



Original Article

The dissemination of non-tariff measures in ASEAN and some implications

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Abstract: By aggregating the calculation of indicators assessing the popularity of non-tariff measures including coverage ratio, frequency index and prevalence score, combined with the tallying method of the number of non-tariff measures applied by ASEAN member states collected from sources such as TRAINS – UNCTAD, WITS – World Bank, this study has assessed the dissemination of the application of ASEAN’s non-tariff measures in the period from 2015 to 2022. The results have shown that the non-tariff measures applied by ASEAN nations tend to increase exponentially. SPS and TBT are the two types of non-tariff measures recorded as the most applicable at ASEAN. The agricultural products sector is being affected by non-tariff measures much more than those in the industrial or mineral sectors. The dense application of non-tariff measures is one of the main reasons why intra-regional trade has not flourished. Non-tariff measures have become the biggest challenge for domestic and foreign enterprises to penetrate into ASEAN markets. Therefore, the study provides some implications to reduce non-tariff barriers, and solutions to help governments and businesses in ASEAN overcome these obstacles.

Keywords: Non-tariff measures, ASEAN, ASEAN member states.

1. Introduction

Non-tariff measures are one of the two main policy instruments (besides tariffs) used by countries in the process of participating in international trade. Since the 1960s, non-tariff measures have steadily replaced tariffs as a core issue in the agenda and especially in trade

negotiations at both the multilateral and bilateral levels (OECD, 2018) when the tariff rates on goods have been now reduced to a very low level thanks to the free trade agreements that are continuously signed between regions and nations.

In the ASEAN region, tariffs have been reduced almost to zero under the framework of the implementation of the Trade and Goods

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Agreement. However, the trend of promulgation and application of non-tariff measures is increasingly recorded (Ing et al., 2016; UNCTAD, 2021) in all ASEAN member states. In addition to the application of this measures towards primitive and non-commercial purposes such as the protection of human health, animal and plants, environmental protection, national security, etc., ASEAN member states have also been using for the purpose of hindering trade or protecting domestic production. The trend of non-tariff measures becoming non-tariff barriers has been very common and obvious, especially in the context of zero tariffs and the fluctuating and complex economy today (namely the COVID-19 pandemic, political tensions between Russia and Ukraine, economic inflation, fierce competition between developed nations, the declining trend of globalization and the return and strong emergence of protectionism, etc.). Economic, political, and social shocks have caused countries to constantly change policies and use non-tariff measures as an effective tool to implement their international trade policies. In the same situation with all nations in the world, non-tariff measures have become the major challenges and barriers to trade for ASEAN member states. Therefore, the assessment of the current situation of dissemination of the application of non-tariff measures in the ASEAN region has become extremely necessary and urgent. Based on the research result, the author give some implications to ASEAN nations in order to build and implement effective non-tariff measures policies to promote international trade, not only intra – ASEAN but also to external partners contributing to the economic growth of each ASEAN member.

2. Research method and data

In order to assess the current status of the popularity of non-tariff measures in ASEAN which impacted on international trade, the study used the tallying method and the calculation method of indicators measuring the dissemination of non-tariff measures including frequency index, coverage ratio, and prevalence score.

The quantity counting method assesses the extent of the increase, change or supplement to

the trade policy regulations in the countries. Meanwhile, three basic indicators have been used to represent the use of non-tariff measures as a policy tool, namely information on how often countries use this instrument, the most common types of non-tariff measures, and the most regulated sectors (Deardorff & Stern, 1997). Indicators can be used to test hypotheses in economic models and to indicate the possible impact of non-tariff measures on trade (UNCTAD, 2021). Moreover, these indicators, which have been based on the strength of policy instruments, measure the degree of adjustment and evaluate the non-tariff measures' impacts on trade or the economy based on calculations under overall trade with all types of non-tariff measures. In addition, they are also suitable to illustrate the extent of the impact of specific non-tariff measures on specific product groups (Melo & Nicita, 2018).

- The method of tallying the number of non-tariff measures applied: This is the simplest method to measure the popularity of non-tariff measures. The study conducted a tally of the number of non-tariff measures issued by countries and applied it to imported and exported goods.

- The method of calculating indicators related to the dissemination of non-tariff measures: The calculation of important indicators is considered as one of the useful approaches to assess the popularity of non-tariff measures (Deardorff & Stern, 1997). In addition, these indicators can also represent the degree of impact of specific non-tariff measures on specific product groups (Melo & Nicita, 2018). It consists of the three following indicators:

- The Frequency Index indicates the percentage of imported commodities subjected to one or more non-tariff measures (UNCTAD, 2022), explaining whether or not non-tariff measures are applied. This indicator is calculated according to the formula:

$$FI_j = \frac{\sum DiMi}{\sum Mi} \times 100$$

In which, FI_j is the frequency index of country j ; Mi , Di are dummy variables; Di reflects whether or not there is at least one NTM applied to product line i (Di will receive value 1 if at least one NTM is applied; if no non-tariff measures are applied, Di will receive value 0);

M_i reflects product lines i affected by non-tariff measures.

The frequency index reflects the popularity of non-tariff measures for commodity lines. The higher the frequency index is, the greater the proportion of product lines affected by non-tariff measures.

- Coverage Ratio: This indicator is calculated by determining the imported value of commodities subjected to non-tariff measures, aggregated by the group of applicable HS and represents the percentage of the total value of imported goods subject to non-tariff measures (UNCTAD, 2022).

$$CR_j = \frac{\sum D_i V_i}{\sum V_i} \times 100$$

Where: CR_j is the coverage ratio in country j . V_i is the value of imported goods, which is influenced by the non-tariff measures. This index reflects the popularity of non-tariff measures for the value of impo

rted goods. The higher the coverage ratio is, the higher the proportion of the value of imported products subject to non-tariff measures is.

Unlike frequency index, coverage ratio is calculated through the value of imported goods, rather than the line of products to be exchanged (UNCTAD, 2022). Both frequency index and coverage ratio reflect the ratio of the number of product lines or the ratio of the value of imported goods subject to non-tariff measures. However, these two indicators do not reflect the level of non-tariff measures' impact on a product affected by only one NTM with the product affected by more than one NTM (Melo & Nicita, 2018).

- Prevalence Score: If a product is subject to more than one non-tariff measure, the prevalence score is calculated. The prevalence score reflects the average number of separate non-tariff measure applied to imported products, thereby measuring the diversity and intensity of non-tariff measures (UNCTAD, 2022).

$$PS = \frac{\sum N_i M_i}{\sum M_i}$$

In which, N_i is the average number of non-tariff measures applied to product M_i .

Therefore, the above three indicators are used to determine the dissemination of non-tariff

measures. These indicators reflect in a formal way the extent of non-tariff measures' effect on traded commodities.

Data source:

- The number of non-tariff measures that ASEAN member states have been applying were collected by country and by type from the Trade Analysis and Information System database (TRAINS – UNCTAD) which is a comprehensive database that provides information on the non-tariff measures of more than 100 countries, applied at a very detailed product level (6-digit Harmonized System) (UNCTAD, 2021).

- The data related to three important indicators were collected from the calculations of The World Integrated Trade Solution – World Bank (WITS – WB) and UNCTAD.

Non-tariff measures have been considered as complicated data, regulated in many different legal documents of countries with different language systems; hence, collecting and systematizing non-tariff measures' data has become a difficult task which leads to some limitations regarding the comprehensiveness and updating of the non-tariff measures' database. However, TRAINS and WITS are also considered as the two most complete and reliable data sources on non-tariff measures at present. In this study, the number of ASEAN member states' non-tariff measures was fully collected by the author according to TRAINS. Regarding the data related to the three indicators, only Laos' data was not collected due to the lack of information on the WITS system.

The research used the international classification of non-tariff measures by UNCTAD (see Appendix).

3. Results

Through bilateral and regional trade agreements, import tariffs have been significantly reduced worldwide, and especially in the regions; however, enterprises have been faced with the increasing non-tariff measures (UNCTAD, 2021). In the same situation as the rest of the world, the number of non-tariff measures in ASEAN member states has tended to increase significantly over time, despite the liberalization of tariffs. If the total number of non-tariff measures applied by ASEAN's

nations was 8,237 in 2015, this figure increased 15% in 2018 reaching 9,502 measures, affecting about 70% of the trade value of member countries (Doan, Rosenow & Buban, 2019). By December 2022, an increase of more than 45% compared to 2018 has been seen in the number of ASEAN member states' non-tariff measures, that is: 13,804 measures according to TRAINS UNCTAD (Figure 1).

Therefore, although tariffs have been sharply cut down, the number of non-tariff measures that ASEAN members have issued has increased exponentially. Moreover, many of them are non-tariff barriers which have limited competitiveness, increased product

prices due to higher trade costs than necessary (EU-ASEAN Business Council, 2019).

Figure 2 shows the picture of the number of non-tariff measures that each country in ASEAN has been applying. Among the 10 nations, Thailand and Vietnam are recognized as the two countries applying the most non-tariff measures. Notably, Thailand – the country with the highest number of non-tariff measures reached 5390 measures, which is nearly twice that of Vietnam (2339 measures) and about 5 times more than the Philippines, Malaysia and Indonesia (over 1000 measures are recorded in these 3 countries). Laos, Cambodia, Singapore, Brunei and Myanmar recorded a relatively lower number of non-tariff measures from about 300 to about 500 measures.

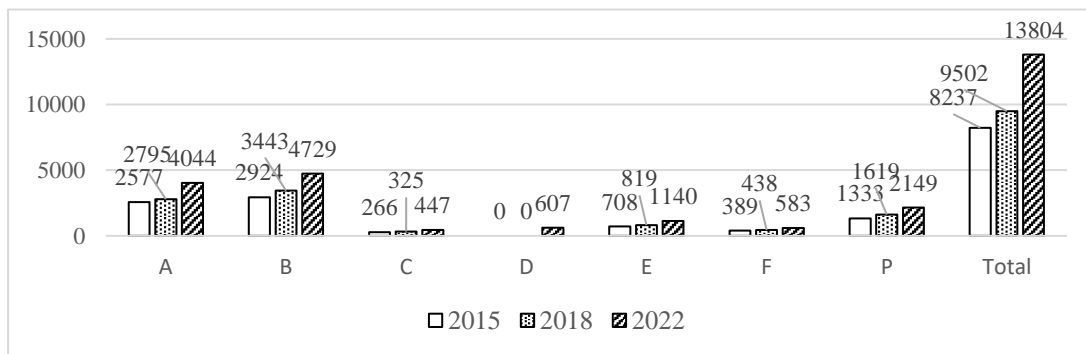


Figure 1: Total ASEAN's non-tariff measures by types in 2015, 2018 and 2022
 Source: ERiA-UNCTAD raw non-tariff measures in ASEAN Database, version 2018 and TRAINS – UNCTAD non-tariff measures database 2022.

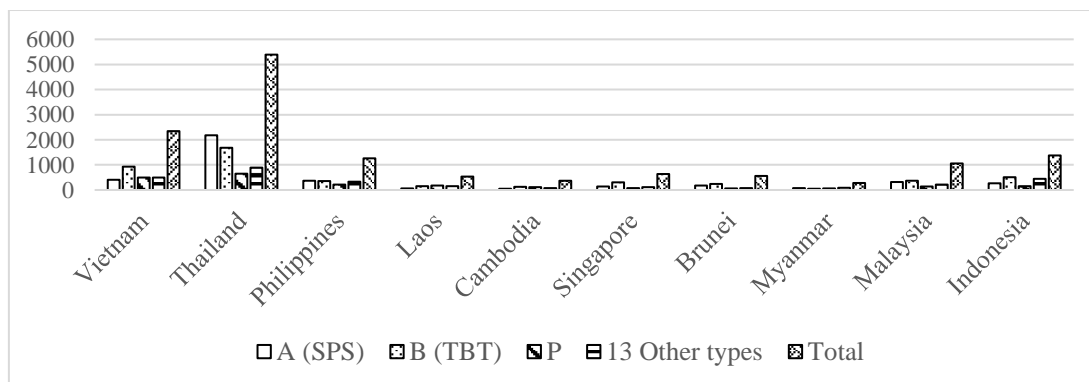


Figure 2: Number of non-tariff measures in ASEAN by country and by type, 2022
 Source: The author calculated from TRAINS – UNCTAD non-tariff measures database.

Non-tariff measures are mainly concentrated in ASEAN-6 countries, which have a high degree of commodity market openness such as in Thailand, Vietnam, Indonesia, Malaysia, and the Philippines. Regarding Singapore, although Singapore has the 3rd highest GDP in the

ASEAN region, the number of non-tariff measures applied by Singapore is quite low, with a figure of about 635 measures. This is 4 times lower than Vietnam and more than 8 times lower than Thailand. The given reasons here are that Singapore has engaged steadfastly in

encouraging trade liberalization, limiting trade barriers and simplifying cumbersome procedures. Meanwhile, Thailand, Vietnam, Indonesia and the Philippines have made tons of regulations aiming to hinder international trade. Hence, for these countries both intra-ASEAN and extra-ASEAN free trade with external partners are seriously hindered. The proliferation of non-tariff barriers in the ASEAN region is a huge obstacle to achieving the ASEAN Economic Community 2025 targets (Asian Trade Centre, 2019).

Regarding the types of non-tariff measures, it is easy to see that SPS and TBT are the two types applied most in ASEAN member states (Figure 3), which has the same status as all other

countries and regions in the world (Ing et al., 2019). By 2022, the 8773 measures applied to imported goods are in the two types of SPS and TBT measures, accounting for 63.6% of the total 13804 non-tariff measures imposed by ASEAN members with 16 measures' types. Specifically, SPS measures occupy 4044 measures; accounting for over 29% while TBT includes 4729 measures, accounting for over 34%. SPS and TBT are also the two measures that have had the largest increase over time (Figure 1). In addition, about 16% of all non-tariff measures are imposed by ASEAN nations on their own exports (Type P). The remaining 13 types only account for about 21% of the total number of non-tariff measures (Figure 3).

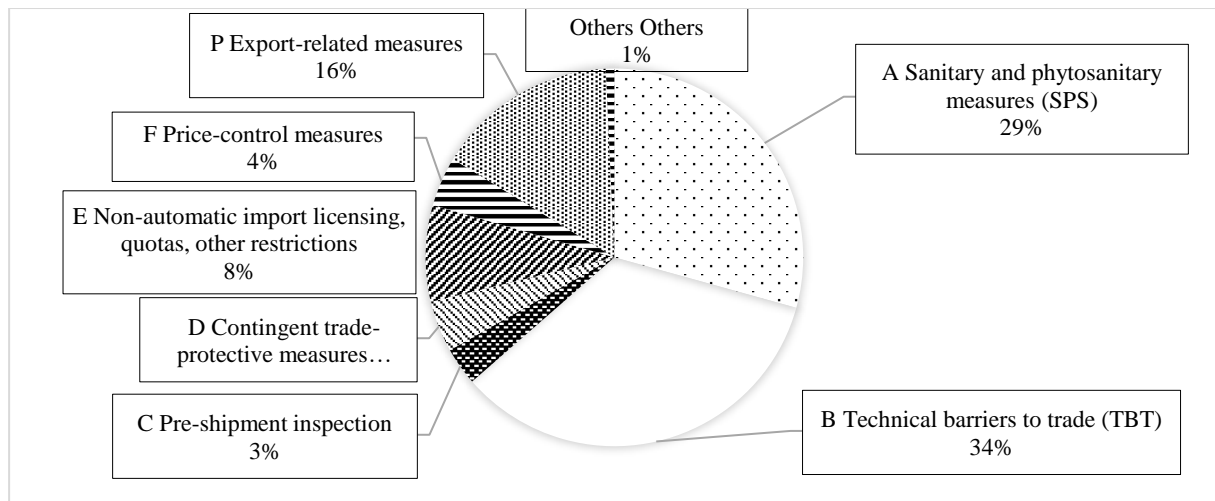


Figure 3: The percentage of non-tariff measures in ASEAN by type, 2022
 Source: The author calculated from TRAINS – UNCTAD non-tariff measures database.

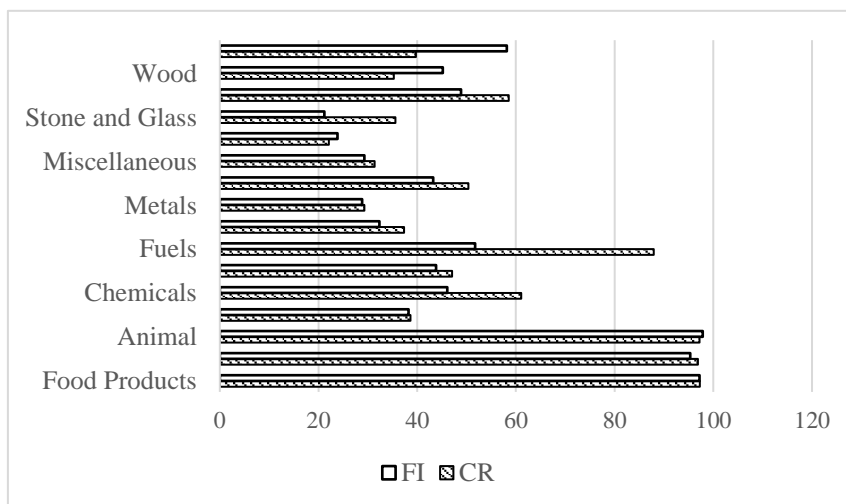


Figure 4: Coverage ratio and frequency index on non-tariff measures by products in ASEAN member economies
 Source: The author compiled from WITS – WB.

Table 1: Non-tariff measures' coverage ratios and frequency index in ASEAN by country and by sector (Unit: %)

Sector	Vietnam		Thailand		Brunei		Cambodia		Indonesia		Malaysia		Myanmar		Philippines		Singapore	
	CR	FI	CR	FI	CR	FI	CR	FI	CR	FI	CR	FI	CR	FI	CR	FI	CR	FI
Food products	100	100	89.36	90.48	100	99.46	92.42	94.21	98.82	99	99.31	99.04	100	100	100	100	95.36	92.65
Vegetable	99.98	99.07	76.14	83.98	99.99	99.02	100	100	99.27	91.77	99.58	99.42	100	100	100	100	96.72	84.76
Animal	79.17	95	98.29	95.36	98.15	97.25	100	100	100	100	100	100	100	100	100	100	99.22	93.08
Textiles and clothing	98.52	98.98	0.38	1.14	1.34	1.79	100	100	80.57	78.16	14.01	11.86	1.57	3.2	49.16	48.43	1.96	0.71
Chemicals	52.97	33.24	39.81	22.15	57.75	22.44	86.05	76.57	69.64	54.49	32.62	28.06	77.55	73.39	69.23	54.47	63.87	50
Footwear	3.49	25.53					92.08	63.04	63.34	53.19	25.04	31.91			98.38	87.23	0.03	2.13
Fuels	78.17	7.69	31.12	44.74	98.6	13.79	94.8	86.36	96.64	28.21	92.05	46.15	100	100	100	97.22	99.77	41.18
Mach and elec	4.39	3.37	17.71	6.74	22.25	7.56	18.71	62.96	61.94	46.04	72.77	40.86	37.95	15.81	92.78	95.46	7.41	12.43
Metals	50.58	35.57	14.32	14.85	0.13	1.27	100	100	40.46	30.47	4.07	7.04	3.81	18.59	49.61	47.8	0.56	3.99
Minerals	33.41	40.86	93.81	86.73	84.39	29.69	0.26	3.46	37.41	13.4	2.1	4.85	100	98.84	100	100	1.92	11.25
Miscellaneous	16.13	13.6	13.89	13.28	5.7	7.53	50.63	54.21	37.53	36.65	30.54	33.9	7.84	9.85	89.34	77.34	30.47	17.49
Plastic or rubber	10.19	8.53	78.98	65.88	4.97	1.02	20.39	32.16	17.56	27.01	0.22	0.95	0.55	11.54	52.27	60.19	13.65	7.11
Stone and glass	42.51	37.7	84.52	22.92	19.24	4.05	66.72	12.16	29.18	35.6	0.59	5.76	1.95	17.39	67.63	51.08	7.77	4.26
Transportation	30.1	17.74	5.11	15.75	52.78	44.34	99.92	94.44	82.65	58.91	28.37	14.96	95.41	63.87	96.53	92.91	36.11	36.97
Wood	51.61	47.64	30.61	36.05	21.36	38.42	81.38	88.6	25.17	46.35	26.92	45.92	11.42	29.86	67.83	70.82	0.94	2.69
Hides and skins							18.71	62.96	77.82	76.56	59.28	81.25	4.14	44	78.59	82.26	0.02	1.85

Source: The author compiled from WITS – WB.

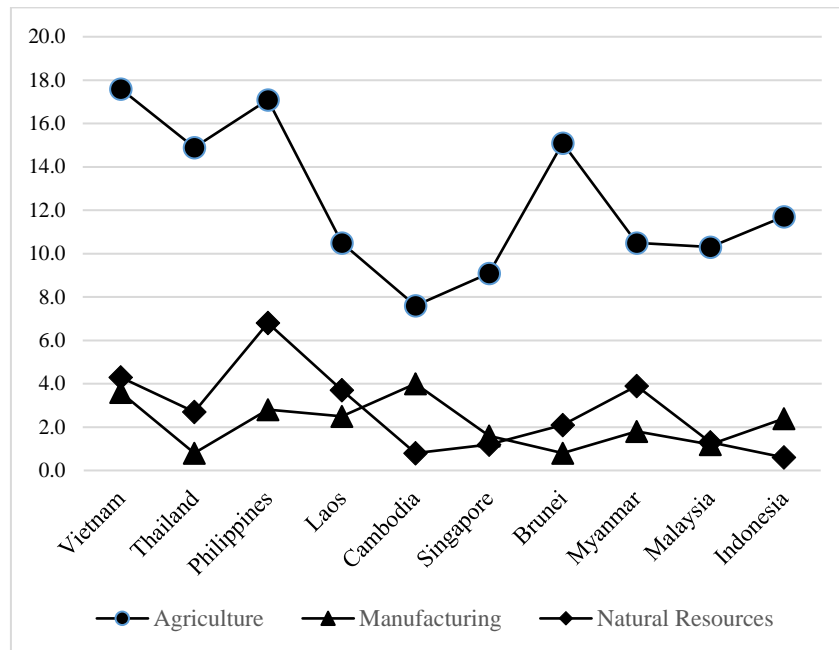


Figure 5: Prevalence score at ASEAN member states by sectors

Source: The author compiled from NTM hub: Data on non-tariff measure (accessed 17 July 2023).

Based on Figure 4, non-tariff measures dominate the product groups of animal, vegetable and food products in terms of product coverage ratio and frequency index with nearly 100% of the value of agricultural products and 100% of agricultural product lines affected by at least one measure. This is followed by fuel commodities with 90% being impacted by non-tariff measures, while commodities related to minerals, hides and skins, transportation, and chemicals are less affected by non-tariff measures with coverage ratio and frequency index in the range of 50-60%.

In particular, non-tariff measures, which are mainly SPS and TBT measures, are recorded as the 2 types that dominate the agricultural sector. This situation in ASEAN is also common with the distribution of non-tariff measures in the world (Ederington & Ruta, 2016). The explanation for the different use of non-tariff measures across different fields is due to technical and economic reasons (Gourdon, 2014). In addition, there is a dispersion of the strongest non-tariff measures regulations in the agricultural sector, which has greater impacts on health (Ederington &

Ruta, 2016), consumer welfare and environmental protection (Cadot et al., 2018).

Table 1 describes in detail the coverage ratio and frequency index of non-tariff measures applied by each ASEAN member state in each specific commodity group. In most ASEAN nations, coverage ratio and frequency index achieved 100% for agricultural commodity groups which means almost 100% of agricultural product lines and 100% of the value of imported agricultural products are affected by non-tariff measures (mainly SPS and TBT).

In addition to agricultural products, there are some commodities that are also subject to about 100% in coverage ratio and 100% in frequency index, such as textiles and clothing in Vietnam and Cambodia; mineral and fuels in Singapore, the Philippines and Myanmar; as well as transportation groups in Singapore, Philippines and Myanmar. Other product groups are seen with different results of coverage ratio and frequency index, which show the influence of non-tariff measures on these traded goods (Table 1).

Regarding the indicator of prevalence score, Figure 5 shows that the agricultural sector is affected by non-tariff measures much

more than those in the industrial or mineral sectors. On average, each agricultural product is affected by 17 measures in Vietnam and the Philippines and 15 measures in Thailand and Brunei. The remaining countries fluctuate around about 8 to 12 measures. By contrast, the prevalence score of non-tariff measures only ranges from 1 to about 4 measures on industrial or mineral commodities. Hence, agricultural products are still the group most affected by non-tariff measures based on the indicator of prevalence score.

4. Discussion and implications

Based on the above-mentioned results, it is possible to make some conclusions about the status of non-tariff measures applied in ASEAN as follows: Firstly, the number of non-tariff measures imposed by ASEAN member states on imported goods is increasing exponentially; Secondly, the two types of SPS and TBT account for the largest proportion of the total number of non-tariff measures; Thirdly, the sectors most strongly affected by non-tariff measures are agricultural commodity groups, with the frequency index and coverage ratio in most ASEAN nations being 100%, and the prevalence score is also the highest compared to other commodity groups. This situation in ASEAN is similar to other countries around the world (Ederington & Ruta, 2016).

“Non-tariff measures are 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” (UNCTAD, 2012). There are a huge number of studies that have shown the negative effects of non-tariff measures on international trade when a nation imposes a large number of non-tariff measures with a high frequency index and coverage ratio like ASEAN member states. Such studies are those of Baldwin (1970), Henson and Loader (2001), OECD (2005), Kee et al. (2009), Gourdon and Nicita (2012), Beghin et al. (2012), Salvatore (2013), Grübler and Reiter (2021), etc.

The increase in the application of non-tariff measures in ASEAN is also based on legitimate purposes, such as: protecting people, animals and the environment. However, in the context of the fluctuating world economic situation, ASEAN member states are using non-tariff measures as a policy tool for protectionism. Therefore, the trend of non-tariff measures becoming non-tariff barriers is more and more popular because these regulations have been too complicated or difficult to be implemented (Ramon & Epictetus, 2016) which leads to increasing difficulties for ASEAN's trade.

In fact, ASEAN member states have been aware of the importance of addressing issues related to non-tariff measures. Since 1977, non-tariff measures has been included in the agenda of ASEAN (Myrna, 2013) which discussed and proposed programs to facilitate intra-regional trade, including initiatives and plans, to reduce non-tariff measures as barriers of intra-ASEAN and extra region trade with external partners. However, the solutions have not been effective in practice so far. ASEAN countries have tended increasingly to enact and apply non-tariff measures, which is an indisputable fact. This is one of the main reasons while ASEAN has successfully removed tariff barriers, with 98.6% of products having been completely removed from the ASEAN Trade in Goods Agreement. However, intra-ASEAN trade has still been hindered. With a large number of non-tariff measures being applied, ASEAN member states' businesses, especially small and medium enterprises, which occupied 90% of the total number of ASEAN's enterprises, have faced a ton of difficulties in meeting the regulations on technical or quality standards to be able to penetrate into ASEAN markets.

Not only intra-regional trade has not prospered, but trade with external partners has also faced many difficulties. According to the survey report of European Union enterprises exporting to the ASEAN member states, businesses considered that non-tariff measures obstructed trade were increasing strongly and negatively affecting trade in goods (EU-ASEAN Business Council, 2019).

Non-tariff measures, especially SPS and TBS measures, have restricted the export of enterprises in member nations to intra – ASEAN markets. Non-tariff measures have impacted the competitiveness of businesses as non-tariff measures cause product prices to increase due to having to meet technical standards and implementing complex continuous control procedures. According to the study of Vietnam Chamber of Commerce and Industry (2021), in the field of agri-food products affected by SPS measures, the country most affected is Vietnam where SPS has caused the price of imported agri-food products to increase 116.4%, followed by Brunei (94.5%), Myanmar (61.9%), the Philippines (60.3%), and Thailand (48.7%). The increase in prices will also reduce the demand for these products in import nations.

Based on the above situation, it is necessary to have solutions to reduce non-tariff measures that are barriers to trade intra ASEAN and external regions. Moreover, until the solutions to reduce non-tariff barriers are successfully implemented, ASEAN member states' governments and businesses also need to have their own solutions to overcome non-tariff barriers, to meet the requirements of the import market. Therefore, ASEAN countries should execute both common and individual solutions in parallel.

The common solution for ASEAN: ASEAN needs to strengthen cooperation and transparency measures within the region. This means that all member nations can cooperate to solve the problem of non-tariff barriers. The dissemination of information on non-tariff measures' regulations by ASEAN member states is the most important problem. Transparency and the need to use technology to facilitate information dissemination to businesses, especially small-medium enterprises are all highlighted (Harsh, 2015; Leong, 2015). Therefore, in order to make non-tariff measures more transparent, all 10 countries jointly implemented an initiative related to building and updating the non-tariff measures database of ASEAN. The countries are required to build a

database of non-tariff measures, and at the same time, each nation must notify when non-tariff measures are revised or new regulations related to them are made. The development of the database is part of a broader initiative – the ASEAN Trade Repository in which information about non-tariff measures must be included. The establishment of the ASEAN Trade Repository will contribute to a significant reduction in business costs through greater regulatory transparency and certainty in business operations (ASEAN Secretariat, 2021).

ASEAN is also implementing plans to update the list as well as reclassify the non-tariff measures to adjust the database of ASEAN's non-tariff measures with the international classification system of UNCTAD 2012 (updated 2019) in order to assist ASEAN in its efforts to build the first comprehensive database related to the non-tariff measures.

For the ASEAN member states' Governments: They need to (1) Improve domestic trade laws and policies and develop regulations on product standards in accordance with world regulations. It is necessary to review, amend, and supply annually the decrees and regulations on the non-tariff measures, especially SPS and TBT to ensure compliance with international and ASEAN's regulations. These adjustments should be based on the measurement of goods harmony between domestic and international regulations. In addition, procedures should be implemented to develop and share information between ASEAN members' governments and stakeholders; (2) Organize a better information channel to help businesses catch up promptly on non-tariff measures while taking part in international trade; (3) Build a team of experts with extensive knowledge and skills to deal with trade disputes, in order to provide information and advice and help businesses in time in a fluctuating market; (4) Support and encourage companies to overcome environmental barriers, invest in science and technology to innovate production processes with qualified products.

For enterprises: The ASEAN member states' companies need to: (1) Improve technology and product quality to meet non-tariff measures requirements from other nations. Especially in the field of agricultural products, enterprises need to plan and implement measures to apply quality management systems of agricultural products according to international standards such as GlobalGAP, ISO, GMP, HACCP; (2) Have a clear understanding of the regulations and laws of ASEAN member states. This is an important determinant of the success or failure of the enterprise. To ensure compliance with regulations and laws, enterprises need to carefully study the regulations in each countries; (3) Expand and strengthen links with other enterprises. Large enterprises often have the finance and the ability to apply scientific and technological advances to production processes. Therefore, the cooperation and association between enterprises will bring benefits in meeting international orders; (4) Strengthen market research and trade promotion activities; (5) Actively deal and coordinate in trade disputes.

5. Conclusion

The difficult situation brought by non-tariff measures to ASEAN member states is indisputable through the above-analyzed results. It will be a long and challenging way for ASEAN to reduce non-tariff barriers; However, the results will be very desirable when intra-region and external trade grows stronger and more competitive and will lead to a more sustainable recovery. It is essential that ASEAN need to be united in implementing solutions, both in the regional level and in each nations.

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APPENDIX

The international classification of non-tariff measures

NTM Type	NTM Description
A	Sanitary and phytosanitary measures (SPS)
B	Technical barriers to trade (TBT)
C	Pre-shipment inspection and other formalities
D	Contingent trade-protective measures
E	Non-automatic import licensing, quotas, prohibitions, quantity-control measures and other restrictions not including SPS or TBT
F	Price-control measures, including additional taxes and charges
G	Finance measures
H	Measures affecting competition
I	Trade-related investment measures
N	Intellectual property
P	Export-related measures

Source: UNCTAD (2019, 2021).