5) than the Codex guidelines' come from these two elements.

[19] The questionnaire was developed together with FIA and AFBA.

[20] Worth mentioning here is that there is no standard definition of SMEs for ASEAN. Based on the SME Corp. Malaysia, a small-sized firm is defined as having sales turnover of RM300,000 - < RM15 million – RM50 million; OR employees of 5 - < 75, while a medium-sized firm is defined as having sales turnover of ≤ RM15 million – RM50 million; OR employees of 75 - ≤ 200. As such, a large firm has a sales turnover of more than RM50 million; OR more than 200 employees.

Table 5.1 Distribution of Responses Based on Level of Complexity of Nutrition Labelling

Elements of Nutrition Labelling	Level of Complexity				
	← less complex		Codex		more complex →
	1	2	3	4	5
Core Nutrient List		6	10	6	1
Nutrition Information Panel (NIP) Format		**5**	**6**	**8**	**4**
Nutrient Reference Values (NRVs)		**4**	**4**	**8**	**7**
Declaration of Carbohydrates	1	3	13	5	1
Declaration of Minerals & Vitamins	1	3	8	7	4
Tolerance Level & Compliance		**5**	**5**	**9**	**3**
Nutrition Claims, Nutrient Function Claims & Other Function Claims	**1**	**2**	**3**	**9**	**8**

Note: Based on the 23 responses from the market survey. One respondent did not provide any feedback on the above table. Another respondent did not rate the tolerance level & compliance element.

The reasons cited by the exporters for the complexity in nutrition labelling regulations across the region are reported in Table 5.2. The main reason for the complexity in regulations relate to the inconsistency in regulations that are largely not aligned to Codex. Importantly, the incoherency in regulations are noted even for the established markets in ASEAN, such as Malaysia, Thailand, the Philippines and Indonesia. They largely reflect the lack of alignment in the NRVs with the Codex guidelines. Conversely, the issue of a lack of transparency in overall regulations per se apply to the newer member economies, the CLMV countries, apart from Thailand, Philippines and Indonesia. In terms of the specifics of transparency in regulations, the lack of clarity and inconsistent requirements with the formal documents were observed by exporters when it comes to the guidelines on NIP and tolerance levels in the afore-mentioned countries.

The following are specific peculiarities expressed by the food exporters regarding the regulations per se:

- The format of the Nutrition Information Panel (NIP)[21] in Thailand is similar (but not identical) to that for the US.
- In terms of the nutrient list and declaration of minerals and vitamins, Thailand is considered unique[22] in that vitamins A, B1 and B2, and calcium and iron need to be declared.
- Front-of-pack (FOP) signposting is also cited as an additional issue for one manufacturer in terms of exporting beverages to Brunei. This refers to graphical format in the form of a heart-shaped logo as interpretation of a cholesterol free claim.

[21] Sometimes called 'Nutrition Facts Panel'.

[22] Thailand is also unique in having three sets of conditions triggering the requirement for a nutrition label: foods with nutrition claims, foods which utilise food value in sale promotion and which define consumer groups in sale promotion (that is, the usefulness or function, ingredients or nutrients of product to health for use in sale promotion and sales promotions that are aimed for specific consumer groups such as: students, executives, elderly groups); plus, as of 2007, a series of snack foods (fried or baked crispy potatoes, fried or baked popcorn, rice crackers or extruded snacks, toasted bread, crackers, or biscuits and wafers) (Hawkes, 2010).

Table 5.2 Reasons for Complexity in Nutrition Labelling

Main Reasons for Complexity	Yes	Explanations
Not aligned to international standards	20	• Incoherence in regulations across AMS. • Particularly for THA, PHL and IDN. • "Covered milk code products (milk for 3- years below)" has a different labelling requirement. • Different number of core nutrients, MY (four parameters), PHL (ten parameters), THA (six parameters). • MY mandates both per serving and per 100g OR 100ml (if more than single serving size), while a majority of the other countries only require per serving. • Not following Codex NRV, countries use their own RDI/RDA, while some have not developed their RDI. • THA has own customised guideline daily amount (GDA) format and requirement and does not accept GDA of other countries. • Different/missing NRV/RDA MYS, SGP, BRN. • No harmonised NRV for THA PHL IDN. • Difficulty in meeting requirement to declare % NRV on nutrition facts. • Different NIP format across AMS. • IDN and THA have rigid NIP mandatory format. • Calorie values in many ASEAN countries using 2000 KCAL. • MY requires carbohydrate to be available carbohydrate, while other countries require total carbohydrate. • Stricter tolerance of declared values for VNM; minimum tolerance of sodium for THA. • THA regulation requires 100% label declaration at the end of shelf life, PHL regulation only requires 80% label declaration at the end of shelf life.
Requirements are not transparent	10	• Food regulation law for VNM (in English version) is hard to be found. • No specific regulation for labelling in MYA. • Not transparent for newer AMS (CAM, LAO, MYA, VNM). • Not transparent for THA, IDN and PHL. • Percentage tolerance level has never been announced in writing for reference in THA, while it changes from time to time and varies upon each consultation with the officials in the case of VNM. • Although nutrition facts are not required if there's no nutrient content/function claims made on the label for IDN, but if the label contains nutrition facts for other ASEAN countries, IDN requires it to be complied with IDN regulations. This requirement is not stated in writing and came to be known only when the product was being registered. • Inconsistent requirements received during product registration from the FDA in IDN, VNM and BRN (different from the official document / not stated in official document/ different from officer to officer).
Frequent changes in labelling requirements	4	• Especially in IDN, THA and PHL. • THA had few revisions in format and GDA values in span of 2-3 years. • Although the AMS do not change labelling regulations regularly, frequent changes occur when the product shares a label with multiple ASEAN countries. For example, PHL revised its labelling regulation (general and nutrition labelling) in 2014 (AO 2014-0030); THA issued a new labelling regulation (Reg. 367) in 2014 (general labelling); IDN issued a new ALG which affects % AKG column in nutrition facts in 2016. • Even with a change in requirement every 2 years, some materials minimum order requirement (MOQ) is big and each order may last more than 2 years.
Short grace period	3	• Particularly for IDN, THA and VNM. • When pre-market approval including is needed, particularly in IDN, VNM. • No grace period for new packaging implementation for VNM and MYA. • Most countries allow for at least 1-year grace period for new regulations that entail changes in the label. • Usually two years is given, however some changes may impact formulation and two years is definitely a challenge for reformulation and actual change.
Others: local language; requirement for nutrition facts on individual packs, healthier choice logo.	2	• Local language is mandatory: issue for countries with small business volume. • Especially for THA, IDN and VNM. • PHL and IDN require nutrition facts on each individual pack (sachet, stick), even though they are in the wrapper bag, which is the selling unit, and nutrition facts are already provided on the wrapper bag. Individual packs are small, making it difficult to put nutrition facts on them. • Tendency for countries to develop their own healthier choice scheme, and they are not ready to recognise each other country's logo (eg: THA, SGP, MY and BRN). • SGP 'healthier choice symbol (HCS)' logo not recognised in MYS, leading to dual label for export and local sales.

Note: (1) The second column is based on the 22 responses from the market survey. Two respondents did not provide any feedback on the above table. "Yes" denotes the number of respondents who cited the corresponding reason for the complexity in nutrition labelling.
(2) AMS – ASEAN Member States; MY – Malaysia; SGP – Singapore; THA – Thailand; PHL- Philippines; IDN – Indonesia; BRN – Brunei; CAM – Cambodia; MYA – Myanmar; LAO – Lao PDR; VNM – Vietnam.

5.2.2 COMPLIANCE COSTS

The common reasons for a change in nutrition labelling include the change in regulation in the export market, and product reformulation. The costs incurred and problems encountered from complying with nutrition labelling regulations are presented in Table 5.3.

Table 5.3: Compliance Costs and Problems Related to Nutrition Labelling

Cost Segments	Specific Problems
(1) Administrative Costs	• Initial costs become recurring with constant changes. • Extra resources needed to handle labelling matters. • Hiring of additional staff with technical knowledge and skills; involves higher hiring costs/ difficulty in getting talent/time needed to train new employees. • Label development is very much dependent on regulatory personnel. • For each revision of the label artwork, the support of the advertising agency is needed. The agency charges the service fee per time per one artwork. Some products have more than one pack size, so the numbers of artwork vary. • Due to the local language requirement, there is a need for personnel with language proficiency to check and ensure the compliance with NIP and the claims.
(2) Testing Costs	• Analytical tests need to be performed on a regular (yearly) basis. • Systematic analytical checks is needed to validate the declared nutritional value complies with regulations. • Certificate of authenticity (COA) is needed as supporting document for the Nutrition Information Table. • Cannot proceed with label development without getting done the nutrient analysis report. • No access to a validated database on nutrients. • The database from GREAT (CAT) is useful, except for source countries who are not disciplined to do the necessary monitoring. • Retesting to get missing data and reproduce consistent results. IDN officers are technically incompetent. • IDN product registration requirement makes market testing almost impossible.
(3) Re-labelling Costs	• Write-off costs for old packaging. • Reprinting the label artwork incurs costs on new moulding, printing and services of the advertising agency and packaging material manufacturer. • Labour costs for 'stickering'. • If unable to incorporate the information on the label, 'stickering' is the only way to comply with local regulation. • Additional resources needed to replace labels to conform to the new requirements.
(4) Networking Costs	• Identifying a common lab recognised by all ASEAN countries. • IDN requests for accreditation certificate from a recognised lab, and information on the relationship between all parties on the lab report. • With increasing tests to be performed, there is a continuous need to identify vendors.
(5) Transportation Costs	• For MYA, need to submit the samples of the product in ready-to-launch appearance in every registration with the Food and Drug Administration (FDA). • IDN does not allow for more than five samples to be shipped, thereby increasing the burden for transporting of samples.
(6) Inventory costs	• Incurred only during the transition period, and the costs vary. • Incurred if the grace period is shorter than 1-year. In some cases, even 1-year is too short, especially for products with less frequent production schedules or low sales volume. Packaging materials must be ordered at the minimum ordering quantity (MOQ), so the stock of printed packaging material may be high in inventory and cannot be used up faster than the 1-year grace period. • Even with the grace period, there is a need to ensure no shortage of on-shelf products. Any shortage of on-shelf products will hurt the business directly as the consumers cannot find the products on shelf resulting in the loss of sales. It would also mean that the obligation under the sales contract made with the trade customers to ensure a continuous supply of products cannot be met, resulting in a compensation fee pay-out to the trader. For every change of label, there will always be more or less leftover stocks of the products with the old label that needs to be written off. • Unnecessary waste in discarding outdated label, which are not due to lack of product quality or for safety reasons. • Additional costs for handling and storage. • More warehouse space needed to store multiple labels add complexity to the operations side. It increases the risks of operation error due to two labels of the same product that look similar.
(7) Other costs	• Change of labels require existing registered product to be 're-registered' / updating of registration. Additional man hour/ service cost from agency required to manage the change to get clearance from the Food and Drug Administration (FDA). Delay of clearance may result in out of stock in market and loss of market share/ business opportunity (VNM, IDN, PHL).

Note: (1) Based on the 23 responses from the market survey. (2) MY – Malaysia; SGP – Singapore; THA – Thailand; PHL- Philippines; IDN – Indonesia; BRN – Brunei; CAM – Cambodia; MYA – Myanmar; LAO – Lao PDR; VNM – Vietnam.

From Table 5.3, it is obvious that multiple costs are involved in the complying with an introduction or change in legislative requirement in the ASEAN export market. The responses are at best mixed in terms of whether the compliance costs across the seven segments, as incurred by the firm, are on a one-off basis, or recurrent.

The following additional feedback on compliance costs was obtained from direct discussions with the industry players:

- Compliance costs largely depend on the timeframe given to the manufacturer to adjust. Normally, the regulations provide a grace period (more than one year) for manufacturers to change product labels. During that period, the balance packaging materials and/or sticker labels will be cleared off; unless the customer requires the immediate use of new labels to comply with new rules. Further, overseas agents for the manufacturer provide feedback on whether the product label meets the regulations in the host countries provides, and advice if any changes on product labels require re-registration with foreign authorities.

- Based on one experienced (35-years in operation) food exporter (HS19 category) in Malaysia, there is no issue in exporting to ASEAN as all member states accept the nutrition information (Maklumat Pemakanan and US Nutrition Facts panel) printed on the package. The only case is that sticker labels and/own packaging have to be developed for Thailand, Vietnam, Lao PDR and Indonesia markets, due to their countries' labelling requirements. Overall, this firm does not incur extra label costs from exporting to ASEAN.

- Another experienced (25-years in operation) food exporter (HS22 category) in Malaysia noted networking costs in terms of identifying alternative/new suppliers of analytical laboratory is of little concern as there are accredited laboratories that are multi-disciplinary in scope, covering both calibration and testing.

5.2.3 REGULATORY CONCERNS

Exporters generally need to adjust to a diverse array of country-level standards instead of adhering to one set of international guidelines. The specific problems encountered from compliance with nutrition labelling regulations in the ASEAN markets, compiled from the discussion with the Malaysian firms and government officials (apart from those already reported in Table 5.2) include:

- Inconsistent nutritional profiling criteria and presentation on product labels. In this regard, all firms surveyed and interviewed look forward to some form of consistency in the seven elements of mandatory nutrition labelling (as reported in Table 5.4) and summarised below;

  - ✓ Align core nutrient list with Codex;
  - ✓ Consistent NIP format/ design for ASEAN vs. flexible format (mixed views);
  - ✓ Align country-specific NRVs with Codex or accept country of origin NRVs;
  - ✓ Only declare total carbohydrates (not available carbohydrates);
  - ✓ Align declaration of minerals and vitamins with Codex vs. flexibility in declaring either in international units or metric units (mixed views);
  - ✓ Adopt a common tolerance (based on necessity) level for ASEAN, and adopt consensus rounding rules and decimal point condition that every ASEAN country accepts; and
  - ✓ Adopt a common list of claims for the region and a consensus criteria for the assessment of scientific substantiation for health claims through an MRA.

- Lack of transparency in the regulations. Regulations in Malaysia and Singapore are considerably more accessible and thereby transparent, as the regulations are updated and are readily available online.

Table 5.4: Suggested Changes for Consistency in Nutrition Labelling

Core Elements	Suggested Changes/ Opinions
Core Nutrient List	• Change requirement of total calorie to be stated in PHL. • All types of fat, total sugars and sodium should be listed for relevant products. • Align with Codex.
Nutrition Information Panel (NIP) Format	• Align country specific format in THA, IDN and PHL with Codex. • Format should be flexible in all markets. • To declare only per serving. • Specific design/ format is needed for ASEAN (eg: font style and size, table and etc.)
Nutrient Reference Values (NRVs)	• Give priority to total energy and macro nutrients. • Accept NRV of country of origin. • Align country specific NRVs in THA, IDN and PHL with Codex. • If possible, the NRVs to be same for ASEAN. • Nutrients should be computed based on a single dietary reference value instead of localised recommended energy and nutrient intake (RENI).
Declaration of Carbohydrates	• Allow carbohydrate to be total carbohydrate in MY like other ASEAN countries, instead of requiring carbohydrate to be available carbohydrate.
Declaration of Minerals & Vitamins	• Provide flexibility for the nutrients to be in either international unit (IU) or metric units in MY and PHL. MY requires all vitamins and minerals to be in metric units, while PHL requires vitamin A, D and E to be in IU. • Align declaration of vitamins and/or minerals with Codex. • Mandatory to declare only when a claim is made. • Not relevant as bioavailability and presence is not consistent with label. • Challenging as nutrition status differs across countries.
Tolerance Level & Compliance	• Suggest: same level in VNM as ASEAN countries, which is +/- 20%; change current allowance of +/- 10% of claim. • Adopt consensus tolerance level that every ASEAN country accepts. Tolerance limit should be set based on necessity only. For example, vitamins and minerals without known toxicity should be allowed with open-ended upper tolerance (as long as they do not exceed the maximum daily nutrient limit, if any). • Example of common tolerance levels: Tested value shall not be less than 20% from the declared positive nutrients (protein, vitamins and minerals); Tested value shall not be more than 20% from the declared negative nutrients (fats, trans fat, sugar). • Adopt consensus rounding rules and decimal point condition that every ASEAN country accepts. Different rounding rules and decimal point condition affects the declared values of nutrients on nutrition facts. There are cases when complying with one country's rounding rules or decimal point condition, causes non-compliance with another country.
Nutrition Claims, Nutrient Function Claims & Other Function Claims	• Align claim requirements with Codex. • Adopt a consensus criteria for nutrient content and comparative claims that every ASEAN country accepts. • Adopt a common list of nutrient function claim within ASEAN and capacity sharing, and a Mutual Recognition Agreement (MRA) on assessment of scientific substantiation for health claims. • These claims should be optional.

Note: (1) Based on the 21 responses from the market survey. One respondent did not provide feedback on the above table.
(2) MY – Malaysia; THA- Thailand; PHL- Philippines; IDN – Indonesia; VNM – Vietnam.

5.3 SUMMARY OF KEY FINDINGS

The micro-level findings of the study can be summarised below:

- The complexity of nutrition labelling, as benchmarked against the Codex, is noted for the following two elements more specifically, nutrition (and function) claims and NRVs.
- Incoherency in regulations and lack of transparency, relative to frequent changes in regulations or short grace period for making the change, are cited as the major reasons for the complexity of the regulations in the region.
- Nutrition labelling incurs multiple costs to exporters, with less impact cited for networking costs. The costs of compliance are firm specific; hence this accounts for the mixed responses on the types and nature of costs incurred (one-off or recurrent basis), and the problems of compliance for each segment.
- Apart from the impacts on business compliance costs, complex nutrition labelling distorts trade, as it imposes price and/or quantity effects. It increases the price of the product and results in market- and product losses. This confirms that though nutrition labelling is a NTM (TBT more specifically), it can turn out to be a NTB if the complexity of this regulation increases to the point of limiting trade.
- Though not all exporters desire nutrition labelling be made mandatory, there is a clear consensus when it comes to streamlining measures for the various elements of nutrition labelling to facilitate regional trade.

6. CONCLUSION AND RECOMMENDATIONS

6.1 CONCLUSION

It is interesting to note that of the 24 firms surveyed, and the two firms interviewed,18 firms support that nutrition labelling be made mandatory on PPF in ASEAN as it provides a standardised way for food manufacturers to communicate with their customers. The remaining eight firms are not in favour of mandatory nutrition labelling. Their reasons, apart from the high cost-per-unit of complying with regulations, are, that, some categories of PPF have limited nutritional importance, some food products have no/ limited negative attributes to health, some food products do not have nutrition claims and some categories of packaging have limited space for posting nutrition information. Through discussion with government officials in Malaysia, it is noted that SMEs are not in favour of making nutrition labelling mandatory due to the additional costs (testing and re-labelling of products) borne from complying with those guidelines. For those that support mandatory requirements, they consider the Codex guidelines as a suitable benchmark given that a majority of the ASEAN countries have already adopted this international standard.

The debate should however move beyond the option of voluntary versus mandatory, as even where nutrition labels are only required where a claim is made on foods with special dietary uses, the regulations usually also set out standards for the label format when they are applied on a voluntary basis. Accordingly, even if the label is applied voluntarily, it still must follow mandatory standards on its format (Hawkes, 2010). Further, nutrition labelling is already mandatory for some foods in Thailand and most foods in Malaysia, the core players of PPF trade in the region. Globally, nutrition labelling is becoming increasingly mandatory. It would therefore be in the best interest of the region to solidify its global market position by streamlining the regulations across the AMS.

Despite the mixed responses on making nutrition labelling mandatory, all firms value harmonisation, as common labelling schemes are needed to reduce compliance costs and there is already existing information overload[23] on nutrition for consumers for some food products. The Malaysian stakeholders (industry and government) pointed out some important factors for consideration in harmonising the guidelines. This includes the following:

A. The nutritional contexts – different countries may be lacking or excessive in national diets, and national recommended daily intakes (RDI) may vary between countries;

B. The health burden – concerns and risks of unhealthy diets, obesity and other chronic disease are much higher in some countries than the others, and thus, would be more of a priority in some countries than others. For example, Zakaria et al. (2015) argue the case for mandatory nutrition labelling with a more comprehensive labelling policy inclusive of declaration on salt in processed foods in the case of Brunei. They forward this argument based on the problem of rising hypertension in Brunei and the fact that many manufacturers (mainly those in Brunei and Malaysia) did not display sodium or salt content on the packages based on the Healthier Choice Symbol (HCS) Nutrient Guidelines of Singapore[24].

C. The level of consumer awareness/understanding and the importance of PPF in national diets – dictates the preference for mandatory guidelines and the extent of information needed on the label. In the case of Malaysia, nutrition labelling was made mandatory for a selected group of foods on the basis of those that were frequently consumed and in significant amounts and were important to the community. In Singapore, where consumer awareness is higher relative to most ASEAN countries, it has gone ahead with the HCS for the development of “healthier” products.

D. The consensus of ASEAN to harmonise nutrition labelling – consensus-building from regulators in ASEAN is important to move forward the harmonisation process.

[23] Nutrition information on food labels remains underutilised by consumers (Miller and Cassady, 2015).
[24] The HCS guidelines consist of a set of nutritional (voluntary) criteria that food manufacturers need to adhere to in order to be eligible to carry a Healthier Choice Logo on their products. The guidelines include recommended level of fat, saturated fat, sugar, sodium and dietary fibre on a range of food products such as dairy products, cereals, seafood, meat and poultry, beverages, sauces, soups and convenient foods.

6.2 RECOMMENDATIONS

It is also important to bear in mind that a single nutrition label may not be practical for the region (see also Tee et al., 2002). In this respect, priority should be given to move ahead with the harmonisation of guidelines in a selective manner that will produce the desired results. For this purpose, the following three-stage approach is considered feasible:

(i) Adopt a standard format, aligned to Codex, and identify the minimum (necessary and sufficient) requirements within the basic[25] nutrient list of Codex that should be declared at all times and made mandatory. The idea is to start with streamlining the selected nutrients across the ASEAN Member States[26]

(ii) Give priority to streamline NRVs, as this is cited frequently by firms to be complex relative to the six other core elements of nutrition labelling. Inconsistencies in NRVs also prevail across countries.

(iii) For the other remaining six elements of nutrition labelling, adopt a consensus on the following at the regional level:

- standardise the NIP design and format ;
- a common declaration list of carbohydrates, and list of minerals and vitamins;
- a common tolerance limit (based on necessity), with rounding rules and decimal point conditions that is acceptable in ASEAN Member States;
- a common list of claims and criteria for nutrition (functional) claims

The above recommendations suggest that: (a) not all elements of nutrition labelling can be made mandatory and harmonised; (b) even within those elements that should be mandatory, they need to be done sequentially, that is to align with the Codex guidelines before the identification of the mandatory requirements; and (c) a common consensus, list or criteria for the remaining voluntary guidelines be followed by MRAs[27]. The list or criteria adopted for the region should however be shown to be effective as the set of internationally approved requirements.

Finally, ASEAN should nurture bottom-up rapprochement especially in dealing with the harmonisation or streamlining of technical requirements. At the regional level such as the ACCSQ platform, input from the food industry is important to harness the concerns of the industry players and undertake regulatory changes that benefit the industry. Representation from the food industry in the working group is essential to inform the discussion on the complexity of the regulations, the extent of incoherence in the regulations, and more importantly on the minimum similarities in the requirements that would benefit the industry and facilitate regional trade.

[25] For example, the basic requirement for the core nutrient list as per the Codex recommendation is for the listing on the label energy plus three nutrients, proteins, available carbohydrates (dietary fibre, sugar, starch) and total fats.
[26] The number of nutrients required on labels should be the lowest common nutrients required in the AMS.
[27] Harmonisation is time-consuming and involves consensus-building demands. Harmonisation outcomes are politically and conceptually difficult to accomplish. Hence it must be used sparingly.

APPENDICES

APPENDIX TABLE 1: PRODUCT DESCRIPTION FOR SUBCATEGORIES OF FOOD

HS Code	Product Description
02	Meat and edible meat offal
03	Fish and crustacean, mollusc and other aquatic invertebrate
07	Edible vegetables and certain roots and tubers
08	Edible fruit and nuts; peel of citrus fruit or melons
10	Cereals
11	Product milling industry; malt; starches; inulin; wheat gluten
12	Oil seed, oleagic fruits; miscellaneous grain, seed, fruit, etc.
13	Lac; gums, resins & other vegetable saps & extracts
15	Animal/vegetable fats and oils and their cleavage products, etc.
HS Code	Product Description
04	Dairy products; birds' eggs; natural honey; edible products not elsewhere specified
09	Coffee, tea, mate and spices
16	Preparation of meat, fish or crustaceans, molluscs, etc.
17	Sugars and sugar confectionery
18	Cocoa and cocoa preparations
19	Preparation of cereal, flour, starch/milk; pastry cooks' products
20	Preparation of vegetable, fruit, nuts or other parts of plants
21	Miscellaneous edible preparations
22	Beverages, spirits and vinegar

Source: Based on the UNCOMTRADE commodity code description, https://comtrade.un.org/db/mr/rfCommoditiesList.aspx

APPENDIX TABLE 2: NTM CLASSIFICATION FOR IMPORT MEASURES

Chapters	Technical Measures
A	Sanitary and Phytosanitary (SPS) Measures
B	Technical Barriers to Trade (TBT)
C	Pre-Shipment Inspection and Other Formalities (PSI)
Chapters	**Technical Measures**
D	Contingent Trade Protective Measures (CTPM) Non Automatic Licensing, Quotas, Prohibitions and Quantity Control
E	Measures other than for SPS or TBT Reasons (QC)
F	Price Control Measures, Including Additional Taxes and Charges (PC)
G	Finance Measures
H	Measures Affecting Competition
I	Trade-Related Investment Measures
J	Distribution Restrictions
K	Restrictions on Post Sales Services
L	Subsidies
M	Government Procurement Restrictions
N	Intellectual Property
O	Rules of Origin

Source: UNCTAD (2013).

APPENDIX TABLE 3: VARIANCES IN NUTRITION LABELLING ELEMENTS ACROSS AMS

(i) Core Nutrient List

	Codex	Brunei	Indonesia	Lao PDR	Malaysia	Philippines	Singapore	Thailand
Energy	X	X	X	X	X	X	X	X
Protein	X	X	X	X	X	X	X	X
Carbohydrate	X	X	X	X	X	X	X	X
Fat	X	X	X	X	X	X	X	X
Saturated Fat	X		X			X	X	X
Sodium/Salt	X		X			X	X	X
Total sugars	X		X		X (Draft)	X		X
Trans Fat			X			X	X	
Cholesterol			X			X	X	X
Dietary fibre			X			X	X	X

(ii) Declaration of Carbohydrates

	Codex	Indonesia	Malaysia	Philippines	Singapore	Thailand
Sugars	X	X	X	X	X	X
Dietary fibre		X		X		X
Soluble dietary fibre		X				
Insoluble dietary fibre		X				
Alcohol sugar		X				
Other carbohydrates		X				
Starch					X	

(iii) NIP Format

	Codex	Brunei	Indonesia	Lao PDR	Malaysia	Philippines	Singapore	Thailand
Per 100g/ Per 100ml					X		X	
Per serving					X		X	X
Either Per 100g/ Per 100ml OR Per serving	X	X		X				
%NRV/ %RDI etc			%NRV + amount			%RENI + amount		%RDI + amount

(iv) Declaration of Minerals and Vitamins

Vitamins to be declared if claims have been made AND if they are in amounts not less than 5% per 100g/100ml/serving	Vitamins to be declared if claims have been made	Other requirements/declaration formats
Codex, Malaysia	Brunei, Indonesia, Lao PDR, Philippines, Singapore, Thailand	Philippines: added vitamin A, iron and iodine (products covered under the Food Fortification Programme) have to be declared. Thailand: vitamins A, B1 and B2, and calcium and iron must be declared

(v) Tolerance Level and Compliance

	Codex	Indonesia	Malaysia	Philippines	Singapore
Minimum	Not specified	For fortified food/food with nutritional and/or health claims: at least 100% For other food products with nutrition facts: at least 80%	Protein, vitamins, minerals: 80% No minimum limits for energy, fat, saturated fat, cholesterol, trans fatty acid, sugars, sodium	80%	80%
Maximum	Not specified		Energy, fat, saturated fat, cholesterol, trans fatty acid, sugars, sodium: 120% No maximum limits for protein, vitamins and minerals	Energy, fat, carbohydrate: 120% No maximum limits for other nutrients	120%

Source: FIA (2017).

APPENDIX TABLE 4: PREPACKAGED FOOD SECTOR IN ASEAN - GRAVITY STOCHASTIC FRONTIER ANALYSIS

	(5a)	(5b)
$\ln GDP_i$	1.20*** (0.03)	1.30*** (0.03)
$\ln GDP_j$	0.65*** (0.02)	0.67*** (0.02)
$\ln GDPPC_i$	0.30*** (0.02)	0.27*** (0.02)
$\ln GDPPC_j$	0.01 (0.03)	0.02 (0.03)
$\ln DIST_{ij}$	-0.62*** (0.07)	-0.61*** (0.07)
TRF_j	-0.03*** (0.01)	-0.02** (0.01)
$REER_i$	0.02*** (0.00)	0.05*** (0.00)
$LANGUAGE_{ij}$	0.19** (0.09)	0.16* (0.09)
$BORDER_{ij}$	1.18*** (0.08)	1.22*** (0.08)
$LANDLOCKED_{ij}$	-0.07 (0.12)	-0.00 (0.12)
Constant	-31.40*** (1.21)	-37.67*** (1.47)
σv	1.148*** (0.033)	1.1848*** (0.035)
σu	3.418*** (0.053)	3.340*** (0.055)
λ	2.977*** (0.080)	2.81*** (0.0836)
LR test of $\sigma_u^2 = 0$	610*** (0.00)	520*** (0.00)
Observations	7350	7350

Note: (1) Standard errors are reported in the parentheses. (2) *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

APPENDIX TABLE 5: SAMPLE QUESTIONNAIRE

Economic Impact Assessment of Nutrition Labelling in ASEAN

The University of Malaya team is commissioned by the Food Industry Asia (FIA, Singapore) to undertake an economic impact assessment study of mandatory nutrition labelling on exporters of selected food products in the Association of Southeast Asian Nations (ASEAN). A two-fold (macro-micro) approach to the evaluation and impact of mandatory nutrition labelling on export flows is undertaken within ASEAN. Mandatory nutrition labelling has imposed costs on exporters. Therefore, for the micro-impact assessment of nutrition labelling, the study examines issues related to the key business compliance costs (financial costs) and economic costs through a firm-level survey.

This questionnaire comprises four (4) parts. Please answer all questions. **Your answers will be treated with strict confidentiality.**

Please send the completed questionnaire by email to:

Dr. Evelyn Devadason
Faculty of Economics & Administration
University of Malaya
Lembah Pantai
50603 Kuala Lumpur
Malaysia

Email: evelyndevadason@gmail.com

Please feel free to email me if you have any questions/queries.

We thank you in advance for your kind cooperation.

For firms/ companies with multiple locations in the ASEAN, please provide information based on the location of this particular plant.

01 Please state the location of this particular plant.

_____

02 Major product produced by your firm/ company requiring nutrition labelling

(Please √ ONE only)

√	HS Code	Description
	04	Dairy products, eggs, honey, edible animal product, not elsewhere specified *e.g.: milk, cream, butter, yoghurt, cheese*
	09	Coffee, tea, mate and spices *e.g.: roasted coffee and ground coffee (excluding instant coffee – refer to HS 21), tea leaves, spices such as pepper, vanilla beans, cinnamon*
	16	Preparations of meat, of fish or of crustaceans, molluscs or other aquatic animals *e.g.: sausages, luncheon meat, canned seafood*
	17	Sugars and sugar confectionery *e.g.: cane or beet sugar, glucose, maple syrup, artificial honey, chewing gum, pastilles*
	18	Cocoa and cocoa products *e.g.: cocoa paste, cocoa butter, chocolate*
	19	Preparations of cereals, flour, starch or milk; pastrycooks' products *e.g.: pasta, couscous, bread, pastry, wafers, biscuits*
	20	Preparations of vegetables, fruit, nuts or other parts of plants *e.g.: preserved tomatoes, preserved vegetables, frozen vegetables, potato chips, jams, jellies, marmalades*
	21	Miscellaneous edible preparations *e.g.: concentrates of tea, instant coffee, sauces, condiments, mixed seasoning, soups, broths; ice-cream*
	22	Beverages, spirits and vinegar *e.g: mineral water, aerated waters, flavoured UHT milk, soya milk drinks*

03 Annual global sales turnover of firm/ company (based on 2016):

Annual turnover (USD)	√
< $75,000	
$75,000 - < $375,000	
$375,000 - < $12,500,000	
≥ $12,500,000	

04 Annual exports of major product (as identified in 02) (based on 2016):

Global Exports (% of annual turnover)	√	Exports to ASEAN (% of global exports)	√
< 25%		< 25%	
25% - 49%		25% - 49%	
50% - 74%		50% - 74%	
> 75%		> 75%	

05 Please tick the top three most important ASEAN markets for your major product:

Country	√	Country	√
Malaysia		Brunei	
Singapore		Cambodia	
Thailand		Laos	
Philippines		Myanmar	
Indonesia		Vietnam	

PART 2: MANDATORY NUTRITION LABELLING IN ASEAN

Elements of Nutrition Labelling	Description	Codex Guidelines
Core Nutrient List	"Core" nutrients are nutrients that require mandatory declaration wherever nutrient declaration is applied.	Energy, protein, carbohydrate, fat, saturated fat, sodium/ salt, total sugars.
Nutrition Information Panel (NIP) Format	The expression of nutrient content in the food product as amount per 100ml/100g, per serving size etc.	Either per 100 g / per 100 ml OR per serving.
Nutrient Reference Values (NRVs)	NRVs are a set of numerical values for the purpose of nutrition labelling and relevant claims. They are used as references when declaring the percentage of a particular nutrient against the recommended intake of that nutrient.	For example, the NRVs prescribed for the following nutrients are: Vitamin A: 800 µg Calcium: 1000mg Protein: 50g
Declaration of Carbohydrates	This refers to the expression of carbohydrates, and if dietary fibres and sugars are required to be declared as a subset of carbohydrates.	Codex guidelines recommend that in instances where the type of carbohydrate is declared, this declaration should follow immediately after the declaration of the total carbohydrate content, e.g.: "Carbohydrate … g, of which sugars … g, 'x' … g" where 'x' represents the specific name of any other carbohydrate constituent.
Declaration of Minerals & Vitamins	The requirement(s) for declaring the presence of vitamins and/or minerals, e.g. if the content of that particular vitamin and/or mineral exceeds a certain amount.	Vitamins to be declared if claims have been made and if they are present in amounts not less than 5% NRV per 100 g / 100 ml / serving. Only vitamins and minerals for which recommended intakes have been established and/or which are of nutritional importance should be declared.
Tolerance Level & Compliance	Tolerance limits refer to analytical values of the nutrient content as compared to the value claimed, e.g. for certain nutrients, the analytical value of the nutrient content shall be between 80 – 120% of the content claimed (i.e. tolerance of ±20%).	Not specified in Codex.
Nutrition Claims, Nutrient Function Claims & Other Function Claims	Nutrition claim: Any representation which states, suggests or implies that a food has particular nutritional properties Nutrient function claim: A nutrition claim that describes the physiological role of the nutrient in growth, development and normal functions of the body. Other function claim: Refers to specific beneficial effects of the consumption of foods in the context of the total diet on normal functions or biological activities of the body.	Under Codex, the only nutrition claims permitted are those relating to energy, protein, carbohydrate, and fat and components thereof, fibre, sodium and vitamins and minerals for which NRVs have been established.

06 Rate the complexity of the seven (7) elements of nutrition labelling for your major product (as identified in 02) in the ASEAN market. (Refer to the above table).

Codex guidelines indicate a rating of "3"

1 & 2 = less complex than Codex; 4 & 5 = more complex than Codex

Elements of Nutrition Labelling	Level of Complexity (√)				
	← less complex		Codex	→ more complex	
	1	2	3	4	5
Core Nutrient List					
NIP Format					
Nutrient Reference Values (NRVs)					
Declaration of Carbohydrates					
Declaration of Minerals & Vitamins					
Tolerance Level & Compliance					
Nutrition Claims, Nutrient Function Claims & Other Function Claims					

07 Why do you consider nutrition labelling as complex in the ASEAN markets for your major exported product?

Reason	Yes/ No	State for which individual ASEAN markets
Not aligned to international standards		
Requirements are not transparent		
Frequent changes in labelling requirements (once a year)		
Short grace period (< 1-year)		
Others:		

PART 3: ISSUES OF COMPLIANCE WITH MANDATORY NUTRITION LABELLING IN ASEAN

08 What is the most common reason for the change in nutrition labelling in your firm/ company? (Tick ONE only)

- ◯ Change in regulation in the export market
- ◯ Product reformulation
- ◯ Marketing reasons

For Questions 09 – 10, base your answers on the costs of mandatory nutrition labelling due to an introduction or change in legislative requirement in the ASEAN export market for your major product (as identified in 02):

09 What are the types of costs incurred and problems encountered from compliance with mandatory nutrition labelling in ASEAN markets?

IC – initial cost RC – recurring cost

Cost Segments & Specifics	Tick (√)		Detail the Problem(s) Encountered
	IC	RC	
Administrative costs Includes labour and materials associated with administrative activities			
Hiring of consultants for label compliance.			
Increase in company personnel to manage the labelling regulations (eg: graphic design/ redesign, prepress and printing, audit and inspection, and recordkeeping).			
Testing costs Refers to *analytical* testing and *market* testing costs			
Products that do not have the necessary nutrient information and need to undergo laboratory analysis.			
Access to reliable and validated databases for determining nutrient content requirements are met for the specific product.			
Market testing of the new label design.			

Re-labelling costs Costs of having to attach additional labels onto products that are not specifically packaged for the specific ASEAN (domestic) market before local sale.			
Costs due to reprinting labels to conform to the new specifications.			
Costs due to replacing labels to conform to the new specifications.			
Handling and storage requirements.			
Networking costs Includes sourcing initiatives and managing supplier relationships.			
Sourcing, tracing and verifying nutrient composition and information from suppliers.			
Identifying alternative / new suppliers of analytical laboratory.			
Transportation costs Includes expenses involved in transporting the samples to obtain clearance.			
Shipping of product samples.			
Inventory costs Costs incurred from the following:			
Value of labels in inventory that cannot be used due to the new regulation.			
Discard of products with outdated/ unsuitable labels.			
More warehouse space needed to store multiple labels.			
Other costs (please state):			

10 What are the trade distorting effects faced by your firm/ company due to complex nutrition labelling regulations in ASEAN?

Trade Distortion	Please tick (√) - more than one option is allowed.
Price effect - when exporters price increase	
Quantity reduction (market loss) - When exporters experience market loss	
Quantity reduction (product loss) – When exporters withdraw products from a particular market.	

PART 4: OPINIONS ON NUTRITION LABELLING IN ASEAN

11 Nutrition labelling should be made mandatory on prepackaged food in ASEAN.

◯ Yes. State your reason(s):

□ To facilitate consumers to make informed food choices.

□ To provide a standardized way for food manufacturers to communicate with their customers.

□ Others. Please state: _____

◯ No. State your reason(s):

□ Some categories of food products have limited nutritional importance.

□ Some food products have no/ limited negative attributes to health.

□ High cost-per-unit of complying with regulations.

□ No clear benchmarks against which to measure the efficiency of a nutrition labelling scheme across food products.

□ Others. Please state: _____

12 The most important reason for the harmonization of mandatory nutrition labelling in ASEAN is (Tick ONE only)

□ Reduce compliance costs through common labelling schemes.

□ Ensure regulation is not misused for protectionist purpose.

□ Existing information overload on nutrition for consumers for some food products.

□ Reduce the asymmetry in the provision of nutrition information.

□ Others. Please state: _____

_____

13 What form(s) and type(s) of consistency is (are) needed in mandatory nutritional labelling across ASEAN? Tick relevant information.

Information	Tick (√)	Specify what changes should be made in which markets
Core Nutrient List		
NIP Format		
Nutrient Reference Values (NRVs)		
Declaration of Carbohydrates		
Declaration of Minerals & Vitamins		
Tolerance Level & Compliance		
Nutrition Claims, Nutrient Function Claims & Other Function Claims		

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LIST OF ABBREVIATIONS

AEC	ASEAN Economic Community
AFBA	ASEAN Food and Beverage Alliance
AMS	ASEAN Member States
ASEAN	Association of Southeast Asian Nations
CR	Coverage Ratio
FIA	Food Industry Asia
FR	Frequency Ratio
HS	Harmonised System
NTB	Non-Tariff Barrier
NTM	Non-Tariff Measure
OLS	Ordinary Least Square
PPF	Prepackaged Food
SFA	Stochastic Frontier Analysis
SPS	Sanitary and Phytosanitary
TBT	Technical Barrier to Trade
TE	Trade Efficiency

GLOSSARY

Food: means any substance, whether processed, semi-processed or raw, which is intended for human consumption, and includes drinks, chewing gum and any substance which has been used in the manufacture, preparation or treatment of "food" but does not include cosmetics or tobacco or substances used only as drugs.

Labelling: includes any written, printed or graphic matter that is present on the label, accompanies the food, or is displayed near the food, including that for the purpose of promoting its sale or disposal.

Labelling requirements for TBT reasons: measures regulating the kind, colour and size of printing on packages and labels and defining the information that should be provided to the consumer. Labelling is any written, electronic, or graphic communication on the packaging or on a separate but associated label, or on the product itself. It may include requirements on the official language to be used as well as technical information on the product, such as voltage, components, instruction on use, safety and security advice.

Non-tariff measures: policy measures other than ordinary customs tariffs that can potentially have an economic effect on international trade in goods, changing quantities traded, or prices or both.

Nutrition labelling: a description intended to inform the consumer of the nutritional properties of a food.

Prepackaged: means packaged or made up in advance in a container, ready for offer to the consumer, or for catering purposes.

Prepackaged foods: food that is packaged before being offered for sale in such a way that the food, whether wholly or only partly enclosed, cannot be altered without opening or changing the packaging and is ready for sale to the ultimate consumer or to a catering establishment.

ABOUT ASEAN FOOD AND BEVERAGE ALLIANCE

Who We Are
The ASEAN Food and Beverage Alliance (AFBA) is a group of national associations in South East Asia involved in the manufacturing, distribution and sale of food and beverage products. We are a dedicated non-profit body committed to effectively representing the food industry within the Association of South East Asian Nations (ASEAN).

Vision & Mission
AFBA seeks to support harmonisation efforts across South East Asia and to provide a voice for the ASEAN food industry at the policy table. We aim to coordinate industry efforts to deliver effective input and practical guidance on ASEAN policies, which in turn will unlock the growth potential for intra-and extra-regional trade of food products.

Our Promise
AFBA will help to facilitate intra- and extra-regional trade in ASEAN by supporting and accelerating the ASEAN harmonisation process for the benefit of small, medium and large enterprises, and their consumers in the ASEAN markets.

ABOUT FOOD INDUSTRY ASIA

Food Industry Asia (FIA) is a non-profit organisation that was formed in 2010 to enable major food manufacturers to speak with one voice on complex issues such as health & nutrition, food safety and the harmonisation of standards. From its base in Singapore, FIA seeks to enhance the industry's role as a trusted partner and collaborator in the development of science-based policy throughout Asia. To do so means acting as a knowledge hub for Asia's national industry associations and affiliated groups, to support with their engagement of public bodies and other stakeholders across the region.

UNIVERSITY OF MALAYA CONSULTANTS

Associate Professor Dr Evelyn S. Devadason
Department of Economics
Faculty of Economics and Administration
University of Malaya

Associate Professor Dr VGR Chandran Govindaraju
Department of Development Studies
Faculty of Economics and Administration
University of Malaya

info@afba.co | www.afba.co