

Building a Dataset for Non-Tariff Measures and its Usage: The Case of Indonesia and Applicability for Other Countries

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Abbreviations

AVE	Ad-valorem Equivalent
BPOM	National Agency of Drug and Food Control
BTKI	Indonesian Customs Tariff Book
CR	Coverage Ratio
DGCE	Directorate General of Customs and Excise
ERIA	Economic Research Institute for ASEAN and East Asia
EXP	Export-related measures
FR	Frequency Ratio
Gol	Government of Indonesia
HS	Harmonized System
INP	Indonesian National Police
INSP	Pre-shipment inspection and other formalities
MAST	Multi-Agency Support Team
MoA	Ministry of Agriculture
MoCI	Ministry of Communication and Information Technology
MoEF	Ministry of Environment and Forestry
MoEMR	Ministry of Energy and Mineral Resources
MoF	Ministry of Finance
MoH	Ministry of Health
Mol	Ministry of Industry
MoIT	Ministry of Industry and Trade
MoMAF	Ministry of Marine Affairs and Fisheries
MoT	Ministry of Trade
MoTr	Ministry of Transport
NTM	Non-tariff measures
OTH	Other measures
PC	Price control measures
QC	Quantity-control measures
TBT	Technical barriers to trade
SNI	Indonesian National Standard
SPS	Sanitary and phytosanitary measures
UNCTAD	United Nations Conference on Trade and Development
WBOJ	World Bank Jakarta Office
WCO	World Customs Organization
WITS	The World Integrated Trade Solution

Foreword by UNCTAD and Government of Indonesia

UNCTAD

In our increasingly globalized and industrialized world with fragmented production processes and complex trade networks, concerns about health and safety as well as protection of the environment are rising. Trade related regulations including technical measures are often used to target these concerns and protect health, safety and the environment.

These regulations are important for non-trade concerns but also have a significant impact on trade - much higher than tariffs do, in fact. They can increase or decrease trade and trade costs. Most often, they increase trade costs and trade is hampered. Furthermore, there is evidence that more vulnerable groups such as smaller enterprises, women and lower-income countries are disproportionately affected by such regulations.

These non-tariff measures (NTMs) are complex by nature and generally not available in a systematic user-friendly way. Lack of transparency alone increases trade costs by about 25 per cent. UNCTAD and the World Bank, together with its other partners in the Multi Agency Support Team on NTMs (FAO, IMF, ITC, OECD, UNIDO, WTO) and experts from countries and organizations such as ERIA, have developed a common language, the International Classification of NTMs, and a standardized approach to collect NTM information to address the lack of transparency.

Indonesia was among the first countries in Asia where comprehensive NTM data on all applicable regulations was collected. Together with the government of Indonesia, ERIA and UNCTAD collected data on NTMs for all ten ASEAN countries in 2015 and updated the data in 2018. The data has been published in a systematic manner and is easily accessible for policy makers, researchers and traders. For example, policy makers use the data for trade negotiations and regulatory cooperation (which could, according to UNCTAD research, reduce trade costs also by about 25 per cent), researchers use it to assess the impact of NTMs on trade and vulnerable groups, and traders, particularly small and medium size enterprises, use it to get intelligence about potential export markets.

The World Bank office in Indonesia, together with the government of Indonesia, has now updated this information and even widened the time coverage to include regulations that were in force before 2015 but no longer applicable in 2015. This is remarkable and significant for at least two reasons. First, considerable effort was necessary to update and complete the data sufficiently for it to truly be a "panel data series". This is important for researchers as it allows them to assess the impact of NTMs on a much more detailed level than if they had access only to cross-section data. Second, the government of Indonesia is a role model in supporting transparency. Transparency supports the importers and exporters of Indonesia and contributes to attracting investments. Furthermore, the data is useful also for internal and external coordination and negotiation processes.

I congratulate the World Bank office in Jakarta and the government of Indonesia for this outstanding work and contribution to the global transparency agenda. UNCTAD looks forward to continuing to work with the World Bank and Indonesia and use the data for sustainable development.



Ralf Peters,
Head, Trade Analysis Branch, Division on International
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Government of Indonesia

Currently, the government continues striving to accelerate the process of national economic recovery. Constructive efforts were being enforced through the Job Creation Law, now the Job Creation In Lieu of Law (Perppu). The government keeps on formulating appropriate strategies and policies so that Indonesia can optimally achieve its potential. Especially amidst global economic conditions that are still struggling, increasing competitiveness to support domestic resilience is one of the main strategies.

Quoting the World Bank's Indonesia Economic Prospect report on December 2022, foreign investment has been responding positively to the reforms. Looking ahead, complementary reforms under the Perppu of Job Creation with further trade reforms could result in larger multiplier effects on investment and growth. In the medium to long term, economic transformation policies and boosting export growth are expected to create more sustainable economic growth.

One of the strategies to encourage export growth is to ensure that Indonesia's Non-Tariff Measures (NTMs) policies are supporting the export and industry competitiveness. NTMs are often used to achieve public policy goals, such as food safety, consumer protection, and environmental protection. For this reason, it is important to know the implications of this policy for national economic development, so that the Government can maximize the positive impact of NTMs while reducing the costs of NTMs. Therefore, the availability of data and information related to NTM policies in Indonesia is very important to support the process of formulating policies based on scientific evidence and rational arguments (evidence-based policy making), so as to produce optimal output.

The data is a product of the World Bank and the Government of Indonesia's long-standing engagement on trade policy which was expanded through the Coordinating Ministry for Economic Affairs (CMEA). Through CMEA, trade policy dialogue was established with many various government stakeholders including the Ministry of Trade, Ministry of Finance, Ministry of Industry, Ministry of National Development Planning, and also Financial System Stability Committee. Due to this engagement and the government's own development agenda, there was progress in reforming some measures through the implementation of the Job Creation Law in 2021, notable of which was a removal of pre-shipment inspections.

We hope the on-going dialogue and the data will continue to help identify measures that may need to be improved or reformed. We also hope this data-set will be a useful reference in discussions and policy analyses in Indonesia. The collaboration between the World Bank and the Government of Indonesia (CMEA) elaborating this data-set has been a very fruitful experience that we hope to maintain in the future.

FERRY IRAWAN

Acting Deputy Minister for Macroeconomics and Financial Coordination,
Coordinating Ministry for Economic Affairs

* * *

As part of the engagement with the World Bank, DG Customs provided data to World Bank that helped identify the effect of non-tariff measures on Indonesian traders. We also engaged in several active and productive discussions with the World Bank on the rationales of several non-tariff measures and their implementation to see the plausible implications. This is important as not all non-tariff measures are distortive. Therefore identifying those few that need reform is crucial. As customs, this also ensures more efficiency in our ports regarding documentary requirements, helping reduce implementation cost to the government and to traders. We look forward to continuing working with the World Bank to enhance the competitiveness of Indonesia and smooth port procedures. Furthermore, we are pleased to be part of a process that shows Indonesia as an example for other countries to follow.

Rudy Rahmaddi

Director of Customs and Excise Information and Technology, Ministry of Finance

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Abstract

As import tariffs have been declining over the past decades, non-tariff measures (NTMs) have become the most frequently used measures in trade policy. The increasing use of NTMs in global trade has highlighted the need for timely, high frequency and accurate data in order to better understand the implications that NTMs have on products, firms and the economy. This manual describes the first high-frequency panel dataset built by the World Bank on the universe of NTMs applied by a country, i.e. Indonesia. The manual includes a comprehensive overview of the purpose, building procedures and usage of the data for Indonesia. The dataset expands on and improves on existing data on Indonesian NTMs collected by other institutions (UNCTAD and ERIA) by covering a broader source base, customizing the data, and by increasing the frequency of updates. By documenting the data collection and transformation process, the manual hopes to facilitate the construction of similar datasets in other countries.

1. Introduction

In recent years, governments have increasingly used non-tariff measures (NTMs) to achieve a variety of policy objectives.¹

Since the demand for protection against health and environmental hazards is expected to increase in future years, so are the number of NTMs (Cadot et al. 2022).

NTMs include “policy measures other than ordinary customs tariffs that can potentially have an economic effect on international trade in goods, changing quantities traded, or prices or both” (UNCTAD 2022). Unlike tariffs, NTMs are typically used to address potential negative externalities of trade and thus, many NTMs aim primarily at achieving public policy objectives such as food safety or consumer protection. However, even without protectionist intent, they can entail costs which are unnecessarily high to achieve their intended objective. Firms might face administrative burdens, information transparency issues, inconstancy or discriminatory behavior, lack of sector-specific facilities, lack of recognition, time constraints and/or informal payments. Identifying problematic NTMs is key before making a case for the elimination or modification of an existing government regulation.

This increases the need for reliable updated data that help identify the extent of application and the impact of NTMs on the economy. The key to maximizing benefits of NTMs is to reduce the cost of compliance with necessary NTMs and eliminate unnecessary NTMs. A useful benchmark to identify problematic NTMs is whether or not they comply with the key principles of the trading system put in place by the World Trade Organization (WTO): do not discriminate among trading partners; and do not create unnecessary obstacles to trade². It is therefore crucial to understand these dynamics to ensure consistency with basic principles of implementation (Figure 1).

Figure 1: General Principles on NTMs and Monitoring



Source: APEC Cross-cutting Principles on NTMs

¹ As defined by the Multi-Agency Support Team and the Group of Eminent Persons on Non-Tariff Barriers.

² https://www.wto.org/english/tratop_e/tbt_e/tbt_e.htm

However, NTM data is challenging to collect for multiple reasons.

The main global source of NTM data is the UNCTAD data set³.

However, as it is a snapshot at a specific point in time, it does not enable to track the evolution of NTMs, nor to perform a time-series analysis of NTMs.

This manual presents the process through for which NTMs have been hand-collected, compiled and tracked to generate the World Bank NTM Database for Indonesia, closely following UNCTAD guidelines.

The World Bank NTM Database improves on existing data through more frequent updates, a wide variety of sources and a routine for forward and backward tracing that enables the creation of a panel data.

First, NTMs cannot usually be tracked from a single source as they are introduced by many different government entities making it hard to monitor. Second, regulations may mention product names without specifying the product codes, meaning that the product name needs to be assigned to the relevant product code to produce an accurate data. Third, the regulations are frequently renewed and adapted, making it hard to keep track of all changes over time so as to build a proper panel dataset of measures.

The data set covers over 100 countries, containing more than 10,000 different regulations and almost 60,000 distinct measures based on the UNCTAD International Classification of NTMs (UNCTAD 2022). It was collected through official sources, including national laws and regulations and provides annual snapshots by selecting the cut-off date for each year. The data can be accessed through multiple portals like the TRAINS Portal⁴, the World Integrated Trade Solution (WITS)⁵ or the Global Trade Help Desk⁶. The UNCTAD data is used by researchers to study the impact of NTMs, and the broad coverage of the data enables researchers to make comparisons across countries on the NTM application.

Additionally, updates are usually once every few years (especially given the coverage of a wide number of countries), making timely tracking of policies challenging. For Indonesia, the data is available based on a 2015 and 2018 snapshot, collected in collaboration with ERIA. This data provides the starting point for the dataset construction described in this manual.

The manual presents the mechanism through which data is collected, analyzed, compiled, updated, and used for Indonesia. It also provides a comparison of the data with other existing datasets as well as the steps for building the data to allow its replication in other countries. Additionally, examples on how the data has been applied for policy analysis is provided, including in-depth monitoring and assessment.

The data uses highly disaggregated NTM classification, i.e., 3-digit, with the highest frequency available, monthly series, applied to a granular product classification, HS-10 digit. The NTM (and product) classification is the most appropriate for policy analysis as it identifies individual measures introduced or modified by each agency and policy is usually made at a granular product level (as further discussed below). The data is updated annually and spans between 2008 and 2021 at the time of writing and release. The monthly panel data construction is based on 652 regulations in Indonesia spanning 13 government ministries and agencies that are responsible for the measures.⁷

³ <https://unctad.org/topic/trade-analysis/non-tariff-measures>

⁴ <https://trainsonline.unctad.org/home>

⁵ <https://wits.worldbank.org/>

⁶ <https://globaltradeshelppdesk.org/en>

⁷ Note that this number will be different in the UNCTAD TRAINS data and WITS, since the data is at an annual frequency using 31st December of each year as cut-off date and the panel has a monthly variation. This means that any regulations that were changed within the year (e.g. enacted in February and revoked in September of the same year) would be in the panel data (World Bank) but not in the annual data in UNCTAD.

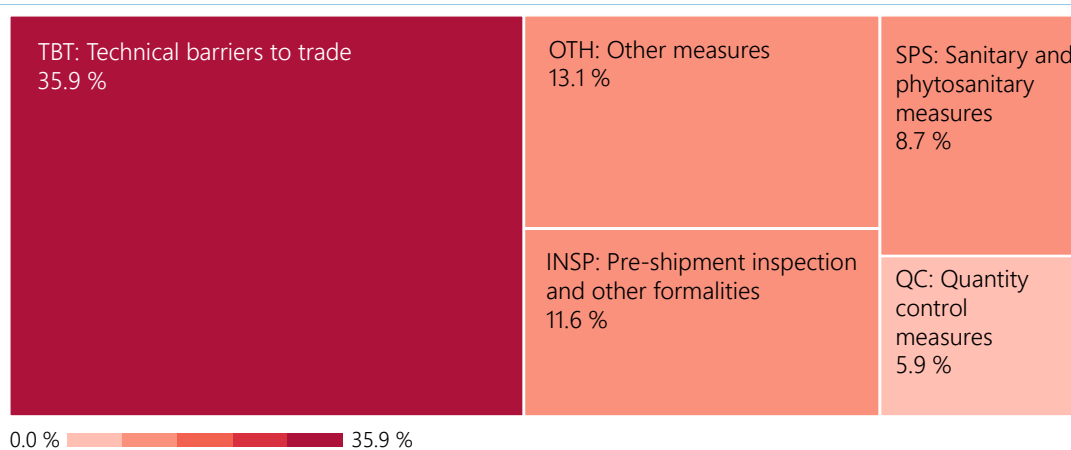
The data is organized as a panel at the NTM-product-month-year level with the individual NTMs (and tariffs) as dummy variables.

The data and related resources can be found online.

A total of 89 individual 2-digit, 3-digit, and 4-digit NTMs are listed in the dataset, of which 15 are customized NTMs. Among these 33 are sanitary and phytosanitary measures (SPS), 24 are technical barriers to trade (TBT), 3 are pre-shipment inspection and other formalities (INSP), 11 are quantity-control measures (QC), 1 is a price control measure (PC), 2 are other measures (OTH), and 15 are export-related measures (EXP) as of December 2021, the latest update. For each NTM classification a value of 1 is assigned to the specific product-month-year pair if that NTM is in effect, and 0 otherwise. The regulations for each NTM measure as well as the issuing ministry/government agency are also available in a separate NTM-product-regulation-month-year data file which serves as the basis of NTM-product-month-year panel construction. The NTM-product-regulation-month-year data contains the series (base regulations), amendments, and revoked regulations along with the products code and NTM code based on in each regulation.

The raw data, containing regulation-product-measure over time (1,946,891 observations as of December 2021), the panel data (measure-product panel, 1,472,688 observations over time), and all related material can be downloaded on the World Bank Development Data Hub⁸. Additionally, data visualizations are available on the WITS website⁹, where the user can apply different filters (examples in Figure 2) and download the respective data¹⁰. Finally, the data is also available in the UNCTAD format on the UNCTAD TRAINS website¹¹ and WITS, and can thus be used in a multi-country analysis with other countries 'available data found in TRAINS. The UNCTAD format is annual with cutoff date of December each year and the World Bank data was transformed into this format then UNCTAD added this to the Indonesia data in TRAINS.

Figure 2: Example of Data Visualizations on the WITS Website



Note: Shares are share within each group
Source: WITS database

⁸ https://datacatalog.worldbank.org/search/dataset/0063543/indonesia_nontariff_measures

⁹ <https://wits.worldbank.org/tariff/non-tariff-measures/en/ntm-datavisualization>

¹⁰ <http://wbmswitsqa201.worldbank.org/tariff/non-tariff-measures/en/ntm-about>

¹¹ <https://trainsonline.unctad.org/home>

The potential users of the Indonesia NTM data include government policy makers, international financial institutions (including the World Bank, and relevant multilaterals), the academic research community and private sector.

Policy makers may also benefit from the data via reports or policy and analytical pieces that summarize the results from the data.

The rest of this manual is organized as follows.

These audiences have different needs and will potentially consume the data in different ways. Academics can use the data to run econometric and other analyses. Policy makers may consume the data through indicators which are computed based on the raw data and summarize key messages on prevalent NTMs and most affected products, which may warrant for an in-depth review of the regulatory space in the identified areas. These indicators are calculated consistently across all the products and all types of NTMs in the data and are presented at the country level as well as by different products and product groups. Thus, they facilitate benchmarking across products, NTMs, and across time.

International organizations may use the data to understand and guide their private sector development and structural reform operational work. Finally, the data may provide a way to easily trace the regulations and issuing institutions for products of interest to the private sector.

Chapter 2 elaborates the difference in the data collection process between UNCTAD and the World Bank and shows how these differences translate into differences in the data. Chapter 3 discusses how the data can be used and shows examples of existing analysis and limitations of the data. In Chapter 4 the manual elaborates more on how the data was built. Chapter 5 concludes.

2. How does the Collection and Update Process Differ?

While the construction of the World Bank NTM database has followed the guidelines of UNCTAD for the data collection process, key differences also exist aimed to facilitate the use of the data for policy analysis. These include the frequency of updates, the frequency of the data, the sources used, customized NTMs and finally the link to policies such as COVID-19.

2.1 Frequency of Updates and Links to Policy

The data is updated annually, ensuring only active regulations remain and inactive regulations are timely identified.

Annual updates and backward and forward tracing ensure that only active regulations remain in the data and revoked regulations are also timely identified and marked as such (for a sample of regulations which revoked NTMs in 2021 see Table A1). The policy direction is monitored and creates a reliable panel dataset that is time varying. Each annual update also provides the opportunity to check the data for consistency, possible duplicates and other aspects to continually improve its quality.

The annual updates also ensure the identification of NTMs that were put in place in response to transitory shocks or structural reforms.

For instance, since 2020, the data tags NTM-product measures linked to regulations that were put in place in response to COVID-19 (Figure 3). Other relevant tags are also added as needed. For instance, in 2020 Indonesia enacted the Omnibus Law for Job creation, subsequent to which hundreds of regulations were implemented including ones on trade policy. The data identifies changes in regulations and subsequently the NTM and products linked to the broader reform and therefore can be traced more easily and if need be, analyzed. For example, in 2020, 12 regulations were related to Covid-19 (Table A2), which were linked to 38 specific NTM codes and 647 HS-10 products (Figure 3).

The data is constructed at the monthly level which is appropriate to capture frequent policy changes.

This high-frequency is necessary given the frequently changing nature of the regulations and allows mapping to equally high-frequency trade data. Tracking of regulations therefore allows for timely tracking of new policies and reforms especially in an environment with frequent regulatory changes. Figure 4 shows the monthly change in the number of active regulations for a specific NTM.

The data allows the user to get a sense of new/amended/revoked regulations over time and thus the scope of regulatory changes, whether more are being added or revoked (Figure 5).

The high frequency dataset also makes it possible to track the specific product and NTMs that the newly applied and/or revoked regulations affect (Figure 6). As a specific example, in November 2021, the government enacted significant reforms to regulations regarding the pre-shipment inspections, where there was the largest decline in the number of regulations, and total regulations were at their lowest (122 regulations by the end of 2021 (Figure 7).

Figure 3: Covid-19 Response Involved Many New NTMs

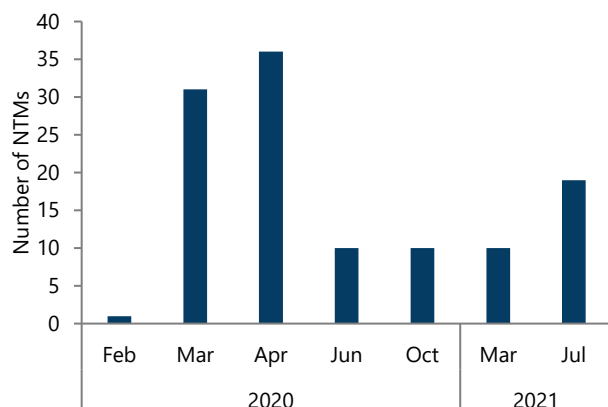
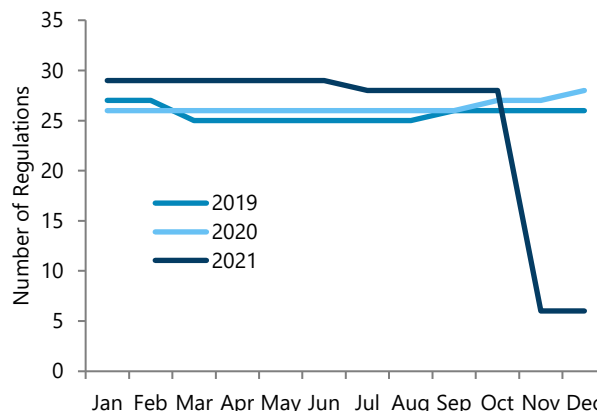


Figure 4: Number of Active Regulations that include Pre-Shipment Inspections (C1) Dropped in November 2021



Source: World Bank Jakarta Indonesia NTM Database and Statistics Indonesia Trade data

Figure 5: In 2021, the Government Revoked a Higher Number of Regulations than it Amended

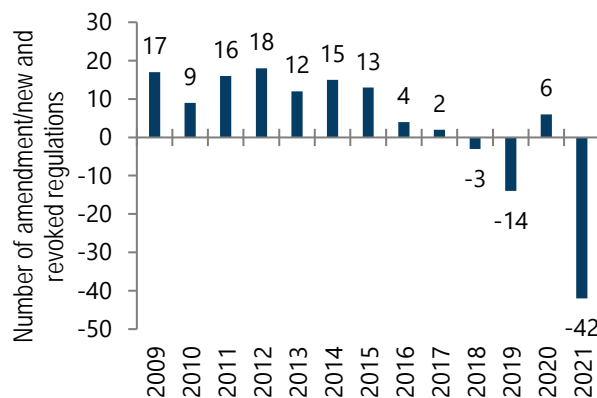
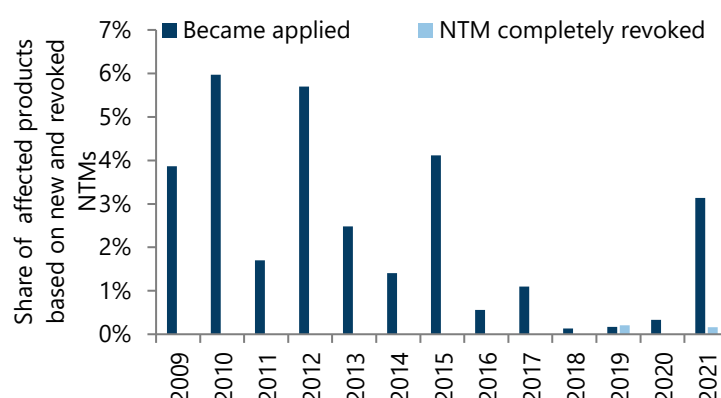


Figure 6: Increase in the Share of Affected Products from Newly Applied NTMs in 2021



Source: World Bank Jakarta Indonesia NTM Database and Statistics Indonesia Trade data

2.2 Using Multiple Sources

The ERIA-UNCTAD 2015 NTMs was used as a starting point for backward and forward tracing.

Using added and multiple sources ensures regulations are less likely to be missed and forward and backward tracing is more accurate.

When ERIA-UNCTAD 2018 was released, it was checked to see if there are any new/missed regulations. Regulations from multiple sources including repositories of line ministries (the detailed list of repositories is available in the annex in Table A3 and more on how this is done in the next section), hukumonline.com¹², and peraturan.go.id¹³.

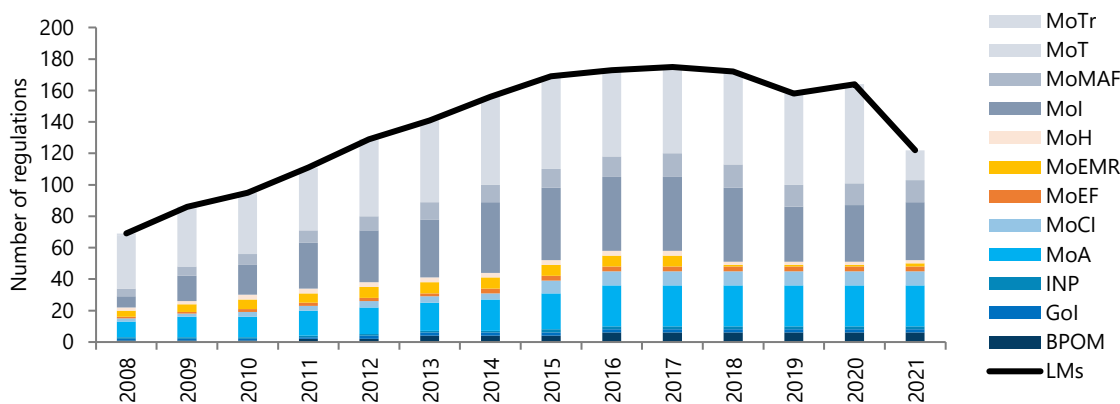
NTM-related regulations have been spread out among a total of 13 government institutions (ministries, agencies and some are issued as a presidential decree) in Indonesia. Although most import and export provisions are issued by the Ministry of Trade, each institution/ministry has its own mandate to provide additional technical provision on certain products (for example technical recommendation and certification for horticulture product come from the Ministry of Agriculture, technical recommendation for iron and steel come from the Ministry of Industry). This makes monitoring NTMs difficult since there is no dedicated government

¹² hukumonline.com is a subscription-based site managed by law experts which also provides historical regulation evolution in Indonesia.

¹³ peraturan.go.id is a site managed by Ministry of Law and Human Rights to accommodate all enacted regulations in Indonesia

institution to carry out NTM regulatory review and stocktaking. This dataset provides a consolidated source of regulations that spans across line ministries, agencies and presidential decrees which makes monitoring easier. The most prominent institutions are MoT, MoMAF and MoA (Figure 7).

Figure 7: Several Government Institutions are Responsible for Issuing NTMs



Note: MoT = Ministry of Trade; MoMF = Ministry of Marine Affairs and Fisheries; MoTr = Ministry of Transport; MoI = Ministry of Industry; BPOM = National Agency of Drug and Food Control; MoIT = Ministry of Industry and Trade; MoH = Ministry of Health; MoEF= Ministry of Environment and Forestry; MoEMR = Ministry of Energy and Mineral Resources; GoI = Government of Indonesia; MoA = Ministry of Agriculture; INP = Indonesian National Police; MoCI = Ministry of Communication and Information Technology.
Source: World Bank Indonesia NTM dataset

2.3 Customized Database

For the data to be relevant to the Indonesian context, several customizations were made to some of the measures.

While the data uses the existing 2019 version of NTMs, some additional codes are created by adding a letter to the normal MAST codes to further specify the measure. For instance, an “R” for recommendation letter is added to B14 import approval. This signifies that B14R is the mandatory recommendation letter for import approval. Another example is export approval being issued only if the exporters have a recommendation letter from a ministry or agency related to the sector. In that case the code will be P11R. This extension allows to qualify the potentially more burdensome measure than the standard one due to the recommendation letter requirement. The full list is provided in Table 1.

Table 1: List of custom NTMs in the dataset

NTM	Description
A14R	Mandatory recommendation letter for getting import approval
A15IP	Specific import license for producer importer
A15IT	Specific import license for registered importer
A15R	Mandatory recommendation letter for getting import license
B14R	Mandatory recommendation letter for getting import approval
B15IP	Specific import license for producer importer
B15IT	Specific import license for registered importer
B15R	Mandatory recommendation letter for getting import license
C32	Requirement to pass through a very specific port of customs
P11R	Mandatory recommendation letter for getting export approval
P12R	Mandatory recommendation letter for getting export license

Source: World Bank Indonesia NTM dataset

2.4 Key Differences with Existing Data at the time of compilation Data

As described above, there are key differences in the data collection for the World Bank NTM dataset compared to previously existing data.

Overall, the World Bank data includes a higher number of regulations.

Figure 8 shows that in 2018 the World Bank recorded a higher number of total regulations but lower number of total active regulations (Figure 9) compared to UNCTAD.

The lower number of total active regulations recorded by the World Bank in 2018 links back to point (1) and (4) above, i.e. more frequent updates and tracking of active (and revoked) measure-product pairs based on regulatory updates.

A comparison was made with the UNCTAD-ERIA data on which the World Bank data was based. While these differences are important, ultimately the two datasets are different in that one is a cross-section at a point in time (and a time dimension taken from in force date), while the World Bank data is a time-series panel by design with revoked regulations updated more frequently. Crucially, the World Bank data was transformed into the UNCTAD format and Indonesia data in UNCTAD TRAINS has already been updated with the World Bank data. Therefore, the differences refer to comparisons made with the data at the time when the data was being assembled and this should be kept in mind in the brief discussion below.

This may be due to different reasons:

- 1) Differences in frequency of updating the data (annual for World Bank, stock taking exercise for UNCTAD).
- 2) While UNCTAD and World Bank are relying on ministerial/agential repositories (e.g., MoT repository), the World Bank uses additional sources such as hukumonline.com and peraturan.go.id. Hukumonline.com provides historical data of regulations which enable users to track the previous and recent version of a regulation. Contrarily, not all ministries provide real time updates on their own repositories.
- 3) As is the case in many countries, there is no single agency in Indonesia to track NTMs, which can also lead to different number of regulations.
- 4) World Bank is collecting data and monitoring regulation-measure-product combinations that are active and no-longer active for a time varying dataset, while UNCTAD is a stock taking exercise at a single point in time.

Apart from a few exceptions, the World Bank has a lower number of active NTMs for all broad NTM groups. This analysis can be broken down further to the specific NTM level. For pre-shipment inspections and port of entry restrictions, the World Bank records a higher number of regulations compared to UNCTAD. For compliance with national standards (SNI) on the other hand, the reverse was observed.

The 2018 UNCTAD data captures regulations as of March 2018 while the World Bank data covers active regulations at the end of the year, therefore any regulation changes in the time period would not reflect the UNCTAD data (i.e. if some were revoked later in the year, they would appear as still active in the UNCTAD data but not in the World Bank data, which would lead to a higher number of 'active' regulations in the former). Indeed, upon analyzing the 185 regulations (Figure 9) in the UNCTAD data for Indonesia in 2018, 92 were not the latest active as of the end of 2018. For these reasons, the World Bank data has a lower number of active regulations. On the other hand, the cumulative number of NTMs is higher for World Bank, partially due to the multiplicity of data sources used, since cumulative is simply the total number of regulations, regardless of whether they are active or not. The difference in stock-taking regulations might have led to different HS-NTM mapping and interpretation of the regulations. A more detailed analysis on this again based on the 2015 and 2018 UNCTAD-ERIA data is provided in Annex A.4.

Figure 8: The World Bank Recorded a Higher Number of Cumulative Regulations before the UNCTAD update

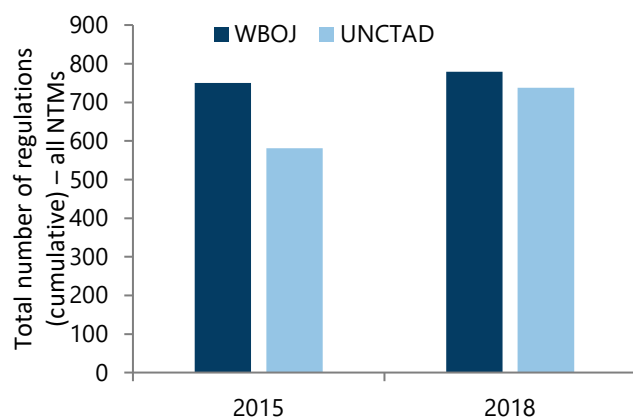
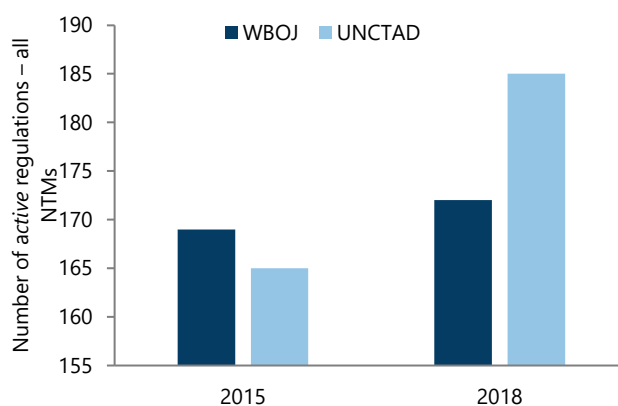
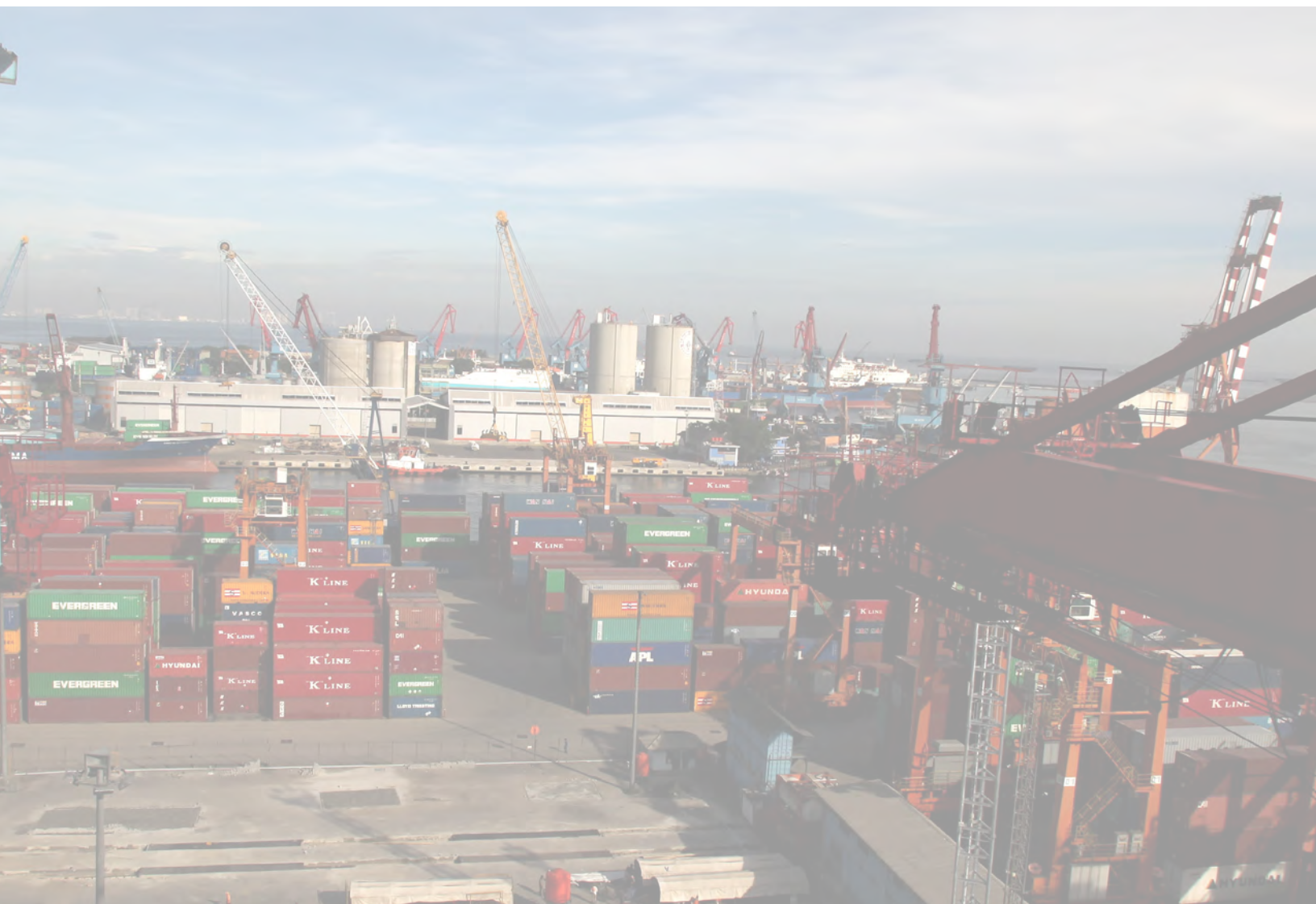


Figure 9: ...But a Lower Number of Total Active Regulation



Note: A breakdown by broad NTM groups or specific NTMs can be found in the Annex Figure A1, Figure A2 and Figure A3. This was comparison done during compilation of the data, before UNCTAD TRAINS added the World bank NTM data to the Indonesia data therein.

Source: World Bank Jakarta NTM Database for Indonesia and UNCTAD NTM Data



3. Usage of the Data

The database can be of interest to a wide variety of potential users.

These include researchers, policy makers, governments, NGOs and the general public. The data can help answer research questions, analyze the current policy landscape, enable a systematic review of NTMs, and provide a basis for decisions on policy changes among other things. There are three types of indicators that define the potential economic impact of NTMs: (i) the extent to which NTMs are applied across ranges of products; (ii) the costs they may entail to the trade procedures; and (iii) the value of the externality the NTM aims to address, e.g. how much ensuring the safety of imported meat is worth in terms of consumer welfare. The NTM dataset allows to develop direct measures of indicators (i) and (ii), while estimating (iii) would require additional data that is not immediately available, such as the health and economic costs of disease outbreak from imported meat and the change in probability of an episode of disease outbreak due to the application of the NTM. As such the analysis based on this NTM data would ideally be complemented with one capturing more fully the potential benefits of NTMs, which goes beyond the scope of this manual.

3.1 Indicators on the Incidences of NTMs

Useful indicators based on a broad range of product categories can be calculated by users.

The coverage ratio is the share of import value affected in that year as a share of total imports of that category. The frequency ratio is the number of products that the measure applies to in that year as a share of total number products in that category. Figure 10 show how the coverage ratio evolved over time for all product groups in Indonesia.

The coverage ratio and frequency ratio can also be calculated over time for specific NTMs and specific products, such as green goods and technologies.

These can reveal more meaningful analysis in terms of the underlying regulations and implications on products. Figure 11 shows the frequency ratio by differentiating the use of goods, namely consumption goods, capital goods and intermediate goods as well as specific measures (compliance with national standards, SNI). Figure 12 shows that import approvals affect a varying share of green good product categories including nearly 40 percent of energy efficiency technologies and products. Other NTMs such as requirements to pass through a specific port of customs (C3) affect as much as 30 percent of Environmentally Preferable Products based on End-Use or Disposal Characteristics in 2021 (more indicators can be viewed on WITS data visualization¹⁴).

Trade in green and environmental goods has become increasingly important in recent years.

Eliminating or modifying certain NTMs can play a crucial role in supporting international green competitiveness and unlocking the potential for the trade and climate change nexus. However, the next section will show which of these NTMs impose a cost on these goods. These useful indicators can also be viewed using available data visualizations online¹⁵ which are based on the panel data. Visualizations may also be used in WITS using the UNCTAD TRAINS version which includes this data.

¹⁴ <https://wits.worldbank.org/non-tariff-measures/visualization/indonesia-ntm-data.html>

¹⁵ <https://wits.worldbank.org/non-tariff-measures/visualization/indonesia-ntm-data.html>

Figure 10: The Frequency Ratio Varies Between the Different NTM Groups

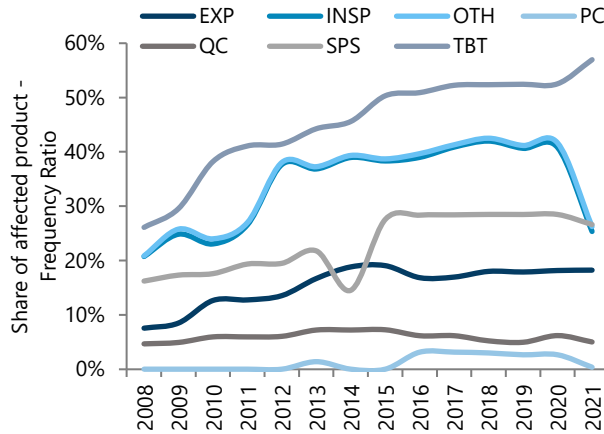
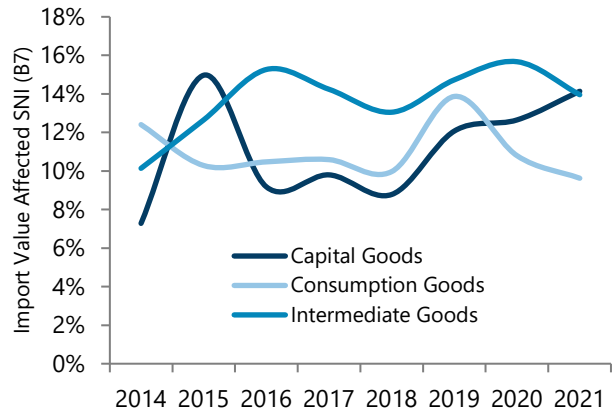
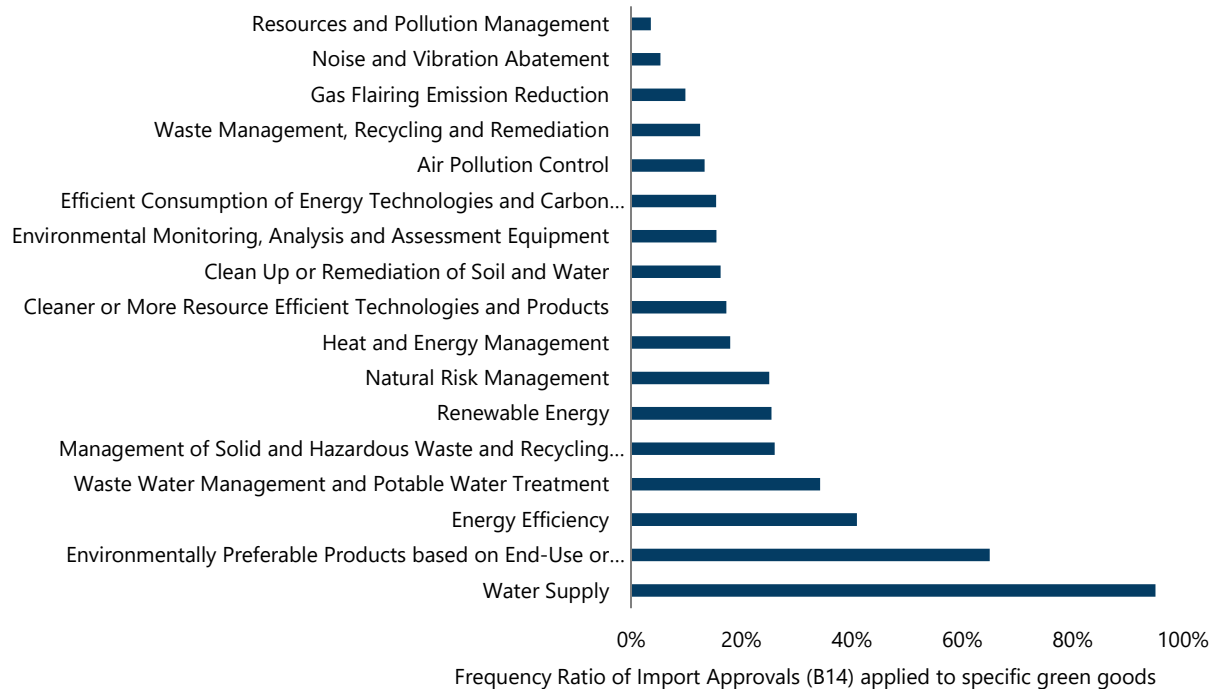


Figure 11: The Coverage Ratio of Compliance With National Standards (SNI) Varies by Product End



Note: SPS = Sanitary and phytosanitary measures; TBT = Technical barriers to trade; INSP = Pre-shipment inspection and other formalities; QC = Quantity-control measures; OTH = Other measures; EXP = Export-related measures; PC = Price control measures. Source: World Bank staff calculations from World Bank NTM Database and trade data sourced from BPS

Figure 12: Frequency Ratio of Import Approvals (B14) Applied to Specific Green Goods



Note: Frequency Ratio measured in percentage, 2021. Source: World Bank staff calculations

3.2 Indicators of the Costs of NTMs

A systematic analysis of the effects of NTMs involves evaluating their tariff ad-valorem equivalents (AVEs).

AVEs of NTMs involve estimating the uniform tariff that will result in the same trade impacts on the import of a product due to the presence of the NTMs. The AVE of an NTM is often interpreted as measuring the distortion imposed by the NTM to the domestic economy. However, as some NTMs are imposed to address market failures, due to the presence of externalities or public goods, simply interpreting AVEs as measuring distortions would be misleading. To be able to draw meaningful insights, an in-depth review on whether the measures are justified on the products they affect is also needed. For instance, the tariff equivalent of complying with standards may be high, but these may be applied to medical products which would cause public health challenges if for instance these were counterfeit.

The results show varying levels of costs for different measures.

For instance, AVEs of 13% for all technical barriers to trade (TBT classifications aggregated). Licensing for specific use (E112) have an estimated AVE of 30% for intermediate goods imports (Figure 13). Further, it is possible to break down the analysis by product type or focus on green goods. Results show that there has been an increasing number of NTMs on green goods in recent years with some imposing significant costs on renewable energy products (Figure 14). This suggests that reforming some of these measures could enable access to green technologies from foreign markets (Lakatos et al. 2021b). A list of all statistically significant and positive AVEs on all goods can be found in Table A4. The methodology for the AVE estimation can be found in the annex A.5. Identifying problematic NTMs is key before making a case for the elimination or modification of an existing government regulation, but AVEs may provide insights on the implementation efficiency even when measures are justified.

Figure 13: NTMs Have Different AVEs on Intermediate Goods

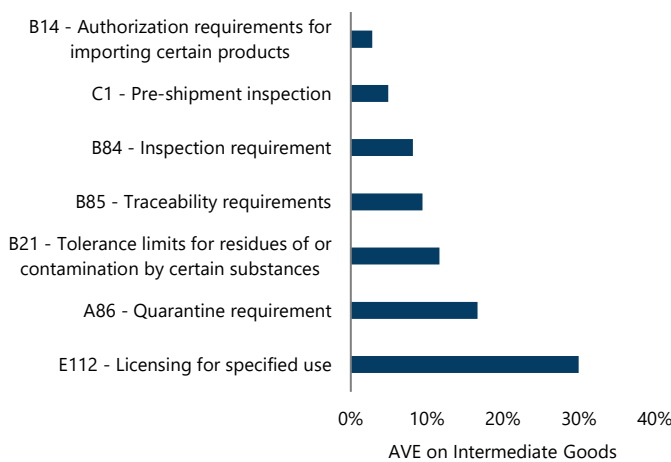
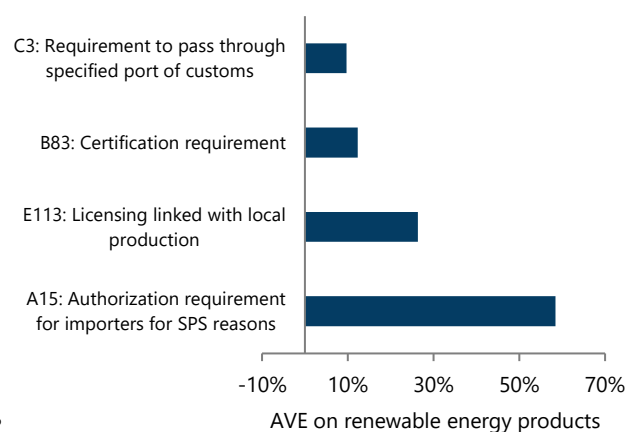


Figure 14: NTMs Have Different AVEs on Renewable Energy Products



Note: Estimated based on a sample from 2008-2021.

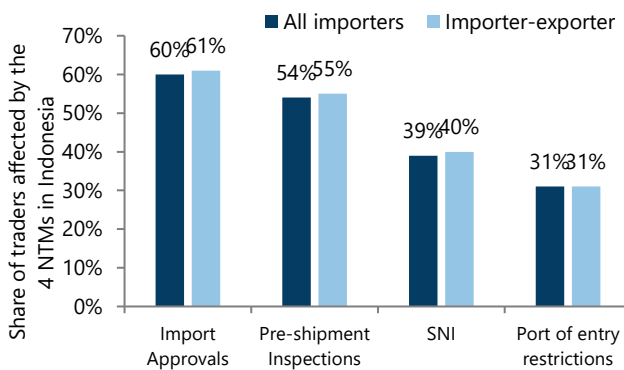
Source: World Bank staff calculations from World Bank NTM Database. Green goods based on GTN list of green goods

3.3 Identifying Burdensome NTMs: Research Using the Data

Using the data, Cali et al. (2021) show that the average effect of all NTMs masks significant heterogeneity.

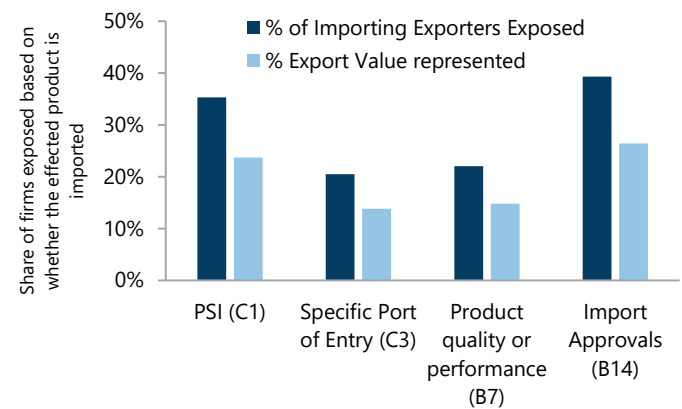
While some specific NTMs increase the quality of the products on which they are applied to, others act as barriers to trade. Identifying these measures is where the data is most useful. The World Bank identified four specific measures (out of the 89 in the data) to be among the most burdensome for Indonesian firms, while not appearing necessary to achieve non-protectionist public policy objectives (World Bank, 2022). These are pre-shipment inspections (PSI), restrictions on port of entry, import approvals and mandatory certification with Indonesian National Standards (SNI). For example, analysis shows that importing exporters are more exposed to some of these NTMs relative to pure importers (Figure 15) and these represent a significant amount of export value (Figure 16) as over two-thirds of exports is generated by importing exporters (Cali et al. 2022).

Figure 15: Importer-Exporters Affected by the 4 NTMs



Note: measured as % of firms in the respective group.
Source: Cali et al. (2022)

Figure 16: Importing Exporters Represent Notable share of Indonesia's Exports

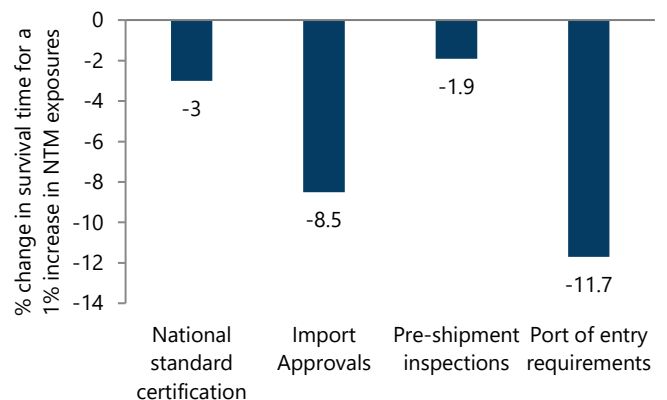


Note: measured as % of exporter-importer firms.
Source: World Bank staff calculations from World Bank NTM Database and DG Customs Data

A study by Cali and Montfaucon (2021) empirically tests how import competition affects economic performance by studying these four NTMs.

They find that NTMs reduce firms' incentives to continue to export. Firms that face these NTMs have a shorter life span in the export market, as they become less competitive globally and can no longer continue taking advantage of foreign markets (Figure 17). Additionally, NTMs negatively affect the export performance for Indonesia: a 10 percent addition in the basket of goods affected by NTMs, leads to over 5 percent drop in values and quantities of exporting companies, by the most conservative estimates (Figure 18).

Figure 17: The 4 NTMs Reduce Firms' Export Survival



Note: World Bank staff estimates using all Indonesian exports, 2014-18 from DG Customs and Excise, MoF.
Source: Cali and Montfaucon 2021

Furthermore, NTMs negatively affect exports of new and different products, therefore making it more difficult to switch resources to new products or add different products that would make Indonesia more competitive in a changing global economy.

Second, they affect exports to new destination markets, therefore making it more difficult to take advantage of market access opportunities or change export destinations (Figure 19). Overall, the negative effects exceed the negative impact of import tariffs.

Figure 18: The 4 NTMs Reduce the Number of Products and Destinations

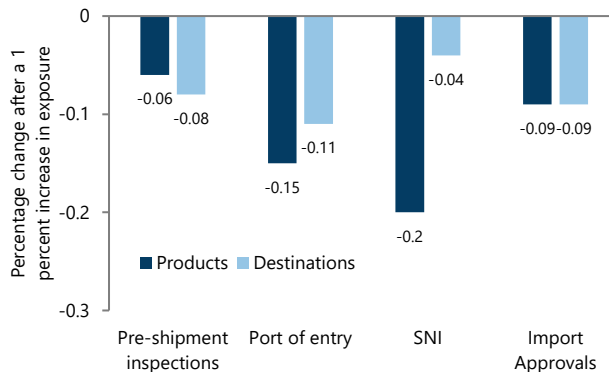
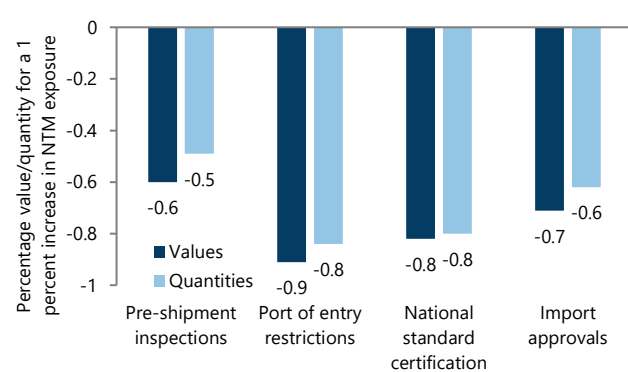


Figure 19: The 4 NTMs Reduce the Number of Products and Value

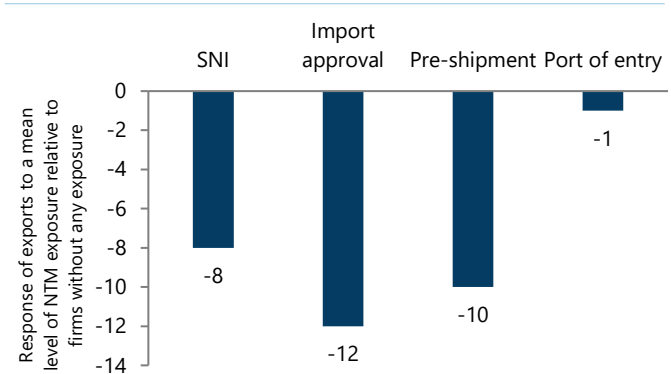


Note: World Bank using all export data from 2014 to 2018 sourced from DGCE, MoF. Source: Cali and Montfaucon 2021

Cali et al. (2022) also use the NTM data to study the effect of a foreign demand shock on exporters and particularly how trade policy affects the ability of firms to adapt in these situations.

The authors use the depreciation of the yuan and differentiate between firms that face NTMs versus firms that do not. The results show that firms that face NTMs on their inputs suffer from a larger negative impact on their export values (Figure 20).

Figure 20: Firms Exposed to the 4 NTMs have a larger drop in Exports



Note: World Bank staff estimates using Indonesian exports to Japan, 2014-18 from DG Customs. Source: Cali et al. (2022)

Effect of Covid-19 Lockdowns on Products Affected by NTMs

As explained in Chapter 2.1, the dataset also allows the user to analyze the interactions of NTMs and other policies.

Making use of this feature, Majune and Montfaucon (2023) study how the four NTMs impacted the effect that Covid-19 related lockdown measures had on trade. They found that intermediate imports subject to NTMs were more negatively affected than those that were not exposed. Those exposed to port of entry restrictions and pre-shipment inspections for instance, were more negatively affected by external lockdowns, which seem to have worsened the supply side factors for imports.

Results from the product-country relationship survival analysis show that the failure rate of imports subject to NTMs had lower survival rates during both domestic and external Covid-19 lockdowns.

This was especially true for imports subject to port of entry restrictions and import approvals (Figure 21). Domestic lockdowns also adversely affected intermediate imports subject to NTMs, especially measures requiring physical inspection and testing (such as certification with Indonesian product standards or Standar Nasional Indonesia (SNI)) and import approval processes.

Effect of Covid-19 on GVC Firms Affected by NTMs

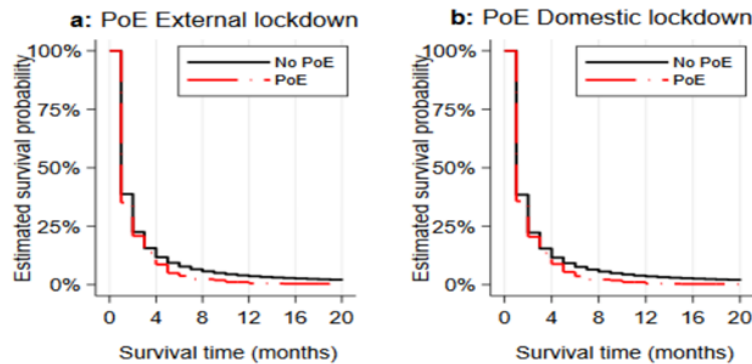
At the firm level, Ghose and Montfaucon (forthcoming) use the NTM data to analyze the effect that Covid-19 had on GVC firms that faced the four NTMs compared to those that did not.

These examples show how the World Bank NTM data can assist in answering policy relevant questions.

Firms facing any type of NTMs, including the four NTMs, on average have lower survival rates compared to firms who do not face any NTMs (Figure 22). Further, among GVC firms, firms who faced port of entry restrictions, on average faced reductions in export quantities and number of transactions, consistent with the evidence of major port congestion during Covid-19 (Figure 23).

Identifying potential flaws in the setup of certain NTMs enables policy makers to adjust their regulations accordingly and in turn facilitate trade and growth. In the next section, the World Bank simulates the impact of regulatory changes in the four NTMs on the Indonesian economy.

Figure 21: Products Facing Port of Entry Restrictions Had lower Survival During Covid-19 Lockdowns



Note: Domestic lockdown indicates the months when Indonesia imposed containment measures (from January 2020). External lockdown is the period partner countries imposed lockdowns (from January 2020).
Source: Majune and Montfaucon (2023), authors' compilation using BPS data

Figure 22: GVC Firms That Faced Port of Entry Restrictions had a Lower Survival Rate Following Covid-19

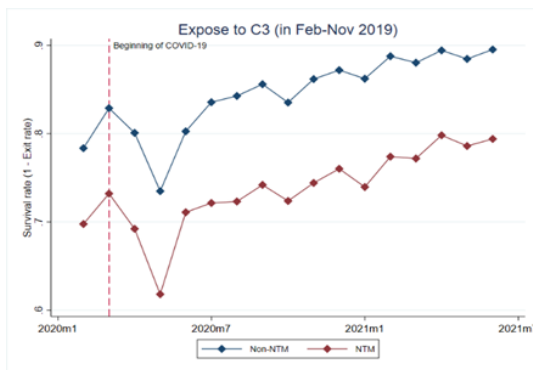
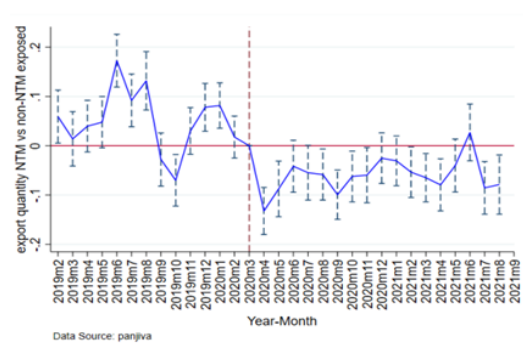


Figure 23: Monthly Average Export Quantities Dropped More for Firms Exposed to Port of Entry Restrictions



a. Quantities

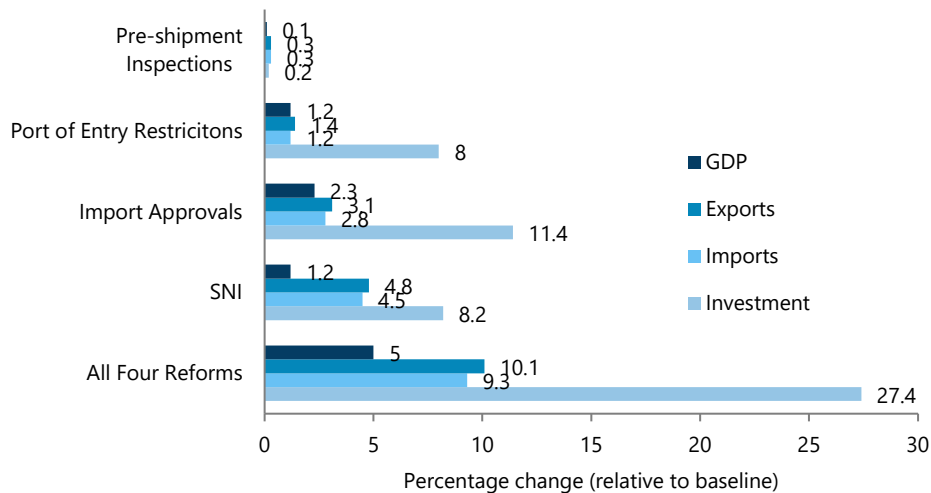
Note: The graph reports results from the event study, where the dependent variable is the monthly average export quantities (a) and monthly average export transactions (b). NTM firms are firms that were exposed to C3 during Feb-Nov 2019. Non-NTM firms are otherwise.
Source: Ghose and Montfaucon (forthcoming), Panjiva

3.4 Simulating the Impact of NTM Reforms

Using estimated AVEs (see section 3.2), these are plugged into a computation General Equilibrium model (CGE) to estimate economy-wide impact of NTM reforms for Indonesia.

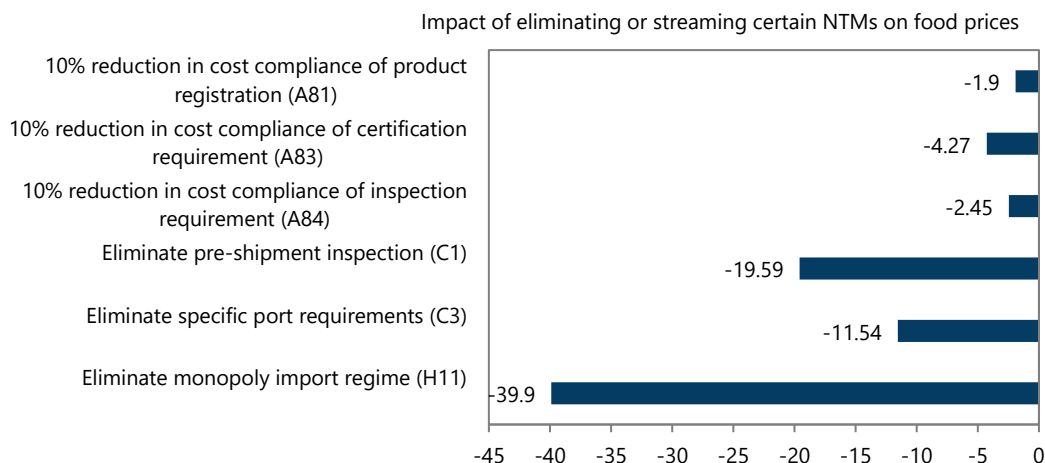
Focusing on the same four NTMs discussed in the previous section (pre-shipment inspections, restrictions on port of entry of imports, import approval requirements and mandatory certification with Indonesian product standards), reforms in all four measures would boost GDP by 5 percent. The simulated reforms are turning import approval into automatic licenses expect for products with quotas, turning third-part SNI into self-certification except for high-risk products and eliminating pre shipment inspections and port of entry restrictions. The results further show that these reforms would not undermine legitimate concerns and could increase Indonesia’s total exports by 10 percent and investment by 27 percent over the medium- to long run (Figure 24). Analysis also shows that eliminating problematic NTMs and streamlining inefficient NTMs could greatly reduce food prices (Figure 25)

Figure 24: Eliminating or Streamlining Certain NTMs Could Lower Food Prices



Note: Measured in percent change relative to baseline, 2008-2018. SNI (B7), Import approval (B14), Port of entry Restrictions (C3), Pre-shipment Inspections (C1)
Source: Lakatos et al. (2021a)

Figure 25: Eliminating or Streamlining Certain NTMs Would Lower Food Prices



Note: Sample period 2008-2017.
Source: Cali et al. (forthcoming)

3.5 Cross-country comparison

The above examples are all on Indonesia.

The second limitation is that the data collection involves significant investments of time and resources to collect data from a variety of sources and update it regularly.

While the data is ideal for this type of in-depth country analysis, it is trickier for it to be used for cross-country data unless similar data exists for the country one would like to compare with. The data has been added to existing data for Indonesia in UNCTAD TRAINS¹⁶ following the UNCTAD format and therefore can be used in cross-country studies, and this partially addresses this limitation. However, since currently the data in its panel form only exists for Indonesia, it cannot be strictly used in its product-measure-month (or even year) in a cross-country analysis. The aim of the release and this detailed manual is that the effort could be replicated in other countries while also contributing to evidence-based policy making in Indonesia.

Additionally, the team responsible for the data collection needs to have adequate local knowledge to understand the NTM implementation processes and the content of the regulations. They also need to be familiar with NTM code description and functions. To ensure high quality data, there is a need for consistent human resources. To help train the staff, UNCTAD provides online training for different audience and for different purpose (see UNCTAD website¹⁷).

¹⁶ <https://trainsonline.unctad.org/home>

¹⁷ <https://unctad.org/topic/trade-analysis/non-tariff-measures/NTMs-policy-support/online-training>

4. How the Data is Built

This section goes into the step-by-step detail on how the NTM data was built.

The Indonesia NTM dataset consists of NTMs that are applied in Indonesia from 2008-2021.

According to the UNCTAD guidelines for collecting NTM data, for the purpose of the classification, a measure is a mandatory trade control requirement enacted by an official (UNCTAD 2021)¹⁹.

Each measure is likely to affect certain products and countries, and there may also be objectives mentioned explicitly in the text.

Building on the UNCTAD -ERIA NTM 2015 stock-take, the World Bank engaged in a labor-intensive exercise of compiling all the relevant regulations on NTMs issued in Indonesia by various ministries from 2008, with the help of the Global Trade Alert dataset¹⁸. For each regulation, 2-digit, 3-digit, 4-digit NTM codes (based on UNCTAD International Classification of NTMs 2019) were assigned, emanating from that regulation and applied it to the HS codes included in the regulation and/or HS codes corresponding to the description of affected products.

The dataset uses a consistent HS 2007 code for goods classification, and the 2019 version of the UNCTAD International Classification of NTMs (UNCTAD 2019) for the NTM codes. This comprehensive NTM database is built by the World Bank on the basis of data collected by the ERIA in collaboration with UNCTAD. The UNCTAD-ERIA data identifies the stock of NTMs applied by Indonesia in 2015 (and then updated in 2018). The data is reviewed extensively to identify the right coding based on the guidelines from UNCTAD and made time-varying by tracking the individual NTMs applied to each product before and after 2015. A detailed step by step procedure is provided below.

Only those measures backed by official mandatory regulations are to be collected and classified. There are six important steps provided by UNCTAD for collecting NTMs data, detailed below from point a) to point f):

1. Obtain the source data
 - a. Identify sources of information
 - b. Identify regulations from each document or source
2. Classify and register the information
 - c. Identify and classify measures within each regulation
 - d. Identify and classify affected products for each measure
 - e. Identify and classify affected countries for each measure
 - f. Identify and classify objectives for each measure, whenever possible

All of them must be registered. After the data collector registers all relevant information (NTMs and HS codes for the products affected by the measures), the data collection supervisor will validate the accuracy of registered measures and codes. The data will then be ready for publication. For creating Indonesia's NTM dataset, a similar process with UNCTAD guidelines was followed, with an additional 2 steps to transform the data into a panel, resulting in a total of eight steps as detailed below:

¹⁸ https://www.globaltradealert.org/data_extraction

¹⁹ As defined by the Multi-Agency Support Team and the Group of Eminent Persons on Non-Tariff Barriers.

Step 1. Sourcing the Regulations and Setting up Series as the Backbone

The NTM regulations are sourced from various sources including:

- a. Line Ministries (LMs) repositories (the detailed list of repositories is available in the annex A.3)
- b. hukumonline.com
- c. peraturan.go.id
- d. and ERIA-UNCTAD NTM 2015 dataset

Some of the initial series are taken from ERIA-UNCTAD NTM 2015 dataset (also with the help of the Global Trade Alert dataset²⁰), while others not in this initial data are sourced from the LM repositories and other regulation resources.

It should be noted that UNCTAD-ERIA updated the NTM data and the latest one is 2018, where some corrections were made²¹.

The ERIA-UNCTAD NTM 2015 series serves as the "backbone regulation" or starting point to trace backward and forward each applied product-NTM. The series does not necessarily act as an initial regulation due to its nature of having one or more preceding regulations. Otherwise, the series could serve as a standalone and/or initial regulation if there is no preceding/following regulation.

Changing the initial series for the purposes of our data does not change the data or content in itself since the data is traced forward and backward (as explained in the next step) and thus inevitably including of the 2018 updated regulations and regulations that may have been omitted in the 2015 stock take.

Step 2. Backward and Forward Tracing

The date of entry into force of the regulation is used to convert the stock of existing regulations applied at one point in time (as per the original ERIA data) into a panel dataset.

In doing that it is crucial to track the individual regulations over time. The first check in that respect is whether each regulation was the first such regulation introducing the specific NTM on that specific product, or if it was updating a previous regulation. In the latter case (which incidentally is the most common case in our data backward tracing is needed to complete the NTM series. At the same time, tracking the same regulation forward is also needed to ensure consistency of the data over time.

For example, consider Figure 26, which shows that regulation 83/M-IND/PER/10/2014, i.e. Mandatory Enforcement of the Indonesian National Standard (SNI) on Concrete Steel Wire for Concrete Construction Purposes, is available in the initial data.

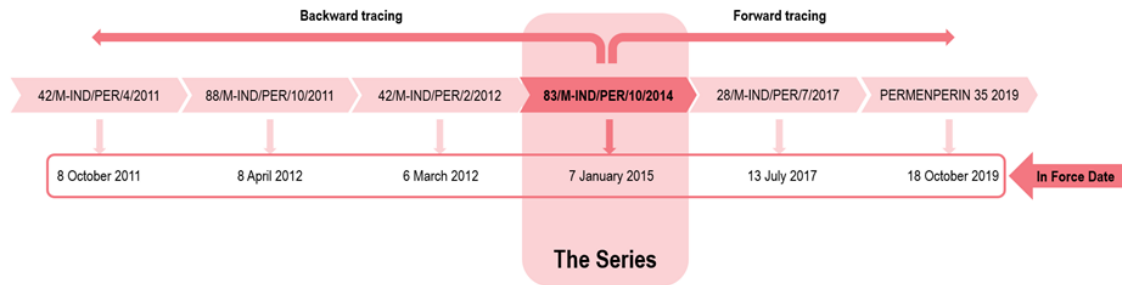
However, since the data spans from 2008 to 2021, backward and forward tracing from 2008 to 2021 are also needed for all regulations related to Mandatory Enforcement of SNI on Concrete Steel Wire for Concrete Construction Purposes. The result of this is we find that the initial regulation started in October 2011 (which began from the 42/M-IND/PER/4/2011 regulation), and the most updated regulation is PERMENPERIN 35 2019 from October 2019²².

²⁰ <https://www.globaltradealert.org/>

²¹ <https://wits.worldbank.org/>

²² Note that the ministry who issued both of these regulations is the Ministry of Industry. The structure of the title is different (M-IND vs PER-MENPERIN) due to a change in the ministry over the time period.

Figure 26: Example of the Schematic of a Series 83/M-IND/PER/10/2014 – Mandatory Enforcement of the Indonesian National Standard (SNI) on Concrete Steel Wire for Concrete Construction Purposes



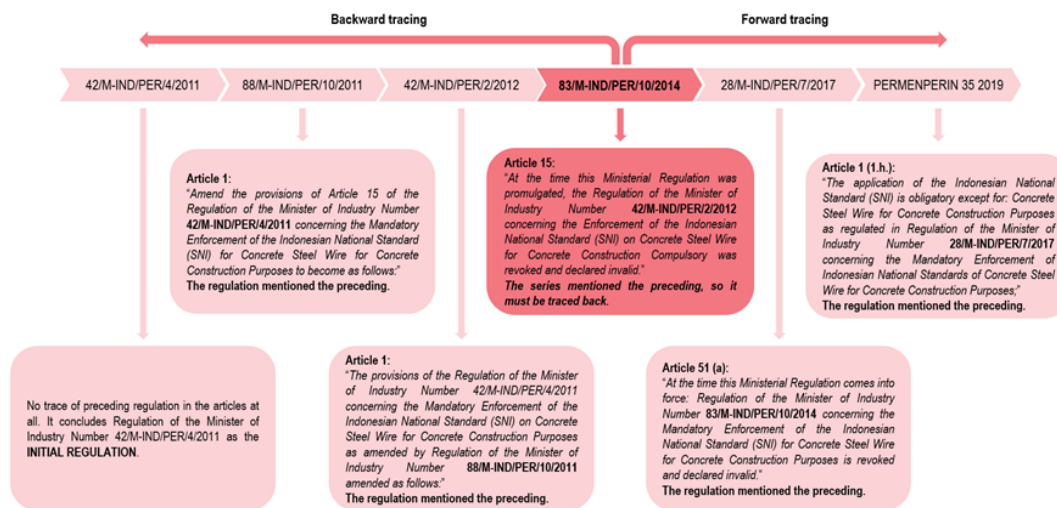
Note: The illustration shows an example how regulations precede and follow each other. Through backward and forward tracing, it becomes clear how one regulations supersedes the next.

Source: Author illustration based on Ministry of Industry repository and hukumonline.com

Further consider Figure 27 which displays regulation 83/M-IND/PER/10/2014 article 15.

This states that the regulation revoked a previous regulation, 42/M-IND/PER/2/2012. If the backward process is continued, 42/M-IND/PER/4/2011 is obtained as the initial regulation related to Mandatory Enforcement of SNI on Concrete Steel Wire for Concrete Construction Purposes. As for forward tracing, all the regulations that updated the 83/M-IND/PER/10/2014 regulation are investigated. As a result, we find that 28/M-IND/PER/7/2017 and PERMENPERIN 35 2019 updated the 83/M-IND/PER/10/2014 regulation. Hence, the backward and forward tracing would conclude here and the series for the 83/M-IND/PER/10/2014 regulation is considered as completed.

Figure 27: An Illustration of Backward and Forward Tracing using 83/M-IND/PER/10/2014



Note: The illustration shows an example of how a regulation is traced.

Source: Author illustration based on Ministry of Industry repository and hukumonline.com

Step 3. From Regulation to NTM Code

The next step is to apply the NTM(s) code by translating every article in each regulation.

It is useful to classify NTMs in groups/types as they comprise a large variety of different measures enacted by different parts of the government.

As outlines in Section 2.3, for the data to be relevant to the Indonesian context, customized NTMs beyond UNCTAD NTM 2019 Version handbook are also added.

NTMs are identified by interpreting the regulation articles within a series. A series may carry the same NTM without the regulation issuing new article(s).

For each regulation, 2-digit, 3-digit, 4-digit NTM codes (based on UNCTAD International Classification of NTMs 2019) are assigned. The intention to use UNCTAD 2019 Version handbook is to get streamlined 2019 NTM nomenclature, regardless of the promulgation date of the regulations. Reviews, adds, and amends, are conducted whenever appropriate.

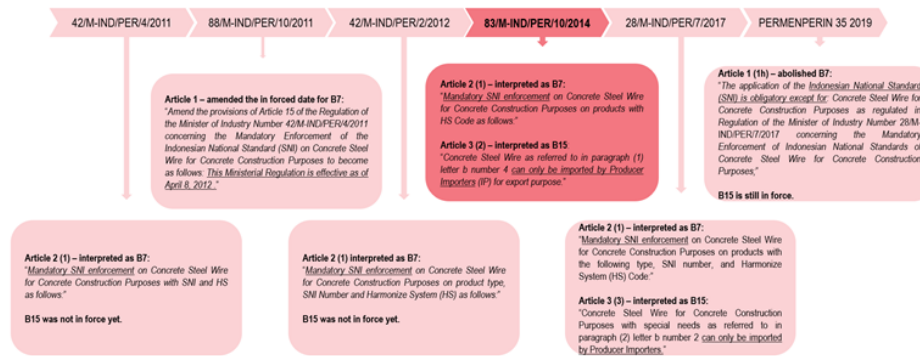
To that end, the international classification developed by the Multi-Agency Support Team (MAST), an inter-organization group chaired by UNCTAD, is followed. This classification includes broad groupings, comprising different NTMs according to their typology, e.g., Sanitary and Phyto-Sanitary Standards (SPS), Technical Barriers to Trade (TBT) and pre-shipment inspection and other formalities (INSP) (see annex Table A5 for a full list of all classifications). It also includes more refined measures, classified at the 2- and 3-digit level, which typically match specific measures introduced by the individual regulations. In fact, each ministerial or agency regulation can introduce or modify more than 1 NTM (at the 3-digit level). This level of classification is therefore the appropriate one for policy advice and that is what is used in the analysis that has used the data (See Chapter 3).

These are listed in Table 1. In addition, the in-force dates and NTM codes for each regulation-NTM pair in the NTM dataset by UNCTAD-ERIA were reviewed and revised (if needed). It makes this exercise and resulting data differ from UNCTAD-ERIA since:

- a. In some cases, there is an incorrect in-force date for regulation-NTM code pair in the UNCTAD-ERIA data.
- b. Possibility of different interpretations of articles between UNCTAD and the World Bank on which specific NTM code the text corresponds to.
- c. Aim to build a higher frequency of NTM dataset, which is a monthly panel at the product level.

Figure 28 shows an example using the 83/M-IND/PER/10/2014 regulation series. In this case, the regulation 88/M-IND/PER/10/2011 is the initial regulation of the 83/M-IND/PER/10/2014 series which only contains the requirements to comply with the national standard (SNI, coded as B7). However, 83/M-IND/PER/10/2014 updated and revoked a previous regulation, which, included import licensing (coded as B15), thus adding measures to Concrete Steel Wire for Concrete Construction Purposes. Therefore, all the regulations which update the 83/M-IND/PER/10/2014 regulation will have both B7 and B15 NTM codes in the regulation-NTM data. In some cases, the type of measures may be buried in the annexes while unavailable in the main text. Figure 29 is an example of a regulation called PERMENDAG 20 2021, whose annexes contain three NTMs: B14 (import approval), B15 (import licenses), and C3 (port of entry restrictions).

Figure 28: Interpreting NTM Codes from the Regulations Articles Within a Series



Note: The illustration shows an example of how each regulation within a series is interpreted to identify the introduced NTMs. Source: Author illustration based on Ministry of Industry repository

Figure 29: Interpreting NTM Codes from a Regulation’s Annexes

PEARL

No	HS	Description	Condition	Explanation	IT	IP	PI	LS	Post Border
	71.01	Pearls, natural or cultured, whether or not worked or graded, but not strung, mounted or arranged; pearls natural or cultured, temporarily strung for easy transport.	Pearls Import Approval (API-P or API-U)	Import Approval is released upon					
190	7101.10.00	- Natural pearls	1. Letter of statement which contain production plan for API-P; or	a. Commodity Balance in terms of Commodity Balance have been set; or			√	√	√
191	7101.21.00	-- Not graded		b. Available data, in terms of Commodity Balance have not been set.			√	√	√
192	7101.22.00	-- Graded	2. Letter of statement which contain distribution plan for API-U; and				√	√	√
	71.16	Articles of natural or cultured pearls, precious or semi-precious stones (natural, synthetic or reconstructed).		Only through Soekarno-Hatta (Tangerang) and Juanda (Surabaya) airports.					
193	7116.10.00	- From natural pearls or cultured	3. Pearl import realization report in the past year, for importer who already obtained import approval.				√	√	√

Annotations: Three red boxes with arrows pointing to the table. Box 1: 'These pearl products interpreted to be applied by import license (B15)'. Box 2: 'These pearl products interpreted to be applied by port of entry restriction (C3)'. Box 3: 'These pearl products interpreted to be applied by import approval (B14)'.

Note: The illustration shows an example of PERMENDAG 20 2021 where measure descriptions are in the Regulations annex. Source: Author illustration based on Ministry of Trade repository

Step 4. HS Product Extraction

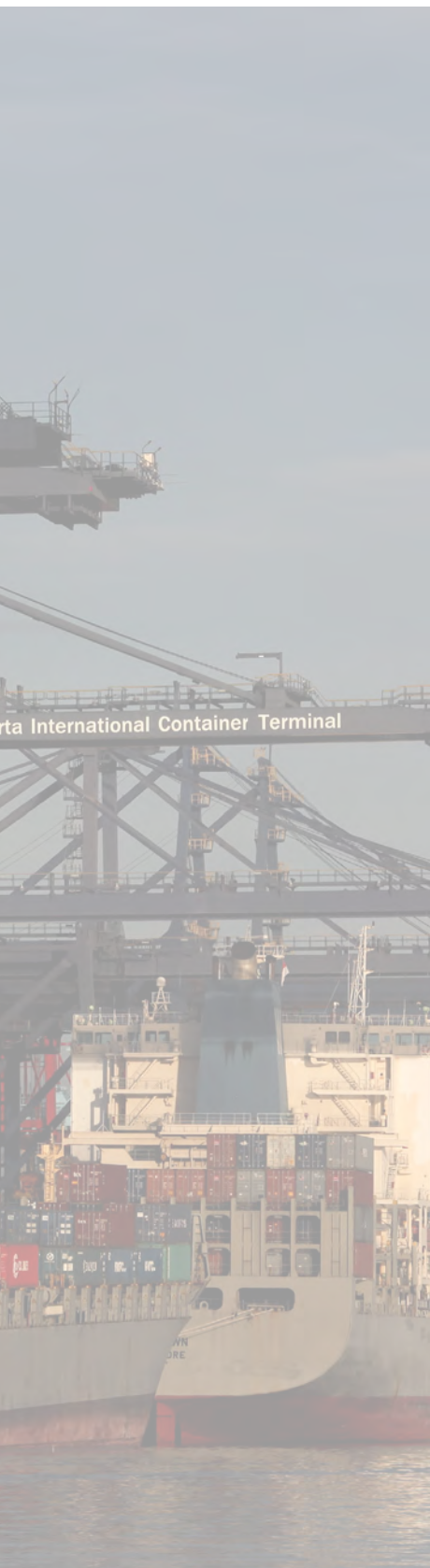
The Harmonized System (HS) Code is a standardized numerical method of classifying traded products.

Various versions of it are used internationally. HS code is used by customs authorities worldwide to identify products when assessing duties and taxes and for gathering statistics. It has been regularly updated since 1988. The HS is administrated by the World Customs Organization (WCO). Following WCO, Indonesia has been using:

1. HS version 2007 for regulations that were enacted in 2007-2011
2. HS version 2012 for regulations that were enacted in 2012-2016
3. HS version 2017 for regulations that were enacted in 2017-2021
4. HS version 2022 for regulations that enacted in 2022

The international HS assigns specific six-digit codes for varying classifications and commodities.

In Indonesia, for the period 2007-2016, products use HS Code at the 10 digits level, with the first six digits being the international HS number. Since 2017, Indonesia has been using HS Codes at the 8 digits level. The NTM data converts products to the same HS version of 2007, which is the version of the initial year of the data 2008, for consistency. The World Bank uses Indonesia Customs Tariff Book 2007, 2012, and 2017 (Buku Tarif Bea Masuk Indonesia 2007, Buku Tarif Kepabeanan Indonesia 2012, and Buku Tarif Kepabeanan Indonesia 2017).



When extracting HS product extraction from Indonesian regulations, there are four possible cases that can be encountered:

a. Case 1: HS codes are carried in the annexes of the regulation.

For the first case, many of the regulations carry HS codes in the annexes' regulations. Standard HS extraction procedure from PDF to excel sheet is feasible. For example, this is the case when we once again use the regulation PERMENDAG 20 2021 for illustration in Figure 30.

Figure 30: Extracting HS Codes in the Annexes' Regulation

MUTIARA		
No	Pos Tarif/HS	Uraian Barang
	71.01	Mutiara, alam atau budidaya, dikerjakan atau ditingkatkan mutunya maupun tidak, tetapi tidak diuntai, tidak dipasang atau disusun; mutiara, alam atau budidaya, diuntai sementara untuk memudahkan pengangkutan.
190.	7101.10.00	-- Mutiara alam
		-- Mutiara Budidaya;
191.	7101.21.00	-- Tidak dikerjakan
192.	7101.22.00	-- Dikerjakan
	71.16	Barang dari Mutiara alam atau Mutiara budidaya, batu mulia atau batu semi mulia (alam, sintetik atau direkonstruksi).
193.	7116.10.00	-- dari Mutiara alam atau budidaya

Note: The Figure shows an example of how the HS codes can be carried in the annexes' regulation. The translated table can be found in the annex (Table A6).

Source: Ministry of Trade repository, regulation PERMENDAG 20 2021

b. Case 2 – HS codes are carried in the body of the regulation.

HS codes being carried in the body of the regulation is a common case in Indonesian trade regulations. Standard HS extraction procedure to excel sheet is feasible. An example of this case can be seen in article 2 of a regulation on SNI, 28/M-IND/PER/7/2017 (Figure 31).

Figure 31: Extracting HS Codes in the Body Regulation Table

BAB II
LINGKUP PEMBERLAKUAN WAJIB

Pasal 2

(1) Memberlakukan SNI Kawat Baja Beton Pratekan untuk Keperluan Konstruksi Beton secara wajib pada produk dengan jenis, nomor SNI, dan nomor Pos Tarif Harmonize System (HS) Code sebagai berikut:

NO.	JENIS PRODUK	NOMOR SNI	HS CODE
1.	Tujuh Kawat Baja tanpa Lapisan Dipilin untuk Konstruksi Beton Pratekan (PC Strand/KBq-P7)	1154:2016	Ex. 7312.10.91 Ex. 7312.10.99
2.	Kawat Baja tanpa Lapisan untuk Konstruksi Beton Pratekan (PC Wire/KBq-P)	1155:2016	Ex. 7217.10.33 Ex. 7217.10.39 Ex. 7229.20.00 Ex. 7229.90.20 Ex. 7229.90.99
3.	Kawat Baja Quens (Quench) Temper untuk Konstruksi Beton Pratekan, (PC Bar/KBq-P-Q)	7701:2016	Ex. 7217.10.22 Ex. 7217.10.29 Ex. 7229.20.00 Ex. 7229.90.99

(2) Dalam memproduksi Kawat Baja Beton Pratekan untuk Keperluan Konstruksi Beton sebagaimana dimaksud pada ayat (1), Produsen Kawat Baja Beton Pratekan untuk Keperluan Konstruksi Beton dapat menggunakan bahan baku dengan ketentuan sebagai berikut:

a. baja karbon atau baja paduan yang mengandung unsur fosfor (P) tidak lebih dari 0,030% dan unsur sulfur (S) tidak lebih dari 0,035%, untuk jenis produk: Tujuh Kawat Baja tanpa Lapisan Dipilin untuk Konstruksi Beton Pratekan (PC Strand/KBq-P7) dan Kawat Baja tanpa Lapisan untuk Konstruksi Beton Pratekan (PC Wire/KBq-P); dan

Note: The Figure shows an example of how the HS codes are carried in the body of the regulation.

Source: Ministry of Industry repository, regulation the 28/M-IND/PER/7/2017

c. Case 3 – HS codes are not explicitly stated in the regulation.

In the third case, products are mentioned in the regulation, but the HS codes are not. These products then need to be matched on the basis of their descriptions, with the Indonesian Customs Tariff Book (BTKI). Figure 32 shows an example of this case, where article 2 of regulation PERMENKOMINFO 13 2021 only stated subscriber station and base station as the goods that the NTM applies. In this case, HS codes 8517.11.00, 8517.12.00, 8517.18.00, 8517.61.00, 8471.30.20, 8471.30.90, 8471.50.10, and 8471.50.90 are included in the data (at 8 digit level of HS). This case where product and no HS codes are given however, is only a few of the regulations.²³

Figure 32: Extracting HS Codes When Only Product Names are Stated in Regulation's Articles

Pasal 2	
(1)	Alat telekomunikasi dan/atau perangkat telekomunikasi bergerak seluler sebagaimana dimaksud dalam Pasal 1 meliputi: a. <i>subscriber station</i> ; dan b. <i>base station</i> .
(2)	Alat telekomunikasi dan/atau perangkat telekomunikasi bergerak seluler sebagaimana dimaksud pada ayat (1) berbasis standar teknologi: a. <i>Long Term Evolution</i> ; dan b. <i>International Mobile Telecommunications-2020</i> .

Note: The Figure shows an example of when the HS codes are not explicitly stated. The translated table can be found in the annex (Table A7).

Source: Ministry of Communication and Information Technology repository, regulation PERMENKOMINFO 13 2021

d. Case 4 – HS codes are not provided in the regulation, but the preceding regulation carries them over

Usually, this scenario happens when the following regulation only updates the validity period of the previous regulation without any other substantial changes. Since a particular regulation is updating a previous regulation, the HS codes are carried over by the preceding regulation. For example, it can be seen in Figure 33 that 88/M-IND/PER/10/2011 did not provide any clear HS codes in the regulation. Nevertheless, since it is known that 88/M-IND/PER/10/2011 updated a previous regulation (42/M-IND/PER/4/2011), the HS codes in 88/M-IND/PER/10/2011 will be the same as those in 42/M-IND/PER/4/2011 (Figure 34).

²³ One of the issues faced in other countries is the product name sometime is too generic like Fishes or Vegetables and this means adding a lot of HS code at the 8 or 10 digit level. While our data does not maintain a repository to identify mapped names to HS codes of such a case, these are far and apart and will be included in subsequent updates.

Figure 33: No HS Code provided in original Regulation

Pasal I

Mengubah ketentuan Pasal 15 Peraturan Menteri Perindustrian Nomor 42/M-IND/PER/4/2011 tentang Pemberlakuan Standar Nasional Indonesia (SNI) Kawat Baja Beton Pratekan untuk Keperluan Konstruksi Beton Secara Wajib menjadi sebagai berikut:

Pasal 15

Peraturan Menteri ini berlaku sejak tanggal 8 April 2012.

Pasal II

Peraturan Menteri ini mulai berlaku sejak tanggal diundangkan.

Agar setiap orang mengetahuinya, Peraturan Menteri ini diundangkan dengan menempatkannya dalam Berita Negara Republik Indonesia.

Note: The Figure shows an example of when the HS codes are not provided in the regulation.

Source: Ministry of Industry repository, regulation 88/M-IND/PER/10/2011

Figure 34: Extracting HS Codes in the Previous Regulation

Pasal 2

(1) Memberlakukan secara wajib SNI Kawat Baja Beton Pratekan untuk Keperluan Konstruksi Beton dengan SNI dan Pos Tarif HS sebagai berikut:

No	Jenis Produk	No SNI	No. HS
a.	Tujuh Kawat Baja Tanpa Lapisan Dipilin untuk Konstruksi Beton Pratekan (PC Strand/KBjP-P7)	1154:2011	7312.10.10.00 7312.10.90.00 (hanya untuk kawat baja beton pratekan)
b.	Kawat Baja Tanpa Lapisan untuk Konstruksi Beton Pratekan (PC Wire/KBjP).	1155:2011	7217.10.22.90 7217.10.31.00 7217.10.39.00 7229.90.00.90 (hanya untuk kawat baja beton pratekan)

Note: The Figure shows an example of when the HS codes of a preceding regulation can be carried over.

Source: Ministry of Industry repository, regulation 42/M-IND/PER/4/2011

From step 1 until step 3, we get the regulation series and their respective NTM codes.

In Figure 35, the column **seri** provides us with a standardized series name as the backbone of each relevant regulation-NTM pair.

Step 5. Building the Regulation-NTM-HS Dataset

Therefore, a table to present a proper dataset for further analysis can be created. Figure 35 provides an example of the table format for creating the data. This enables the data collector or user to better analyze the NTMs and may provide some basic statistical analysis.

At the same time, the **regs** column indicates the standardized regulation name traced backward-forward within a unique series. The **inst** column shows which institution issued particular regulations. The **infc** column provides the regulations in force date. The **artc** and **verb** columns provide information on regulation **articles** in **verbatim** for each applied/carried-over and abolished/not yet applied NTM. Columns **ntms19** and **desc19** show us the NTM codes (2019 nomenclature) and their descriptions from the UNCTAD handbook. Finally, **stat** column indicates whether the assigned NTM code is applied (coded as 1) or not yet applied / no longer applies (coded as 0) in the time period.

Figure 35: Building the Regulations-NTM Dataset

seri	regs	inst	infc	artc	verb	ntms19	desc19	stat
83/M-IND/PER/10/2014	42/M-IND/PER/4/2011	MoI	08/10/2011	n/a	n/a	B15	Authorizati	0
83/M-IND/PER/10/2014	42/M-IND/PER/4/2011	MoI	08/10/2011	art 2(1)	Mandatory S	B7	Product qua	1
83/M-IND/PER/10/2014	88/M-IND/PER/10/2011	MoI	08/04/2012	n/a	n/a	B15	Authorizati	0
83/M-IND/PER/10/2014	88/M-IND/PER/10/2011	MoI	08/04/2012	follow prev	follow prev	B7	Product qua	1
83/M-IND/PER/10/2014	42/M-IND/PER/2/2012	MoI	06/03/2012	n/a	n/a	B15	Authorizati	0
83/M-IND/PER/10/2014	42/M-IND/PER/2/2012	MoI	06/03/2012	art 2(1)	Mandatory S	B7	Product qua	1
83/M-IND/PER/10/2014	83/M-IND/PER/10/2014	MoI	07/01/2015	art 3(2)	Concrete St	B15	Authorizati	1
83/M-IND/PER/10/2014	83/M-IND/PER/10/2014	MoI	07/01/2015	art 2(1)	Mandatory S	B7	Product qua	1
83/M-IND/PER/10/2014	28/M-IND/PER/7/2017	MoI	13/07/2017	art 3(3)	Concrete St	B15	Authorizati	1
83/M-IND/PER/10/2014	28/M-IND/PER/7/2017	MoI	13/07/2017	art 2(1)	Mandatory S	B7	Product qua	1
83/M-IND/PER/10/2014	PERMENPERIN 35 2019	MoI	18/10/2019	follow prev	follow prev	B15	Authorizati	1
83/M-IND/PER/10/2014	PERMENPERIN 35 2019	MoI	18/10/2019	art 1(1h)	The applica	B7	Product qua	0

Note: seri = Standardized series name as the backbone of each relevant regulation-NTM pair; regs = Standardized regulation name that have been traced backward-forward within unique series; inst = Issuing institution; infc = in force date; artc/verb = Articles and in their verbatim manner that referred to each applied/carried-over and abolished/not yet applied NTM; ntms19/desc19 = 3-digit NTM codes (2019 nomenclature) and their descriptions; stat = Assigned NTM status of applied or not yet applied.

Source: World bank Indonesia NTM database

Step 6. Building the Regulation-HS Dataset

Steps 1 to 4 enables us to obtain the regulation series and HS codes that are affected by a particular regulation.

In Figure 36, the **regs** column indicates the standardized regulation name that has been traced backward-forward within unique series.

Similar to step 5, in this step, tables that consist of regulations and HS codes that are affected by particular regulations are built. By having Figure 36 table format, the reader could investigate which HS product codes are affected by which regulations in Indonesia. The reader also may conduct basic statistical analysis.

The **nomen** column provides information about HS **nomenclature** based on WCO that is applied in particular regulations. The **hs** column shows extracted HS codes from each regulation. And finally, the **ntms19** columns provide us with the NTM codes (2019 nomenclature) from the UNCTAD handbook.

Figure 36: Building the Regulations-HS Dataset

regs	nomen	hs	ntms19
42/M-IND/PER/4/2011	2007	7217.10.22.90	B31, B7, B82
42/M-IND/PER/4/2011	2007	⋮	⋮
42/M-IND/PER/4/2011	2007	7312.10.90.00	B31, B7, B82
88/M-IND/PER/10/2011	2007	7217.10.22.90	B31, B7, B82
88/M-IND/PER/10/2011	2007	⋮	⋮
88/M-IND/PER/10/2011	2007	7312.10.90.00	B31, B7, B82
42/M-IND/PER/2/2012	2007	7217.10.31.00	B31, B7, B82
42/M-IND/PER/2/2012	2007	⋮	⋮
42/M-IND/PER/2/2012	2007	7312.10.90.00	B31, B7, B82
83/M-IND/PER/10/2014	2007	7217.10.22.00	B15, B31, B33, B7, B82, B83
83/M-IND/PER/10/2014	2007	⋮	⋮
83/M-IND/PER/10/2014	2007	7312.10.90.00	B15, B31, B33, B7, B82, B83
PERMENPERIN 35 2019	2007	7217.10.22.00	B15, B31, B33, B82, B83
PERMENPERIN 35 2019	2007	⋮	⋮
PERMENPERIN 35 2019	2007	7307.19.00.00	B15, B31, B82

Note: regs = Standardized regulation name that has been traced backward-forward within a unique series; nomen = HS nomenclature based on WCO; hs = Extracted HS codes for each regulation; ntms19 = Identified NTMs from regulation-NTM dataset that applied to each HS codes from each regulation.

Source: World bank Indonesia NTM database

Step 7. Building the Regulation-NTM-HS Dataset

The Regulation-NTM-HS dataset is built by merging regulation-NTM and regulation-HS datasets obtained in steps 5 and 6.

This will yield a dataset which we have named "NTM_HS_Regulation.dta" which is available for download at the World Bank Data Development Data Hub²⁴. The Regulation-NTM-HS dataset consists of regulation series, NTM codes, and HS codes that are affected by particular regulations. Figure 37 shows a preview what the "NTM_HS_Regulation.dta" consists of: series, regulation, in force dates, year, month, NTM, HS codes, and NTM status. For each regulation-NTM-HS pair, the abolished and not yet applied NTMs are coded 0 in status. While the applied and carried-over NTMs are coded 1 in status. The importance of keeping both 0 and 1 codes of status is to capture the monthly variance of the NTM dataset.

Figure 37: Building the Regulations-NTM-HS Dataset

seri	regs	infc	year	mont	ntms19	HS10_07	stat
83/M-IND/PER/10/2014	42/M-IND/PER/4/2011	08oct2011	2011	10	815	7217103900	0
83/M-IND/PER/10/2014	42/M-IND/PER/4/2011	08oct2011	2011	10	87	7217103900	1
83/M-IND/PER/10/2014	88/M-IND/PER/10/2011	31oct2011	2011	10	815	7217103900	0
83/M-IND/PER/10/2014	88/M-IND/PER/10/2011	31oct2011	2011	10	87	7217103900	1
83/M-IND/PER/10/2014	28/M-IND/PER/7/2017	13jul2017	2017	7	815	7217103900	1
83/M-IND/PER/10/2014	28/M-IND/PER/7/2017	13jul2017	2017	7	87	7217103900	1
83/M-IND/PER/10/2014	PERMENPERIN 35 2019	18oct2019	2019	10	815	7217103900	1
83/M-IND/PER/10/2014	PERMENPERIN 35 2019	18oct2019	2019	10	87	7217103900	0

Note: seri = Standardized series name as the backbone of each relevant regulation-NTM pair; regs = Standardized regulation name that have been traced backward-forward within unique series; infc = in force date; year = in force year; mont = in force month; ntms19 = 3-digit NTM codes (2019 nomenclature) and their descriptions; HS10_07 = Indonesia HS 2007 10 digits code; stat = Assigned NTM status of applied or not yet applied.

Source: World bank Indonesia NTM database

Step 8. Building the Panel Dataset

The last step is to transform the "NTM_HS_Regulation.dta" data into the NTM-HS-Year-Month format, using a panel data frame with streamlined NTM 2019 and HS 2007 nomenclature.

This will yield a dataset which we have called "NTM_HS_Panel_2008-2021.dta" and can also be downloaded at the World Bank Data Development Data Hub. Figure 38 shows us a sample of the contents of "NTM_HS_Panel_2008-2021.dta".

²⁴ https://datacatalog.worldbank.org/search/dataset/0063543/indonesia_nontariff_measures

Figure 38: Building the NTM Panel Dataset

HS10_07	HS10_07_desc	year	mont	tariff	d_A11	d_A12	d_A13
0101100000	Live horses, asses, mules and hinnies, pure-bred breeding animals	2008	1	0	0	0	0
0101100000	Live horses, asses, mules and hinnies, pure-bred breeding animals	2008	2	0	0	0	0
0101100000	Live horses, asses, mules and hinnies, pure-bred breeding animals	2008	3	0	0	0	0
0101100000	Live horses, asses, mules and hinnies, pure-bred breeding animals	2008	4	0	0	0	0
0101100000	Live horses, asses, mules and hinnies, pure-bred breeding animals	2008	5	0	0	0	0
0101100000	Live horses, asses, mules and hinnies, pure-bred breeding animals	2008	6	0	0	0	0
0101100000	Live horses, asses, mules and hinnies, pure-bred breeding animals	2008	7	0	0	0	0
0101100000	Live horses, asses, mules and hinnies, pure-bred breeding animals	2008	8	0	0	0	0
0101100000	Live horses, asses, mules and hinnies, pure-bred breeding animals	2008	9	0	0	0	0
0101100000	Live horses, asses, mules and hinnies, pure-bred breeding animals	2008	10	0	0	0	0
0101100000	Live horses, asses, mules and hinnies, pure-bred breeding animals	2008	11	0	0	0	0
0101100000	Live horses, asses, mules and hinnies, pure-bred breeding animals	2008	12	0	0	0	0
0101100000	Live horses, asses, mules and hinnies, pure-bred breeding animals	2009	1	0	0	0	0
0101100000	Live horses, asses, mules and hinnies, pure-bred breeding animals	2009	2	0	0	0	0
0101100000	Live horses, asses, mules and hinnies, pure-bred breeding animals	2009	3	0	0	0	0
0101100000	Live horses, asses, mules and hinnies, pure-bred breeding animals	2009	4	0	0	0	0
0101100000	Live horses, asses, mules and hinnies, pure-bred breeding animals	2009	5	0	0	0	0

Note: HS10_07 = Indonesia HS 2007 10 digits code; HS10_07_desc = Description Indonesia HS 2007 10 digits code; year = in force year; mont = in force month; tariff = applied tariff; d_A11 = Dummy prohibitions for sanitary and phytosanitary reasons; d_A12 = Dummy for geographical restrictions on eligibility; d_A13 = dummy for systems approach.

Source: World bank Indonesia NTM database

5. Conclusion

The World Bank NTM data for Indonesia offers extensive information on NTMs in Indonesia.

The data collection process can be adjusted to facilitate NTM data collection in other countries.

The high frequency data covers NTMs based on regulations issued by a multitude of agencies to facilitate an accurate and comprehensive time series of NTMs. The data is hand-collected through different sources and checked rigorously through backward and forward tracing. The data can help users understand the current policy landscape, calculate frequency and coverage ratios, ad-valorem equivalents, answer research and policy questions and understand the implications of specific policies.

We hope that following a similar methodology will enable other countries to increase their understanding of NTMs and therefore contribute to the policy debate. Additionally, we hope that the data on Indonesia can be used to analyze NTMs in ways that other existing data does not permit, and we encourage researchers, policy makers and other interested parties to use the data to contribute to Indonesia's policy debate and global understanding of NTMs and welcome any feedback users may have.

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Appendix

A.1 Sample of Revoked NTMs 2021

Table A1: Sample of Regulations which Revoked NTMs in 2021

Institution	Revoking regulation	In force date	Revoked regulation	NTM Code	NTM Description
MoA	PERMENTAN 16 2021	18-05-21	18/PERMENTAN/OT.140/4/2009	A15	Authorization requirement for importers for SPS reasons
MoMAF	PERMENKP 1 2021	15-01-21	8/PERMEN-KP/2020	A82	Testing requirement
MoMAF	PERMENKP 1 2021	15-01-21	8/PERMEN-KP/2020	A83	Certification requirement
MoT	PERMENDAG 19 2021	19-11-21	13/M-DAG/PER/3/2012	P169	Conformity-assessment measures n.e.s.
MoT	PERMENDAG 19 2021	19-11-21	32/M-DAG/PER/5/2017	P169	Conformity-assessment measures n.e.s.
MoT	PERMENDAG 19 2021	19-11-21	33/M-DAG/PER/5/2015	P169	Conformity-assessment measures n.e.s.
MoT	PERMENDAG 19 2021	19-11-21	72/M-DAG/PER/12/2013	P169	Conformity-assessment measures n.e.s.
MoT	PERMENDAG 19 2021	19-11-21	PERMENDAG 1 2018	B14	Authorization requirements for importing certain products
MoT	PERMENDAG 19 2021	19-11-21	PERMENDAG 1 2018	B15	Authorization requirements for importers

Source: World Bank Indonesia NTM dataset

A.2 Sample of Covid-19 related regulations

Table A2: Sample of Regulations Related to Covid-19, Implemented in 2020

Institution	Regulation	In Forced Date
MoT	PERMENDAG 10 2020	7/2/2020
MoT	PERMENDAG 23 2020	18/3/2020
MoT	PERMENDAG 27 2020	18/3/2020
MoT	PERMENDAG 28 2020	23/3/2020
MoT	PERMENDAG 34 2020	1/4/2020
MoT	PERMENDAG 37 2020	2/4/2020
MoT	PERMENDAG 57 2020	19/6/2020
MoT	PERMENDAG 74 2020	25/10/2020
MoA	PERMENTAN 13 2020	2/4/2020
Mol	SURAT EDARAN MENPERIN 5 2020	7/4/2020
Mol	SURAT EDARAN MENPERIN 6 2020	7/4/2020

Source: World Bank Indonesia NTM dataset

A.3 Repositories

Table A3: List of Repositories for Line Ministries

LMs	Abbreviation	Repository
The National Agency for Drug and Food Control	B POM	https://jdih.pom.go.id/
Government of Indonesia	GoI	https://peraturan.go.id/pp.html
Indonesian National Police	INP	https://jdih.polri.go.id/
Ministry of Agriculture	MoA	https://jdih.pertanian.go.id/
Ministry of Communication and Information	MoCI	http://jdih.kominfo.go.id/
Ministry of Environment and Forestry	MoEF	https://jdih.menlhk.go.id/
Ministry of Energy and Mineral Resource	MoEMR	https://jdih.esdm.go.id/
Ministry of Health	MoH	https://jdih.kemkes.go.id/
Ministry of Industry	MoI	http://jdih.kemenperin.go.id/
Ministry of Marine Affairs and Fisheries	MoMAF	https://jdih.kkp.go.id/
Ministry of Trade	MoT	http://jdih.kemendag.go.id/
Ministry of Transportation	MoTr	https://jdih.dephub.go.id/

Source: World Bank Indonesia NTM dataset

A.4 Differences between the UNCTAD and World Bank data at the time of compilation

Note that these represent differences prior to the UNCTAD update of 2023 which has added the World Bank data to the Indonesia data in UNCTAD TRAINS. Once the data was assembled, further checks were made to compare to the UNCTAD-ERIA data of 2015 and 2018 on which the World Bank data was based. To test this out, difference of frequency ratio (FR) and pairwise correlation of the HS-NTM mapping in each year was estimated.

It's important to point out that while FR differences and correlations may not provide a full explanation, they give us a glimpse how the World Bank and UNCTAD interpreted and mapped HS-NTMs differently when compared with the UNCTAD data at the time. The differences between the World Bank and UNCTAD further demonstrate how the World Bank updated and expanded on the UNCTAD data that was available for Indonesia.

Now that the UNCTAD data includes this data however, these differences may no longer be as relevant.

Figure A1: The World Bank Recorded a Higher Number of Regulations for Most NTM Groups

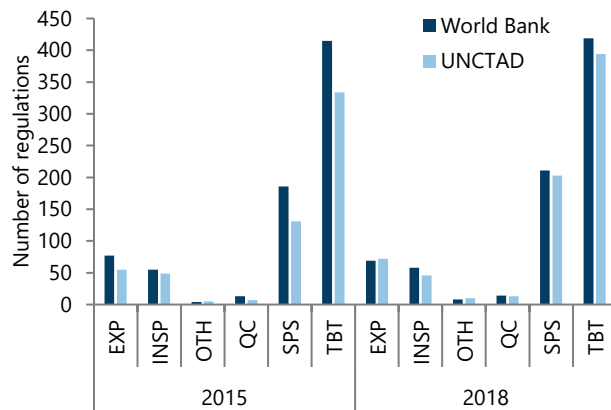
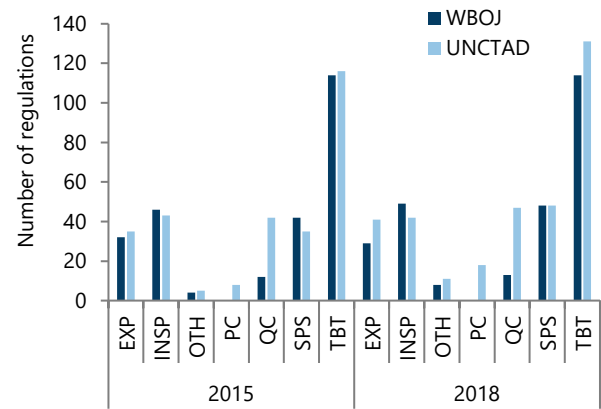
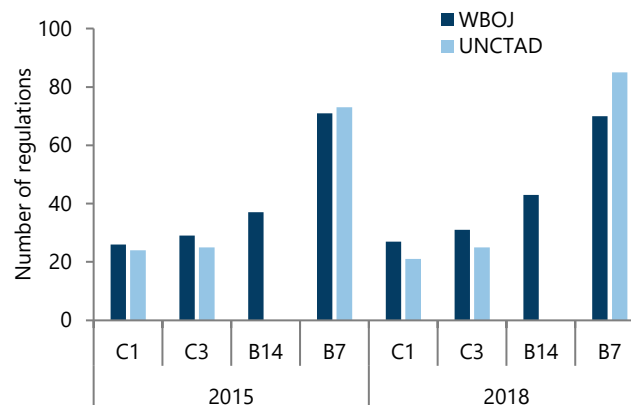


Figure A2: The World Bank Recorded a Lower Number of Active Regulations for Most NTM Groups



Note: SPS = Sanitary and phytosanitary measures; TBT = Technical barriers to trade; INSP = Pre-shipment inspection and other formalities; QC = Quantity-control measures; OTH = Other measures; EXP = Export-related measures; PC = Price control measures. Note that one regulation may have various NTM codes therefore this chart may not necessarily add up to all the total active regulations. This was comparison done during compilation of the data, before UNCTAD TRAINS added the World bank NTM data to the Indonesia data therein.
Source: World Bank Jakarta NTM Database for Indonesia and UNCTAD NTM Data

Figure A3: The Number of Regulations Recorded Varies Between NTMs



Note: C1=PSI; C3=Specific Port of Entry; B14=Import Approvals; and B7=Product quality or performance.
Source: World Bank Jakarta NTM Database for Indonesia and UNCTAD NTM Data

A.5 AVE Estimation Methodology

The ad-valorem equivalents (AVE) of NTMs are estimated by comparing the trade effect of NTMs to the one from tariffs. Specifically, it is theorized that the total effect of NTMs is a product of trade elasticity and the AVEs. The following regression specification is then estimated using the EA countries' import data as follows:

$$\ln V_{it} = \beta_1 \ln(1 + tariff_{it}) + \beta_j NTM_{ijt} + \gamma_k NTM_{ikt} + \alpha_i + \alpha_t + \varepsilon_{it} \quad (1)$$

Eq.1 is the first step to get the coefficients of NTM and tariff. They are β_j and β_1 , respectively

$\ln V_{it}$ is the log import value of commodity i (HS 10) at year t .

tariff_{it} is the ad-valorem tariff of commodity i at year t .

NTM_{ijt} is a dummy that takes value of 1 if NTM of interest j affects commodity i at year t .

NTM_{ikt} is a dummy that takes value of 1 for all other NTMs k that affect commodity i at year t .

α_i is the product dummy that serves as a control for other product characteristics

α_t is the year dummy that serve as a control for shocks to a given year

ε_{it} is the error term.

$$AVE_j = \beta_j / \beta_1 * 100 \quad (2)$$

Eq.2 is the second step that will give us the estimated of unique AVE for each NTM j . The AVE is defined as the ratio between estimated coefficient of NTM j and estimated coefficient of ad-valorem tariff, both of which we already derived from Eq.1. Essentially, this allows turning NTMs into “tariff units” since NTMs are regulatory text which are represented by a dummy variable. The AVE from Eq.2 is only feasible and calculated if the estimated coefficient of β_j and β_1 are statistically significant. For product groups, the estimation is done at HS-10 product level if the product is within that product category or group (sub samples). Due to the differences in the NTM data used compared to previous studies, AVEs may be different from other existing estimates in the literature.

A.6 Ad-Valorem Equivalent Result

Table A4: AVE by NTM Group

NTM Group	NTM Code and Description	AVE
SPS: Sanitary and phytosanitary measures	A42; Hygienic practice during production	56%
	A64; Storage and transport conditions	55%
	A83; Certification requirement	13%
	A86; Quarantine requirement	34%
TBT: Technical barriers to trade	B15; Authorization requirements for importers	12%
	B84; Inspection requirement	10%
	B85; Traceability requirements	21%

INSP; Pre-shipment inspection and other formalities	C1; Pre-shipment inspection	21%
Non-automatic import licensing, quotas, prohibitions, quantity-control measures and other restrictions	E316; Prohibition of used, repaired or remanufactured goods	22%

Source: World Bank staff calculations from World Bank NTM Database and BPS Data

A.7 Full List of NTM Classifications

Table A5: NTM Classifications

	NTM Classification	NTM Broad Group WB	Specific NTM	Description
Technical Measure	Sanitary and Phytosanitary Measures	SPS	A	Chapter A deals with sanitary and phytosanitary measures. The chapter outlines measures such as those restricting substances, ensuring food safety and preventing the dissemination of diseases or pests. Chapter A also includes all conformity-assessment measures related to food safety, such as certification, testing and inspection, and quarantine.
	Technical Barriers to Trade	TBT	B	Chapter B provides a collection of technical measures, also called technical barriers to trade. The chapter describes measures relating to product characteristics such as technical specifications and quality requirements; related processes and production methods; and measures such as labelling and packaging in relation to environmental protection, consumer safety and national security. As in the case of sanitary and phytosanitary measures, chapter B includes all conformity-assessment measures related to technical requirements, such as certification, testing and inspection.
	Pre-shipment inspection and other formalities	INSP	C	Chapter C, the last chapter in the technical measures section, classifies the measures related to pre-shipment inspections and other customs formalities

Non-Technical Measure	Contingent trade-protective measures		D	Chapter D groups contingent measures, that is, those measures implemented to counteract the adverse effects of imports in the market of the importing country, including measures aimed at tackling unfair foreign trade practices. These include anti-dumping, countervailing and safeguard measures.
	Non-automatic import licensing, quotas, prohibitions, quantity-control measures and other restrictions not including sanitary and phytosanitary measures or measures relating to technical barriers to trade	QC	E	Chapters E and F feature the “hard” measures that are traditionally used in trade policy. Chapter E includes licensing, quotas and other quantity-control measures, including tariff-rate quotas. Chapter F lists the price-control measures that are implemented to control or affect the prices of imported goods. Among the examples are those measures designed to support the domestic prices of certain products when the import prices of these goods are lower, to establish the domestic prices of certain products because of price fluctuation in domestic markets or price instability in a foreign market and to increase or preserve tax revenue.
	Price-control measures, including additional taxes and charges		F	This category also includes measures other than tariffs measures that increase the cost of imports in a similar manner (para-tariff measures)
	Finance measures		G	Chapter G lists the finance measures. The chapter outlines measures restricting the payments of imports, for example when the access and cost of foreign exchange is regulated. It also includes measures imposing restrictions on terms of payment.
	Measures affecting competition	OTH	H	Chapter H includes those measures affecting competition – those that grant exclusive or special preferences or privileges to one or more limited group of economic operators. They are mainly monopolistic measures, such as State trading, sole importing agencies or compulsory national insurance or transport.
	Trade-related investment measures	OTH	I	Chapter I deals with trade-related investment measures and groups the measures that restrict investment by requiring local content or requesting that investment be related to export in order to balance imports.

Non-Technical Measure	Distribution restrictions		J	Chapters J and K relate to the way products – or services connected to the products – are marketed after being imported. They are considered non-tariff measures because they could affect the decision to import such products or services. Chapter J, on distribution restrictions, describes restrictive measures related to the internal distribution of imported products. Chapter K deals with restrictions on post-sales services, for example restrictions on the provision of accessory services.
	Restrictions on post-sales services.		K	
	Subsidies and other forms of support		L	Chapter L contains measures that relate to the subsidies that affect trade.
	Government procurement restrictions		M	Chapter M, on government procurement restrictions, describes the restrictions bidders may find when trying to sell their products to a foreign government.
	Intellectual property		N	Chapter N contains restrictions related to intellectual property measures and rights.
	Rules of origin		O	Chapter O, on rules of origin, groups the measures that restrict the origin of products or its inputs
Exports	Export-related measures	EXP	P	Chapter P, the last chapter, is on export measures. The chapter groups the measures applied by a country to its exports, inter alia, export taxes, export quotas and export prohibitions.

Source: UNCTAD 2019

A.8 Extracting HS Code from Regulation

Table A6: Extracting HS Codes in the Annexes' Regulation

No	Pos Tarif/HS	Description
	71.01	Pearls, natural or cultured, whether or not worked or graded, but not strung, mounted or arranged; pearls, natural or cultured, temporarily strung for easy transport.
190.	7101.10.00	- Natural pearls
		- Cultured pearls:
191.	7101.21.00	-- Not graded
192.	7101.22.00	-- Graded
	71.16	Articles of natural or cultured pearls, precious or semi-precious stones (natural, synthetic or reconstructed).
193.	7116.10.00	- From natural pearls or cultured

Source: Ministry of Industry repository, regulation PERMENDAG 20 2021

Table A7: Extracting HS Codes from Interpreting Regulation's Articles**Article 2**

- 1) Telecommunications equipment and/or mobile telecommunications devices as referred to in Article 1 shall include:
 - a. Subscriber stations; and
 - b. Base stations.

- 2) Telecommunications equipment and/or mobile telecommunications devices as referred to in paragraph (1) shall be based on the following technological standards:
 - a. Long-Term Evolution; and
 - b. International Mobile Telecommunications-2020.

Source: Ministry of Industry repository, regulation PERMENKOMINFO 13 2021

