

Business Perspectives on Obstacles to Trade: Evidence from New Survey Data

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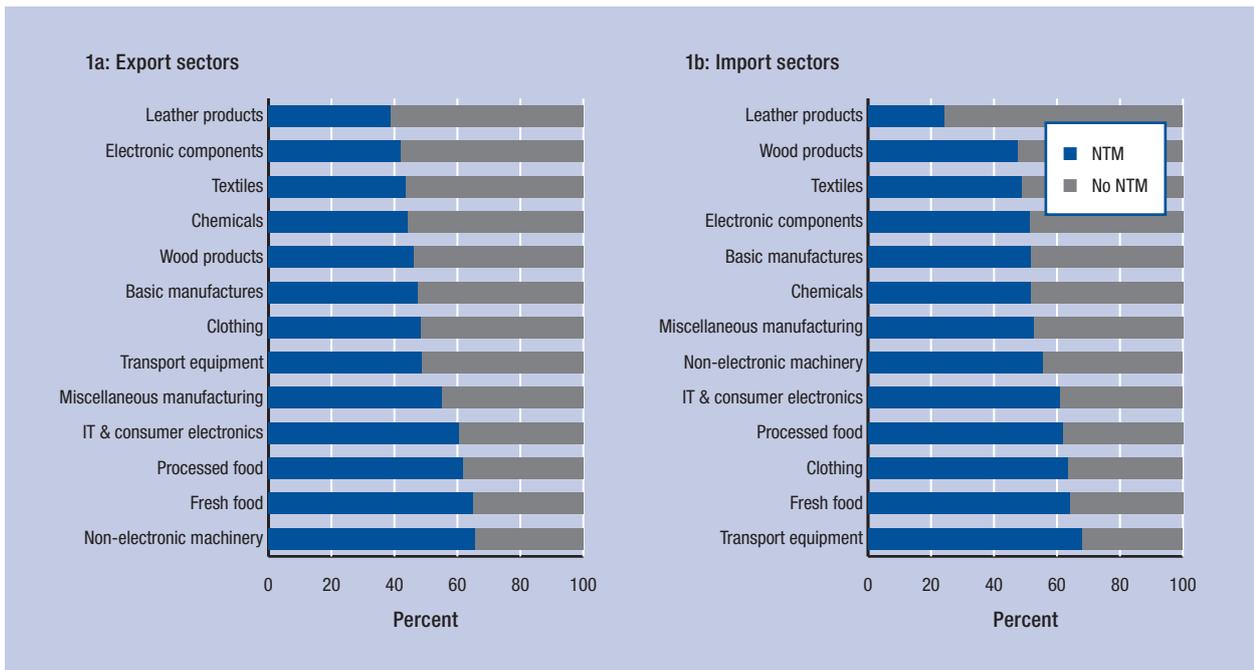
Despite the global decline of tariff rates to historically low levels, trade is far from being free. Other factors, such as technical regulations, product standards, and customs procedures, still prevent the limitless exchange of goods across countries. Such non-tariff measures (NTMs) are less visible and more complex than measures of tariff protection, and have proved particularly burdensome for companies in developing countries, which sometimes do not have the capacity to support their firms in complying with the imposed rules and regulations. The business sector as well as trade policymakers are therefore more and more concerned about the fact that NTMs can pose real obstacles to trade. Any preferential market access that firms from developing countries might enjoy on international markets could easily vanish without delivering the desired effect.

Existing studies use data at the country level but do not capture the experiences of exporters in their daily operations.¹ Recent analyses of firm-level datasets have convincingly shown, however, that companies differ with respect to their international competitiveness, even when operating in the same country and sector. Whether a manager considers a measure to be burdensome or not depends to a large extent on the situation of the particular firm. The recent literature provides robust evidence that only the most productive firms within an industry are able to serve “difficult” markets that are geographically remote and that feature unfavorable economic conditions or a lower level of institutional quality.² A similar reasoning applies to firms’ experience with NTMs, thus the perception of such NTMs as burdensome in export markets may eventually be subject to firm-specific characteristics.

Following this line of argumentation, we will present new evidence from recently conducted firm-level surveys on NTMs.³ As part of a broader initiative of the International Trade Centre (ITC), in these surveys, trading companies in developing countries are asked about the barriers they face in their daily business, as well as the reasons that firms experience a measure as burdensome. The dataset is unique in that it provides comparable and consistent cross-country and cross-sector information on firms from developing countries as well as, at the product-level, the measures these firms perceive as barriers when doing business in their foreign markets. We focus on 12 countries for which data have already been fully processed and harmonized.⁴ In each country, between 150 and 1,000 telephone screening and up to 300 face-to-face interviews were carried out, sometimes representing the entire population of trading firms. The analyses in this chapter focus on information obtained during the telephone-screening stage, but are complemented with information obtained during the face-to-face stage.

This study was conducted under the supervision of Mondher Mimouni, Chief Ad-Interim of ITC’s Market Analysis and Research Section. The author would also like to thank her colleagues for their valuable contributions to this chapter.

Figure 1: Shares of NTM-affected firms by export and import sector



Source: ITC's NTM survey data; author's calculations.

LINKING NON-TARIFF MEASURES TO TRADE

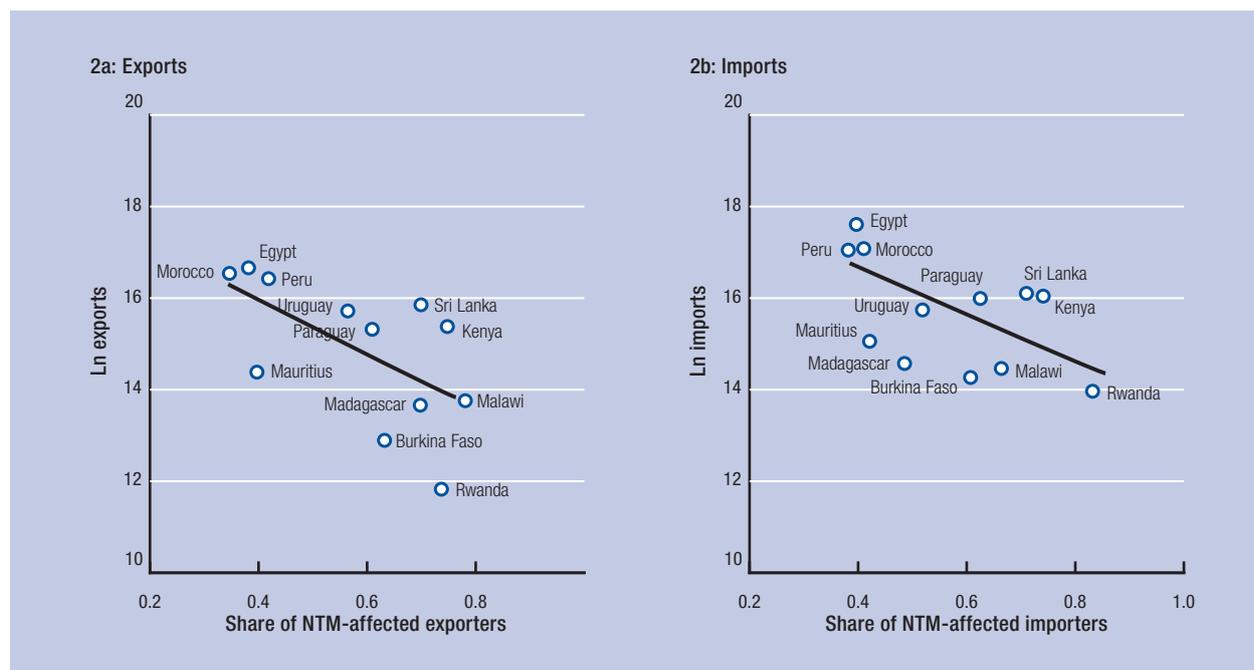
Our study comprises 12 developing countries and 13 sectors across which the share of firms that report burdensome NTMs differs substantially (see Tables A1 and A2 in Appendix A).⁵ Out of the 12 countries considered, Malawi, Kenya, and Rwanda record the highest percentages of exporters facing NTMs. Out of a total of 73 Malawian exporters in the sample, 57 claim to experience problems related to NTMs in their daily business. Figure 1 ranks export and import sectors according to their NTM affectedness. On the export side (Figure 1a), firms in non-electronic machinery, as well as firms in the fresh and processed food industry, most often face obstructive NTMs, whereas they are less problematic for firms in the leather and textile industry. On the import side (Figure 1b), the transport equipment industry faces the highest share of firms reporting obstacles from NTMs, again closely followed by the food industry. These country- and sector-specific differences are likely to be related to the nature of NTMs. Previous analyses by the ITC demonstrated that a substantial portion of NTMs are “homemade,” meaning that firms experience impediments domestically rather than abroad. Furthermore, these are more likely to occur in the agricultural sector, where food and feed control are essential for ensuring the health and well-being of consumers and the protection of the environment.⁶

The sometimes high shares of NTM reports found in certain countries or sectors would not call for any action if NTMs did not translate into real obstacles to trade. For instance, a tolerance limit for residues may be set at a level that exporters find easy to comply with.

By construction, the survey contains only those NTMs that enterprises perceive as serious hindrances having a negative impact on their trade. Figure 2 confirms the close negative correlation between trade and NTMs. Figure 2a shows that countries with a low share of exporters that face NTMs (such as Egypt, Morocco, and Peru) export substantially more than countries with a high share of exporters that face NTMs (such as Rwanda and Malawi). Kenya and Sri Lanka report a comparatively large number of NTMs given their high export levels. Figure 2b presents a similar picture for imports: again, Peru, Egypt, and Morocco are the countries with the highest imports and the lowest NTM shares. Rwanda, in turn—both a landlocked and a least-developed country—suffers simultaneously from low imports and high NTM shares. Note that causality could go two ways: on the one hand, a low share of NTMs may encourage a country's trade activities. On the other hand, a high trade activity may simply reflect the capacity of a country to support its firms in dealing with NTMs, thereby making them appear to be only slightly burdensome.

The negative relation of NTMs to trade argues in favor of these measures being a vital determinant of market access for firms in developing countries. Even though substantial differences exist between sectors and countries, the question of whether an individual firm considers a measure to be an obstacle or not depends finally on its individual ability to deal with it. Against this background, a business-sector perspective appears indispensable for defining national strategies that help different types of firms to overcome these hindrances.

Figure 2: The relation of NTMs to a country's exports and imports



Source: ITC's NTM survey data, author's calculations. Trade data come from ITC's Trade Map. Service trade and trade of arms and minerals are deducted from the total trade values to match the sectors covered in the survey.

Note: Exports and imports are expressed in natural logarithms (ln).

COMPANY TYPES AFFECTED BY NON-TARIFF MEASURES

A few firm characteristics are determined at the telephone-screening stage; these can therefore be used to study variations in the likelihood that an individual firm will face a cumbersome NTM. For example, firms were asked to specify their number of employees, their export status, their location, and their main activity ("producing" or "other," which mainly entails "trading/forwarding"). Since not all of these variables are available for each of the 12 countries (in particular, information on the activity of the firm is sometimes gathered only at the face-to-face interview stage), we focus on information from three countries—Egypt, Madagascar, and Mauritius—for which we can also identify the entity responsible for managing the export and import procedures. In what follows, we limit the sample to exporters that are responsible for dealing with export procedures themselves.

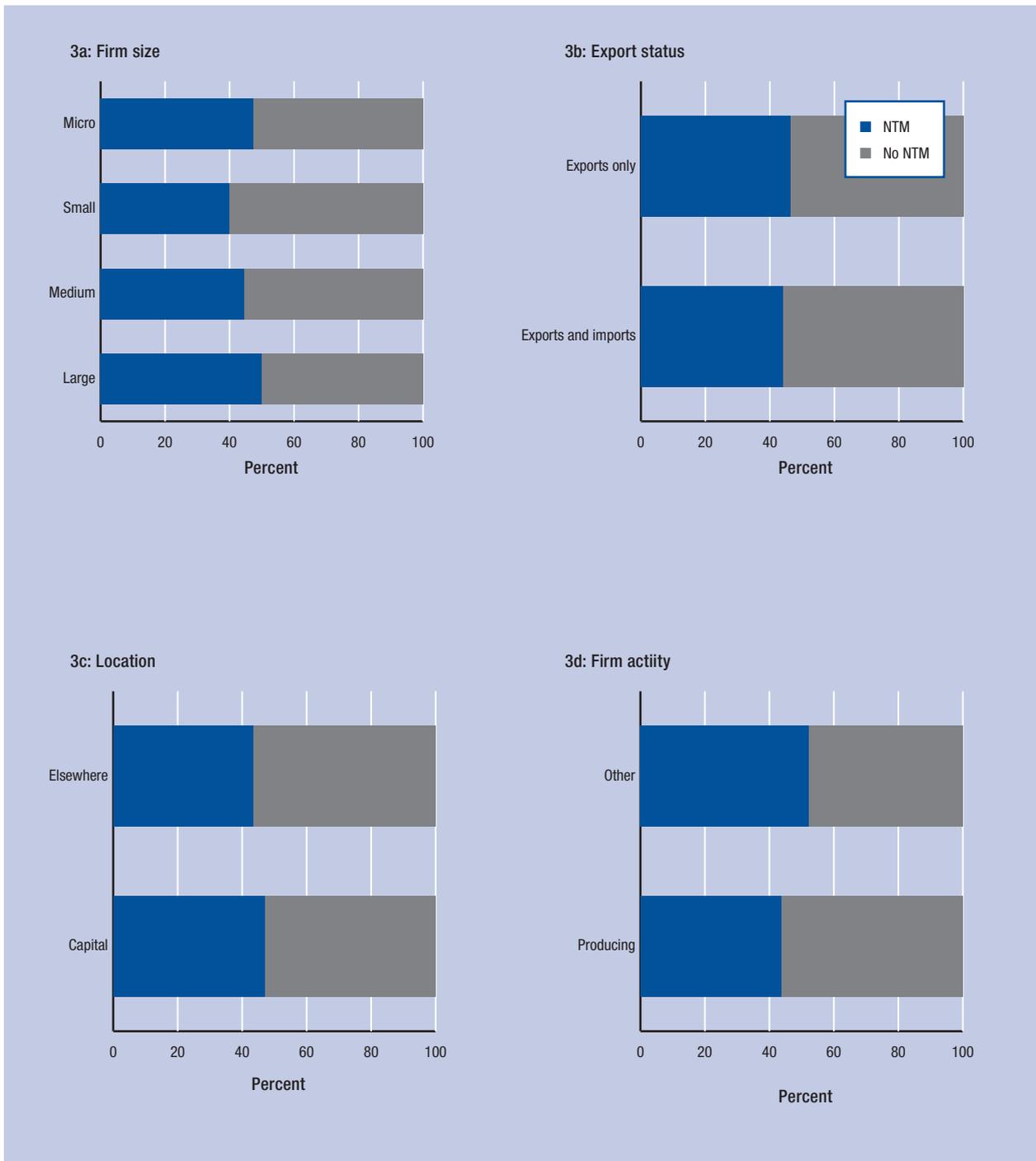
Figure 3 shows the share of firms facing at least one NTM while exporting according to their respective size, export status, and geographic location as well as their activity. Somewhat surprisingly, Figure 3a indicates a U-shaped pattern, with the largest share of firms reporting burdensome NTMs both among the smallest firms with fewer than 11 employees *and* among the biggest firms with more than 250 employees. Figure 3b does not indicate any difference with respect to export status, suggesting that pure exporters and firms that simultaneously export and import are affected to a very similar extent. Both of these results are likely to be influenced by the observation that large firms and two-way traders serve more products and more markets (i.e.,

so-called product-markets). The probability that they would encounter at least one obstructive NTM appears therefore to be high, even though they have much greater capacities than small firms to deal with export procedures in general.

In addition to firm size and export status, the location of firms may play a role. Since government and public agencies are often clustered within the capital of a country, having a firm's head office situated in the capital as well could facilitate its access to information. Challenging this argument, Figure 3c reveals that the share of NTM-affected exporters is slightly higher for firms located in the region of the capital city than for firms located elsewhere in the country. Finally, we look for differences concerning the activity of the firm. On the one hand, trading firms may be more specialized and have more experience in dealing with export procedures than producing firms. On the other hand, producers have detailed knowledge of their products and production processes, which may facilitate their compliance with (international) standards.⁷ Indeed, Figure 3d suggests that the share of producers facing burdensome NTMs is considerably lower than the share of other types of firms, including traders. Recall that we have restricted our sample to firms that deal with export procedures on their own responsibility.

Even though Figure 3 gives a first impression of the probability of facing obstructive NTMs according to major firm characteristics, the data do not allow any broader conclusions to be drawn. For instance, it might easily be the case that the food industry, which reports a high share of NTM-facing firms, consists predominantly

Figure 3: Share of NTM-affected firms according to firm characteristics



Source: ITC's NTM survey data; author's calculations.

of micro businesses that frequently encounter NTMs. Hence, with the basic analyses conducted so far, it is impossible to distinguish whether the high share of NTMs is caused by the size of the firm or the sector in which it operates. To address this issue, we conduct a regression analysis that allows us to assess how changing one factor influences the probability of a firm encountering a troublesome NTM while all other factors are held fixed.⁸ Thus, in contrast to the *unconditional* results obtained by looking at each factor separately,

this exercise will enable us to produce *conditional* results obtained by looking at all factors simultaneously.

Table 1 describes the variables considered to be potentially relevant as well as their presumed and actual relation to the likelihood of a firm facing a burdensome NTM. The expected and estimated effects in Table 1 show how likely it is, on average, that firms with a certain characteristic will encounter an NTM, as compared with firms belonging to the reference group. For firm size, the reference group comprises micro firms (hence firms in

Table 1: Firm characteristics and their relation to the probability of facing an NTM

Variable	Definition	Expected effect	Estimated effect
Firm size	Categorical variable: 1 = micro firms with < 11 employees 2 = small firms with 11–50 employees 3 = medium firms with 51–250 employees 4 = large firms with > 250 employees	-/+	+
Export status	Dummy variable: 0 = firm only exports 1 = firm exports and imports	-/+	+
Location	Dummy variable: 0 = firm is not located in the country's capital 1 = firm is located in the country's capital	-	(-)
Activity	Dummy variable: 0 = firm does not engage in production 1 = firm engages in production	-	-

Notes: Parentheses indicate that the estimated effect is statistically not different from 0 at the 10 percent significance level (compare Table A3). Column 4 corresponds to Column 4 of Table A3.

groups 2 to 4 are compared with firms in group 1); for the other three variables, the reference group comprises firms falling into the “0” categories. Although economic theory suggests that large and more experienced traders (such as two-way traders) are better able to overcome bottlenecks to trade, they tend at the same time to export a broader range of products to a greater number of destinations. Hence, these firms are more likely to face a troublesome NTM in at least one of their export activities, a circumstance that naturally conflicts with potential advantages given by their larger resources and/or greater experience. For this reason, we do not have a clear hypothesis on the direction of the link between firm size and export status on the one hand, and the probability of encountering an NTM on the other hand (see Column 3 of Table 1). Since we suppose that information is more easily accessible in the capital of a country, we expect a lower likelihood of facing an NTM for firms located in the capital. Finally, we expect firms that engage in production to be—on average—less likely to face burdensome NTMs than firms that do not engage in production.

Summarizing the main findings, whereas small firms are less likely to encounter troublesome NTMs than micro firms (which build the reference group), large firms have a higher probability of being confronted with an NTM (for detailed results, please refer to Table A3 in the appendix). Likewise, two-way traders seem to be confronted more often with NTMs than pure exporters. Finally, producing firms are less likely to face an obstructive NTM than non-producing firms. This last finding strongly confirms our presumption that firms find it easier to cope with export procedures when they are familiar with the products they want to export. We additionally account for sector- and country-specific

factors that might be correlated with both the incidence of an NTM and our main variables of interest. Indeed, we find that the country of origin of the firm as well as the sector in which it operates matter. For example, exporters from Egypt and Mauritius are less likely to face burdensome NTMs than exporters from Madagascar. Also agricultural firms (comprising firms operating in the fresh and processed-food industries) are more likely than non-agricultural firms to face cumbersome NTMs.

As previously outlined, the results of the study on firm size and export status may hinge on the difficulty of distinguishing firm-level capabilities to overcome bottlenecks from the likelihood of being confronted with at least one NTM when the product and market dimension is not taken into account. Figure A1 in the appendix uses information from the face-to-face stage to scale the number of NTMs by the number of product-markets. Indeed, the relative share of NTMs is highest for micro firms and for pure exporters, which face on average 0.74 and 0.68 burdensome NTMs per product-market (in contrast to 0.55 and 0.60 NTMs per product-market faced by large firms and two-way traders, respectively). Also, Figure A2 shows that the types of burdensome NTMs differ across size classes. Technical requirements, which represent a fixed market-entry cost, are particularly troublesome for micro firms. Their small export volumes translate into large per-unit costs of compliance with these requirements. In turn, charges, taxes, and para-tariff measures—representing variable costs that increase in the export level of a firm—account for a significant share of large firms’ reports on obstructive NTMs. Even though we do not have this information for all interviewed firms at the telephone-screening stage and cannot therefore control for it in the regression

analysis, Figures A1 and A2 support our general perspective that affectedness varies greatly with firm characteristics.

Summing up, our descriptive and regression analyses point out that the country and sector affiliation of the firm is crucial. Nevertheless, we also identify a role for firm characteristics in determining the risk of encountering a troublesome NTM. Although we control for the fact that the firm operates, for example, in the agricultural sector, it is more likely to perceive an NTM as trade-impeding if it does not produce the export good itself. Given these insights, we consider our results at the firm level to be complementary rather than substitutionary to the findings of previous studies conducted at the country or sector level.

CONCLUSIONS

The elimination of NTMs has been gaining importance in the international trade agenda. In the light of low overall levels of tariff protection, there is a fear that NTMs could represent real trade obstacles and therefore influence market access conditions. Our descriptive analyses strongly confirm this. Countries at the lower end of the export (import) rankings are confronted with a higher share of firms that report burdensome NTMs than countries at the top of the export (import) rankings. Differences between sectors are also remarkable, with agricultural firms among the most seriously affected by obstructive NTMs.

Evidence from the ITC's recent firm-level surveys on NTMs suggests, however, that not all firms in the same sector are affected to the same extent. Even within one sector and one country, substantial differences persist. This chapter has shown that a firm's perception of its confrontation with a burdensome NTM is at least partly influenced by its particular situation. We were able to identify the firm's production activity as a firm characteristic that strongly correlates with the incidence of NTMs beyond what can be explained by sector or country characteristics. Furthermore, there is some evidence of a U-shaped relation to firm size, with the smallest and the largest firms being the most highly affected; the latter finding is potentially related to the greater number of served product-markets. These findings have important policy implications that complement earlier insights gained at the country or sector level. An attempt to mitigate NTMs should therefore not be tackled merely at an aggregate level. While a sector- or a countrywide approach may be a very useful starting point, it will not be suitable for every firm. Instead, our findings stress the need to design policies aimed at moderating the impact of trade obstacles that fit different firm types.

NOTES

- 1 See Ferrantino 2006 for an overview of existing studies and methods.
- 2 See Greenaway and Kneller 2007 for a synthesis of the literature on the new theories of firms in an open economy context as well as on the rapidly growing microeconomic evidence.

- 3 When we refer to *NTMs* throughout this study, procedural obstacles are included.
- 4 The initiative foresees the conduction of interviews in more than 30 developing countries.
- 5 Note that the sector classification refers to the sector of the main Harmonized System (HS) 6-digit export product. Service exports and exports of arms and minerals are excluded from the survey.
- 6 See ITC 2010.
- 7 Furthermore, customs issues affect a larger share of traders' and forwarders' activities. Even though selected carefully, a producing firm's interviewee may for this reason perceive NTMs to be less burdensome.
- 8 Please refer to Appendix A for a technical description of this method.

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- Greenaway, D. and R. Kneller. 2007. "Firm Heterogeneity, Exporting and Foreign Direct Investment." *The Economic Journal* 117 (517): F134–F161.
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Appendix A: Country and sector distributions of surveyed firms

This appendix provides specific data for the 12 countries in the study. Table A1 considers the distribution of exporters and importers by country; Table A2 considers the distribution of exporters and importers by sector. Next a regression analysis is applied and Table A3 provides the results of the estimations. Figures A1 and A2 present additional results obtained from the face-to-face stage of the survey.

REGRESSION ANALYSIS

In order to obtain results based on conditional probabilities, we estimate the incidence of a firm encountering an obstructive NTM according to its characteristics while controlling for the sector and the country of origin. We apply a simple probit model (equation 1):

$$\begin{aligned} \Pr(\text{NTM}=1) = & \phi(\beta_0 + \beta_1 \text{ size} + \beta_2 \text{ status} \\ & + \beta_3 \text{ cap} + \beta_4 \Sigma \text{sector} \\ & + \beta_5 \Sigma \text{country}) \end{aligned} \quad (1)$$

where the dependent variable is set equal to 1 whenever the firm indicates that it faces at least one NTM while exporting and 0 otherwise.

The factors we consider to be relevant for the likelihood of a firm confronting a burdensome NTM are summarized in Table 1: first, we take into account firm sizes, ranging from 1 for “micro firms with fewer than 11 employees” to 4 for “large firms with more than 250 employees.” Second, we assign the value of 1 to firms that export and import at the same time and combine pure exporters together in the 0 category. Third, we set the location variable to 1 if the firm is situated in a country’s capital and to 0 if it is situated elsewhere. Fourth, we expect producers to be better able to comply with standards. Since production firms are assigned a value equal to 1, while all other firms are assigned a value equal to 0, we expect, again, a negative relationship.

Detailed results are presented in Table A3. Whereas small firms are less likely to encounter troublesome NTMs than micro firms (which build the reference group), large firms have a higher probability of being confronted with an NTM. Likewise, two-way traders seem to be confronted more often with NTMs than pure exporters. These results are likely to correlate with the number of product-markets. A firm’s location in the capital of a

country decreases its risk of encountering burdensome NTMs. The effect is, however, statistically not different from zero—that is, we cannot exclude the possibility that we have obtained the result due to a random distribution of NTM-facing firms across locations. Finally, producing firms are less likely to face an obstructive NTM than non-producing firms. As shown in Table A3, this finding is statistically significant and robust across all different specifications. It therefore strongly confirms our presumption that firms find it easier to cope with export procedures when they are familiar with the products they want to export.

Despite the presented evidence that firm characteristics play a role, we also report results for the relationship between firm characteristics (size, export status, location, and activity) and NTMs without controlling for sector and country effects. Table A3 contains the detailed results of all four different specifications. Two findings are remarkable: first, the explanatory power of our model (as captured by the pseudo R^2) increases, particularly as we add country effects, underscoring their importance in determining the existence of NTMs. The negative coefficient indicates that exporters from Egypt and Mauritius are less likely to face burdensome NTMs than exporters from Madagascar. Second, the positive and significant coefficient suggests that agricultural firms are more likely to face cumbersome NTMs. Given these additional insights, we consider our results at the firm level to be complementary rather than substitutionary to the findings of previous studies conducted at the country or sector level.

Table A1: Country distribution of firms

Export rank	Country	No. of exporters	No. of exporters with NTMs	Share of exporters with NTMs (%)
1	Malawi	73	57	78.08
2	Kenya	567	424	74.78
3	Rwanda	138	98	73.68
4	Sri Lanka	412	286	69.93
5	Madagascar	245	171	69.80
6	Burkina Faso	106	67	63.21
7	Paraguay	283	170	60.93
8	Uruguay	365	206	56.44
9	Peru	712	298	41.85
10	Mauritius	272	108	39.71
11	Egypt	719	274	38.16
12	Morocco	560	194	34.64
	Total	4,452	2,353	53.05

Import rank	Country	No. of importers	No. of importers with NTMs	Share of importers with NTMs (%)
1	Rwanda	339	282	83.19
2	Kenya	548	406	74.09
3	Sri Lanka	363	257	70.99
4	Malawi	116	77	66.38
5	Paraguay	297	185	62.50
6	Burkina Faso	84	51	60.71
7	Uruguay	351	182	51.85
8	Madagascar	241	117	48.55
9	Mauritius	368	155	42.12
10	Morocco	697	286	41.03
11	Egypt	630	250	39.68
12	Peru	749	286	38.18
	Total	4,783	2,534	53.01

Source: ITC data; author's calculations.

Note: The figures of the export and the import tables (A1 and A2) do not add up to the total number of firms, since firms engaging in both export and import activities are included in both tables.

Table A2: Sector distribution of firms

Export rank	Sector of main export product	No. of exporters	No. of exporters with NTMs	Share of exporters with NTMs (%)
1	Non-electronic machinery	70	46	65.71
2	Fresh food	853	552	65.02
3	Processed food	585	360	61.54
4	IT & consumer electronics	33	20	60.61
5	Miscellaneous manufacturing	635	348	54.98
6	Transport equipment	35	17	48.57
7	Clothing	454	219	48.45
8	Basic manufactures	350	165	47.28
9	Wood products	303	140	46.20
10	Chemicals	448	198	44.20
11	Textiles	383	167	43.60
12	Electronic components	81	34	41.97
13	Leather products	98	38	38.78
	Total	4,328	2,304	53.35

Import rank	Sector of main import product	No. of importers	No. of importers with NTMs	Share of importers with NTMs (%)
1	Transport equipment	205	139	67.80
2	Fresh food	241	154	63.90
3	Clothing	123	78	63.41
4	Processed food	291	180	61.86
5	IT & consumer electronics	166	101	60.84
6	Non-electronic machinery	298	165	55.37
7	Miscellaneous manufacturing	798	420	52.63
8	Chemicals	738	381	51.63
9	Basic manufactures	426	219	51.41
10	Electronic components	221	113	51.13
11	Textiles	584	285	48.80
12	Wood products	235	111	47.44
13	Leather products	54	13	24.07
	Total	4,380	2,359	53.87

Source: ITC's NTM survey data; author's calculations.

Note: The figures of the export and the import tables (A1 and A2) do not add up to the total number of firms, since firms engaging in both export and import activities are included in both tables.

Table A3: Estimation results

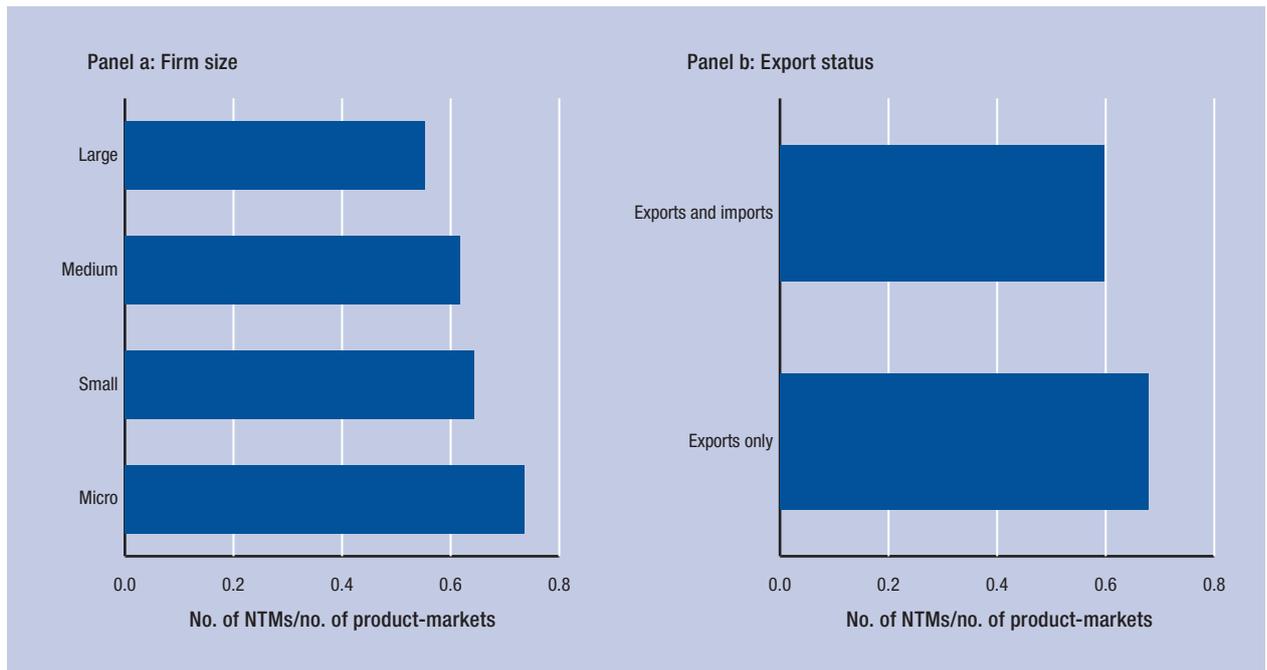
Firm characteristic	Base	Sector effects	Country effects	Sector & country effects
Size 2	-0.136 (0.147)	-0.151 (0.147)	-0.132 (0.153)	-0.148 (0.152)
Size 3	0.051 (0.155)	0.033 (0.155)	0.116 (0.16)	0.102 (0.16)
Size 4	0.21 (0.162)	0.205 (0.163)	0.297* (0.174)	0.294* (0.174)
Status	-0.089 (0.103)	-0.015 (0.107)	0.143 (0.112)	0.206* (0.115)
Location	0.107 (0.097)	0.093 (0.097)	-0.099 (0.104)	-0.109 (0.105)
Activity	-0.281** (0.137)	-0.216 (0.139)	-0.366*** (0.141)	-0.310** (0.144)
Constant	0.094 (0.162)	-0.081 (0.176)	0.761*** (0.188)	0.602*** (0.204)
Agriculture		0.272** (0.108)		0.247** (0.11)
Mauritius			-1.020*** (0.165)	-1.002*** (0.166)
Egypt			-0.852*** (0.13)	-0.851*** (0.131)
No. of observations	718	718	718	718
pseudo R^2	0.0106	0.0171	0.061	0.0661

Source: ITC's NTM survey data; author's calculations.

Note: Size class 1 (micro firms with < 11 employees) builds the reference group. Robust standard errors are reported in parentheses with significance levels *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

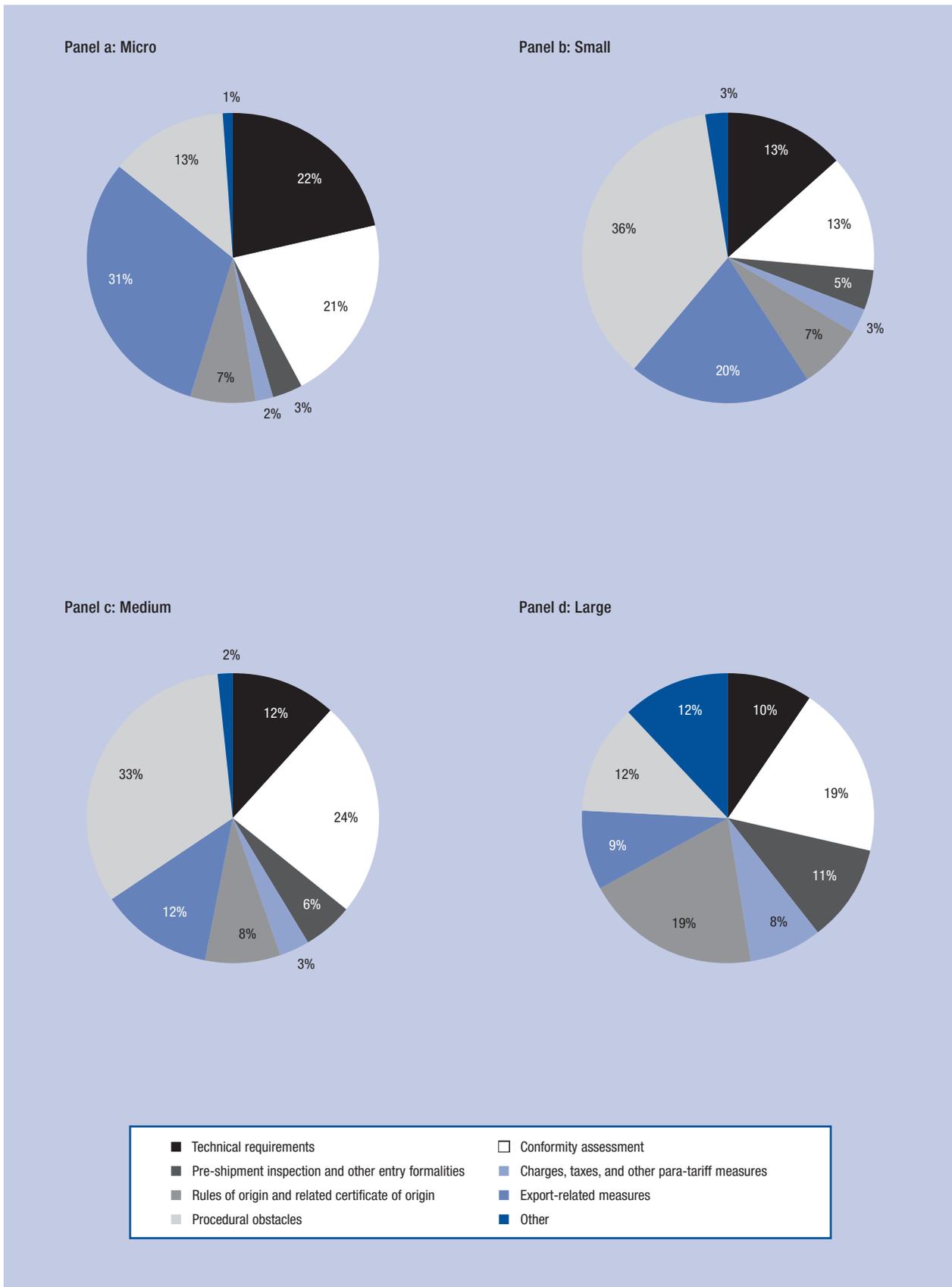
ADDITIONAL RESULTS FROM THE FACE-TO-FACE STAGE

Figure A1: NTMs to product-markets ratio according to firm characteristics



Source: ITC's NTM survey data; author's calculations.

Figure A2: Types of NTMs by firm size



Source: ITC's NTM survey data; author's calculations.