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Nontariff Measures in the Philippines: A Preliminary Analysis Using Incidence Indicators

Francis Mark A. Quimba
Sylwyn C. Calizo Jr.

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Please address all inquiries to:

Philippine Institute for Development Studies
18th Floor, Three Cyberpod Centris - North Tower
EDSA corner Quezon Avenue, 1100 Quezon City
Telephone: (63-2) 8877-4000; 8372-1291 to 92
Fax: (63-2) 8877-4099
E-mail: publications@mail.pids.gov.ph
Website: <https://www.pids.gov.ph>

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List of Acronyms

ADB	Asian Development Bank
AIM	Asian Institute of Management
APEC	Asia-Pacific Economic Cooperation
ASEAN	Association of Southeast Asian Nations
AVE	ad valorem equivalent
BAI	Bureau of Animal Industry
BFAR	Bureau of Fisheries and Aquatic Resources
BPI	Bureau of Plant Industry
BPS	Bureau of Philippine Standards
DA	Department of Agriculture
DAO	Department Administrative Order
DENR	Department of Environment and Natural Resources
DepEd	Department of Education
DSWD	Department of Social Welfare and Development
DTI	Department of Trade and Industry
ERIA	Economic Research Institute for ASEAN and East Asia
FDA	Food and Drug Administration
GPN	global production network
GVA	gross value added
GVC	global value chain
ICT	information and communications technology
IMF	International Monetary Fund
ITC	International Trade Centre
KII	key informant interview
LBP	Land Bank of the Philippines
OECD	Organisation for Economic Co-operation and Development
NTM	nontariff measure
NFA	National Food Authority
PAGCOR	Philippine Amusement and Gaming Corporation
PHP	Philippine peso
PNRI	Philippine Nuclear Research Institute
QMS	quality management system
RA	Republic Act
ROW	Rest of the World
SD	standard deviation

SDGs	Sustainable Development Goals
SE	standard error
SMEs	small and medium enterprises
SNA	System of National Accounts
US	United States
USD	US dollar
UNCTAD	United Nations Conference on Trade and Development
UNCTAD-MAST	UNCTAD-Multi-Agency Support Team
UNCTAD-TRAINS	UNCTAD-Trade Analysis Information System
UNIDO	United Nations Industrial Development Organization
WITS	World Integrated Trade Solution
WTO	World Trade Organization
WTO-iTIP	WTO-Integrated Trade Intelligence Portal

Abstract

As several countries have reduced tariff rates, other forms of regulatory measures that impact on trade have proliferated. These regulations, collectively known as nontariff measures (NTMs), can be imposed on both imports and exports. Using descriptive indicators, NTMs could be measured with coverage ratios, frequency indices, and prevalence scores. For instance, the coverage ratios for all NTMs is found to be at 99.6 percent, which means that practically all of the imports value of the Philippines are affected. NTM chapters with the highest coverage ratio values, applied on all products, are Chapters C (preshipment inspection and other formalities), F (price control), and G (finance) at 99.6 percent followed by Chapter B (technical barriers to trade) at 89.5 percent. Across the different government agencies, it has been found that the Department of Agriculture and the Department of Environment and Natural Resources both implement the most number of NTMs with 422 and 103 NTMs, respectively. Moreover, both agricultural goods and manufactured goods have been shown to be highly regulated at 92.2 percent and 93.9 percent, respectively, albeit agricultural goods have a higher prevalence score (19.8) compared to manufactured goods (8.9). Furthermore, between capital goods and consumption goods, results have shown that capital goods have a slightly higher frequency index (96.8%) compared with consumption goods (93.7%) despite both showing a similar number of NTMs. The relationship between NTMs and trade has shown that the average number of NTMs applied on a product group tends to have no association either with the growth rates of imports of that product group or with technical measures. However, the number of nontechnical measures show a negative correlation on the same. Likewise, imports growth is also negatively correlated with the number of consumer and customs NTMs although positive correlations were observed with process NTMs.

Introduction

As tariff rates of protection have dropped all over the world, other regulatory measures that impact on trade have become increasingly important. Examples of these regulations would include technical standards, i.e., Sanitary and Phytosanitary (SPS) measures and Technical Barriers to Trade (TBT) measures, quotas, price controls, export restrictions, contingent trade protective measures (e.g., antidumping and safeguard measures), behind-the-border measures that apply to the operation of firms in a market (e.g., local content requirements), and trade-related investment measures. All of these are examples of the broad category of trade measures called nontariff measures (NTMs).

Objectives of the study

The purpose of this paper is to dig deeper into the macropicture of NTMs to understand them better and explore how they are related to Philippine trade. This study's research is guided by the questions:

- Which industries (agriculture versus manufacturing) are more regulated?
- Which commodity groups (capital versus consumption) are more regulated?
- What is the relationship between NTMs and trade outcomes?

Significance of the study

This study on NTMs is very much in line with the strategies identified in the *Philippine Development Plan (PDP) 2017-2022*¹ because this paper analyzes the existing trade policy environment which affects importers and exporters. The PDP intends to implement a strategic external policy regime, which includes

- expanding market access and diversifying export products and markets;
- increasing the competitiveness of Philippine exports; and
- enhancing trade facilitation and strengthening linkages and connectivity.

¹ The PDP 2017–2022 could be read in full at http://www.neda.gov.ph/wp-content/uploads/2017/12/Abridged-PDP-2017-2022_Final.pdf.

This study on NTMs supports the strategy to increase competitiveness of Philippine exports by highlighting the importance of adhering to international standards of products. The issue of NTMs is also related to the issue of declining export competitiveness (*Export Development Plan 2015–2017*²) through its possible negative effects on the ability of local producers to link up with the global value chains (GVCs).

Furthermore, NTMs have implications for industrial development. In their analysis of NTMs in the Association of Southeast Asian Nations (ASEAN), Ing et al. (2016) found that among the most heavily regulated products (i.e., three or more NTMs) include those that are clearly sensitive from a public health perspective (e.g., animal products, foodstuffs, and chemicals) and those where the rationale for state regulation is less clear. For instance, machinery which is highly differentiated is typically purchased by companies with the capability to assess quality by themselves, perhaps even better than government agencies, yet it is one of the most heavily regulated products. The automobile sector is another heavily regulated industry. Finally, Ing et al. (2016) identified textile products as another economically important sector in which safety standards are of secondary importance yet substantially affected by NTMs.

The issue of NTMs also affects the achievement of the Sustainable Development Goals (SDGs). Goal 17 (strengthening the means of implementation and the Global Partnership for Sustainable Development) directly relates the SDGs and trade policy by issuing a call to adhere to a universal, rules-based, open, nondiscriminatory, and equitable multilateral trading system under the WTO; timely implementation of duty-free, quota-free market access on a lasting basis for all least developed countries supported by preferential rules of origin that are transparent, simple, and facilitates market access; and respecting national policy space and leadership to establish and implement policies for poverty eradication and sustainable development.

Furthermore, a number of SDGs indirectly reference NTMs as instruments that can affect the attainment of a specific objective (WTO 2018; see Annex 1). These would include the following:

- Goal 2 (Ending Hunger) includes, among others, a call to foster more trade through the removal of trade restrictions and distortions in world agricultural markets. This would also

² The Philippine Export Development Plan 2015–2017 could be read in full at <http://www.edc.net.ph/wp-content/uploads/2018/04/PEDP-2015-2017-FullText.pdf>

include the elimination of agricultural export subsidies and all export measures with equivalent effect;

- Goal 9 (Industry, Innovation, and Infrastructure) which notes the need to increase the integration of small-scale industrial and other enterprises into GVCs may be affected by restrictions on imports of intermediate goods and capital, government procurement and regional and trans-border rules and regulations;
- Goal 10 (Reducing Inequality) recognizes the need for special and differential treatment for developing countries within the World Trade Organization (WTO) system; and
- Goal 14 (Conservation of Maritime Resources) may be facilitated by limiting the export subsidies utilized by rich countries on fisheries exports.

Limitations of the study

Much of this study relies on the calculation of indices to describe the NTM environment of the Philippines. However, these indicators may suffer endogeneity issues as the relationship between imports and NTMs may be difficult to ascertain. Also, a certain sector that reports zero imports would mean that that sector would be excluded in the calculation of the coverage ratios; however, the zero imports may have been the result of some NTMs previously applied to that particular sector.

In an attempt to relate NTMs with trade outputs, this paper utilizes simple correlations as presented in scatterplots. Although a more rigorous econometric analysis is necessary to disentangle the complicated relationship of trade outcomes and NTMs, this paper is satisfied with simple correlations as an initial assessment. Further research would explore econometric analysis of NTMs and trade outcomes.

What Are NTMs?

NTMs are policy measures—other than ordinary customs tariffs—that can potentially have an economic effect on international trade in goods, changing quantities traded, prices, or both (UNCTAD 2015). Pasadilla (2013), however, clarifies that NTMs are not necessarily nontariff

barriers (NTBs) if there is a sufficient reason behind the imposition of the NTM. For instance, reasonable NTMs could include health protection, local species protection, or sanitation. The question proceeds as to what determines sufficient reason for an NTM to be an NTB? When is a precaution regarded as too stringent that it results in an NTM becoming a trade protection?

Taxonomy of NTMs

Given the broad definition that NTMs could potentially take, the United Nations Conference on Trade and Development (UNCTAD) together with the Food and Agriculture Organization (FAO) of the United Nations, the International Monetary Fund (IMF), the International Trade Centre (ITC), the Organisation for Economic Co-operation and Development (OECD), the United Nations Industrial Development Organization (UNIDO), the World Bank, and the WTO organized a classification of NTMs. In general, there are three main categories of NTMs namely (1) technical measures, (2) nontechnical measures, and (3) export-related measures (Table 1).

Technical measures pertain to the physical characteristics, technical specifications, or production process used on a certain product. These measures also include associated conformity assessment methods. Included here are chapters A (SPS), B (TBT), and C (preshipment inspection and other regulations). SPS includes all measures and restrictions related to food safety and disease prevention. This would include specific requirements such as certification, testing, inspection, and quarantine. Meanwhile, TBT measures include regulations related to technical standards and specifications including quality requirements. These TBT measures may be imposed for consumer and environmental protection. It would also include conformity assessment measures related to technical requirements such as certification, testing, and inspection whereas Chapter C would include all measures related to preshipment inspections and other customs documentation and formalities.

Table 1. Classification of nontariff measures

Imports	Technical measures	A	Sanitary and Phytosanitary (SPS) measures
		B	Technical Barriers to Trade (TBT)
		C	Preshipment inspection and other formalities
	Non-technical measures	D	Contingent trade-protective measures
		E	Nonautomatic licensing, quotas, prohibitions, and quantity-control measures other than for SPS or TBT reasons
		F	Price-control measures, including additional taxes and charges
		G	Finance measures
		H	Measures affecting competition
		I	Trade-related investment measures
		J	Distribution restrictions
		K	Restrictions on post-sales services
		L	Subsidies (excluding export subsidies under P7)
		M	Government procurement restrictions
		N	Intellectual property
		O	Rules of origin
	Exports	P	Export-related measures

Source: UNCTAD (2015)

Nontechnical measures, on the other hand, are comprised by chapters E to O. Particularly, chapters E and F are the ‘hard’ group of measures³ traditionally used in trade policy (while chapters L, M, N, and O are described as ‘behind-the-border’ measures⁴ (UNCTAD 2015; de Melo and Nicita 2018). Chapter E includes measures aimed at limiting the volume of imports regardless of source but excluding the measures related to SPS and TBT. Examples of this measure include

³ UNCTAD (2015) considers these as hard measures as these directly control the price and/or quantity of the goods being traded.

⁴ NTMs may also be classified according to where the NTMS are being applied, i.e., either as ‘at-the-border’ or as ‘behind-the-border’. At-the-border measures would include some import measures (e.g., quotas, import licensing, custom fees, anti-dumping actions) and export measures (e.g., export subsidies, export taxes, voluntary export restraints). Behind-the-border measures, imposed internally in the domestic economy, would include most technical measures resulting from domestic legislation covering product standards in relation to health, environmental, technical and other concerns, as well as internal taxes and domestic subsidies (de Melo and Nicita 2018).

those that are related to nonautomatic import licensing procedures, quotas, and other prohibitions. Chapter F, meanwhile, includes measures and regulations that aim to control or affect the prices of imported goods for a number of reasons which could include those supporting the domestic price of certain products when the import prices of these goods are lower, establishing the domestic price of certain products because of price reduction in domestic markets, or price instability in a foreign market. Chapter F could likewise include increasing or preserving tax revenue, and measures other than tariff measures that increase the cost of imports in a similar manner (i.e., para-tariff measures).

Chapter G covers finance measures that would include measures restricting the payments of imports when the foreign exchange is regulated, and those imposing restrictions on the terms of payments whereas Chapter H would pertain to measures affecting competition including State trading, sole importing agencies, or compulsory national insurance or transport.

On the other hand, Chapter I refers to trade-related investment measures that include policies requiring foreign investors to source from local manufacturers. These measures could be likened to tariffs on imported intermediate goods essentially inducing firms to resort to (usually more expensive) local products. These measures could also be viewed as quantitative restrictions preventing the importation of certain intermediate goods beyond the defined limit. Chapter J, meanwhile, covers measures related to the internal distribution of imported products. These would include measures allowing for the existence of a monopoly on the importation of specific products. Mandatory import-licensing regulations are also included in Chapter J. Chapter K would cover the restriction to the provision of after-sales and ancillary services. Restrictions to the provision of accessory services are also included in this chapter to the extent that these measures hamper the importation of foreign products, making them potentially being considered as NTMs.

The UNCTAD classification describes measures in Chapters L, M, N, and O as 'behind-the-border' policies. Chapter L includes subsidies that affect trade excluding export subsidies whereas Chapter M is on government procurement measures that cover restrictions on foreign companies as they attempt to sell to the national government including the preference for national providers. Meanwhile, Chapter N refers to

intellectual property measures that would cover legislations on patents, trademarks, industrial designs, copyrights, and similar related concepts. Finally, Chapter O refers to the Rules of Origin (ROO) that serves as the criteria used by customs authorities to determine the nationality of a product, the inputs used on the product, or even by the producer. The ROO are not necessarily NTBs as these could simply be used to inform consumers on the origin of these products; however, it could be considered as a potential NTB to the extent that these rules could be used to determine preferential treatment to certain products.

Finally, Chapter P refers to all export measures that an exporting country applies to its exports. The policies covered under this heading comprise export restrictions, export quotas, and export price-control measures. It would also include measures on re-exports (exported goods originally imported from abroad.)

Examples of NTMs in the Philippines

Without concrete examples, the taxonomy discussed in the previous section becomes quite esoteric. This section provides select examples of technical, nontechnical, and export-related measures being implemented in the Philippines on its imports. Examples are likewise provided for agricultural and manufacturing products.

Technical measures (Chapters A, B, and C) applied by the Philippines could cover imports from specific countries (such as Japan or the United States) or could encompass all countries. Similarly, technical measures could also be applied to agricultural or manufacturing products (Box 1).

The Philippines also imposes nontechnical measures (Chapters D, E, F, G, and H). Box 2 provides some examples of these NTMs. These examples show that NTMs imposed by the Philippines to Philippine exports may be product-specific (e.g., RFID), or it may cover an entire set of products (e.g., all products covered by the BPS.) It may also affect products having a specific characteristic such as in the case of right-hand drive vehicles.

NTMs imposed by the Philippines may also come from different types of regulation and are imposed by different agencies. The Department of Agriculture (DA), together with its attached bureaus and agencies, imposes the greatest number of NTMs as reported in the WTO Integrated Trade Intelligence Portal (WTO-iTIP) (Figure 1).

Box 1. Examples of technical measures applied by the Philippines for agriculture and manufacturing products

A. Imports of agricultural products

1. SPS measures governing fish and fishery products from Japan

In 2012, the Bureau of Fisheries and Aquatic Resources (BFAR) issued Memorandum Order 1, series of 2011, on the pre- and post-border requirements in the application of SPS clearance for importation of fish and fishery products from Japan. This measure requires that all application for SPS clearance for the importation of fish and fishery products from the prefectures of Fukushima, Ibaraki, Tochigi, and Gunma shall be accompanied by radionuclide test results for Iodine 131, Cesium 134, and Cesium 137 from the competent authority of Japan showing that the products conform with the guidance levels for representative radionuclides in food under the Philippine Nuclear Research Institute Administrative Order (AO) 1, series of 2009.

On the other hand, all applications for SPS clearance for the importation of fish and fishery products from other prefectures shall be accompanied by a Certificate of Origin from the competent authority of Japan indicating the prefecture of origin of the consignment.

2. TBT measures affecting vegetable products (celery, lettuce, and crucifers) from the United States

The Bureau of Plant Industry (BPI) has issued its rules and regulations governing the importation of fresh vegetables (celery, lettuce, and crucifers) from the United States. As a labelling regulation for consignments that have satisfactorily passed the inspection, each carton box is required to be sealed and labeled with the following information conspicuously displayed on two sides of the box: "For the Philippines" – information label that includes the country or district of origin and the individual shipper or grower.

3. Pre-inspection measures on meat products (edible carcass) from all countries

In February 2015, the Revised Implementing Rules and Regulations of Republic Act (RA) 9296, otherwise known as the "Meat Inspection Code," as amended by RA 10536, required that all meat exporters to the Philippines must comply with *all other Philippine import requirements* prior to the shipment of meat and meat products into the country. This would cover fresh, chilled, or frozen edible carcass including offal derived from food animals and products made, wholly or in part, from meat. Tasked to implement this is the National Meat Inspection Service.

Box 1. (continued)

B. Imports of manufactured products

1. SPS on used vehicles, earth moving equipment, and container vans

In 1981, the Philippines imposed a regulation on the importation of used vehicles, earth moving equipment, and container vans. The Department of Agriculture (DA) through the BPI was mandated by Presidential Decree 1433 entitled "Promulgating the Plant Quarantine Law of 1978, thereby revising and consolidating existing plant quarantine laws to further improve and strengthen the plant quarantine service of BPI" to subject to plant quarantine inspection all used vehicles, earth moving equipment, and container vans to determine whether these are free from soils, sand, or earth and those found contaminated shall be required to be disinfected or washed and cleaned thoroughly.

2. TBT on the Radio Frequency Identification Systems (RFIC)

In 2006, the National Telecommunications Commission (NTC) required that all RFID tags shall be covered by a 'Permit to Import'.

3. Inspection covering household appliances, lights and lighting, wiring devices, wires and cables, mechanical and construction materials, and chemical and consumer products

The Bureau of Philippine Standards (BPS) New Rules and Regulations concerning the issuance of the Import Commodity Clearance under Product Certification Mark Scheme of the BPS accepts the Quality Management System (QMS) document of the product manufacturer submitted by the importer but subject to on-site audit or inspection by BPS-qualified QMS auditors to verify compliance with any needed corrective action noted during the review of said documents. The BPS allows the importation after submission of results of these activities is made.

Source: WTO-Trade Analysis Information System (WTO-TRAINS)

Box 2. Examples of nontechnical measures applied by the Philippines for agriculture and manufacturing imports

A. Imports of agricultural products

1. Import-licensing regulations for fresh vegetable importation (Chapter E)

Based on the Bureau of Plant Industry Memorandum Order 206, series of 2009 entitled "Requirement for Fresh Vegetables Importation", all companies applying as importer of fresh vegetables must have high-end clients before being accredited. Importation of fresh vegetables is monitored and every application for Plant Quarantine Clearance should have a certification from the clients of the ordered vegetables with the corresponding volume.

This is to reiterate that the importation of fresh vegetables is allowed mainly to supply the demand of consumers of high-end institutions that would only include hotels, restaurants, and airline companies. Supermarkets, hypermarkets, and groceries are not considered as high-end institutions.

2. Processing fee charged per bill of lading for the importation of rice (Chapter F)

In compliance with the general guidelines for the importation of 163,000 metric tons (MT) well-milled rice under the Minimum Access Volume-Country Specific Quota (MAV-CSQ) program for the year 2014, the import permit shall be issued upon payment of a processing fee of PHP 2,000.00 per Bill of Lading.

3. Terms of payment regulations for importation of rice (Chapter G)

Following the general guidelines for the importation of 163000 MT well-milled rice under the MAV-CSQ program for the year 2014, Land Bank of the Philippines (LBP) shall process and accept payment of the advance customs duty or tariff based on the volume specified and the amount computed and stated in the Certificate of Eligibility. The eligible importer shall open an account with the designated LBP branches for the payment of advance customs duties or tariffs. The importer shall open bank account with LBP only, simultaneously with payment of the initial advance customs duty or tariff or with a negotiable instrument as listed. The National Food Authority (NFA) shall not honor cash payments or negotiable instruments issued by other banks.

Box 2. (continued)

B. Imports of manufactured products

1. Import of right-hand drive vehicles (Chapter E)

Under Republic Act (RA) 8506, Section 1, it is unlawful for any person to import, cause the importation of, register, cause the registration of, use, or operate any vehicle with its steering wheel at the right-hand side thereof of any highway, street, or road, whether private or public, or of the national or local government. The exceptions to this would be those that are acknowledged as vintage automobiles manufactured before 1960 given that it is in showroom condition. Vehicles to be utilized exclusively for officially and legally sanctioned motorsport events and off-road special purpose vehicles are also exempted from this law.

2. Application fees for the importation of vaccines, biologics, and other temperature-sensitive drug products (Chapter F)

Based on the Food and Drug Administration (FDA) AO 2014-0034, the FDA has the authority to collect a nonrefundable application fee for each type of activity or classification that the application will engage in and other charges as may be allowed by the existing rules on fees and charges or surcharges. These fees and other charges shall be based on the existing issuances on schedule of fees including any applicable amendments.

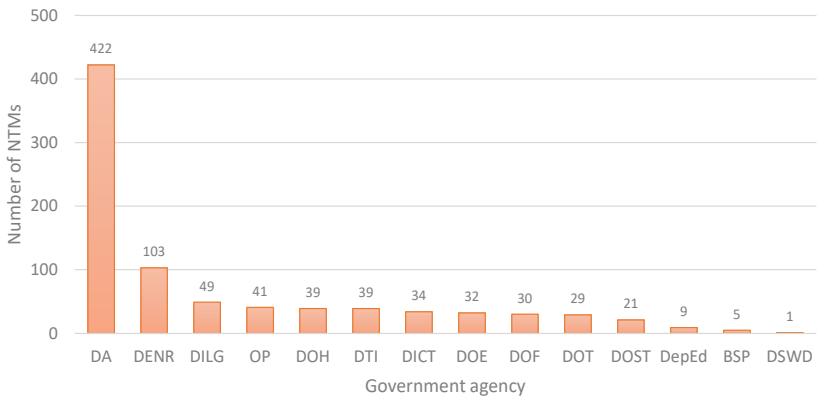
3. Advance payment requirements for the importation of household appliances, lights and lighting products, wiring devices, wires and cables, mechanical and construction materials, and chemical and consumer products (Chapter G)

According to the Department of Trade and Industry (DTI) AO (DAO) 5, series of 2008, that provides the rules and regulations governing the issuance of import commodity clearances, a bond in the amount of PHP 150, 000.00 shall be posted before the issuance of the Conditional Release and shall be valid for at least one year (section 13, clause 4). The Import Commodity Clearance is a document issued by DTI attesting to the quality and safety of a certain product based on the Philippine National Standards (PNS) or any BPS-recognized standard. This DAO encompasses all imported products covered by the mandatory BPS product certification, which includes household appliances, lights and lighting products, wiring devices, wires and cables, mechanical and construction materials, and chemicals and consumer products.

Source: WTO-Integrated Trade Intelligence Portal (WTO-iTIP)

Other bureaus in the DA that contribute to the implementation of NTMs include the Bureau of Fisheries and Aquatic Resources (BFAR), Bureau of Plant Industry (BPI), and the Bureau of Animal Industry (BAI), among similar others. Interestingly, other line agencies such as the Department of Education (DepEd) and the Department of Social Welfare and Development (DSWD), which have limited mandate pertaining to trade, also impose NTMs numbering to 9.0 and 1.0, respectively⁵.

Figure 1. Distribution of NTMs by government agency



NTM = nontariff measures; DA = Department of Agriculture; DENR = Department of Environment and Natural Resources; DILG = Department of the Interior and Local Government; OP = Office of the President; DOH = Department of Health; DTI = Department of Trade and Industry; DICT = Department of Information and Communications Technology; DOE = Department of Energy; DOF = Department of Finance; DOT = Department of Tourism; DOST = Department of Science and Technology; DepEd (Department of Education; BSP = Bangko Sentral ng Pilipinas; DSWD = Department of Social Welfare and Development

Source: WTO-Integrated Trade Intelligence Portal (WTO-iTIP)

The third group of NTMs is Chapter P (export-related measures), which are imposed by the Philippines to ensure the entry of products to the importing market and regulate the products leaving the country (Box 3). Similar to technical and nontechnical measures, export-related measures are applied to both agricultural and manufacturing exports and these measures are implemented by various agencies for different reasons.

⁵ The DSWD, as mandated by RA 4653, prohibits the importation of used clothing and rags to safeguard the health of the people and maintain the dignity of the people. NTMs that are under DepEd are implemented through the National Book Development Board, which monitors the importation of books and raw materials for books.

Box 3. Examples of export-related measures as applied by the Philippines for agriculture and manufacturing products

A. Exports of agricultural products

1. Minimum health requirements for poultry exports strictly regulated by the Philippines

In 2004, the Bureau of Animal Industry (BAI) of the Department of Agriculture (DA) issued a memorandum on the 'requirements and procedures in the export of poultry (hatching eggs, day-old chicks, and frozen poultry meat)' detailing the set of minimum health requirements for poultry exports. Through this memorandum, the BAI intends to ensure the entry of Philippine poultry items to importing countries and to protect the Philippine export market.

On top of those imposed by the importing country, the BAI's memorandum adds that:

- (a) "[...] the farm of origin has been inspected by staff of the Animal Health Division (AHD) or duly-designated staff of the DA Regional Field Units and Local Government Units and tested and found to be free from Avian Influenza and other diseases required by the importing country every six months or as the need arises;
- (b) [...] at the time of inspection, there is no clinical evidence of infectious poultry diseases;
- (c) A certification issued by the farm veterinarian stating no case of Newcastle Disease, Fowl Cholera, Fowl Typhoid, Avian Salmonellosis, and Mareks Disease has occurred in the farm for a period of at least 90 days prior to export; and
- (d) Only farms that have passed the herein health requirements will be allowed to export."

2. Copra grades and standards in the Philippines consistent with developed countries

The BPS of the DTI released in 2009 the Philippine National Standard for Copra ('PNS/BAFPS 43:2009'). This standard is made to be consistent with the requirements of developed countries particularly that of the European Union—the Philippines' major importer of coconut products.

The PNS/BAFPS 43:2009 classifies Copra based on quality from Grade 1 (highest) to Grade 3 (lowest). Parameters to the grading criteria include moisture content, oil, free fatty acid, color of meat, extraneous matter, aflatoxin level, aflatoxin-related mold, inferior copra, and other specifications such as 'free from smoke and other contaminants'. Annexes in the document details the sampling methodology to be followed with technical standards defined.

3. Cats and dogs in the Philippines 'tagged' with microchips

Following the DA's AO 24 in 2004, 'all dogs and cats that are intended for import into the country and exported as breeders and pets [are to be registered] using the microchip technology.' Microchips used for registration are battery-less and encoded with a unique and permanent number.

Box 3. (continued)

B. Exports of manufactured products

1. Hazardous wastes exported in accordance to the Basel Convention and RA 6969

The Department of Environment and Natural Resources (DENR) issued AO 22 in 2013 detailing revised procedures and standards for the management of hazardous wastes. DENR's AO 22 is in accordance to the 'Basel Convention on the Transboundary Movement of Hazardous Wastes and their Disposal' and to RA 6969 or otherwise known as the 'Toxic Substances and Hazardous and Nuclear Wastes Control Act of 1990'.

As defined in the AO, exporters of hazardous wastes are required to submit notifications to the importing and transit countries, designate a Pollution Control Officer, comply with all requirements of the Basel Convention and with the transport record or manifest system, follow storage and labeling requirements, accompany shipments with a movement document from the point of commencement to the point of disposal, provide written consent from each State of transit, have written confirmation of both the existence of a contract between the exporter and the disposer and the existence of financial guarantee to cover cost for re-import should it be needed.

2. Gaming equipment meticulously packed for moving, transfers, and export

In 2004, the Philippine Amusement and Gaming Corporation (PAGCOR) released the 'Suppliers Regulatory Manual Version 2.0' with guidelines for packing gaming equipment. One of the requirements is the use of tamper-proof packaging based on product and environmental considerations. Moreover, the use of biodegradable materials over plastics, polystyrene cushioning materials, and the similar sort are encouraged.

The manual also details labeling requirements that include supplier's name, address, and contact numbers, name of manufacturer, item type and brand, item serial number, consignee's name and address, PAGCOR inventory tag number, and other details deemed necessary by the Gaming Licensing and Development Department (GLDD).

3. Exporters need clearance for discs, machinery, and materials for every shipment

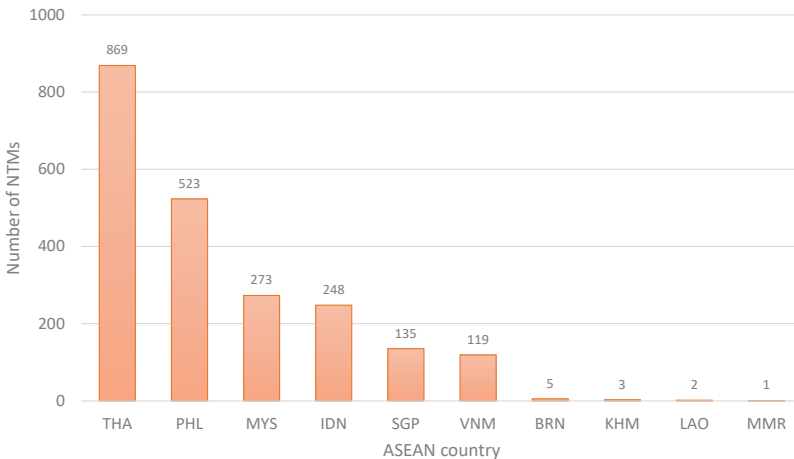
The Optical Media Board (OMB) of the Office of the President issued Memorandum Circular 2005-008 prescribing guidelines for the exportation of discs, machinery, and materials. 'All companies and individuals are required to first apply for a license to engage in optical media business as exporters and must secure and export clearance prior to every shipment.' Inspection activities are also conducted at the port of origin.

Source: WTO-Integrated Trade Intelligence Portal (WTO-iTIP)

Boxes 1 to 3 present some of the regulations identified in the WTO-iTIP database. These examples do indicate that the NTMs can come from various forms of policy instruments such as RAs, MCs, and Department Administrative Orders (DAO), among similar others. In terms of scope, de Dios (2016) has observed that as of 2015, the Philippines' NTMs cover 100 percent of all product lines (HS lines) of the Philippines. Furthermore, de Dios finds that since 1976, all imports of the Philippines have been subject to some form of NTM.

Other studies (de Dios 2016; Ing et al. 2016; ITC 2016; Medalla and Mantaring 2017) also observed that the Philippines, much like the rest of the world, had been reducing its tariff rates while increasing the number of its NTMs. In 2000, average tariff rate imposed by the Philippines was more than 7 percent while the number of NTMs was less than 300. In 2016, the average tariff rate declined to around 4 percent while the number of NTMs increased to more than 500 for the Philippines (Figure 2). Among the ASEAN countries, Thailand and the Philippines have the greatest number of WTO-notified NTMs, most of which are SPS and TBT measures.

Figure 2. Number of NTMs per country in ASEAN, 2016



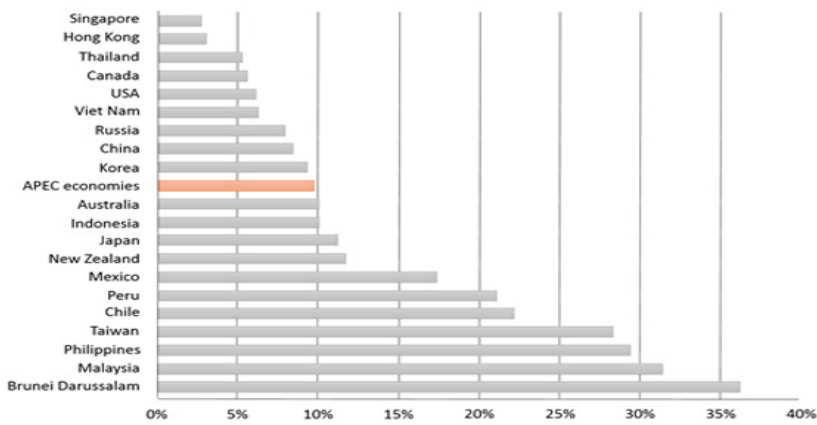
NTM = nontariff measures; THA = Thailand; PHL = Philippines; MYS = Malaysia; IDN = Indonesia; SGP = Singapore; VNM = Viet Nam; BRN = Brunei Darussalam; KHM = Cambodia ; LAO = Lao PDR; MMR = Myanmar; ASEAN = Association of Southeast Asian Nations
Source: WTO-Integrated Trade Intelligence Portal (WTO-iTIP)

Cost of NTMs

Understanding the costs of NTMs is not straightforwardly done. Apart from 'hard' measures, such as quantity and price controls, the cost effects of NTMs are difficult to estimate. The quantification of NTM's impact on trade has been widely researched in the literature. For instance, there are frequency-type measures, price-comparison measures, and quantity-impact measures (Ronen 2017). A study conducted by the New Zealand Institute of Economic Research (NZIER 2016) has shown that NTMs can raise transaction costs on goods by up to three times as much as tariffs in the Asia-Pacific Economic Cooperation (APEC) region, which is estimated to be USD 790 billion. This estimate reflects the cost of all NTMs in APEC, which includes both NTMs and NTBs. Differentiating the costs between NTMs and NTBs are, however, difficult to do. While APEC, in its entirety, has imposed an additional USD 790 billion in the form of NTMs, the impact of this additional expense is not equally felt by developed and developing economies. Often, developing economies are adversely affected more than developed ones (UNCTAD 2018).

One way of understanding the cost of NTMs is through the calculation of ad valorem equivalents (AVEs) or tariff rate equivalents, which has been widely explored in the literature (Abbyad and Herman 2017). A number of studies (Kee et al. 2005; Adler and Hufbauer 2009) have undertaken the estimation of these AVEs because AVEs provide an easy means of measuring and comparing the impact of various NTMs. AVEs may also serve as inputs in the preferential trade agreement negotiations. For negotiators to effectively work toward the loosening or reduction of NTMs, AVEs are needed to illustrate the magnitude of the impact of keeping or loosening the NTMs. Figure 3 presents the AVEs of the NTMs that a given economy imposes on its imports from other economies. The NTMs of APEC economies have, on average, an AVE of about 10 percent while for the Philippines the average AVE is about 30 percent. This means, on average, the Philippines is imposing NTMs equivalent to a tariff rate of around 30 percent. Only Malaysia and Brunei Darussalam have average AVEs higher than the Philippines while Singapore, Hong Kong, and Thailand have the lowest AVEs among APEC member-economies.

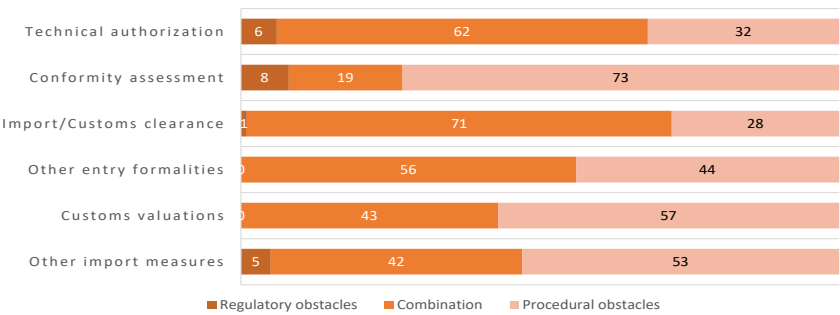
Figure 3. AVEs, as percentage of import values, by APEC economy



AVE = ad valorem equivalents; APEC = Asia-Pacific Economic Cooperation; USA = United States of America
Source: Lifted from NZIER (2016) with some stylistic alterations

Analyzing the NTMs at the firm level may provide insight into the aspects of the NTMs that increase cost. The private sector’s biggest perceived barriers to trade are not the regulations per se but their accompanying procedural obstacles (ITC 2016). Examples of these obstacles related to NTMs include administrative burdens, information and transparency issues, inconsistent or discriminatory behavior of officials, time constraints, payments, infrastructural challenges, security, and legal constraints, among others (Figure 4).

Figure 4. Obstacles to trade from NTMs (Imports)



NTM = nontariff measures
Source: ITC (2016)

Methodology

Calculating descriptive indicators of NTMs

Following Deardorff and Stern (1998), a set of descriptive indicators were calculated to characterize the NTMs in the country. Incidence indicators such as the coverage ratio, frequency index, and the prevalence score are essentially based on the extent of coverage of the policy instruments with no consideration of the impact to trade or the economy. Thus, these incidence indicators carry with it certain limitations. For instance, the frequency index cannot measure the relative value of affected goods and is unable to show importance of the NTM to an exporter or export product group whereas the coverage ratio cannot show the extent by which NTMs reduce the value of affected products (Bora et al. 2002). Depending on the objectives of the study, these indicators may be calculated for overall trade or for specific groups or products. For this study, these indicators were calculated for different product groups.

The coverage ratio measures the percentage of imports subject to NTMs. It was calculated using Equation 1, where subscript k denotes product at the Harmonized System (HS) 6-digit level (sub-heading) and i denotes the product group of interest (usually at the HS 2-digit 'chapter' or HS 4-digit level 'heading'), whereas, NTM_k is a dummy variable denoting the presence of an NTM (or type of NTM) imposed by the Philippines on product k . X_k is the value of imports by the Philippines for product k .

Equation 1. Coverage ratio

$$CR_i = \frac{\sum_{k=1}^{hs6 \in i} NTM_k X_k}{\sum_{k=1}^{hs6 \in i} X_k} 100$$

The frequency index, on the other hand, shows the percentage of imported products subject to NTMs (or some form of NTM). Mathematically, it is calculated using Equation 2 where, similar to the coverage ratio, subscript k denotes product at the HS 6-digit level and i is the product group of interest. NTM_k is a dummy variable denoting the presence of an NTM (or type of NTM) imposed by the Philippines on

product k while D_k is a dichotomous variable taking the value of 1 when the Philippines imports any quantity of product k and 0 otherwise.

Equation 2. Frequency index

$$FI_i = \frac{\sum_{k=1}^{hs6\in i} NTM_k D_k}{\sum_{k=1}^{hs6\in i} D_k} 100$$

Finally, the prevalence score, which shows the average number of NTMs applied to products was calculated using Equation 3, where $\#NTM_k$ is the number of NTMs (or type of NTMs) imposed by the Philippines on commodity k , whereas, D_k is a dummy variable taking the value of 1 when the Philippines imports any quantity of product k and 0 otherwise.

Equation 3. Prevalence score

$$PS_i = \frac{\sum_{k=1}^{hs6\in i} \#NTM_k D_k}{\sum_{k=1}^{hs6\in i} D_k}$$

Commodity groups of interest i could be classified according to industry (agriculture, natural resources, manufacturing) or according to end-use using the System of National Accounts (SNA) basic classes of goods.⁶ Classifying according to industry provides insight as to which sectors tend to be more restricted while classifying according to SNA allows understanding of how these NTMs affect the type of commodities that consumers or industries purchase.

Furthermore, to characterize the NTMs in the Philippines, this study looks at the theory-based classification of NTMs as defined by Ederington and Ruta (2016), which classified NTMs into four categories:

- Customs regulations, which pertains to NTMs that act similarly to tariffs or as transport cost, which drives a wedge between world price and domestic prices. Examples of customs regulation include registration requirements for importers, conformity assessment related to SPS and TBT measures, and inspections;

⁶ The SNA categorizes products into their end-use and consists of three basic classes of goods, namely, capital, consumption, and intermediate.

Nontariff Measures in the Philippines

- Process regulations include policies that regulate the method by which a good is manufactured or processed. NTMs that would fall under this category are labor standards, environmental regulations, and handling, processing, and packaging regulations, among others;
- Consumer regulations would encompass NTMs that are related to the consumption of the good, which include sales and excise taxes; and
- Product regulations that refer to standards and policies related to the product itself. For instance, this would include emission standards for vehicles, product safety standards for child protection, and restrictions on the use of hazardous materials. Since process regulations can also affect the characteristic of the product, Ederington and Ruta (2016) notes that there would be cases when it would be difficult to distinguish between process regulation and product regulation.

By utilizing this classification of NTMs, this study has been able to understand better how the existing regulatory environment in the country affects the economy through the wedges in prices these NTMs impose. Through the use of scatterplots, this paper attempts to investigate correlations of NTMs with key trade outcomes to obtain some inkling on the possible relationship between NTMs and trade. Understandably, these scatterplots lack the statistical rigor of econometric methods.

Data sources

The data used in this study was sourced from UNCTAD's Trade Analysis and Information System (UNCTAD-TRAINS), which is a rich dataset providing information on NTMs at the HS 6-digit level for each trading partner of a country.⁷ The TRAINS, however, does not include information on the requirements necessary to comply with regulations.

⁷ Some modifications have been done to the data from TRAINS with regard to the bilateral regulations and regulations applied to the 'Rest of the World (ROW)'. The authors noticed that, for instance, products HS 100101 from country j is subject to NTM A101 but is exempt from all other NTMs while HS 100101 from the ROW is subject to a number of NTMs such as NTM F100, P100, among others. Since these NTMs are applied to the ROW, the authors modified the data for HS 100101 from country j such that all NTMs applied to the ROW would also be applied to products from country j while maintaining HS 100101, which is also specifically applied to country j. This modification may result in a difference between the reported WTO NTM results and those of this paper.

Another data source used in this study was the WTO-iTIP, which provides some information as to the relevant legislation behind measures listed in the UNCTAD-TRAINS. Information such as the rationale behind the regulation and the agency imposing the regulation may be found in the WTO-iTIP.

Meanwhile, data on Chapters J to O are yet to be collected⁸; thus, the UNCTAD-TRAINS database is basically looking at technical measures (Chapters A to C), some nontechnical measures (Chapters D to N), and export-related measures (Chapter P). Finally, trade data for 2015 and trade outcome indicators for 2013-2015 were sourced from the World Bank's World Integrated Trade Solution (WITS).

Results and Discussion

Technical measures

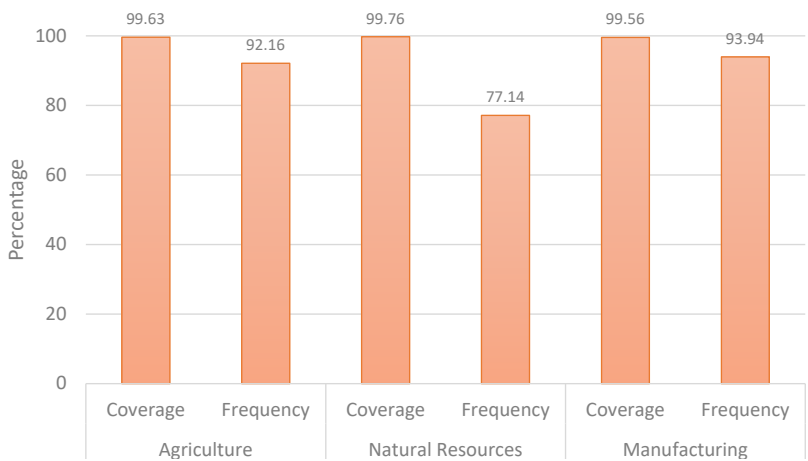
This section presents the calculated coverage ratios, frequency indices, and prevalence scores. By classifying Philippine imports by agriculture, natural resources, and manufacturing⁹, Figure 5 shows that agriculture, natural resources, and manufacturing imports have a coverage ratio that is close to 100 percent while the frequency index tends to display a different story with natural resources (77.1%) having a much lower percentage than agriculture (92.2%) and manufacturing (93.9%). Another insight that can be obtained from Figure 5 is that roughly 22.9 percent of imported natural resources not subject to any NTM account for only 0.2 percent of the value of natural resources imports. For agriculture and

⁸ Since its establishment in 2006, the UNCTAD Multi-Agency Support Team (MAST) has been working on the taxonomy of NTMs. As of December 2018, a disaggregated taxonomy for Chapters J to O is still in progress. The last meeting of UNCTAD-MAST took place in September 2017. Moreover, under the UNCTAD Guidelines to Collect Data on Official Non-Tariff Measures published in January 2016, Chapters J to O are explicitly stated as not to be collected (UNCTAD 2014, p.2). https://unctad.org/en/PublicationsLibrary/ditctab2014d4_en.pdf (accessed on December 10, 2018).

⁹ Classifying the HS sections, agricultural goods would include sections: I (live animals); II (vegetable products); III (animal or vegetable fats and oils and their cleavage products); IV (prepared foodstuffs); and, IX (wood). Natural resources would include: V (mineral products); XIII (articles of stone, plaster, cement, asbestos, mica, or similar materials); XIV (natural or cultured pearls, precious or semi-precious stones, precious metals, metals clad with precious metal); and XV (base metals). Manufacturing goods would include: VI (products of the chemical or allied industries); VII (plastics); VIII (raw hides and skins, leather, furskins); X (pulp of wood or other fibrous cellulosic material); XI (textiles); XII (footwear, headgear, umbrellas, sun umbrellas, walking-sticks, seat-sticks, whips, riding-crops); XVI (machinery and mechanical appliances); XVII (vehicles, aircraft, vessels and associated transport equipment); XVIII (optical, photographic, cinematographic, measuring, checking, precision, medical or surgical instruments and apparatus); XIX (arms and ammunition); XX (miscellaneous manufactured articles); and XXI (works of art, collectors' pieces, and antiques).

manufacturing, the figure is much smaller where around 7.8 percent of imported agricultural commodities are not subject to any NTM while 6.1 percent of imported manufactured commodities are not subject to any NTM. These figures account for 0.4 percent of the value of imports both for agricultural and manufactured commodities.

Figure 5. Coverage ratio and frequency index for all types of NTMs applied to Philippine imports by industry



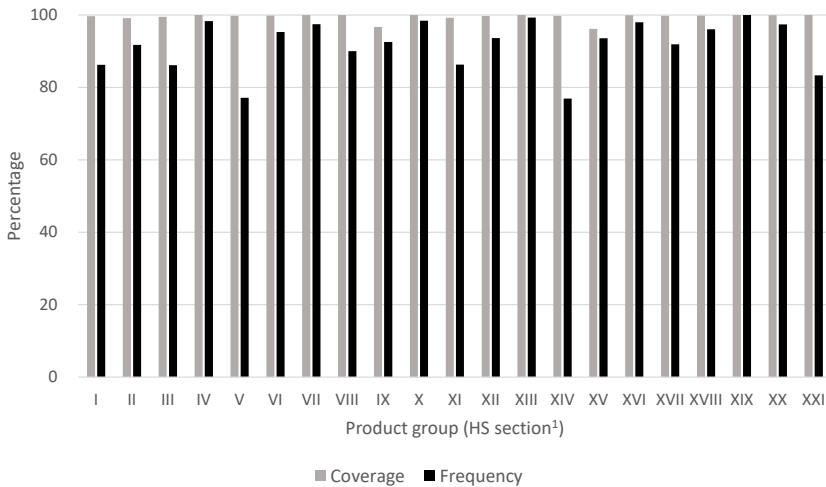
NTMs = nontariff measures

Source: Authors' calculations using the modified UNCTAD-TRAINS dataset

A more disaggregated product grouping is shown in Figure 6, which corroborates the observation that, in terms of commodity imports, agriculture and manufacturing tend to be similarly treated by NTMs while natural resource imports tend to be less regulated. Figure 6 also clearly shows that while the coverage ratio is close to 100 percent for almost all commodity groups, the frequency index is more varied with some commodity groups having a percentage below 80 percent (e.g., 'XIV' natural or cultured pearls, precious or semi-precious stones, precious metals, metals clad with precious metal and articles thereof; and 'V' mineral products) while others fall into the range of 80 to 90 percent (e.g., 'XXI' works of art, collectors' pieces and antiques; 'III' animal or

vegetable fats, oils and cleavage products; 'I' live animals; 'XI' textiles and textile articles; and 'VIII' leather and hides) while the rest have a percentage of more than 90 percent. Finally, 100 percent of products belonging to HS Section XIX (arms and ammunition) are subject to some type of NTM.

Figure 6. Coverage ratio and frequency index for all types of NTMs applied to Philippine imports by HS section



NTMs = nontariff measures

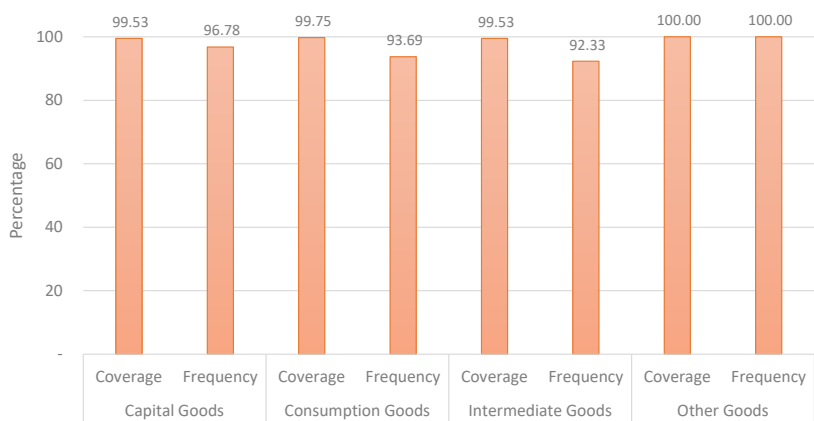
¹ HS section descriptions: I (live animals); II (vegetable products); III (animal or vegetable fats and oils and their cleavage products); IV (prepared foodstuffs); V (mineral products); VI (products of the chemical or allied industries); VII (plastics); VIII (raw hides and skins, leather, furskins); IX (wood); X (pulp of wood or other fibrous cellulosic material); XI (textiles); XII (footwear, headgear, umbrellas, sun umbrellas, walking-sticks, seat-sticks, whips, riding-crops); XIII (articles of stone, plaster, cement, asbestos, mica, or similar materials); XIV (natural or cultured pearls, precious or semi-precious stones, precious metals, metals clad with precious metal); XV (base metals); XVI (machinery and mechanical appliances); XVII (vehicles, aircraft, vessels and associated transport equipment); XVIII (optical, photographic, cinematographic, measuring, checking, precision, medical or surgical instruments and apparatus); XIX (arms and ammunition); XX (miscellaneous manufactured articles); and XXI (works of art, collectors' pieces and antiques)

Source: Authors' calculations using the modified UNCTAD-TRAINS dataset

One explanation for the coverage ratio being higher than the frequency index is the composition of imports. For developing countries, larger volumes of products are imported in which NTMs are more extensively used. This would include agriculture products that are

extensively regulated by SPS measures and manufactured parts and components, which are often regulated by TBT measures. Another reason for such an observation would be the more frequent use of NTM policies on products that are most traded. While this is often the case in developed countries, this may also be true for the Philippines, which has a high coverage ratio applied on consumer and intermediate goods (Figure 7) as identified using the SNA classification. All types of goods (capital, consumption, intermediate goods, and other goods¹⁰) have a high (i.e., above 90%) coverage ratio and this is higher than the frequency indices. The 100-percent coverage ratio and frequency index for other goods is explained by the inclusion of HS Section XIX (arms and ammunition) in this category.

Figure 7. Coverage ratio and frequency index for all types of NTMs applied to Philippine imports by SNA basic class of goods



NTMs = nontariff measures; SNA = System of National Accounts
Source: Authors' calculations using the modified UNCTAD-TRAINS dataset

¹⁰ Other goods include products that can be classified into two of the other categories. This would include some products in HS 27 (mineral fuels, oils and waxes and their products), HS 71 (natural or cultured pearls, precious metals, semi-precious stones, and metals, among similar others), and HS 87 (vehicles other than railway or tramway and other parts and accessories), HS 88 (aircraft and spacecraft part), HS 89 (ships, boats, and floating structures), and HS 93 (arms and ammunition).

Digging deeper, the coverage ratio¹¹ of NTMs according to type was analyzed. Table 2 presents the coverage ratio of commodity groups (HS section) for each NTM chapter. Looking at the SPS measures, it can be observed that products related to agriculture are all heavily regulated by some form of SPS measure while some manufactured products have SPS coverage ratios below 10.0 percent. Meanwhile, natural resource products are the least subject to SPS measures with coverage ratios below 1 percent.

In contrast to the SPS measures that are more often applied to agricultural products, TBT measures tend to have a wider coverage being applied to almost all of the product groups. Notably, except for works of art, which is not at all subject to TBTs, all product groups have a coverage ratio of at least 40 percent. Most of the manufactured products with an SPS coverage ratio below 10 percent have a TBT coverage ratio of 90 percent or more. These results are in line with UNCTAD (2013), which has similarly found that TBTs are the most widely used NTM globally (about 30% of product and trade affected) as compared to SPS and other NTMs. This prevalence of TBTs can potentially signal trade diverting effects for developing countries such as the Philippines since institutions and processes domestically employed can be inadequate as compared with developed countries. The same report found that SPS measures are largely limited to agricultural goods (i.e., 60 percent of food-related products were found to have at least one form of SPS measure), which require the protection of both consumers' health and the environment. Interestingly, other measures apart from SPS and TBT measures were found to be more heterogeneous in its distribution following the rationale that different countries have various regulatory intent.

While Chapters D and H have very small coverage ratios, Chapters C, F, and G, have coverage ratios very close to 100 percent (Table 3). From among the technical measures—Chapters A, B, and C, Chapter C has the highest coverage ratio (99.6%) and a frequency index of 93.3 percent (Annex 2). Investigating further as to which sub-branch of Chapter C is contributing the most to the high coverage ratio, Table 3 presents the sub-branches of Chapter C that includes: (C1) preshipment inspection; (C3) requirements to pass through specified ports or customs office for inspection and testing; (C4) import-monitoring and surveillance

¹¹ Similar patterns have been observed with frequency indices. Annex 2 presents the frequency indices by HS section for each of the NTM chapters.

Table 2. Coverage ratio by HS section by NTM chapter

HS Section	Description	A	B	C	D	E	F	G	H	All
I	Live animals	99.68	99.38	99.68	0.00	50.73	99.68	99.68	0.00	99.68
II	Vegetable products	99.13	99.13	99.13	1.80	82.53	99.13	99.13	0.45	99.13
III	Animal or vegetable fats and oils and their cleavage products	99.37	99.35	99.48	0.00	2.80	99.48	99.48	0.00	99.48
IV	Prepared foodstuffs	99.01	96.63	99.99	0.00	18.55	99.99	99.99	0.07	99.99
V	Mineral products	0.30	99.73	99.76	0.00	99.34	99.76	99.76	0.04	99.76
VI	Products of the chemical or allied industries	44.23	72.42	99.80	0.00	28.78	99.80	99.80	0.03	99.80
VII	Plastics	2.04	41.39	99.98	0.00	49.34	99.98	99.98	0.03	99.98
VIII	Raw hides and skins, leather, furskins	53.62	92.93	99.99	0.00	0.00	99.99	99.99	0.25	99.99
IX	Wood	95.73	96.68	96.68	0.00	88.53	96.68	96.68	0.01	96.68
X	Pulp of wood or of other fibrous cellulosic material	3.84	53.89	99.99	0.00	37.56	99.99	99.99	0.02	99.99
XI	Textiles and textile articles	5.48	44.48	99.20	0.00	25.47	99.20	99.20	0.03	99.20
XII	Footwear, headgear, umbrellas, sun umbrellas, walking-sticks, seat-sticks, whips, riding-crops	40.08	95.05	99.71	0.00	0.00	99.71	99.71	0.00	99.71
XIII	Articles of stone, plaster, cement, asbestos, mica or similar materials	0.00	89.65	100.00	0.00	19.71	100.00	100.00	0.01	100.00
XIV	Natural or cultured pearls, precious or semi-precious stones, precious metals, metals clad with precious metal	0.62	98.98	99.76	0.00	98.98	99.76	99.76	0.00	99.76

Chapter

HS Section	Description	A	B	C	D	E	F	G	H	All
XV	Base metals and articles of base metal	0.36	57.12	96.14	0.00	54.60	96.14	96.14	0.10	96.14
XVI	Machinery and mechanical appliances	1.69	96.99	99.93	0.00	43.81	99.93	99.93	0.01	99.93
XVII	Vehicles, aircraft, vessels and associated transport equipment	63.16	98.74	99.76	0.00	79.28	99.76	99.76	0.00	99.76
XVIII	Optical, photographic, cinematographic, measuring, checking, precision, medical or surgical instruments and apparatus	8.90	90.17	99.82	0.00	77.54	99.82	99.82	0.81	99.82
XIX	Arms and ammunition	26.63	100.00	100.00	0.00	99.52	100.00	100.00	0.00	100.00
XX	Miscellaneous manufactured articles	1.36	89.28	99.92	0.00	10.05	99.92	99.92	0.00	99.92
XXI	Works of art, collectors' pieces and antiques	8.35	0.00	99.96	0.00	91.61	99.96	99.96	0.07	99.96
XIX	Arms and ammunition	26.63	100.00	100.00	0.00	99.52	100.00	100.00	0.00	100.00
XX	Miscellaneous manufactured articles	1.36	89.28	99.92	0.00	10.05	99.92	99.92	0.00	99.92
XXI	Works of art, collectors' pieces and antiques	8.35	0.00	99.96	0.00	91.61	99.96	99.96	0.07	99.96
XXI	Works of art, collectors' pieces and antiques	8.35	0.00	99.96	0.00	91.61	99.96	99.96	0.07	99.96

NTMs = nontariff measures; HS = harmonized system

Source: Authors' calculations using the modified UNCTAD-TRAINS dataset

Table 3. Coverage ratio by HS section by select Chapter C sub-branches

HS Section	Description	C1	C3	C4	C9
		Pre-shipment inspection	Requirements to pass through a specified port of customs	Import-monitoring and surveillance requirements	Other formalities
	Total	59.71	1.45	2.36	99.60
I	Live animals	35.67	18.38	32.35	99.68
II	Vegetable products	82.58	8.62	29.69	99.13
III	Animal or vegetable fats and oils and their cleavage products	99.48	2.80	0.00	99.48
IV	Prepared foodstuffs	38.23	0.36	8.13	99.99
V	Mineral products	92.29	0.00	0.00	99.76
VI	Products of the chemical or allied industries	22.30	0.20	0.00	99.80
VII	Plastics	1.61	0.00	0.00	99.98
VIII	Raw hides and skins, leather, furskins	0.02	0.00	0.00	99.99
IX	Wood	5.59	88.53	0.00	96.68
X	Pulp of wood or of other fibrous cellulosic material	0.91	3.84	0.00	99.99
XI	Textiles and textile articles	0.00	0.00	0.19	99.20
XII	Footwear, headgear, umbrellas, sun umbrellas, walking-sticks, seat-sticks, whips, riding-crops	0.00	0.00	0.00	99.71
XIII	Articles of stone, plaster, cement, asbestos, mica or similar materials	2.66	0.00	0.00	100.00
XIV	Natural or cultured pearls, precious or semi-precious stones, precious metals, metals clad with precious metal	0.00	0.00	0.00	99.76
XV	Base metals and articles of base metal	24.55	0.00	0.00	96.14
XVI	Machinery and mechanical appliances	93.02	0.00	0.00	99.93

Table 3. (continued)

HS Section	Description	C1	C3	C4	C9
		Pre-shipment inspection	Requirements to pass through a specified port of customs	Import-monitoring and surveillance requirements	Other formalities
XVII	Vehicles, aircraft, vessels and associated transport equipment	5.18	0.00	0.00	99.76
XVIII	Optical, photographic, cinematographic, measuring, checking, precision, medical or surgical instruments and apparatus	16.13	0.00	0.00	99.82
XIX	Arms and ammunition	0.00	0.00	0.00	100.00
XX	Miscellaneous manufactured articles	13.91	0.00	0.00	99.92
XXI	Works of art, collectors' pieces and antiques	0.00	0.00	0.00	99.96

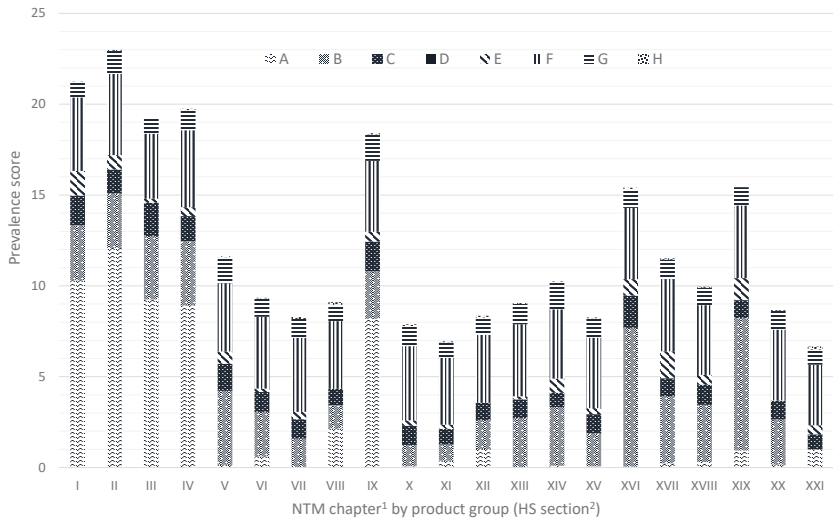
HS = harmonized system

Source: Authors' calculations using the modified UNCTAD-TRAINS dataset

requirements; and (C9) other formalities, not elsewhere classified. From among the C sub-branches, C9 is the most common technical NTM applied to imports (99.6%) while C1 is a distant second at 59.7 percent coverage ratio. It would also be interesting to note that the Philippines imposes C3 NTM measures on wood products (88.5%), live animals (18.4%), and vegetable products (8.6%), among others.

Given the limited information in the TRAINS database covering the specific description of C9 NTMs, the WTO-iTIP database was referred to instead. Based on the measure descriptions, there seems to be no discernible characteristic common among the measures identified in the database. Some measures cover all products while some others cover either manufactured or agricultural products. Some products covered are understandable because of their impact on consumers while other products are regulated like gun powder, dynamite, and radioactive material because of their implications for public safety.

Figure 8. Prevalence scores by HS section by NTM chapter



NTM = nontariff measures

¹ NTM chapter descriptions: A (Sanitary and phytosanitary measures); B (Technical barriers to trade); C (Preshipment inspection and other formalities); D (Contingent trade-protective measures); E (Nonautomatic licensing, quotas, prohibitions, and quantity-control measures other than for SPS or TBT reasons); F (price-control measures, including additional taxes and charges); G (finance measures); H (measures affecting competition)

² HS Section Descriptions: I (live animals); II (vegetable products); III (animal or vegetable fats and oils and their cleavage products); IV (prepared foodstuffs); V (mineral products); VI (products of the chemical or allied industries); VII (plastics); VIII (raw hides and skins, leather, furskins); IX (wood); X (pulp of wood or other fibrous cellulosic material); XI (textiles); XII (footwear, headgear, umbrellas, sun umbrellas, walking-sticks, seat-sticks, whips, riding-crops); XIII (articles of stone, plaster, cement, asbestos, mica, or similar materials); XIV (natural or cultured pearls, precious or semi-precious stones, precious metals, metals clad with precious metal); XV (base metals); XVI (machinery and mechanical appliances); XVII (vehicles, aircraft, vessels and associated transport equipment); XVIII (optical, photographic, cinematographic, measuring, checking, precision, medical or surgical instruments and apparatus); XIX (arms and ammunition); XX (miscellaneous manufactured articles); and, XXI (works of art, collectors' pieces and antiques)

Source: Authors' calculations using the modified UNCTAD-TRAINS dataset

Aside from the coverage ratio and frequency index, which seems at the breadth of the NTMs applied to the product groups, there is also the prevalence score which specifies the number of NTMs applied to the product group (Figure 8; see Annex 3). On average, there are about 12 regulations applied to Philippine imports (excluding Chapter P). Consistent with the observations stemming from the analysis of the coverage ratio and frequency index, agricultural imports (i.e., I–live

animals, II—vegetable products, III—animal and vegetable fats, and IV—prepared foodstuffs) have the greatest number of regulations. This is because of the high number of SPS regulations being applied to these product groups relative to others. Alongside agricultural imports are V (mineral products), IX (wood products), XVI (machinery and mechanical appliances), and XIX (arms and ammunition), which also have high numbers of NTMs despite having minimal SPS measures imposed.

Nontechnical measures

Figure 8 also supports the observation that nontechnical measures are applied to almost all imports of the Philippines particularly Chapters F and G. Scrutinizing further the subbranches of these NTMs, Table 4 shows that F6 (additional taxes and charges levied in connection to services provided by government) and G1 (advance payment requirement) are the primary nontechnical NTMs affecting Philippine imports. Examples of F6 include customs inspection, processing and servicing fees (F61), merchandise handling or storing fees (F62), stamp tax (F64), and additional charges (F69). Selected examples are presented in Annex 4. Most of these measures apply to all product groups, although some regulations specifically apply only to certain products such as radioactive materials; fresh, chilled, or frozen fish; rice and corn; and vaccines, among others. It is also worth noting that there are some regulations that are still in force despite being enacted in the 1980s and 1990s.

On the other hand, finance measures (Chapter G), which are essentially those intended to regulate the access to and costs of foreign exchange for imports and define the terms of payment, have NTMs related to advance payment requirement (G1) as the most prevalent. For the Philippines, these advance payment requirements come in the form of advance payment of customs duties (G13) or other advance payment requirements (G19).

Export-related measures

Figure 8 does not include export-related measures (Chapter P) but these NTMs also impose a significant number of NTMs on almost all product groups. Among its sub-branches, export-technical measures (P6), export subsidies (P7), export-credits (P8), and other export measures (P9) are the ones that have, on the average, the greatest frequency index (93.3%)

Table 4. Coverage ratio by HS section by select Chapter F and G sub-branches

HS Section	Description	F1	F6	F7	G1	G4	G9
		Adminis- trative measures affecting customs value	Additional taxes and charges levied in connection to services provided by government	Internal taxes and charges levied on imports	Advance payment requirement	Regula-tions concerning terms of payment for imports	Other finance measures
	Total	5.94	99.60	26.30	99.60	0.30	0.35
I	Live animals	0.00	99.68	64.92	99.68	0.00	0.00
II	Vegetable products	0.00	99.13	91.77	99.13	8.62	0.00
III	Animal or vegetable fats and oils and their cleavage products	0.00	99.48	1.91	99.48	0.00	0.00
IV	Prepared foodstuffs	0.95	99.99	31.44	99.99	0.00	0.00
V	Mineral products	0.00	99.76	99.34	99.76	0.00	0.00
VI	Products of the chemical or allied industries	0.00	99.80	18.66	99.80	0.00	1.01
VII	Plastics	35.56	99.98	0.42	99.98	0.00	0.00
VIII	Raw hides and skins, leather, furskins	0.00	99.99	1.72	99.99	0.00	0.00
IX	Wood	0.00	96.68	5.51	96.68	0.00	0.00
X	Pulp of wood or of other fibrous cellulosic material	0.00	99.99	17.12	99.99	0.00	17.80
XI	Textiles and textile articles	22.03	99.20	2.04	99.20	0.00	0.00

HS Section	Description	F1	F6	F7	G1	G4	G9
XII	Footwear, headgear, umbrellas, sun umbrellas, walking-sticks, seat-sticks, whips, riding-crops	0.00	99.71	0.00	99.71	0.00	0.00
XIII	Articles of stone, plaster, cement, asbestos, mica or similar materials	0.00	100.00	0.00	100.00	0.00	0.00
XIV	Natural or cultured pearls, precious or semi-precious stones, precious metals, metals clad with precious metal	0.00	99.76	98.98	99.76	0.00	0.00
XV	Base metals and articles of base metal	27.87	96.14	2.47	96.14	0.00	0.00
XVI	Machinery and mechanical appliances	0.00	99.93	0.01	99.93	0.00	0.00
XVII	Vehicles, aircraft, vessels and associated transport equipment	28.35	99.76	53.39	99.76	0.00	0.00
XVIII	Optical, photographic, cinematographic, measuring, checking, precision, medical or surgical instruments and apparatus	0.00	99.82	0.00	99.82	0.00	0.00
XIX	Arms and ammunition	0.00	100.00	0.00	100.00	0.00	0.00
XX	Miscellaneous manufactured articles	0.00	99.92	0.00	99.92	0.00	0.00
XXI	Works of art, collectors' pieces, and antiques	0.00	99.96	0.00	99.96	0.00	0.00

HS = Harmonized System

Source: Authors' calculations using the modified UNCTAD-TRAINS dataset

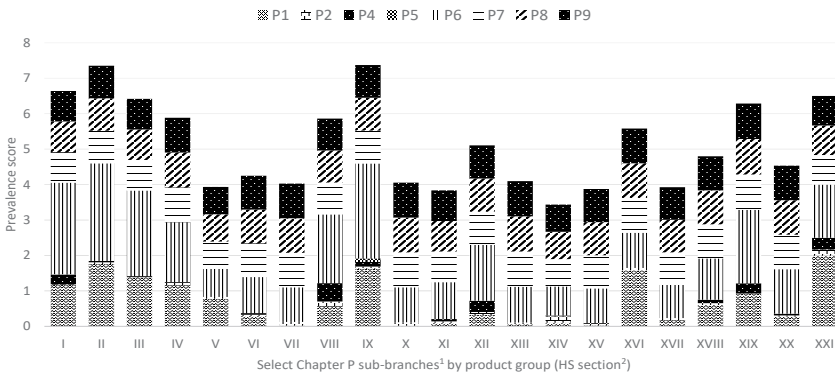
while export-license, -quota, -prohibition, and other quantitative restrictions (P1) have a frequency index as high as 98.3 percent for I (live animals), II (vegetable products), III (animal or vegetable fats and oils and other cleavage products), and IV (prepared foodstuffs) (Table 5).

The prevalence scores do reflect a high degree of regulations applied to almost all types of exports particularly P7 and P8 measures are applied to almost all products, ensuring that almost all exported commodities receive some form of export subsidy or export credit (Figure 9). Meanwhile, looking at the prevalence score of export measures by the SNA basic classes of goods (Figure 10), it can be surmised that the Philippines' exports are subject mostly to technical measures (P6) to ensure that the exports of the Philippines would meet the standards of the receiving country.

NTMs and trade outcomes

While the coverage ratio, frequency index, and prevalence scores discussed in the earlier section are already informative, it is also of interest to relate these descriptive NTM indicators with trade outcome indicators. In doing so, this section presents some scatterplots that attempt to provide the correlation of NTMs with selected trade outcome indicators. From among the incidence indicators, the prevalence score would be used as it reflects the average number of NTMs applied unlike the coverage ratio and frequency index, which are percentages. Aside from that, these scatterplots will also use the classification system of Ederington and Ruta (2016). These figures only provide correlations (at best) and it would be better for a rigorous statistical method to be utilized to disentangle the complex relationship between trade outcomes and NTMs; thus, these figures should be viewed as a preliminary assessment of the possible relationship between trade outcomes and NTMs.

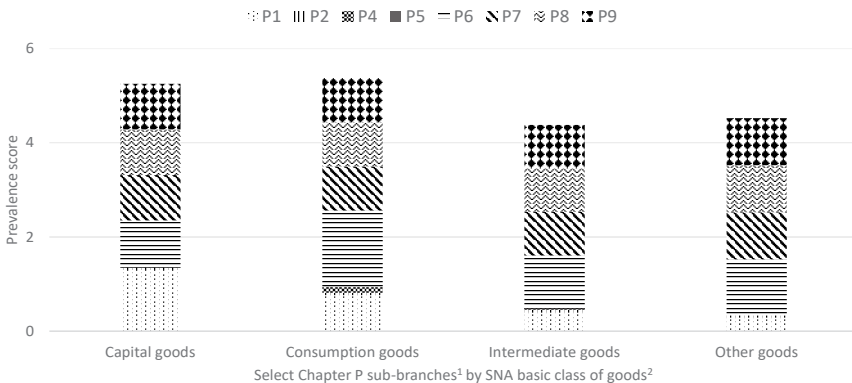
As discussed in the previous section, another way of classifying NTMs is by their effect on the economy through their impact on specific costs. To reiterate, customs NTMs affect the economy by increasing the cost of the import at the border whereas process NTMs increase the cost of production. Meanwhile, product NTMs add further by increasing the cost of meeting the requirements on product characteristics. Finally, consumer NTMs add cost directly to consumers of the product.

Figure 9. Prevalence scores by HS section by select Chapter P sub-branches

¹ Chapter P sub-branch descriptions: P1 (export-license, -quota, -prohibition, and other quantitative restrictions); P2 (state-trading enterprises, for exporting; other selective export channels); P4 (measures on re-export); P5 (export taxes and charges); P6 (export technical measures); P7 (export subsidies); P8 (export credits); and P9 (export measures, not elsewhere specified)

² HS Section Descriptions: I (live animals); II (vegetable products); III (animal or vegetable fats and oils and their cleavage products); IV (prepared foodstuffs); V (mineral products); VI (products of the chemical or allied industries); VII (plastics); VIII (raw hides and skins, leather, furskins); IX (wood); X (pulp of wood or other fibrous cellulosic material); XI (textiles); XII (footwear, headgear, umbrellas, sun umbrellas, walking-sticks, seat-sticks, whips, riding-crops); XIII (articles of stone, plaster, cement, asbestos, mica, or similar materials); XIV (natural or cultured pearls, precious or semi-precious stones, precious metals, metals clad with precious metal); XV (base metals); XVI (machinery and mechanical appliances); XVII (vehicles, aircraft, vessels and associated transport equipment); XVIII (optical, photographic, cinematographic, measuring, checking, precision, medical or surgical instruments and apparatus); XIX (arms and ammunition); XX (miscellaneous manufactured articles); and, XXI (works of art, collectors' pieces and antiques)

Source: Authors' calculations using the modified UNCTAD-TRAINS dataset

Figure 10. Prevalence scores by SNA basic class of goods by select Chapter P sub-branches

SNA = System of National Accounts

¹ Chapter P sub-branch descriptions: P1 (export-license, -quota, -prohibition, and other quantitative restrictions); P2 (state-trading enterprises, for exporting; other selective export channels); P4 (measures on re-export); P5 (export taxes and charges); P6 (export technical measures); P7 (export subsidies); P8 (export credits); and P9 (export measures, not elsewhere specified)

Source: Authors' calculations using the modified UNCTAD-TRAINS dataset

Table 5. Frequency index by HS section by select Chapter P sub-branches

HS Section	Description	P1	P2	P4	P5	P6	P7	P8	P9
		Export- license, quota, prohibition, and other quantitative restrictions	State- trading enterprises, for exporting	Measures on re- export	Export taxes and charges	Export technical measures	Export subsidies	Export credits	Other export measures
	Total	37.46	5.39	5.08	0.14	93.32	93.32	93.32	93.32
I	Live animals	84.73	0.76	29.01	0.00	86.26	86.26	86.26	86.26
II	Vegetable products	91.74	4.59	4.13	0.00	91.74	91.74	91.74	91.74
III	Animal or vegetable fats and oils and their cleavage products	80.56	0.00	2.78	0.00	86.11	86.11	86.11	86.11
IV	Prepared foodstuffs	98.30	6.82	2.27	0.00	98.30	98.30	98.30	98.30
V	Mineral products	67.62	4.76	0.00	0.00	77.14	77.14	77.14	77.14
VI	Products of the chemical or allied industries	23.01	3.39	4.72	0.00	95.28	95.28	95.28	95.28
VII	Plastics	2.06	10.31	0.00	0.00	97.42	97.42	97.42	97.42
VIII	Raw hides and skins, leather, furskins	54.00	14.00	52.00	0.00	90.00	90.00	90.00	90.00
IX	Wood	88.06	5.97	13.43	8.96	92.54	92.54	92.54	92.54
X	Pulp of wood or of other fibrous cellulosic material	0.79	10.24	0.00	0.00	98.43	98.43	98.43	98.43
XI	Textiles and textile articles	8.95	4.33	6.78	0.00	86.29	86.29	86.29	86.29

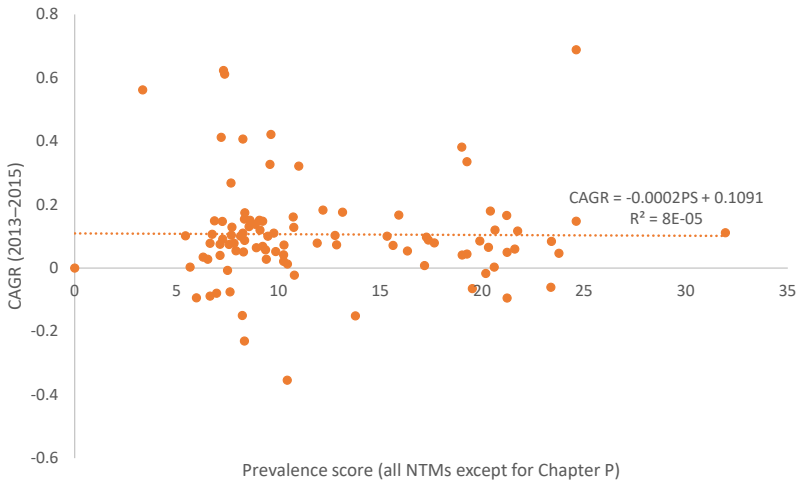
HS Section	Description	P1	P2	P4	P5	P6	P7	P8	P9
XII	Footwear, headgear, umbrellas, sun umbrellas, walking-sticks, seat-sticks, whips, riding-crops	31.91	8.51	31.91	0.00	93.62	93.62	93.62	93.62
XIII	Articles of stone, plaster, cement, asbestos, mica or similar materials	4.41	5.15	0.00	0.00	99.26	99.26	99.26	99.26
XIV	Natural or cultured pearls, precious or semi-precious stones, precious metals, metals clad with precious metal	5.13	17.95	2.56	0.00	76.92	76.92	76.92	76.92
XV	Base metals and articles of base metal	2.46	4.35	2.08	0.00	93.57	93.57	93.57	93.57
XVI	Machinery and mechanical appliances	79.60	6.71	0.00	0.00	97.99	97.99	97.99	97.99
XVII	Vehicles, aircraft, vessels and associated transport equipment	9.76	6.50	0.00	0.00	91.87	91.87	91.87	91.87
XVIII	Optical, photographic, cinematographic, measuring, checking, precision, medical or surgical instruments and apparatus	42.36	4.93	9.85	0.00	96.06	96.06	96.06	96.06
XIX	Arms and ammunition	92.86	0.00	28.57	0.00	100.00	100.00	100.00	100.00
XX	Miscellaneous manufactured articles	19.30	3.51	5.26	0.00	97.37	97.37	97.37	97.37
XXI	Works of art, collectors' pieces and antiques	83.33	16.67	33.33	0.00	83.33	83.33	83.33	83.33

HS = harmonized system

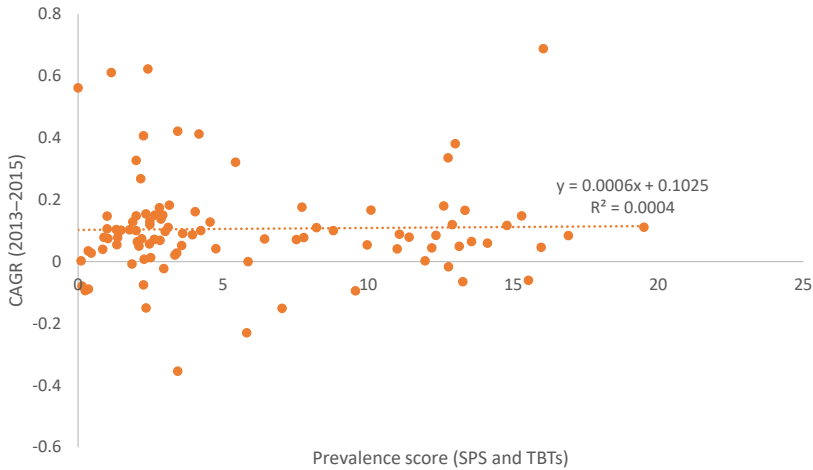
Source: Authors' calculations using the modified UNCTAD-TRAINS dataset

This paper finds that the average number of NTMs applied to a product group tends to have no association with the growth rates of imports of that product group (Figure 11). Similarly, there seems to be no correlation between technical measures, estimated by the prevalence score of SPS and TBT, and the growth rate of imports (Figure 12). The weak correlation between the Compound Annual Growth Rate (CAGR) of imports and the prevalence scores of all NTMs (excluding P) is unsurprising as the impact of the NTMs would have been averaged out by looking at the average prevalence scores. Some of the trade-facilitating benefits of the NTMs would have been canceled out by the trade-impeding cost, resulting in a weak correlation. In contrast, the number of nontechnical NTMs shows a negative relationship with the CAGR of imports (Figure 13).

Figure 11. CAGR of imports and the prevalence score of all NTMs except for Chapter P

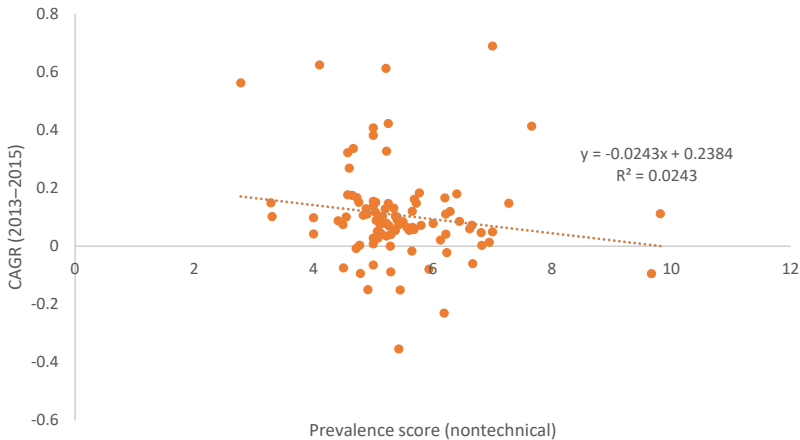


CAGR = compound annual growth rate; NTMs = nontariff measures
Source: Authors' calculations using the modified UNCTAD-TRAINS dataset and trade outcomes from WITS

Figure 12. CAGR of imports and the prevalence score of SPS and TBT measures

CAGR = compound annual growth rate; SPS = sanitary and phytosanitary measures;
TBT = technical barriers to trade

Source: Authors' calculations using the modified UNCTAD-TRAINS dataset and trade outcomes from WITS

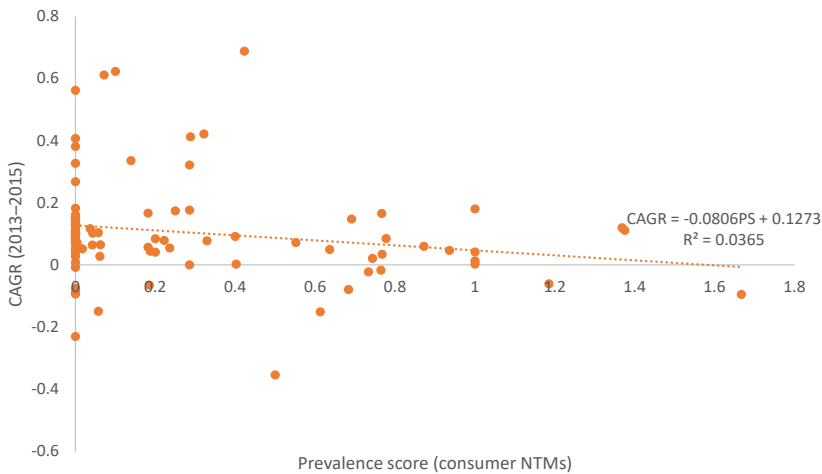
Figure 13. CAGR of imports and the prevalence score of nontechnical NTMs

CAGR = compound annual growth rate; NTM = nontariff measures

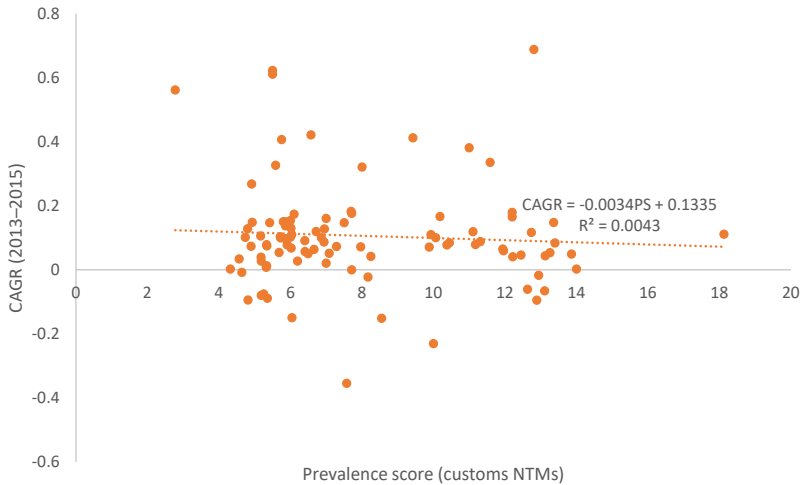
Source: Authors' calculations using the modified UNCTAD-TRAINS dataset and trade outcomes from WITS

Another interesting finding is the correlation between the number of NTMs, classified using the definition of Ederington and Ruta (2016), and the CAGR of imports from 2013 to 2015. Figures 14 and 15 show that the import growth is inversely associated with the number of consumer and customs NTMs. This is because consumer NTMs and customs NTMs tend to affect the price of imported goods, resulting in higher prices and decreased consumer demand. On the other hand, it can also be observed that there exists a positive correlation between process NTMs and import growth (Figure 16). An explanation for the positive correlation is that some regulations may benefit international trade as it can reduce information costs (e.g., labeling), guarantee quality (e.g., certification), or reflect commitment to development issues and goals (e.g., labor and environmental standards, and fair-trade schemes.)

Figure 14. CAGR of imports and the prevalence score of consumer NTMs

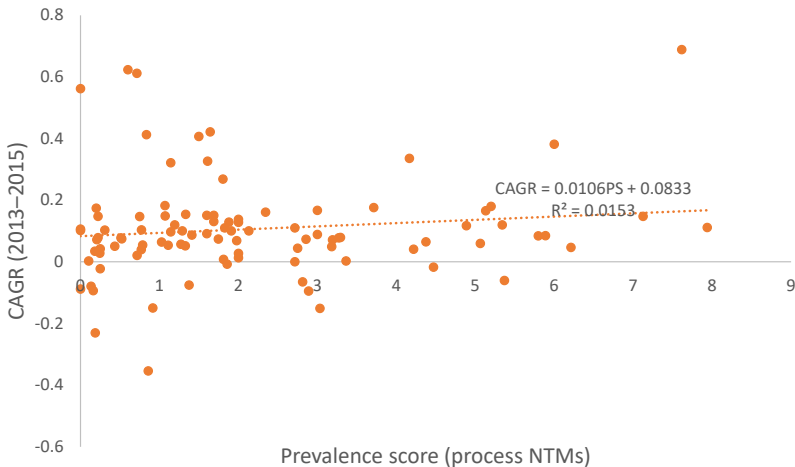


CAGR = compound annual growth rate; NTMs = nontariff measures
Source: Authors' calculations using the modified UNCTAD-TRAINS dataset and trade outcomes from WITS

Figure 15. CAGR of imports and the prevalence score of customs NTMs

CAGR = compound annual growth rate; NTMs = nontariff measures

Source: Authors' calculations using the modified UNCTAD-TRAINS dataset and trade outcomes from WITS

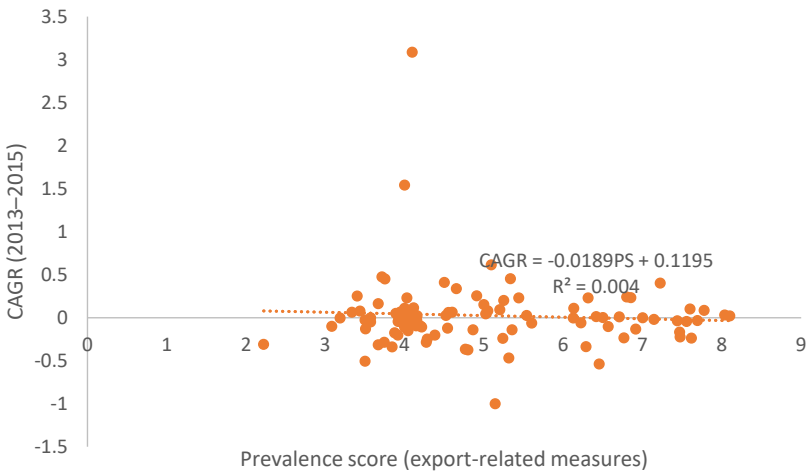
Figure 16. CAGR of imports and the prevalence score of process NTMs

CAGR = compound annual growth rate; NTMs = nontariff measures

Source: Authors' calculations using the modified UNCTAD-TRAINS dataset and trade outcomes from WITS

This study also investigated the correlation between NTMs and trade outcomes particularly those related to exports. Figures 17 and 18 show the correlations between the CAGR of exports from 2013 to 2015 and the prevalence score and frequency index of export-related NTMs, respectively. Both figures show a negative relationship between NTMs and the CAGR of exports indicating that NTMs may make it difficult for exports to grow because of the increased transaction cost. However, the average number of product and process NTMs was shown to have a positive correlation with the growth rate of new markets,¹² which may imply that these NTMs despite increasing the cost of production may have trade-facilitating impact because it improves the adherence of the product to international standards (Figure 19).

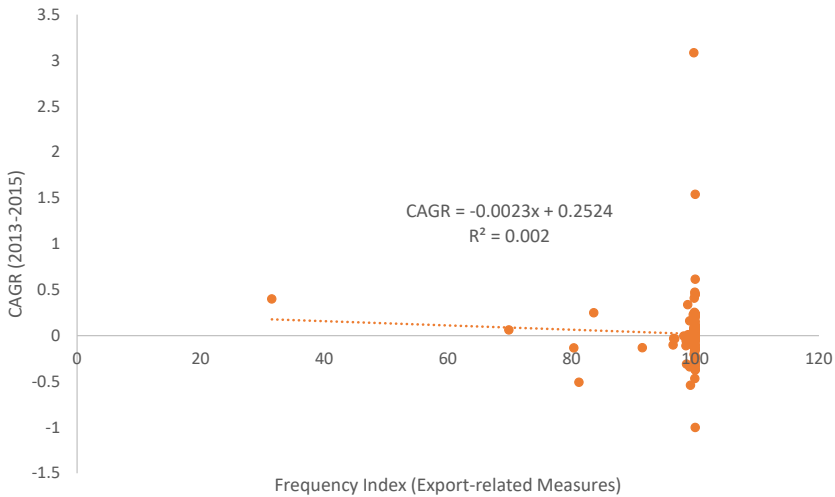
Figure 17. CAGR of exports and the prevalence score of export-related measures



CAGR = compound annual growth rate

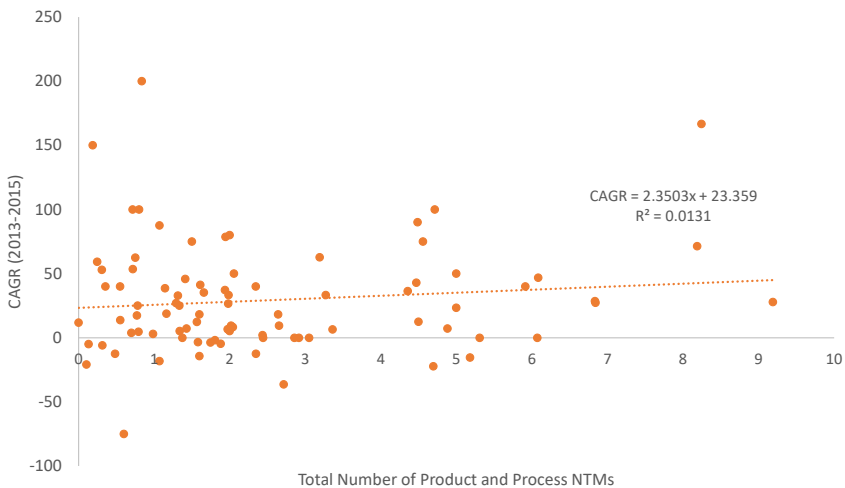
Source: Authors' calculations using the modified UNCTAD-TRAINS dataset and trade outcomes from WITS

¹² This indicator was obtained from WITS. The number of markets counts the number of partner markets and the number of products exported, specified at the HS 6-digit level. A market is counted if the exporter ships at least one product to that destination in the given year with a trade value of at least USD 10,000 whereas a product is counted if it is exported to at least one destination in the selected year with a value of at least USD 10,000.

Figure 18. CAGR of exports and the frequency index of export-related measures

CAGR = compound annual growth rate

Source: Authors' calculations using the modified UNCTAD-TRAINS dataset and trade outcomes from WITS

Figure 19. CAGR of the change in the number of markets and the total number of product and process NTMs

CAGR = compound annual growth rate; NTMs = nontariff measures

Source: Authors' calculations using the modified UNCTAD-TRAINS dataset and trade outcomes from WITS

Conclusion and Policy Recommendations

Conclusion

Several studies have attempted to map NTMs as applied to Philippine trade both from imports and from exports (de Dios 2016; Medalla and Mantaring 2017). Largely, the NTM taxonomy divides measures into chapters ranging from A to P. It could be reclassified as import NTMs (Chapters A to O) and as export NTMs (Chapter P). Import NTMs are further regrouped into two categories, which would include technical measures (Chapters A to C) and nontechnical measures (Chapters D to O).

In the Philippines, a number of government agencies have been tasked to implement the NTMs. The DA and the Department of Environment and Natural Resources (DENR) implement 422 and 103 NTMs, respectively. This could be attributed to the large number of SPS measures on agricultural goods. Regionally in ASEAN, both Thailand and the Philippines report the greatest number of NTMs in 2016 with 869 and 523 NTMs, respectively. With the ASEAN average at 218 NTMs, these two countries highly regulate traded products relative to other ASEAN countries. While NTMs are often regarded as potential obstacles to trade, firms do not seem affected by these NTMs per se as regulatory policies but are, instead, affected by it through the procedures arising from the implementation of the NTM (ITC 2016). Regulatory obstacles were found to comprise only as high as 3.3 percent, on average, as compared to procedural obstacles (47.8%) while the rest of the obstacles arise as a combination of both regulatory and procedural issues (48.8%).

Furthermore, this paper has explored whether agriculture or manufacturing is the more regulated sector. The descriptive indicators have shown that both agriculture and manufacturing are highly regulated as compared to natural resources. The frequency index of natural resources (77.1%) is much lower than the frequency index of agriculture (92.2%) and manufacturing (93.9%). Between agriculture and manufacturing, the two are practically the same when it comes to being affected by NTMs; however, agricultural goods have a higher prevalence score (19.8) than manufacturing products (8.9) owing from the different SPS measures being applied to agricultural goods. Meanwhile, natural resources have a 9.7 prevalence score.

Likewise, this paper has probed on whether capital goods or consumption goods are the more regulated class of goods. The results have

shown that between capital goods and consumption goods, the former has a greater frequency index (96.8%) as compared to consumption goods (93.7%) though the two do not have much difference with their coverage ratios. This shows, however, that both are highly regulated. In terms of exports, prevalence scores show that both capital goods and consumption goods have a similar number of NTMs.

In trying to understand the relationship between NTMs and trade, different scatterplots were done to visually gauge possible correlations. For instance, this paper has found that the average number of NTMs (prevalence score) applied on a product group tends to have no association with the growth rates of imports of that product group and neither do technical measures have any distinct correlation. However, the number of nontechnical NTMs does show a negative correlation for imports growth and average number of NTMs applied. This relationship could indicate that firms are adaptable to technical measures as perhaps this is already being done within the industry in the form of classifications, quality management, production standards, and regular protocol, among others, that it has already become part of the standard procedure of the firms' operations. On the other hand, nontechnical NTMs could potentially be confusing to firms as these may be subject to discretion when implemented.

Moreover, classifying NTMs using Ederington and Ruta (2016) has shown that import growth is also negatively correlated with the number of consumer and customs NTMs but has a positive correlation with process NTMs. An increased number of consumer and customs NTMs may become obstacles for buyers to import products. This could manifest as higher prices on imported goods which may lead to lower consumer demand. On the other hand, an increase in process NTMs is associated with higher import growth, potentially because it can create an environment conducive to international trade as it can reduce information costs, guarantee quality, or reflect a commitment to important development matters such as labor and environmental standards.

Further, with exports, while the number of NTMs applied register weak negative correlations with export growth, again, product and process NTMs show a positive correlation with export growth and growth of markets. This implies that NTMs, by themselves, are not necessarily barriers to trade.

This paper has provided descriptive indicators that explore the extent of how NTMs correlate with Philippine imports and exports by

providing a set of correlations that could form part of future researches. Succeeding studies building on this could investigate the relationship of the trade outcomes discussed in this paper using more rigorous econometric methods. Apart from that, should the UNCTAD-TRAINS dataset already contain information on NTMs under Chapters J to O, then it would be beneficial to explore as it contains new information on distribution restrictions (Chapter J), restrictions on post-sales services (Chapter K), subsidies, excluding export subsidies under P7 (Chapter L), government procurement restrictions (Chapter M), intellectual property (Chapter N), and rules of origin (Chapter O). These chapters could be relevant to the Fourth Industrial Revolution as borders dissolve from disruptions resulting from digitalization. For instance, Chapter J contains geographical restrictions (J1) and restriction on resellers (J2), whereas, Chapter N holds NTMs affecting intellectual property. In terms of services embedded in goods trade, Chapter K would be interesting to explore especially with cross-border trading and e-commerce.

Policy recommendations

Based on the various observations derived from the descriptive statistics and scatterplots, this paper presents the following policy recommendations.

- This paper finds that NTMs, on average, have little correlation with the growth of imports. This is in line with the ITC (2016) finding that the regulations, by themselves, are rarely cited as obstacles to importation. However, the same ITC report highlighted the critical issue of procedural obstacles. These obstacles, according to the report, are the main reason for NTMs becoming obstacles to trade. Examples of procedural obstacles include delays, numerous administrative windows or redundant documents, large number of different documents, informal payments, and unusually high fees and charges, among others. Aside from reviewing the policies that serve as the basis of these NTMs, there is also a need to review and streamline the procedures and documentary requirements that these NTMs require for compliance.
- While the Philippines has a number of SPS (Chapter A) and TBT (Chapter B) measures applied to its imports, the

nontechnical measures that the Philippines applies outnumber the technical measures. There is a need to review these nontechnical measures, particularly Chapters F (price-control measures, including additional taxes and charges) and G (finance measures) as these cover most of the goods traded by the Philippines.

- This paper was able to obtain negative correlations between customs NTMs and trade outcomes. NTMs that increase the cost of importation, particularly those that drive a wedge between domestic price and world price, need to be streamlined to remove redundancies of regulation. It is recommended that the government work toward the completion of the Philippine National Single Window to improve trade facilitation and reduce the procedural obstacles related to import licensing and issuance of permits.
- This paper was also able to show that both process and product NTMs are positively correlated with increasing exports and expanding markets. This implies that ensuring the quality of our products by aligning with global standards is of primary importance. As this may impose an additional cost to exporters, it should be the government's policy to assist exporters and manufacturers in ensuring that international standards are met. Medalla and Mantaring (2017) identified three stages in which SMEs require assistance with regard to NTMs, namely, awareness of the measures, understanding the process of compliance, and knowing how to proceed to obtain certificates of compliance.
- The analysis in this paper utilized the WTO-iTIP goods initiative, a database of nontariff measures applied by WTO members on merchandise trade. The information in the database are essentially notifications of members including specific trade concerns raised by them. Although quite comprehensive, the database may not be completely useful for businesses as it only enumerates the NTMs that may affect the importers or exporters and does not explicitly state the procedures and documents necessary to meet the requirements. The Philippines should strengthen the Philippine National Trade Repository to supplement the information gap in the WTO-iTIP and increase the transparency on NTMs.

- Finally, further research is necessary to obtain measures of restrictiveness of the NTMs. In analyzing further the cost implications of NTMs, the conduct of analysis must be made at the sub-branches of specific chapters of NTMs to be able to isolate the true impact of NTMs on trade outcomes. While the analysis in this paper is important in providing an overview of the NTMs in the Philippines, policy recommendations for specific industries or addressing specific NTMs require a more detailed analysis.

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Annex 1. Sustainable Development Goals (SDGs) and Trade

SDG	Goal	Description
01	No Poverty	There is increasing evidence that well planned and strategically executed trade policy initiatives can impact positively on sustainable poverty reduction. Trade opening has also generated higher living standards through greater productivity, increased competition, and more choice for consumers and better prices in the marketplace.
02	Zero Hunger	Eliminating subsidies that cause distortions in agriculture markets will lead to fairer more competitive markets helping both farmers and consumers while contributing to food security. The World Trade Organization (WTO) 2015 decision on export competition eliminated export subsidies in agriculture, thereby delivering on Target 2.B of this goal.
03	Good Health and Well-being	One of the main objectives under Sustainable Development Goal (SDG) 03 is to ensure access to affordable medicines for all. An important amendment to the WTO's Trade-Related Aspects of Intellectual Property Rights agreement recently entered into force. This measure will make it easier for developing countries to have a secure legal pathway to access affordable medicines in line with Target 3.B of this goal.
05	Gender Equality	Trade can create opportunities for women's employment and economic development. Through trade, job opportunities for women have increased significantly. Jobs in export sectors also tend to have better pay and conditions. Export sectors are an important job provider for women in developing countries.
08	Decent Work and Economic Growth	Trade-led inclusive economic growth enhances a country's income-generating capacity which is one of the essential prerequisites for achieving sustainable development. The WTO's Aid for Trade initiative can make a big difference in supplementing domestic efforts in building trade capacity, and SDG 08 contains a specific target for countries to increase support under this initiative.
09	Industry, Innovation, and Infrastructure	Trade produces dynamic gains in the economy by increasing competition and the transfer of technology, knowledge, and innovation. Open markets have been identified as a key determinant of trade and investment between developing and developed countries allowing for the transfer of technologies which result in industrialization and development, helping to achieve SDG 09.

Annex 1. (continued)

SDG	Goal	Description
10	Reduced Inequalities	At the global level, changes in development patterns have been transforming prospects of the world's poorest people, decreasing inequality between countries. WTO rules try to reduce the impact of existing inequalities through the principle of Special and Differential Treatment for Developing Countries. This allows the use of flexibilities by developing and least-developed countries to take into account their capacity constraints.
14	Life Below Water	The WTO plays an important role in supporting global, regional, and local efforts to tackle environmental degradation of our oceans under SDG 14. The Decision on Fisheries Subsidies taken by WTO members in December 2017 is a step forward in multilateral efforts to comply with SDG Target 14.6, committing members to prohibit subsidies that contribute to overcapacity and overfishing, and eliminate subsidies that contribute to illegal, unreported, and unregulated fishing with special and differential treatment for developing and least-developed countries. Members committed to fulfilling this commitment by the 12 th Ministerial Conference.
17	Partnerships for the Goals	SDG 17 recognizes trade as a means of implementation for the 2030 Agenda. The targets under this goal call for countries to promote a universal, rules-based, open, non-discriminatory and equitable multilateral trading system; the increase of developing countries' exports and doubling the share of exports of least-developed countries (LDCs); and, the implementation of duty-free and quota-free market access for LDCs with transparent and simple rules of origin for exported goods. The WTO is the key channel for delivering these goals.

Source: WTO (2018)

Annex 2. Frequency index by HS section by NTM Chapter

HS Section	Description	A	B	C	D	E	F	G	H	P	All
	Total	20.29	68.86	93.32	0.02	39.86	93.32	93.32	5.24	93.32	93.32
I	Live animals	86.26	81.68	86.26	0.00	53.44	86.26	86.26	0.76	86.26	86.26
II	Vegetable products	91.74	91.74	91.74	0.46	44.95	91.74	91.74	4.59	91.74	91.74
III	Animal or vegetable fats and oils and their cleavage products	80.56	77.78	86.11	0.00	11.11	86.11	86.11	0.00	86.11	86.11
IV	Prepared foodstuffs	94.89	97.16	98.30	0.00	32.95	98.30	98.30	6.82	98.30	98.30
V	Mineral products	1.90	73.33	77.14	0.00	66.67	77.14	77.14	3.81	77.14	77.14
VI	Products of the chemical or allied industries	14.60	50.88	95.28	0.00	16.08	95.28	95.28	3.39	95.28	95.28
VII	Plastics	2.06	45.88	97.42	0.00	32.99	97.42	97.42	10.31	97.42	97.42
VIII	Raw hides and skins, leather, furskins	76.00	64.00	90.00	0.00	0.00	90.00	90.00	14.00	90.00	90.00
IX	Wood	85.07	92.54	92.54	0.00	53.73	92.54	92.54	5.97	92.54	92.54
X	Pulp of wood or of other fibrous cellulosic material	7.09	55.12	98.43	0.00	21.26	98.43	98.43	10.24	98.43	98.43
XI	Textiles and textile articles	8.51	44.73	86.29	0.00	23.23	86.29	86.29	4.33	86.29	86.29
XII	Footwear, headgear, umbrellas, sun umbrellas, walking-sticks, seat- sticks, whips, riding- crops	31.91	74.47	93.62	0.00	0.00	93.62	93.62	8.51	93.62	93.62

Annex 2. (continued)

HS Section	Description	A	B	C	D	E	F	G	H	P	All
XIII	Articles of stone, plaster, cement, asbestos, mica or similar materials	0.00	81.62	99.26	0.00	16.91	99.26	99.26	5.15	99.26	99.26
XIV	Natural or cultured pearls, precious or semi-precious stones, precious metals, metals clad with precious metal	2.56	74.36	76.92	0.00	74.36	76.92	76.92	2.56	76.92	76.92
XV	Base metals and articles of base metal	2.08	58.03	93.57	0.00	33.46	93.57	93.57	4.35	93.57	93.57
XVI	Machinery and mechanical appliances	4.56	95.03	97.99	0.00	83.36	97.99	97.99	6.71	97.99	97.99
XVII	Vehicles, aircraft, vessels and associated transport equipment	22.76	86.99	91.87	0.00	73.98	91.87	91.87	6.50	91.87	91.87
XVIII	Optical, photographic, cinematographic, measuring, checking, precision, medical or surgical instruments and apparatus	9.85	78.33	96.06	0.00	53.69	96.06	96.06	4.93	96.06	96.06
XIX	Arms and ammunition	35.71	100.00	100.00	0.00	92.86	100.00	100.00	0.00	100.00	100.00
XX	Miscellaneous manufactured articles	5.26	78.95	97.37	0.00	2.63	97.37	97.37	3.51	97.37	97.37
XXI	Works of art, collectors' pieces and antiques	33.33	0.00	83.33	0.00	50.00	83.33	83.33	16.67	83.33	83.33

HS = harmonized system; NTM = nontariff measures
Source: Authors' calculations using the modified UNCTAD-TRAINS dataset

Annex 3. Prevalence score by HS section by NTM chapter

HS Section	Description	A	B	C	D	E	F	G	H	P	All
	Total	1.7	3.1	1.2	0.0	0.5	3.9	1.0	0.1	4.7	16.3
I	Live animals	10.3	3.0	1.6	0.0	1.4	4.0	0.9	0.0	6.6	27.9
II	Vegetable products	12.1	3.0	1.3	0.0	0.8	4.5	1.3	0.0	7.4	30.3
III	Animal or vegetable fats and oils and their cleavage products	9.3	3.5	1.8	0.0	0.2	3.6	0.9	0.0	6.4	25.7
IV	Prepared foodstuffs	8.9	3.5	1.4	0.0	0.5	4.2	1.1	0.1	5.9	25.6
V	Mineral products	0.2	4.1	1.5	0.0	0.7	3.8	1.4	0.0	3.9	15.6
VI	Products of the chemical or allied industries	0.6	2.4	1.1	0.0	0.2	3.9	1.0	0.0	4.2	13.6
VII	Plastics	0.0	1.6	1.1	0.0	0.4	4.1	1.1	0.1	4.0	12.3
VIII	Raw hides and skins, leather, furskins	2.2	1.3	0.9	0.0	0.0	3.7	0.9	0.1	5.9	15.0
IX	Wood	8.2	2.6	1.6	0.0	0.5	3.9	1.5	0.1	7.4	25.8
X	Pulp of wood or of other fibrous cellulosic material	0.1	1.2	1.1	0.0	0.3	4.1	1.1	0.1	4.1	12.0
XI	Textiles and textile articles	0.4	0.9	0.9	0.0	0.2	3.7	0.9	0.0	3.8	10.8
XII	Footwear, headgear, umbrellas, sun umbrellas, walking-sticks, seat-sticks, whips, riding-crops	1.0	1.6	0.9	0.0	0.0	3.7	1.0	0.1	5.1	13.4
XIII	Articles of stone, plaster, cement, asbestos, mica or similar materials	0.0	2.7	1.0	0.0	0.2	4.0	1.1	0.1	4.1	13.1

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Annex 3. (continued)

HS Section	Description	A	B	C	D	E	F	G	H	P	All
XIV	Natural or cultured pearls, precious or semi-precious stones, precious metals, metals clad with precious metal	0.1	3.2	0.8	0.0	0.8	3.8	1.5	0.0	3.4	13.7
XV	Base metals and articles of base metal	0.1	1.8	1.1	0.0	0.3	3.9	1.1	0.0	3.9	12.2
XVI	Machinery and mechanical appliances	0.0	7.6	1.8	0.0	0.9	3.9	1.0	0.1	5.6	21.0
XVII	Vehicles, aircraft, vessels and associated transport equipment	0.2	3.7	1.0	0.0	1.5	4.0	1.1	0.1	3.9	15.4
XVIII	Optical, photographic, cinematographic, measuring, checking, precision, medical or surgical instruments and apparatus	0.3	3.1	1.1	0.0	0.5	3.8	1.0	0.0	4.8	14.7
XIX	Arms and ammunition	0.9	7.3	1.0	0.0	1.2	4.0	1.0	0.0	6.3	21.7
XX	Miscellaneous manufactured articles	0.2	2.5	1.0	0.0	0.0	3.9	1.0	0.0	4.5	13.2
XXI	Works of art, collectors' pieces and antiques	1.0	0.0	0.8	0.0	0.5	3.3	0.8	0.2	6.5	13.2

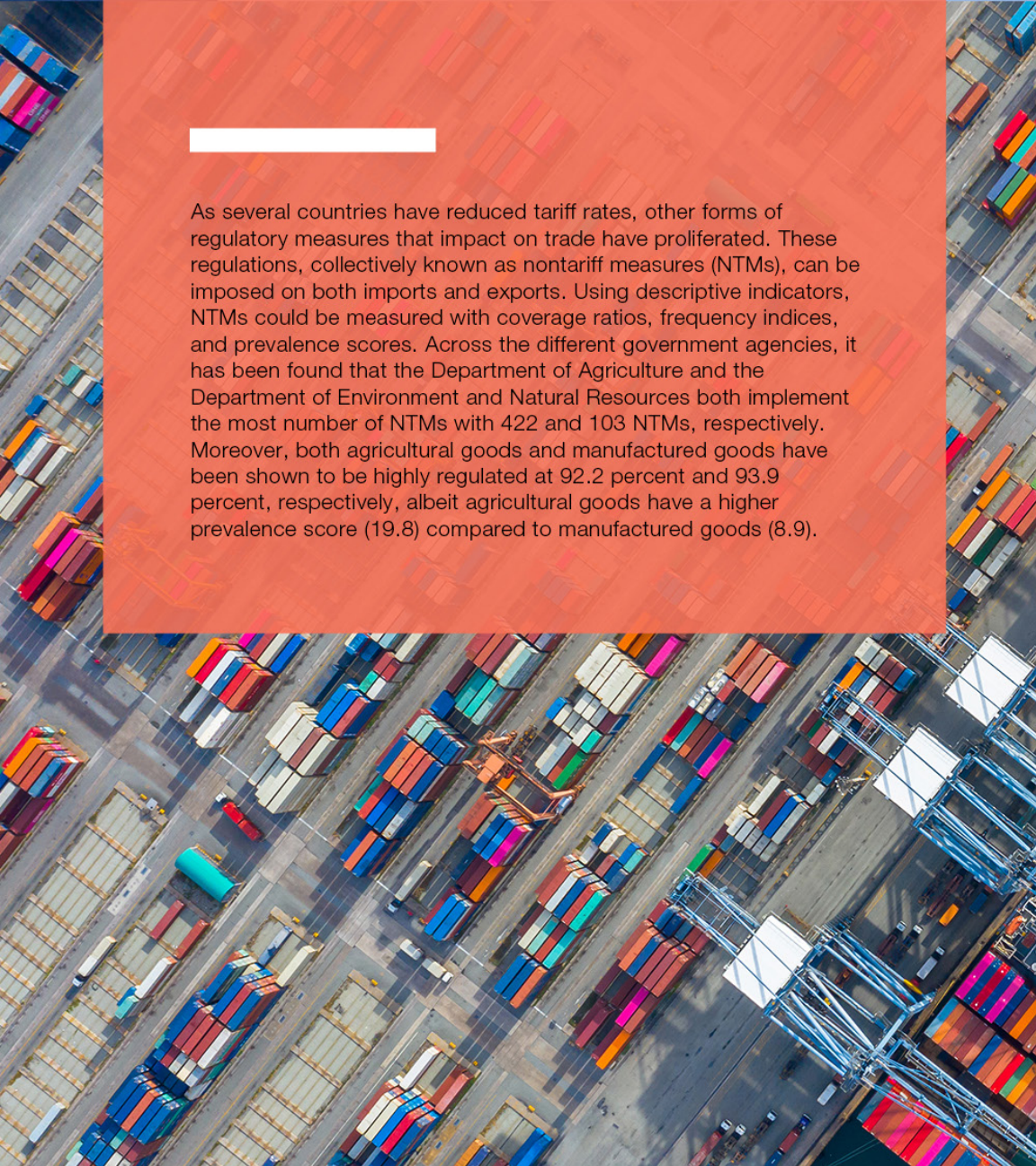
HS = harmonized system; NTM = nontariff measure

Source: Authors' calculations using the modified UNCTAD-TRAINS dataset

The Authors

Francis Mark A. Quimba is a senior research fellow at PIDS and project director of the Philippine APEC Study Center Network. He obtained his PhD in Development Economics from the National Graduate Institute for Policy Studies, Tokyo, Japan. He has worked on research studies in agriculture, trade, rural development, and innovation.

Sylwyn C. Calizo Jr. is a research specialist at PIDS. He has coauthored papers on international trade, digital economy, and innovation activities. His research interests extend to APEC, which he participates through the Philippine APEC Study Center Network. He earned his Bachelor of Arts degree in Economics from the University of Santo Tomas.



As several countries have reduced tariff rates, other forms of regulatory measures that impact on trade have proliferated. These regulations, collectively known as nontariff measures (NTMs), can be imposed on both imports and exports. Using descriptive indicators, NTMs could be measured with coverage ratios, frequency indices, and prevalence scores. Across the different government agencies, it has been found that the Department of Agriculture and the Department of Environment and Natural Resources both implement the most number of NTMs with 422 and 103 NTMs, respectively. Moreover, both agricultural goods and manufactured goods have been shown to be highly regulated at 92.2 percent and 93.9 percent, respectively, albeit agricultural goods have a higher prevalence score (19.8) compared to manufactured goods (8.9).



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18th Floor, Three Cyberpod Centris - North Tower
EDSA corner Quezon Avenue, Quezon City, Philippines
Tel.: (+632) 8877-4000, (+632) 8372-1292
Email: publications@mail.pids.gov.ph
Website: <https://www.pids.gov.ph>
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