Determinants of Non-Tariff Measures in ASEAN: A Correlation Analysis

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I. INTRODUCTION

As part of its regional integration efforts, Member States of the Association of Southeast Asian Nations (“ASEAN”) committed to reduce, if not eliminate completely, both border and behind-the-border trade barriers such as non-tariff measures (“NTMs”) and non-tariff barriers (“NTBs”). This is undoubtedly a difficult task given the complex nature of NTMs and NTBs.

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1 Such as tariffs and quotas.

2 Ass’n of Southeast Asian Nations [ASEAN] Secretariat, ASEAN Economic Community Blueprint 2025, at 3 (Nov. 2, 2015),
NTMs are instruments other than tariffs which can affect the prices or quantities of traded goods. Any law or regulation can thus be classified as an NTM as long as these effects are produced, including instruments which are not necessarily intended to affect trade. NTMs become NTBs when (1) they are applied in a discriminatory manner against foreign firms; (2) they are imposed with a protectionist intent; or (3) they are unjustifiably or improperly applied.

The uncertainty and ambiguity regarding the nature of, and classification of instruments as, NTMs and NTBs may explain the inability of Member States to comply with their NTM-related obligations. Alternatively, the persistence of NTMs may be due to Member States’ and ASEAN’s short-sighted view of the underlying determinants of policy. The political economy of trade protection literature posits that both economic and political factors are influential in the policy-making process. On the one hand, certain economic shocks may lead to an increased demand for protectionist policies. On the other hand, the underlying political institutions may affect how societal preferences for either free trade or protection are translated into policy. In order to effectively address the problem of NTMs and NTBs, ASEAN Member States need to first identify and understand these underlying determinants.

This paper aims to identify the determinants of the incidence of NTMs in the ASEAN region. In particular, it asks whether political and economic factors can illuminate the rising incidence and persistence of NTMs. First, is there a relationship between certain economic trends and the imposition of NTMs? Second, is there a significant difference in the incidence of NTMs among countries with different types of political institutions? Relationships between NTM incidence, on the one hand, and different political and economic characteristics, on the other, are analyzed to discover (1) any possible links between them and (2) the strength and direction of this association.

Frequency ratios were generated to measure NTM incidence for each Member State. Spearman’s correlation analyses were used to determine the correlation between frequency ratios and economic indicators. Independent samples t-tests were used to identify differences in NTM incidence based on the political characteristics of the Member States. The results indicate that the degree of political insulation and accountability may affect how governments react to demands for increased protection. Sectoral trends may also contribute to the frequency of NTMs.

https://www.asean.org/storage/2016/03/AECBP_2025r_FINAL.pdf.


4 Id.
II. THE POLITICAL ECONOMY OF TRADE PROTECTION

It is useful to look at NTMs within the context of a market for trade policy. In this market, (1) the goals and preferences of policymakers (supply), (2) the interests and efforts exerted by gainers and losers from policies (demand), and (3) the economic and political institutions where these interactions occur determine trade policy. The theory of endogenous trade protection emphasizes that industry’s demand for protection increases as a result of economic shocks. The supply of protection depends on the interests and preferences of policymakers. On that point, trade policy cannot be detached from its socio-economic and political contexts. These underlying determinants of policy are among the main focal points of the political economy of trade protection literature.

A. The Interest Group Approach

The interest group approach currently dominates the literature in legal academia as well as in the fields of economics and political science. Its main schools of thought are the tariff formation function, the political support function, and the political contributions model. While these models may differ in certain aspects, common key determinants of protection have emerged, i.e., lobby group size, the ratio of outputs against imports, and import demand elasticity.

The tariff formation function is based on the theories of Ronald Findlay and Stanislaw Wellisz (1982). In a two-sector specific factor economy, opposing groups compete by lobbying the government either for or against protection. Firms aim to raise the domestic prices of the goods produced and lower the prices of the goods consumed. The tariff either increases or decreases based on the lobbying efforts of the different firms. The government trades off the lobbying contributions from the different firms and settles on a tariff based on its tariff formation function. Specifically, a lobby group gains protection only if its contributions are more effective than those of the other lobby group. If the marginal lobbying

6 Ronald Findlay & Stanislaw Wellisz, Endogenous Tariffs, the Political Economy of Trade Restrictions, and Welfare, in IMPORT COMPETITION AND RESPONSE 223, 224 (Jagdish N. Bhagwati ed., 1982).
7 Id. at 225.
8 Id. at 226.
spending of both groups is equally effective, there is free trade.\textsuperscript{9} The tariff is higher when the lobby group is small, its output level is high, and the demand elasticity for imports is low.\textsuperscript{10} High output levels mean that the stakes are higher for this industry, making tariffs more profitable. Conversely, the excess burden of a tariff is lessened if import demand is inelastic.\textsuperscript{11}

Arye Hillman (1982) proposed a political support function which posits that in choosing trade policies, governments trade off industries’ political support against consumer welfare and satisfaction. On the one hand, protectionist policies increase domestic prices, leading to increased industry support. On the other, free trade policies lower domestic prices and increase consumer welfare and support.\textsuperscript{12} The government settles for the policy that maximizes aggregate political support.\textsuperscript{13} In effect, organized and politically active sectors are protected. As with the tariff formation function, the tariff is higher with greater output and inelastic import demand.\textsuperscript{14}

The tariff formation and political support functions have been criticized for being short-sighted, with each focused on just one side of the picture. The tariff formation function’s sole focus is on the demand-side, without accounting for supply-side considerations such as the objective functions and preferences of policymakers.\textsuperscript{15} The political support function, however, only accounts for the objective function of policymakers.\textsuperscript{16} As such, these functions have limited explanatory power.

Unlike the tariff formation and political support functions, the political contributions approach considers the dynamics between the demand for and supply of protection. The focus is on the role of political contributions which aim to influence either (1) the outcome of elections or (2) the policy choices of the incumbent government. These perspectives are


\textsuperscript{10}Id. at 13.

\textsuperscript{11}Id. at 6.


\textsuperscript{13}Helpman, \textit{supra} note 9, at 7; Gawande & Krishna, \textit{supra} note 9, at 225; Hillman, \textit{supra} note 12, at 1184.

\textsuperscript{14}Helpman, \textit{supra} note 9, at 8–9; Gawande & Krishna, \textit{supra} note 9, at 225.


\textsuperscript{16}Id. at 1465.

Magee, Brock, and Young (1989) envisage an economy with two lobbies and two political parties that are either for or against trade. The lobbies represent either capital or labor, and each contributes funds to a certain party. A party’s probability of winning increases with the number of contributions received, but it decreases with the level of policy intervention to which it commits itself. The lobbies make their campaign contributions based on the parties’ declared platforms and trade policies. Thus, contributions are intended solely to influence election outcomes and not the policy choice of officials. Nevertheless, those who believe that it is more likely that contributions aim to influence policy choice rather than to impact the outcome of an election have criticized this model.

Policy influence as the underlying motive for contributions is embodied in the Grossman and Helpman (1994) model. On the supply-side, this model assumes the presence of an incumbent government. As the decision-maker, the government aims to maximize a weighted sum of total political contributions and aggregate welfare.

On the demand-side, the different economic sectors are represented by lobby groups. These lobby groups present the government with a contribution schedule, where contribution levels correspond to and depend on the implemented trade policy. In this case, the lobbies pledge contributions before policies have been chosen by the government. Thus, lobbying aims to directly influence the policy choices of the government. Each lobby aims to maximize the total utility of its members given other lobbies’ contributions, the anticipated policy choices of the government, and domestic prices. A sector gets more protection if (1) it is organized into a lobby, (2) its total output is greater than competing imports, and (3) the import elasticity of demand is low.

The government determines its trade policies while considering the lobbies’ contribution schedules, with organized import-competitive and export-competitive industries obtaining protection in the form of tariffs and

17 Helpman, supra note 9, at 14–15; Rodrik, supra note 15, at 1467.
18 Helpman, supra note 9, at 14–15; Rodrik, supra note 15, at 1467.
19 Helpman, supra note 9, at 16–17.
21 Id. at 836.
22 Id.
23 Id. at 838.
24 Id. at 841–42.
25 Id. at 838.
subsides, respectively. However, unorganized import-competing and export-competing industries will be subjected to corresponding import subsidies and export taxes. Industries characterized by higher outputs and lower import elasticities of demand enjoy higher levels of protection. If all industries were organized, their lobbying activities would cancel one another out, resulting in free trade.26

According to Grossman and Helpman (1994), there are two reasons for the lower rates of protection in industries with a high import demand. First, the deadweight loss from protection translates to a political cost for the government. Second, members of lobbies from other industries will have to bear the social cost of this deadweight loss. Thus, if the social cost from protection is great, these lobbies from other industries will bid more to avoid protection in industries with a high import demand.27

Despite its current popularity, the Grossman and Helpman (1994) model is not without its critics. The assumption that lobbyists only aim to buy protection has been questioned. The key prediction vis-à-vis import penetration has also been criticized.28 Critics maintain that it is more logical for protection to be positively related to a change in import penetration, i.e., in industries where there has been an increase in import penetration.29

B. Political Institutions and Trade

Current scholarship also aims to illuminate the relationship between political institutions, namely electoral rules and forms of government, and economic policy.30 The premise is that different kinds of political

26 Id. at 842-43.
27 Id. at 842.
29 Id. at 181–82.
institutions may generate different types of incentives for both governmental and non-governmental actors. This variety in incentives may help explain the resulting economic policy.

The seminal work on the effect of political institutions on economic policy is derived from the studies of Torsten Persson and Guido Tabellini (2003, 2004). According to Persson and Tabellini (2003), the different dimensions of electoral rules matter. For example, district magnitude affects the nature of electoral competition. Larger districts, which elect more representatives, cater to broader constituencies. Electoral success in large districts depends on the candidates’ ability to capture votes from a wider constituency. Party platforms in these systems tend to feature broad-based projects and general public goods, while smaller districts have narrower constituencies. Thus, candidates tend to cater to voters by targeting district-specific interests and preferences.32

The electoral formula is likewise potentially determinative of economic policy. When voters elect individual candidates, as in plurality or majoritarian systems, rather than parties, as in proportional representation (“PR”) systems, the politicians are held more accountable for their actions. In other words, “individual accountability under plurality rule strengthens the incentives of politicians to please the voters and is conducive to good behavior.”34

The form of government also matters, as it affects the allocation and exercise of power within a government.35 Presidential systems are characterized by: (1) the election of the president by the citizenry; (2) the separation of powers and a system of checks and balances between the branches of government; and (3) a term which does not depend on the continued support and confidence of the legislative assembly. These characteristics incentivize good behavior, as not only is the president held directly accountable to voters, but any inclinations to abuse power are also curbed by the other branches of government. However, in parliamentary

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31 This refers to the number of representatives per electoral district.
32 PERSSON AND TABELLINI, supra note 30, at 17.
33 This refers to how the cast votes are translated into legislative seats.
35 PERSSON & TABELLINI, supra note 30, at 79.
systems, the legislative body appoints the executive, but executive and agenda-setting powers are concentrated in the hands of the government. This concentration of power enables collusion between and among the legislators, which may come at the voters’ expense. Nevertheless, the confidence requirement in parliamentary systems stimulates “legislative cohesion” in policy proposals and decisions. This stable majority of legislators can better pursue broad-based programs and provide public goods. Meanwhile, the lack of a confidence requirement in presidential systems incentivizes different groups to lobby for legislative influence, and legislators tend to favor targeted programs which benefit only their constituencies.

Grossman and Helpman (2005) were the first to develop a model specifically linking electoral rules to trade policy. Using a three-stage model of political campaigns, elections, and policymaking, they showed that a protectionist bias emerges in majoritarian systems. Assume a small country where one-third of the citizens live in one of three geographically and economically distinct districts. A single legislator, who may come from either party A or B, is elected to represent each district. At the first stage, each party chooses a platform which will allow it to win a majority of the legislative seats. Given the heterogenous economic interests of the three districts, the parties promise district-specific protection. At the second stage, the citizens vote for a single representative. At the last stage, the majority party sets policy, with legislators choosing the trade policy that will maximize the aggregate welfare of their represented districts.

If a party wins in all three districts, free trade will prevail as this maximizes aggregate welfare. If the majority party only represents two districts, which is the more probable outcome in majoritarian systems, a positive tariff will be enacted. This policy benefits only those districts represented by legislators from the majority party. Unlike majoritarian systems, the legislative body appoints the executive, but executive and agenda-setting powers are concentrated in the hands of the government. This concentration of power enables collusion between and among the legislators, which may come at the voters’ expense. Nevertheless, the confidence requirement in parliamentary systems stimulates “legislative cohesion” in policy proposals and decisions. This stable majority of legislators can better pursue broad-based programs and provide public goods. Meanwhile, the lack of a confidence requirement in presidential systems incentivizes different groups to lobby for legislative influence, and legislators tend to favor targeted programs which benefit only their constituencies.

36 Id. at 79.
37 Id. at 23-24.
38 Id. at 24.
39 Persson & Tabellini, Economic Policy, supra note 34, at 92; Persson & Tabellini, supra note 30, at 24–25.
40 Grossman & Helpman, supra note 30, at 1240.
41 Each district has its own specific industry.
43 Id. at 1249.
44 Id. at 1257.
45 Id. at 1249.
46 Id. at 1259.
systems, PR systems are more likely to have a governing party which represents all electoral districts. Thus, a protectionist bias is foreseen in majoritarian systems.

C. Empirical Evidence from Previous Studies

The empirical scholarship aims, among other things, to determine the link between certain economic and political characteristics on the one hand and protection levels on the other. Early works offered a range of hypotheses explaining the structure of protection which primarily focused on tariff levels. The emergence of formal theories, i.e., the Grossman and Helpman (1994) model, provided later scholarship with testable hypotheses and solid micro-foundations.

Daniel Trefler (1993) estimated the impact of NTBs as measured by coverage ratios on American manufacturing imports in 1983. Accounting for the endogeneity of protection levels and trade flows, he simultaneously estimated the NTB and import equations. Trefler (1993) showed that import penetration levels led to increased protection levels. Furthermore, increased protection levels negatively affected import penetration. Regarding the determinants of protection, comparative advantage variables were highly significant. These variables were at least five times as important as business-related variables.

Following Trefler (1993), Jong-Wha Lee and Phillip Swagel (1997) also simultaneously estimated the determinants of NTBs, measured by coverage ratios, as trade flows. They used 1988 data on various political and economic determinants for a group of both developed and developing countries and found that several factors affected the incidence of NTBs. While NTBs tended to protect import-competing and declining

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47 Gawande & Krishna, supra note 9, at 214–16.
48 The coverage ratio measures the number of products or tariff lines that are subject to any type of NTBs.
50 Id. at 144.
51 Id. at 149.
52 Such as the increase in import penetration and number of exports.
53 Such as the number of firms, firm concentration, scale and capital stock.
54 Trefler, supra note 49, at 146–47; Gawande & Krishna, supra note 9, at 217.
56 As measured by the share of imports.
57 As measured by the change in wage per worker.
industries, which may be politically important by virtue of their size, also received protection. The observed trends suggest that tariffs and NTBs are used as complements and that NTBs can negatively affect imports.

Edward Mansfield and Marc Busch (1995) viewed protectionist policies as the result of the interaction of two sets of factors: (1) those that give rise to industry demands for protection, and (2) those that regulate the supply of protection. On the one hand, industry’s and other non-state actors’ lobbying activities influence trade policy. Certain macroeconomic conditions can spur these groups to demand greater protection. On the other hand, national interests and domestic institutions can regulate the provision of protection. Public officials’ degree of autonomy and insulation from pressure may affect policymaking processes.

Mansfield and Busch (1995) found that high unemployment rates and appreciated currencies were strongly linked with pronounced pressures for protection and high NTB incidence. The highest values of NTBs occurred in larger States where policymakers were autonomous and well-insulated from societal pressures, as in PR systems. Certain conditions thus make NTBs more likely, to wit:

[W]hen deteriorating macroeconomic conditions generate widespread demands for protection, a state is sufficiently large to give policymakers incentives to impose protection, and public officials are vested with the institutional capacity necessary to act on these preferences and resist pressures

58 Lee & Swagel, supra note 55, at 378.
59 As measured by the share of exported industry output.
60 Lee & Swagel, supra note 55, at 378.
61 As measured by the industry share of value added.
62 Lee & Swagel, supra note 55, at 378.
63 Id. at 379-80.
65 Id. at 724.
66 Such as rising unemployment and currency appreciation.
67 Mansfield & Busch, supra note 64, at 725–27.
68 Id. at 727–28.
69 Id. at 746.
70 As measured by trade coverage ratios.
71 Mansfield & Busch, supra note 64, at 737-39.
exerted by groups with an interest in lower trade barriers.  

Jyotika Saksena and Liam Anderson (2008) reevaluated Mansfield and Busch’s (1995) conclusion on the relationship between political insulation and the incidence of NTBs. They questioned the finding that political insulation from societal pressures, which occurs in PR systems, leads to higher protection. The implication is “that a state’s national interest is for protectionism . . . and that insulated politicians are able to pursue this because they are protected from societal pressures for free trade.” However, this position is counter-intuitive and improbable as shown by the need for treaties safeguarding free trade. Using a pooled time series and cross-sectional analysis, Saksena and Anderson (2008) found that: (1) NTBs are higher in larger states which are more dependent on trade; (2) NTBs are higher in countries where interest groups are institutionalized within the policy-making process; and (3) NTBs are higher in majoritarian systems than in PR systems.

Carolyn Evans (2009) considered the impact of a country’s electoral system, i.e., majoritarian/plurality or proportional system, on its trade policies. Evans (2009) hypothesized that legislators in majoritarian countries have a greater incentive to enact policies which favor their own districts, while legislators with a wide electoral base pursue more egalitarian policies. Using data from one hundred forty-seven countries from 1981 to 2004, Evans (2009) found that majoritarian countries had higher average tariffs than proportional system countries. These results supported the hypothesis that majoritarian countries were biased in favor of protection.

A subsequent study by Stephanie Rickard (2012), which focused on subsidies, found that this majoritarian bias is also present for NTMs. Looking at a sample of sixty-eight countries from 1990 to 2006, budgets for

72 Id. at 747.
73 Jyotika Saksena & Liam Anderson, Explaining Variation in the Use of NTBs in Developed Countries: The Role of Political Institutions, 45 INT’L POL. 475, 483 (2008).
74 Id. at 483.
75 For the years 1988, 1993, and 1996.
76 The authors used data from Austria, Australia, Canada, Finland, Iceland, Japan, New Zealand, Norway, Sweden, Switzerland, and the U.S.
77 Saksena & Anderson, supra note 73, at 491.
78 According to Evans (2009), a majoritarian/plurality country is characterized by a winner-take-all system. A district elects only one representative to the legislature. The winner is the one who receives the most votes. See Evans, supra note 30, at 280.
79 According to Evans (2009), proportional system countries have multi-seat constituencies, and the allocation of seats depends on the votes received by the parties. See id.
80 Id. at 293.
subsidies were found to be higher in majoritarian countries than in PR countries.81

D. Analytical Framework

The present study proceeds to examine the relationship between economic and political factors and the incidence of NTMs in ASEAN Member States. The Grossman and Helpman (1994), Persson and Tabellini (2003, 2004), and Grossman and Helpman (2005) models primarily guide this analysis.

Grossman and Helpman (1994) posit that the relationship between trade flows and NTM incidence depends on whether the affected industry is organized. In organized industries, (1) high demand for imports, i.e., a high import penetration ratio, is expected to be associated with a lower NTM incidence; and (2) a larger domestic output vis-à-vis import demand, i.e., lower import penetration ratio, is associated with a higher NTM incidence.82 Therefore, ASEAN Member States’ larger sectors are expected to be associated with high levels of NTM incidence. Sectors characterized by a high demand for imports are thus expected to be associated with low levels of NTM incidence.

Empirical studies suggest that economic size and unemployment are both positively related to NTM incidence.84 Larger economies wield greater market power, are more able to tailor trade policy to reap gains at the expense of smaller economies, and are less vulnerable to retaliation.85 Increased imports make it harder for displaced workers to secure employment, creating a demand for protection.86 As such, a positive relationship between the Member States’ economic size and NTM incidence is expected. Rising unemployment rates, meanwhile, are also predicted to coincide with greater NTM incidence.

There are opposing views on the relationship between NTM incidence and political institutions. Grossman and Helpman (2005) argue that plurality and majoritarian States will have a higher incidence of NTMs than PR States.87 Persson and Tabellini (2003, 2004), however, emphasize

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81 Rickard, Non-Tariff Protectionist Bias, supra note 30, at 782.
83 In terms of output and political influence.
84 See Mansfield & Busch, supra note 64, at 737-39; Saksena & Anderson, supra note 73, at 489; Trefler, supra note 49, at 146.
85 Mansfield & Busch, supra note 64, at 728; Saksena & Anderson, supra note 73, at 489.
86 Mansfield & Busch, supra note 64, at 727.
87 As confirmed by the empirical results of Saksena and Anderson (2008), Evans (2009), and Rickard (2012). See Evans, supra note 30, at 293; Rickard, Non-Tariff
the fact that the degree of political representation and accountability matters. Given such contradictory views, this paper is non-committal regarding the link between political institutions and NTM incidence.

III. DATA AND METHODOLOGY

The political economy of trade protection suggests that economic and political factors influence trade policy, and thus any examination of NTMs needs to account for both. Therefore, this study uses a variety of economic and political variables to ascertain the determinants of NTM incidence in the ASEAN region.

Analyses of NTMs are, however, complicated by the inherent endogeneity of these measures. This means that there is an underlying feedback mechanism between the level of NTMs and other variables. For example, a change in import penetration can generate increased demands for NTMs. A higher incidence of NTMs, in turn, may lead to fewer imports.\textsuperscript{88} Due to this endogeneity and to insufficient data, this paper focuses on merely determining possible correlations between NTM incidence and the explanatory variables rather than trying to establish any causal links.

A. Data and Sources

Table 1 gives an overview of the variables of interest in this paper along with the predicted relationships between NTM incidence and the various indicators. The variables can be subdivided into three groups based on their subject matter: (1) NTM incidence, (2) Economic Indicators, and (3) Political Indicators.

Table 1: Variables of Interest

<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
<th>Prediction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency Ratio</td>
<td>Percent of imported products that are regulated by NTMs</td>
<td></td>
</tr>
<tr>
<td>Import Penetration Ratio</td>
<td>Ratio of imports over total domestic demand</td>
<td>(-) organized (+)</td>
</tr>
<tr>
<td>Imports</td>
<td>Imports of goods and services, at constant 2010 US$</td>
<td>unorganized (+)</td>
</tr>
<tr>
<td>Exports</td>
<td>Exports of goods and services, at constant 2010 US$</td>
<td>(-)</td>
</tr>
<tr>
<td>Gross Domestic Product</td>
<td>At constant 2010 US$</td>
<td>(+)</td>
</tr>
<tr>
<td>Unemployment Rate</td>
<td>Total, % of total labor force (national estimate)</td>
<td>(+)</td>
</tr>
<tr>
<td>Agriculture, Value Added</td>
<td>Sectoral net output, as % of GDP</td>
<td>(+)</td>
</tr>
</tbody>
</table>

\textit{Protectionist Bias, supra} note 30, at 782; \textit{Saksena & Anderson, supra} note 73, at 491.

\textsuperscript{88} U.N. Trade Conference, \textit{supra} note 3, at 22.
Industry, Value Added Services, Value Added | Sectoral net output, as % of GDP | Sectoral net output, as % of GDP | (+) | (+)
--- | --- | --- | --- | ---
Plurality | Winner-take-all/first past the post | (+) or (-) | (+) or (-)
Proportional Representation | Based on the proportion of votes received by a party | (+) or (-)
Presidential | President’s tenure is independent of legislative confidence | (+) or (-)
Parliamentary | Governments require sustained legislative confidence | (+) or (-)

1. NTM Incidence

The focus of this analysis is on the incidence, or prevalence, of NTMs among the Member States as measured by frequency ratios. The frequency ratio is an inventory measure which shows the percentage of imported products that are regulated by at least one NTM:

\[ F_j = \frac{\sum D_i M_i}{\sum M_i} \times 100 \]

where \( D \) and \( M \) are dummy variables indicating the presence of NTMs and imports, respectively, with respect to goods \( i \) in country \( j \). As a simple inventory measure, this ratio does not reflect the relative value of the affected imports nor the effects of NTMs on trade flows and prices. However, it shows the incidence of NTMs on different product groups and indicates how these trends change from one period to the next, which suffices for purposes of this analysis.

Frequency ratios were generated for seven Member States from 2000 to 2015. NTM data was sourced from the Trade Analysis Information System (“TRAINS”) Global Database on NTMs. NTM information was disaggregated according to the six-digit Harmonized Commodity Description and Coding System (“HS Codes”). As this system is internationally standardized, the product classifications are uniform for all Member States, provided the same HS Codes version is used throughout the analysis. Imports data from 2000 to 2015 was sourced from the United Nations Commodity Trade (“UN COMTRADE”) database, which likewise disaggregated trade flows according to the six-digit HS Codes. However, imports were coded according to an earlier HS Codes version (i.e., H0) while the TRAINS NTM database used more recent versions (i.e., H3 and H4)

\( 90 \) Id. at 22–23.
\( 91 \) Id. at 23.
\( 92 \) Id. at 23.
\( 93 \) Due to data constraints, Brunei Darussalam, Lao People’s Democratic Republic, and Myanmar are excluded.
H4). The TRAINS NTM HS Codes were converted from either H3 or H4 to H0 in order to ensure consistency and comparability among the data.94

The six-digit HS Codes identify more than five thousand product groups. To make this analysis more tractable, these product codes were aggregated into six industry and twenty-one product group classifications.95 These classifications were adapted, with some modifications, from those of Mitsuyo Ando and Ayako Obashi (2010).96 Products were sorted into their respective categories based on their HS chapter codes. Frequency ratios were then estimated for each Member State on three levels: (1) on an overall (country) level; (2) on the six-level industry classification; and (3) on the more disaggregated 21-product group classification.

Table 2 below details the industry and product group classifications and their corresponding HS chapter codes.

Table 2: Industry Classifications

<table>
<thead>
<tr>
<th>Classification: Industries</th>
<th>Classification: Product Groups</th>
<th>HS Code (Chapter)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. Animals, plants, food</td>
<td>1. Live animals; edible animal products</td>
<td>HS01-05</td>
</tr>
<tr>
<td></td>
<td>2. Live plants; edible vegetables and fruits; vegetable products</td>
<td>HS06-14</td>
</tr>
<tr>
<td></td>
<td>3. Animal or vegetable fats and oils</td>
<td>HS15</td>
</tr>
<tr>
<td></td>
<td>4. Edible preparations; beverages; tobacco</td>
<td>HS16-24</td>
</tr>
<tr>
<td>II. Chemicals, chemical products</td>
<td>5. Chemicals and chemical products</td>
<td>HS28-38</td>
</tr>
<tr>
<td></td>
<td>6. Plastics and articles thereof; rubber and articles thereof</td>
<td>HS39-40</td>
</tr>
<tr>
<td>III. Light manufactured</td>
<td>7. Raw hides and skins; leather and articles thereof; fur skins and products</td>
<td>HS41-43</td>
</tr>
<tr>
<td></td>
<td>8. Wood and articles thereof; wood charcoal; cork and articles thereof; straw and esparto products</td>
<td>HS44-46</td>
</tr>
<tr>
<td></td>
<td>9. Pulp, paper, paperboard, and articles thereof; printing industry products</td>
<td>HS47-49</td>
</tr>
</tbody>
</table>

94 The conversion followed the conversion tables provided by the United Nations Statistics Division.

95 Mitsuyo Ando & Ayako Obashi, *The Pervasiveness of Non-Tariff Measures in ASEAN - Evidences from the Inventory Approach*, in *RISING NON-TARIFF PROTECTIONISM AND CRISIS RECOVERY* 27, 55 (Mia Mikic & Martin Wermelinger eds., 2010).

96 Id.
<table>
<thead>
<tr>
<th>Goods</th>
<th>10. Textile fibers; yarn; textile and woven fabrics; articles of apparel and clothing accessories</th>
<th>HS50-63</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>11. Footwear; headgear; umbrellas and sticks</td>
<td>HS64-67</td>
</tr>
<tr>
<td></td>
<td>12. Articles of stone, plaster, cement, asbestos and mica; ceramic products; glass and glassware</td>
<td>HS68-70</td>
</tr>
<tr>
<td></td>
<td>13. Natural or cultured pearls, precious or semi-precious stones</td>
<td>HS71</td>
</tr>
<tr>
<td>IV. Metals, metal products</td>
<td>14. Base metals and articles thereof</td>
<td>HS72-83</td>
</tr>
<tr>
<td></td>
<td>15. Machinery, mechanical appliances, and parts thereof; electrical machinery and equipment and parts thereof</td>
<td>HS84-85</td>
</tr>
<tr>
<td></td>
<td>16. Vehicles and parts thereof; aircraft, spacecraft, and parts thereof; ships, boats, floating structures</td>
<td>HS86-89</td>
</tr>
<tr>
<td></td>
<td>17. Optical, photographic, cinematographic, measuring, checking, precision, medical instruments; clocks, watches, parts thereof; musical instruments, parts and accessories thereof</td>
<td>HS90-92</td>
</tr>
<tr>
<td>VI. Other products</td>
<td>18. Minerals and mineral products</td>
<td>HS25-27</td>
</tr>
<tr>
<td></td>
<td>19. Arms, ammunition, parts and accessories thereof</td>
<td>HS93</td>
</tr>
<tr>
<td></td>
<td>20. Miscellaneous items</td>
<td>HS94-96</td>
</tr>
<tr>
<td></td>
<td>21. Art works, collectors’ pieces, antiques</td>
<td>HS97</td>
</tr>
</tbody>
</table>

2. Economic Indicators

The political economy of protection literature suggests that trade flows can affect the demand for protection from domestic producers.\(^97\) To account for this, import penetration ratios (“IPRs”) were generated for the Member States from 2000 to 2015, following the formula below\(^98\):

---


Figures for imports and exports were sourced from the UN COMTRADE database, while gross domestic product (“GDP”) data was taken from the World Development Indicators. In addition to the IPR, the relationships of imports and exports with NTM incidence were also examined. As with the frequency ratios, the trade indicators (IPRs, imports, and exports) were aggregated at the (1) country, (2) industry, and (3) product group levels. This permits frequency ratios to be examined vis-à-vis trade indicators at more disaggregated levels.

Following Mansfield and Busch (1995) and Saksena and Anderson (2008), the relation between a country’s relative size and NTM incidence was also considered. GDP levels from 2000 to 2015 were used as indicators of economic size. Trefler (1993) and Mansfield and Busch (1995) also suggest that unemployment levels are linked to protectionist policies. The influx of cheaper imports leads to a reduced demand for domestic products, which ultimately lead to higher unemployment rates. Thus, the link between unemployment rates, measured as a percentage of the total labor force and sourced from the World Development Indicators, and NTM incidence was included in this analysis.

Unlike in the United States, there is no detailed information on interest groups and their lobbying activities in the ASEAN Member States. Following Lee and Swagel (1997), data on sectoral value added, measured as a percentage of GDP, was used as a proxy for each sector’s level of political influence. This model assumes that larger sectors have more political influence. These indicators were also sourced from the World Development Indicators.

3. Political Indicators

Political institutions are considered as determinants of trade policy. One debate centers on whether PR systems are more conducive to free trade. As with Mansfield and Busch (1995), Evans (2009), and Rickard (2012), this study includes electoral indicators. Using data from the Database of Political Institutions 2015 (“DPI 2015”), Member States are classified as

\[ IPR = \frac{\text{Imports}}{GDP - \text{Exports} + \text{Imports}} \]

99 Mansfield & Busch, supra note 64, at 728-29; Saksena & Anderson, supra note 73, at 491.

100 Mansfield & Busch, supra note 64, at 746; Trefler, supra note 49, at 146.

101 This refers to (1) agricultural value added, (2) industry value added, and (3) services value added.

102 Lee & Swagel, supra note 55, at 378.

103 Lee and Swagel (1997) used industry employment as another proxy for political influence. Due to data constraints, this variable was excluded from the present study. See id. at 378.
adopting either the plurality system\textsuperscript{104} or the PR system\textsuperscript{105} in their legislative elections. As Table 3 shows, most of the Member States adopt a plurality system.

Table 3: Electoral Rules, 2015\textsuperscript{106}

<table>
<thead>
<tr>
<th></th>
<th>IDN</th>
<th>KHM</th>
<th>MYS</th>
<th>PHL</th>
<th>SGP</th>
<th>THA</th>
<th>VNM</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>PR</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>2</td>
</tr>
<tr>
<td>Plurality</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>5</td>
</tr>
</tbody>
</table>

The form of government likewise affects how societal preferences are reflected in policies. As a parliamentary government might find it easier to initiate or amend trade policies, a presidential system, with its separation of powers, might be more constrained.\textsuperscript{107} Thus, this study also examines the link between form of government and NTM incidence.\textsuperscript{108}

Table 4: Form of Government

<table>
<thead>
<tr>
<th></th>
<th>IDN</th>
<th>KHM</th>
<th>MYS</th>
<th>PHL</th>
<th>SGP</th>
<th>THA</th>
<th>VNM</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Presidential</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>3</td>
</tr>
<tr>
<td>Parliamentary</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>4</td>
</tr>
</tbody>
</table>

The variables for electoral rules and form of government were coded as categorical variables. In the case of electoral rules, plurality and PR systems were coded as 1 and 0, respectively. In the case of form of government, presidential and parliamentary governments were coded as 1 and 0, respectively.

B. Tests of Association

This study aims to determine whether there is a relationship between NTM incidence and a number of economic and political factors.

\textsuperscript{104} With winner-take-all/first past the post rules.

\textsuperscript{105} Where a candidate’s success hinges on the number of votes received by his or her party.

\textsuperscript{106} Where IDN is Indonesia, KHM is Cambodia, MYS is Malaysia, PHL is the Philippines, SGP is Singapore, THA is Thailand, and VNM is Vietnam.


\textsuperscript{108} Among the Member States, Vietnam was characterized by Cesi Cruz, Philip Keefer, and Carlos Scartascini (2016) as having an assembly-elected president. Considering that the term of office of Vietnam’s president remains independent of legislative will and confidence, Vietnam is classified for purposes of this study as a presidential system. \textit{See} Cesi Cruz et al., Inter-American Dev. Bank [IDB], \textit{The Database of Political Institutions 2015} (Jan. 2016), https://publications.iadb.org/en/database-political-institutions-2015-dpi2015.
characterizing the Member States. Firstly, Spearman’s correlation analyses were used to determine the association, if any, between NTM incidence and the economic indicators. Secondly, independent samples t-tests were used to analyze whether there were significant differences between the Member States based on their political characteristics.

Based on scatterplot analyses, the economic indicators exhibited monotonic, but non-linear, trends characterized by outliers vis-à-vis the frequency ratios. Given these data features, Spearman’s rho (ρ) correlation coefficients were estimated between the economic indicators and frequency ratios. Spearman’s rho (ρ) indicates both the strength and direction of the relationship between the variables. As a nonparametric measure of rank correlation, it is less sensitive to outliers and works well with non-linear data. In cases where multiple correlations were estimated, i.e., between frequency ratios and trade indicators, the coefficients were tested using the Bonferroni adjusted significance levels.

Spearman’s correlation requires variables that are measured on either the ordinal or continuous scale and is thus an inappropriate method for the political variables. Point-biserial correlation is also inappropriate for a number of reasons. First, an analysis of box plots indicated that there were outliers in the groups of political categories for the disaggregated levels of frequency ratios. Second, Levene’s test of equality of variances showed that there was no homogeneity of variances in any of the groups of political categories. At the country-level, there was homogeneity of variances only among the category of electoral rules, (p = 0.076). Finally, Shapiro-Wilk’s test assessed that all three levels of frequency ratios were not normally distributed for either set of political indicators (p < 0.05).

Instead of a direct test of association, independent samples t-tests were used for the political variables. The aim was to determine whether the mean frequency ratios between the different political categories, such as between parliamentary and presidential governments, were significantly different. Given the lack of homogeneity in variances, the unequal variance or Welch t-test was adapted.

IV. DETERMINANTS OF ASEAN PROTECTION

This section begins with an overview of NTM incidence in the region. Section IV.B describes the results of the correlation analyses and independent samples t-tests. Section IV.C analyzes and discusses these results within the context of the existing literature’s theories and predictions.

A. ASEAN NTM Incidence

NTM incidence can be considered by looking at both the intensity of regulation and the character of regulated goods. By identifying the highly

109 Country-level frequency ratios had no significant outliers.
regulated goods, heavily regulated industries may also be identified. This identification is the necessary first step to take in an analysis of NTM determinants.

Figures 1 and 2 illustrate the trends in the mean values of the region’s frequency ratios from 2000 to 2015. Figure 1 shows the mean values of the country-level frequency ratios. The region’s frequency ratios have been steadily rising from 0.51 in 2000 to 0.87 in 2015. In 2000, NTMs affected on average a little over half of the region’s imports. By 2015, however, almost 90% of the region’s imports were regulated by at least one NTM.

Figure 2 shows that animals, plants and food products have the highest mean frequency ratios among the six industry categories. The frequency ratios rose from 0.72 in 2000 to 0.98 in 2015. Metals and metal products have the lowest mean frequency ratios, at 0.79 in 2015.110

Figure 1: Mean Frequency Ratios, 2000-2015111

110 In 2000, the industry with the lowest mean frequency ratios was metals, followed by others, chemicals, light manufactured goods, machineries, and animals, plants and food. In 2015, metals still had the lowest mean frequency ratios, followed by others, machineries, chemicals, light manufactured goods, and animals, plants and food.

111 Based on the author’s calculations.
B. Results

Spearman’s rank correlation analyses were run to assess the relationship between frequency ratios and: (1) imports, exports and IPRs; (2) agricultural value added, industry value added, and services value added, all expressed as a percentage of total GDP; (3) GDP; and (4) unemployment rate, expressed as a percentage of total employment.\textsuperscript{113} Except for GDP, there were statistically significant findings for the relationship between the economic indicators and frequency ratios.

Trade indicators were generally positively correlated with frequency ratios. This correlation was weak at the country-level, as shown in Table 5:

\textsuperscript{112} Based on the author’s calculations.

\textsuperscript{113} For brevity, only notable results are presented.
Table 5: Trade Indicators, Country-Level

<table>
<thead>
<tr>
<th></th>
<th>Frequency Ratios</th>
<th>Imports</th>
<th>Exports</th>
<th>IPR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency Ratios</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Imports</td>
<td>0.372* (0.000)</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exports</td>
<td>0.292* (0.011)</td>
<td>0.981* (0.000)</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>IPR</td>
<td>0.243 (0.060)</td>
<td>0.555* (0.000)</td>
<td>0.531* (0.000)</td>
<td>1</td>
</tr>
</tbody>
</table>

* Coefficients were tested against the Bonferroni adjusted significance level.

Among the six industries, the strongest positive correlations between trade indicators and frequency ratios were found in (1) animals, plants, and food and (2) other products. Tables 6 and 7 present the correlation coefficients between trade indicators and frequency ratios within those industries.

Table 6: Animals, Plants, Food

<table>
<thead>
<tr>
<th></th>
<th>Frequency Ratios</th>
<th>Imports</th>
<th>Exports</th>
<th>IPR</th>
</tr>
</thead>
<tbody>
<tr>
<td>FR</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Imports</td>
<td>0.347* (0.001)</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exports</td>
<td>0.110 (1.000)</td>
<td>0.834* (0.000)</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>IPR</td>
<td>0.396* (0.000)</td>
<td>0.220 (0.134)</td>
<td>0.007 (1.000)</td>
<td>1</td>
</tr>
</tbody>
</table>

Coefficients were tested against the Bonferroni adjusted significance level. Asterisked coefficients are significant. Observations = 108

114 Based on the author’s calculations.
115 Based on the author’s calculations.
Table 7: Other Products

<table>
<thead>
<tr>
<th></th>
<th>Frequency Ratios</th>
<th>Imports</th>
<th>Exports</th>
<th>IPR</th>
</tr>
</thead>
<tbody>
<tr>
<td>FR</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Imports</td>
<td>0.350* (0.001)</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exports</td>
<td>-0.008 (1.000)</td>
<td>0.818*</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>IPR</td>
<td>0.332* (0.003)</td>
<td>0.567*</td>
<td>0.310*</td>
<td>1</td>
</tr>
</tbody>
</table>

Coefficients were tested against the Bonferroni adjusted significance level. Asterisked coefficients are significant. Observations = 108

Tables 8 to 11 present the correlation coefficients for the product groups with the strongest correlation coefficients. Among such product groups, animals and edible animal products display the strongest degrees of association between frequency ratios, imports, and the IPR. None of the trade indicators registered a statistically significant relationship with frequency ratios for pearls, precious or semi-precious stones.

Table 8: Animals, Edible Animal Products

<table>
<thead>
<tr>
<th></th>
<th>Frequency Ratios</th>
<th>Imports</th>
<th>Exports</th>
<th>IPR</th>
</tr>
</thead>
<tbody>
<tr>
<td>FR</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Imports</td>
<td>0.666* (0.000)</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exports</td>
<td>0.094 (0.000)</td>
<td>0.516*</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>IPR</td>
<td>0.420* (0.000)</td>
<td>0.571*</td>
<td>0.328*</td>
<td>1</td>
</tr>
</tbody>
</table>

Coefficients were tested against the Bonferroni adjusted significance level. Asterisked coefficients are significant. Observations = 112

---

116 Based on the author’s calculations.

117 The correlation coefficients are: imports with \( \rho = 0.101, p = 1 \); exports with \( \rho = 0.049, p = 1.000 \); and IPR with \( \rho = 0.089, p = 1.000 \).

118 Based on the author’s calculations.
Table 9: Textiles, Apparel, Clothing Accessories

<table>
<thead>
<tr>
<th></th>
<th>Frequency Ratios</th>
<th>Imports</th>
<th>Exports</th>
<th>IPR</th>
</tr>
</thead>
<tbody>
<tr>
<td>FR</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Imports</td>
<td>0.457*</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.000)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exports</td>
<td>0.334*</td>
<td>0.729*</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.002)</td>
<td>(0.000)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IPR</td>
<td>-0.102</td>
<td>-0.133</td>
<td>0.019</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>(1.000)</td>
<td>(0.970)</td>
<td>(1.000)</td>
<td></td>
</tr>
</tbody>
</table>

Coefficients were tested against the Bonferroni adjusted significance level. Asterisked coefficients are significant. Observations = 112

Table 10: Stone, Ceramics, Glass

<table>
<thead>
<tr>
<th></th>
<th>Frequency Ratios</th>
<th>Imports</th>
<th>Exports</th>
<th>IPR</th>
</tr>
</thead>
<tbody>
<tr>
<td>FR</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Imports</td>
<td>0.451*</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.000)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exports</td>
<td>0.179</td>
<td>0.748*</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.350)</td>
<td>(0.000)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IPR</td>
<td>0.375*</td>
<td>0.273*</td>
<td>-0.078</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>(0.000)</td>
<td>(0.022)</td>
<td>(1.000)</td>
<td></td>
</tr>
</tbody>
</table>

Coefficients were tested against the Bonferroni adjusted significance level. Asterisked coefficients are significant. Observations = 112

---

119 Based on the author’s calculations.
120 Based on the author’s calculations.
Table 11: Vehicles, Parts Thereof

<table>
<thead>
<tr>
<th></th>
<th>Frequency Ratios</th>
<th>Imports</th>
<th>Exports</th>
<th>IPR</th>
</tr>
</thead>
<tbody>
<tr>
<td>FR</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Imports</td>
<td>0.229 (0.091)</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exports</td>
<td>0.434* (0.000)</td>
<td>0.906* (0.000)</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>IPR</td>
<td>0.237 (0.072)</td>
<td>0.275* (0.020)</td>
<td>0.138 (0.887)</td>
<td>1</td>
</tr>
</tbody>
</table>

Coefficients were tested against the Bonferroni adjusted significance level. Asterisked coefficients are significant. Observations = 112

Frequency ratios were generally negatively associated with agricultural and industrial value added. Meanwhile, services value added were positively associated with frequency ratios. At both the country and industry levels, the weakest and only insignificant correlations were for agriculture, while the strongest were for industry. Table 12 presents the country-level correlation coefficients between frequency ratios and sectoral value added. In general, the correlation coefficients between frequency ratios on the one hand and industry and services value added on the other were statistically significant at the product-group level, with the highest correlation occurring in the animals and edible animal products group. Table 13 shows the correlation results for the animals and edible animal products group.

121 Based on the author’s calculations.

122 These results were not obtained in the following: (1) animals and edible animal products, with a moderate negative correlation between agricultural value added and frequency ratios; (2) plants, vegetables and fruits, with statistically insignificant results; (3) textiles, apparel and clothing accessories, with statistically insignificant results; and (4) arms and ammunition, with a weak negative correlation between agricultural value added and frequency ratios.
As previously mentioned, the relationship between frequency ratios and GDP was not statistically significant. This indicates that the hypothesis of lack of association between these variables cannot be rejected. As the country-level, there was a weak positive correlation between NTM incidence and GDP, \(\rho = 0.033, p = 0.733\). At the product group level, there were statistically significant results in only 3 instances: (1) a weak positive correlation for animals and edible animal products, \(\rho = 0.192, p = 0.042\); (2) a weak positive correlation for textiles, apparel and clothing accessories, \(\rho = 0.309, p = 0.001\); and (3) a negative correlation for art works, \(\rho = -0.420, p < 0.005\).

The results for unemployment were statistically significant yet contrary to the predicted outcome. Unemployment was negatively correlated with frequency ratios. This correlation was moderately strong at

---

Table 12: Sectoral Value Added, Country-Level

<table>
<thead>
<tr>
<th></th>
<th>Frequency Ratios</th>
<th>Agr.</th>
<th>Ind.</th>
<th>Svcs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>FR</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agr.</td>
<td>-0.088</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(1.000)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ind.</td>
<td>-0.524*</td>
<td>-0.113</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.000)</td>
<td>(1.000)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Svcs.</td>
<td>0.400*</td>
<td>-0.813*</td>
<td>-0.299*</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.014)</td>
<td></td>
</tr>
</tbody>
</table>

Coefficients were tested against the Bonferroni adjusted significance level. Asterisked coefficients are significant. Observations = 102

Table 13: Animals, Edible Animals

<table>
<thead>
<tr>
<th></th>
<th>Frequency Ratios</th>
<th>Agr.</th>
<th>Ind.</th>
<th>Svcs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>FR</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agr.</td>
<td>-0.410*</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.000)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ind.</td>
<td>-0.306*</td>
<td>-0.113</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.011)</td>
<td>(1.000)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Svcs.</td>
<td>0.612*</td>
<td>-0.813*</td>
<td>-0.299*</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.014)</td>
<td></td>
</tr>
</tbody>
</table>

Coefficients were tested against the Bonferroni adjusted significance level. Asterisked coefficients are significant. Observations = 102

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123 Based on the author’s calculations.
124 Based on the author’s calculations.
the country-level, \( \rho = -0.430, p < 0.005 \). This negative relation became stronger at industry level, notably for (1) animals, plants and food (\( \rho = -0.587, p < 0.005 \)) and (2) chemicals and chemical products (\( \rho = -0.525, p < 0.005 \)). Three out of the four product groups under animals, plants and food displayed strong negative correlations as well: (1) plants, vegetables and fruits (\( \rho = -0.528, p < 0.005 \)); (2) animals or vegetable fats and oils (\( \rho = -0.552, p < 0.005 \)); and (3) edible preparations, beverages and tobacco (\( \rho = -0.512, p < 0.005 \)).

Independent samples t-tests (Welch test) were used to assess the differences in the frequency ratios among the Member States under different (1) electoral rules, i.e., either plurality or PR, and (2) forms of government, i.e., either presidential or parliamentary.

**Figure 3** illustrates the distribution of frequency ratios within the different categories of electoral rules, while **Table 14** provides the relevant descriptive statistics. Member States under the plurality system appear to have higher frequency ratios than those under the PR system. The median is noticeably higher in plurality Member States (0.94 vs. 0.41). However, frequency ratios in PR systems display less variability.

125 For brevity, only notable results are presented.

126 Based on the author’s calculations.
Table 14: Electoral Rules, Summary Statistics

<table>
<thead>
<tr>
<th></th>
<th>Plurality</th>
<th>PR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>0.73</td>
<td>0.53</td>
</tr>
<tr>
<td>Min.</td>
<td>0.00</td>
<td>0.21</td>
</tr>
<tr>
<td>Q1</td>
<td>0.40</td>
<td>0.28</td>
</tr>
<tr>
<td>Median</td>
<td>0.94</td>
<td>0.41</td>
</tr>
<tr>
<td>Q3</td>
<td>0.99</td>
<td>0.83</td>
</tr>
<tr>
<td>Max.</td>
<td>1.00</td>
<td>1.00</td>
</tr>
</tbody>
</table>

The results of the independent samples t-test for electoral rules at country-level are presented in Table 15. The mean frequency ratios in PR countries were lower (0.529 ± 0.297) than they were in plurality countries (0.735 ± 0.346). This was a statistically significant difference of -0.206 (95% confidence interval of -0.336 to -0.076), t(66.155) = -3.155, p = 0.0002. Likewise, frequency ratios were statistically significantly higher in plurality systems at both the industry and product group levels except where this difference was not significant.128

Table 15: Two-Sample T-Test with Unequal Variances: Electoral Rules

<table>
<thead>
<tr>
<th>Group</th>
<th>Obs.</th>
<th>Mean</th>
<th>Std. Err.</th>
<th>Std. Dev.</th>
<th>[95% Conf. Interval]</th>
</tr>
</thead>
<tbody>
<tr>
<td>PR</td>
<td>32</td>
<td>.529</td>
<td>.052</td>
<td>.297</td>
<td>.422 - .636</td>
</tr>
<tr>
<td>Plurality</td>
<td>80</td>
<td>.735</td>
<td>.039</td>
<td>.346</td>
<td>.658 - .812</td>
</tr>
<tr>
<td>combined</td>
<td>112</td>
<td>.676</td>
<td>.033</td>
<td>.344</td>
<td>.612 - .741</td>
</tr>
<tr>
<td>diff</td>
<td>112</td>
<td>.206</td>
<td>.065</td>
<td>.336</td>
<td>-.336 - -.076</td>
</tr>
</tbody>
</table>

Ha: diff ! = 0  
Pr(|T| > |t|) = 0.002  
Satterthwaite’s deg. of freedom = 66.155

Figure 4 shows the distribution of frequency ratios within Member States in the cases of presidential and parliamentary forms of government. Table 16 provides the descriptive statistics. While parliamentary governments have a higher median frequency ratio (0.94 vs. 0.62), frequency ratios in presidential governments display greater variability.

127 Based on the author’s calculations.
128 At the industry level, for light manufactured goods, and at the product group level, for (1) natural or cultured pearls, precious or semi-precious stones, and (2) minerals and mineral products.
129 Based on the author’s calculations.
The results of the independent samples t-test for forms of government, at the country-level, are presented in Table 17. The mean frequency ratios for parliamentary states were higher (0.747 ± 0.298) than those in presidential states (0.582 ± 0.381). This represents a significant difference of 0.165 (95% confidence interval of 0.033 to 0.297), t(86.525) = 2.490, p = 0.015.

Table 16: Form of Government, Summary Statistics

<table>
<thead>
<tr>
<th></th>
<th>Parliamentary</th>
<th>Presidential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>0.75</td>
<td>0.58</td>
</tr>
<tr>
<td>Min.</td>
<td>0.28</td>
<td>0.00</td>
</tr>
<tr>
<td>Q1</td>
<td>0.41</td>
<td>0.24</td>
</tr>
<tr>
<td>Median</td>
<td>0.94</td>
<td>0.62</td>
</tr>
<tr>
<td>Q3</td>
<td>0.99</td>
<td>0.95</td>
</tr>
<tr>
<td>Max.</td>
<td>1.00</td>
<td>1.00</td>
</tr>
</tbody>
</table>

Based on the author’s calculations.
Frequency ratios were likewise significantly higher in parliamentary states at the industry\textsuperscript{133} and product group\textsuperscript{134} levels. The opposite result, namely that frequency ratios were higher in presidential systems than in parliamentary ones, was obtained in two cases. First, for the light manufactured goods industry,\textsuperscript{135} frequency ratios were higher in presidential states\textsuperscript{136} than in parliamentary states.\textsuperscript{137} The second instance was for the textiles, apparel and clothing accessories product group,\textsuperscript{138} where frequency ratios in presidential states were likewise higher\textsuperscript{139} than in parliamentary states.\textsuperscript{140}

### C. Summary of Results

For the Spearman’s correlation analyses, only GDP registered results that were not statistically significant for all the frequency ratio levels. In general, there was a weak positive correlation between GDP and frequency ratios. The general trends between frequency ratios and the other economic indicators are: (1) a positive relation with trade flows; (2) a negative relation with the agricultural and industrial sectors; (3) a positive...

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\textsuperscript{132} Based on the author’s calculations.

\textsuperscript{133} Except for (1) metals and metal products, and (2) other products, which produced statistically insignificant outcomes.

\textsuperscript{134} Except for (1) plastics and rubber, (2) pulp, paper products and printing industry products, (3) footwear, headgear, umbrellas and sticks, (4) stone, plaster, cement, ceramics and glassware, (5) pearls, precious or semi-precious stones, (6) base metals, and (7) mineral products, which produced statistically insignificant outcomes.

\textsuperscript{135} There was a non-statistically significant difference of \(-0.087\) (95% confidence interval of \(-0.217\) to \(0.042\)), \(t(105.999) = -1.340, p = 0.183\).

\textsuperscript{136} With an estimated mean of 0.752 and standard deviation of 0.276.

\textsuperscript{137} With an estimated mean of 0.665 and standard deviation of 0.402.

\textsuperscript{138} There was a non-statistically significant difference of \(-0.129\) (95% confidence interval of \(-0.277\) to \(0.020\)), \(t(107.363) = -1.720, p = 0.088\).

\textsuperscript{139} With an estimated mean of 0.783 and standard deviation of 0.369.

\textsuperscript{140} With an estimated mean of 0.654 and standard deviation of 0.422.
relation with the services sector; and (4) a negative relation with unemployment.

Based on the independent samples t-tests, frequency ratios are higher in Member States under (1) plurality electoral rules and (2) parliamentary systems.

D. Discussion

At the outset, the endogeneity of protection should be emphasized. While rising imports can lead to a demand for protection, protectionism can result in reduced imports.141 This feedback mechanism may explain the weak positive correlation between imports and import penetration on the one hand and frequency ratios on the other.

The political economy literature predicts that protection will be higher for industries with low or inelastic import demand, where deadweight costs are minimized.142 Additionally, protection will be higher for larger sectors, i.e., those whose domestic output is greater than import demand. These sectors also have more to gain from protection. With protectionist policies, they can increase their profits from the domestic market.143 Additionally, larger industries tend to have more political power.144 In theory, governments prefer to deviate from the free trade norm to favor large industries with low import demand elasticity. As such, there is a predicted positive correlation between sectoral value added, which is also used as a proxy for political influence, and frequency ratios.

The services sector is currently the largest in ASEAN, followed by industry. For Indonesia, Malaysia, the Philippines, and Thailand, the shift from agriculture to industry which began during the 1950s and 1960s continued during the 1980s and thereafter.145 While agriculture made up an estimated quarter of total output for those countries in 1980, by 2015 it merely contributed between 8 to 14% of their total GDP.146 The structural change is more dramatic in the newer Member States. Before Vietnam joined ASEAN, agriculture comprised more than a third of its GDP. By 2015, agriculture represented only 16% of its GDP.147 Agriculture’s share in

141 Trefler, supra note 49, at 143.
142 See Findlay & Wellisz, supra note 6, at 224; Grossman & Helpman, supra note 20, at 842; Hillman, supra note 12, at 1184-85.
143 Grossman & Helpman, supra note 20, at 842.
144 Lee & Swagel, supra note 55, at 378.
147 Id.
the GDP of Cambodia dropped from 50% in 1995 to just 28% in 2015.\textsuperscript{148}

The decreasing agricultural labor force also reflects the declining economic importance of agriculture. Agriculture currently ranks second\textsuperscript{149} to services in terms of employment in the region.\textsuperscript{150}

As noted in Table 12, services value added is indeed positively associated with NTM incidence. However, the expected positive correlation did not materialize in the case of industry. Nevertheless, it can be argued that this result was to be expected given the significance of trans-boundary production network trade in ASEAN.

Since the 1990s, the composition of traded goods in the region has shifted from primary and natural-resource intensive goods to manufactures such as electronics, machineries, and transport equipment.\textsuperscript{151} From 1992 to 2006, the region’s exports of parts and components increased from 29% to 44% of total manufacturing exports.\textsuperscript{152} Today, trade in parts and components as a share of GDP “is among the highest in the world in the ASEAN.”\textsuperscript{153}

Industrial sectors such as mining and manufacturing are among the top importers of intermediate\textsuperscript{154} goods.\textsuperscript{155} In this context, the assumption that profit-maximizing large sectors use their political power to secure protection is inapplicable. Instead, it is more rational for the industrial sector to lobby for lower prices of their imported inputs. Additionally, the growth of this sector depends on the free flow of goods. Policies which hinder and distort trade have the potential to raise production costs. Thus, the negative

\textsuperscript{148} Id.

\textsuperscript{149} Except for Malaysia, where agriculture has the lowest labor force, and Cambodia, where 54% of total employment is still in agriculture. Id.

\textsuperscript{150} Id.


\textsuperscript{153} Asian Dev. Bank [ADB], \textit{Emerging Asian Regionalism: A Partnership for Shared Prosperity}, at 64 (June 2008).

\textsuperscript{154} Intermediate goods are products which are used as inputs in production, i.e., within the context of production networks.

correlation between industrial value added and frequency ratios can reflect either or both of the following: (1) As trans-boundary production network trade gains in prominence, industrial firms demand lower barriers to trade, which translates to a lower NTM incidence; and (2) Rising NTM incidence can increase the costs of trade and ultimately increase the industrial sector’s production costs.

The strongest association between services value added and NTM incidence was in the animals, plants, and food industry, specifically for the animals and edible animal products group. This is interesting as it suggests that the growth of the services sector, and the corresponding decline of the agricultural sector, is associated with the rise of NTM incidence in agricultural products. However, as agriculture’s diminished economic and political importance suggests that it is not well-placed to secure protection, the rise of NTM incidence in agricultural products seems counter-intuitive. Nevertheless, an examination of agricultural import trends may illuminate this trend.

As Table 18 below shows, agricultural imports make up only a fraction of the Member States’ total merchandise imports. This low demand for agricultural imports translates into lower deadweight losses and social costs arising from distortionary trade policies. Thus, as a declining industry, agriculture is a “natural candidate” for protection. Consequently, an increased demand for imports may create a demand for protection, which is no longer politically costly for politicians to grant. In other words, the shift of import demand from primary agricultural to other commodities makes any potential costs of protectionist policies less burdensome to both the politically influential industrial producers and the general consumers. The services sector, which employs a greater portion of the population whose incomes are no longer dependent on agricultural prices, is less likely to offer any effective opposition. Thus, NTM incidence is highest in agriculture, the seemingly least influential sector.

156 See Lee & Swagel, supra note 55, at 378.
157 HILLMAN, supra note 5, at 26.
159 Anderson, supra note 159, at 232-34.
Table 18: Agricultural Imports (as a Percentage of Total Imports)160

<table>
<thead>
<tr>
<th>Country</th>
<th>2006</th>
<th>2010</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cambodia</td>
<td>6.8</td>
<td>6.6</td>
<td>5</td>
</tr>
<tr>
<td>Indonesia</td>
<td>11.5</td>
<td>12.4</td>
<td>12.5</td>
</tr>
<tr>
<td>Malaysia</td>
<td>6.3</td>
<td>9.9</td>
<td>9.7</td>
</tr>
<tr>
<td>Philippines</td>
<td>8.1</td>
<td>12.1</td>
<td>12.8</td>
</tr>
<tr>
<td>Singapore</td>
<td>3.2</td>
<td>3.6</td>
<td>4</td>
</tr>
<tr>
<td>Thailand</td>
<td>6</td>
<td>7</td>
<td>7.1</td>
</tr>
<tr>
<td>Vietnam</td>
<td>7.8</td>
<td>13.2</td>
<td>11.5</td>
</tr>
</tbody>
</table>

These structural changes may also shed light on the correlation between frequency ratios and unemployment rate, which is contrary to expectations. The predicted positive relation between frequency ratios and unemployment rate is based on the assumed negative impact of trade on the domestic labor market. Specifically, imports and domestic products are presumed to be direct competitors. As a result, “workers who are displaced by imports will find it progressively more difficult to obtain alternative employment, and when they do, downward pressure will be placed on their wages.”161

The wholesale applicability of this assumption to ASEAN is doubtful given the prominence of trans-boundary production network trade in the region. Trade in intermediate products is not antithetical to domestic production. On the contrary, it is a vital part of today’s domestic production processes. As such, there is less danger of the displacement of domestic labor as a result of rising trade flows. Consequently, unemployment does not stimulate a demand for protection.

The negative correlation between unemployment and NTM incidence is therefore not surprising within this context. Given transboundary production network trade, the labor force is more interested in trade liberalization rather than protection. Specifically, displaced workers are more interested in stimulating domestic production, notably in labor-intensive sectors involved in transboundary production, and lobby for lower trade costs.

The correlation results for GDP and frequency ratios were consistent with theoretical predictions. As developing economies, the Member States have relatively little market power compared with their main trade partners, i.e., the United States, China, Japan, and the European Union.162 This makes

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161 Mansfield & Busch, supra note 64, at 725–26.

162 Ass’n of Southeast Asian Nations [ASEAN] Secretariat, ASEAN Yearbook on
The Member States vulnerable to retaliatory acts from their larger partners. As such, the use of trade policy as an instrument of terms-of-trade manipulation is not a viable strategy. Thus, NTM incidence in the region has no statistically significant relationship with the economic size of the Member States.

The results from the independent samples t-test on electoral rules are consistent with Saksena and Anderson (2008). Plurality Member States have higher frequency ratios than PR Member States. As plurality Member States are also characterized by smaller electoral districts, electoral success hinges on developments at the district, rather than national, level. This suggests that plurality Member States are less insulated from, and more responsive to, their constituencies' demands for protection. Thus, politicians have an incentive to cater to specific voters, i.e., industries within their constituencies.

The nature of NTMs may also explain why plurality systems are associated with higher frequency ratios. Plurality systems are expected to incentivize good behavior on the part of politicians. Thus, plurality systems should coincide with lower frequency ratios. However, NTMs are inherently opaque and complex, and it is difficult to identify and examine the effects of all the current NTMs within a given country. Ordinarily, the lower electoral accountability of parliamentary systems is coupled with an incentive for politicians to pursue policies and programs which benefit such economic interest. Thus, these political parties and their legislators in Parliament can pursue policies and programs which benefit such economic interest. Thus, these political parties and their legislators in Parliament can pursue policies and programs which benefit such economic interest.
institutions potentially make the governments more responsive to, and capable of meeting, industries’ demands for protection.

Several insights can be gleaned from these results. Contrary to the predicted outcome, a sector’s economic and political importance is not always positively linked with NTM incidence. The negative correlation between industrial value added and frequency ratios reflects this outcome. Industrial sectors, given their involvement in transboundary production network trade, are more interested in lower trade costs. Consequently, labor is also interested in lowering trade costs, as this stimulates the growth of labor-intensive industries which are part of production networks. Thus, industry growth is linked with falling, rather than rising, frequency ratios.

The correlation results also support the notion that declining sectors do tend to receive greater protection. The rising incidence of NTMs on agricultural products noticeably coincided with the decline of the agricultural sector. Thus, the underlying socioeconomic context does matter, as this shapes preferences either for, or against, free trade. In this specific case, the agricultural sector retains a preference for protection. The structural changes of recent decades have effectively reduced the social and political costs of protection for agriculture.

The ASEAN region’s political institutions incentivize politicians to respond and cater to these preferences. In ASEAN Member States, electoral success is based on the legislators’ ability to cater to narrow, district-specific interests. Parliaments which enjoy a large amount of power and discretion are likewise better able to collude with each other to enact their preferred policies and legislation. In other words, (1) the socioeconomic context results in preferences for certain types of policy, and (2) political institutions determine how well these preferences are reflected in laws and policies.

V. SUMMARY

This paper aimed to determine whether there is a link between political and economic factors and NTM incidence in the ASEAN Member States. In general, frequency ratios have been positively related to trade flows and the growth of the services sector. They have also been negatively related to unemployment and the value added of the agricultural and industrial sectors. Member States with plurality electoral systems and parliamentary governments also displayed higher frequency ratios than PR and presidential Member States.

These results suggest that economic and political factors impact Member States’ trade policy, implying that regional-level commitments designed to address NTMs might be insufficient and ineffective if these underlying domestic factors remain unaccounted for. Thus, a re-examination of the form and content of the ASEAN region’s NTM-related commitments could be in order.

Data limitations restricted this study to an analysis of correlations between NTM incidence and the economic and political variables. An
investigation of the causal links between these variables would shed even more light on the policy-making process. This study was further limited by its use of data sectoral value added as proxies for political influence. An in-depth examination of sectoral characteristics and lobbying activities vis-à-vis NTM incidence may provide greater insights into the link between a sector’s political power and the question of protection. A more fine-toothed classification of Member States based on their political characteristics may likewise yield additional insights. Unfortunately, these economic and political statistics from the ASEAN region are still lacking.

167 Such as market concentration, number of firms per industry, and geographic distribution of firms.

168 Such as constituency, district sizes, and types of presidential and parliamentary systems.