ECONOMIC RESEARCH FORUM
منتدى البحوث الاقتصادية
2013

working paper series

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Working Paper No. 820

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Working Paper 820

December 2013

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First published in 2013 by
The Economic Research Forum (ERF)
21 Al-Sad Al-Aaly Street
Dokki, Giza
Egypt
www.erf.org.eg

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Abstract

The last thirty years have witnessed a general liberalization process of merchandize trade flows. Indeed, tariffs have sharply decreased thanks to the multilateral, regional and/or bilateral trade integration agreements. However, concerns have been raised about the use of Non-Tariffs Measures (NTMs) as trade restriction policies. This paper aims to investigate the impact of NTMs on Tunisian and Egyptian imports. In addition to the distinction between different categories of NTMs (Sanitary and Phytosanitary, Technical Barriers to Trade, Export Related measures…), we study the impact of NTMs on the extensive and intensive margins to trade. The extensive margin has two dimensions: the number of varieties imported from each supplier and the number of supplying countries for each product. Using a traditional gravity model of international trade, we show that NTMs have been used more in Egypt than in Tunisia as a trade restriction measure. Moreover, they act on the intensive rather than the extensive margin.

JEL Classifications: F12, F13

Keywords: Non-Tariffs Measures, International Trade, Extensive and intensive margin.

ملخص

شهدت السنوات الثلاثين الماضية عملية التحرير العام لتدفقات التجارة السلعية . وفي الواقع ، قد انخفضت بشكل حاد التعريفات بفضل اتفاقات التكامل التجارى المتعددة الأطراف الإقليمية و / أو الثنائية. ومع ذلك، فقد أثيرت المخاوف حول استخدام تدابير غير التعريفات الجمركية (الوسائل التقنية الوطنية) عن سياسات تقييد التجارة. تهدف هذه الورقة إلى بحث تأثير الوسائل التقنية الوطنية على الواردات التونسية والمصرية . بالإضافة إلى التمييز بين فئات مختلفة من الوسائل التقنية الوطنية (الصحة والصحة النباتية ، والحواجز التقنية أمام التجارة ، والتدابير ذات الصلة بالتصدير ...)، ونقوم بدراسة تأثير الوسائل التقنية الوطنية على هامش واسع ومكثف أمام التجارة. لهذه الهوامش بعدان : الأول: عدد الأصناف المستوردة من كل مورد والثانى: عدد من بلدان التوريد لكل منتج . باستخدام نموذج الجاذبية التقليدية في التجارة الدولية ، يتبين لنا أن الوسائل التقنية الوطنية قد استخدمت أكثر في مصر مما كان عليه في تونس كإجراء لتقييد التجارة. وعلاوة على ذلك ، فإنها تعمل على نطاق مكثف بدلا من الهامش الواسع النطاق.

1. Introduction

Since the signature of the Structural Adjustment Programs, Egypt (in 1991) and Tunisia (in 1986) had changed their development strategies by adopting liberalization policies in different points: monetary policy, exchange rate regime, trade policy, privatization, etc.

As for their trade policy, a switching from a substitution to imports to an export promotion strategy was adopted. At the multilateral level, both countries adhered to the World Trade Organization since the establishing of this institution. Tunisia and Egypt have adhered to the rules and provisions of the multilateral trading system: Non-discrimination (Most Favored Nation rule and the national treatment policy), reciprocity, binding and enforceable commitments and transparency. At the regional level, Tunisia and Egypt signed an association agreement with the European Union. These agreements, which came into force in 1996 (Tunisia) and 2004 (Egypt), stipulate a gradual fall in trade barriers in the industrial sector as well as concessionary arrangements for trade in agricultural products. Tunisia and Egypt are also member of the Greater Arab Free Trade Area (GAFTA) since 1998 and the Arab Mediterranean Free Trade Agreement (Agadir Agreement) since 2004.[1]

This liberal choice is confirmed by the statistics. For both countries, the share of customs and other import duties in total tax revenue fell sharply between 1995 and 2010. From 20% (Egypt) and 39% (Tunisia), this rate did not exceed 9% in 2010 (World Bank 2012).

However, the reduction over time in tariffs does not necessarily mean a decrease in transaction costs. Indeed, tariffs have often been substituted by non-tariff barriers (NTBs).

Non-tariff barriers (NTBs) refer to restrictions that result from prohibitions, conditions, or specific market requirements that make importation or exportation of products difficult and/or costly. NTBs also include unjustified and/or improper application of non-tariff measures (NTMs) such as sanitary and phytosanitary (SPS) measures and other technical barriers to trade (TBT). NTMs categories are: (Cadot et al. 2012):

A SPS

B TBT

C Pre-shipment clearance and other formalities

D Price control

E Licenses, quotas, prohibition, and other quantity control measures

F Charges, taxes, and other para-tariff measures

G Finance

H Anti-competitive measures

I Trade-related investment

J Distribution restrictions

K Post-sales services

L Subsidies

M Government procurement

P Export-related measures

[1] GAFTA members are: Bahrain, Egypt, Iraq, Jordan, Kuwait, Lebanon, Libya, Morocco, Oman, Qatar, Saudi Arabia, Syria, Tunisia, United Arab Emirates (UAE) and Yemen. Agadir agreement involves Morocco, Egypt, Tunisia and Jordan.

Our aim, in this study, is to focus on the impact of NTMs on Tunisian and Egyptian imports. More precisely, the purpose of this study is twofold:

1. Clarify and compare the different components of the NTMs in Tunisia and Egypt in order to measure the effect of NTBs and more generally the trade transaction costs on productivity in the three countries considered in the study.
2. Estimate the effects of NTB of MENA countries' imports, focusing on the particular case of Tunisia and Egypt

It is particularly interesting to investigate them for the case of MENA trade flows since the number of the studies on the topic in the region is still limited (see for example Hoekman and Zarrouk 2009).

The literature on NTBs has mostly focused on their consequences on trade flows, without distinguishing between the extensive and intensive margins to trade. However, recent theoretical and empirical contributions have emphasized that trade frictions affect both the traded volumes of already traded commodities (the *intensive margin*) and the range of traded goods (the *extensive margin*). This article therefore tests whether NTMs affect the extensive margin by reducing the range of imported varieties and/or the intensive margin by reducing the imports by variety.

This study allows answering the following questions:

- What are the quantitative effects of NTBs imposed by MENA countries on their imports?
- Do NTBs affect trade flows at the extensive or/and intensive margins?

This study is organized as follows: in the next section, we briefly survey the literature on the impact of NTBs on trade flows. In section 3, we describe the recent trend in NTMs in Tunisia and Egypt. In section 4, we display the first empirical study on the impact of the different categories of NTMs on imports. Section 5 presents the empirical study on the distinction between intensive and extensive margins to trade. Section 6 concludes.

2. Related Literature Review

Carrère and De Melo (2009) survey studies on the link between NTMs and trade flows. They state that the systematic analysis of the effects of NTMs has focused on evaluating their ad-valorem equivalents (i.e. on tariffs that would reduce imports by the same amount as the NTM in question) and on their effects on the volume of trade (Hoekman and Nicita 2011; Disdier and Fontagné 2010; Disdier et al. 2008). Two modeling approaches have been used in the literature. One draws estimates using the gravity model of trade, often focusing on the effects of NTBs on the volume of aggregate bilateral trade. The other, draws on the factor-endowment-based theories of trade focusing on the volume of trade at the product level where import volumes are correlated with factor endowments, country characteristics, tariffs and various proxies of NTBs.

Results show that NTBs do restrict bilateral trade volumes. For example, Fontagné at al. (2005) highlight a predominance of negative effects of NTMs on trade of fresh and processed food. Flows of cut flowers, swine meat, vegetables, citrus, sugar, juices, wine, animal feed preparation are significantly reduced by these measures. Second, the restrictiveness of NTBs is larger than the restrictiveness of tariffs. Thus, NTBs should be a priority for trade negotiators (Kee et al. 2009; Hoekman and Nicita 2011). Third, low-income countries, because of their trade composition in which agriculture plays a major role, face more restrictive market access conditions. For example, Disdier et al. (2008) show that NTBs significantly reduce developing countries' exports to OECD countries, but do not affect trade between OECD members. Finally, it is shown that the harmonization of standards increases bilateral trade flows.

On the other hand, the new empirical international trade literature seeks to distinguish between two pass-through effects of trade policy on trade flows: the extensive and intensive margins to trade:

- The intensive margin is the variation in the volume of imports, for a given number of varieties and exporting countries.
- The extensive margin is the variation in the number of varieties, exporting countries and/or exporting firms for a given volume of imports.

One of the major objectives of our study is to discriminate between these two effects when studying the link between NTBs and trade flows.

3. Analysis of NTMs: Recent Trends in Tunisia and Egypt

The comparative study of NTMs[2] implemented by Egypt and Tunisia shows that there is a difference in the timing and strategy (Graph 3.5 and 3.6). Indeed, if for Tunisia implementation was spread over time (1999, implementation of 14% of the measures, 20% in 2002 and 41% in 2010), in Egypt the majority of the measures, i.e 82% of them, were introduced in 2005. For some product groups (see Appendix B for definition), the NTMs have been introduced massively in 2005 in Egypt such as those in Section 1 (83% of them), section 5 (97%), section 8 (91%) and section 12 (100% of them). The same phenomenon occurred in Tunisia for sections 5, 7, 10, 11, 12, 13, 17 and 20.

Analysis of the types of measurements shows a clear predominance of SPS/TBT measures representing 70.7% of all NTMs in Tunisia and 83.9% in Egypt (Graph 3.3 and 3.4).

However, we can note a clear predominance of SPS measures (54.2% against 16.5% for TBT) in Tunisia while in Egypt TBT seem to dominate (75.1% against 8.8% for SPS).

In terms of specific measures (Graphs 3.7, 3.8, 3.9, 3.10), in Egypt measures (B840) Inspection Requirement, (B859) Requirements Traceability, n.e.s. and (B900) TBT Measures n.e.s. represents 69.3% of all measures applied while (F210) Custom Inspection, processing and servicing fees represent 10.3% of the applied measures.

In Tunisia, the most applied measures are (A820) Testing requirement (8.1%), (C200) Direct consignment requirement (7.4%), (C300) Requirement to pass through specified port of customs (6.6%), (F200) service charges (6.5%).

In terms of measures affecting exports such as (P610) and Inspection Requirement (P620) Certification required by the Exporting country, they represent 7.8% of all measures applied, while they are rarely used in Egypt.

If we analyze the distribution of these measures by products (Graph 3.1 and 3.2), in Tunisia 77.2% of these measures are concentrated on four product groups (Live animals and animal products (28.5%), Vegetable products (12.7%), Prepared Foodstuffs (30%), Products of the chemical or allied industries (6%)), while in Egypt they are concentrated (71.6%) on six products (Live animals and animal products (7%), Vegetable products (8.8%) , Products of the chemical or allied industries (8.8%), Textiles and textile articles (22%), base metals and articles of base metal (10%), Machinery and mechanical appliances and electrical equipment (15%).

4. Impact of NTBs on Imports

This section analyzes, empirically, the effects of the imposition of new NTMs on imports in MENA countries, focusing on Tunisia and Egypt. Before displaying the results, the econometric specification is described below.

[2] The NTMs database was elaborated as part of the World Bank/FEMISE project: "Inventory and assessment of non-tariff measures in MENA region". The Egyptian and Tunisian databases were kindly provided by the World Bank. Sofiane Ghali participated in the implementation of the Tunisian database.

4.1 Econometric specification

Our empirical study relies on the gravity model of international trade. First proposed in 1687, the Newton's law of universal gravitation states that two bodies are attracted because of their proportional mass and inversely as square the distance between them. The application of this principle to the social interactions dates back to the 19th century. Studies have involved a variety of topics including trade, migration, tourism, foreign direct investment or financial flows.

Tinbergen (1962) was the first to apply the gravity model to the case of international trade flows. Despite the initial absence of any theoretical background, the approach revealed a surprising richness and empirical relevance that occur rarely in Social Sciences (Leamer and Levinsohn 1995). Anderson (1979) presented a theoretical foundation for the gravity model based on constant elasticity of substitution (CES) preferences and goods that are differentiated by region of origin. Subsequent extensions (Bergstrand 1989/1990; Deardorff 1998) have preserved the CES preference structure and added monopolistic competition or a Hecksher-Ohlin structure to explain specialization (Anderson and Van Wincoop 2003).

The general gravity law for social interaction may be expressed in roughly the same notation:

$$F_{ij} = G\frac{M_i^{\alpha} M_j^{\beta}}{d_{ij}^{\gamma}} \quad (1)$$

Where,

F_{ij} represents the exports from origin i to destination j.

Mi and Mj are the relevant economic sizes of the two locations; GDP is generally used as a proxy for the economic size.

dij is the distance between the locations. As recalled by Head (2006), distance is a proxy of 6 remoteness effects: a) transport costs, b) the time of shipments, c) the synchronization costs between different production plants, d) communication costs, e) transaction costs, and f) cultural differences. Cultural differences can impede trade in many ways such as inhibiting communication, generating misunderstandings, clashes in negotiation styles, etc.

Then, the gravity equation should be estimated as:

$$\ln(X_{ijt}) = \ln(G) + \alpha \ln(GDP_i) + \beta \ln(GDP_j) - \delta \ln(d_{ijt}) + \varepsilon_{ijt} \quad (2)$$

ε_{ijt} is assumed to be a log-normally distributed error term.

However, there is a huge amount of variation in trade that is not explained by the size of the economies and their distances. Income per capita, the share of common border, the use of common language, the existence of colonial links, the signature of free trade or monetary agreements can be added in gravity equations, depending on the question studied.

The aim of our study being to assess the trade impact of NTB to trade, we adopt in the first specification the following formulations:

The first specification does not include NTBs. We just include GDP of the exporting (country i) and the importing countries (country j which are either Tunisia or Egypt), distance and some gravity variables: same language, common border and colonial links. Recall that we are working on the product level (indexed by k).

$$\ln(Imp_{ijkt}) = \beta' + \alpha_1 \ln(GDP_{it}) + \alpha_2 \ln(GDP_{jt}) + \alpha_3 \ln(distance_{ij}) + \alpha_4 Contig_{ij} + \alpha 5 Lang\ ij + \alpha 6 Colony\ ijt + \varepsilon \quad (3)$$

In the second specification, we include the NTB imposed by Tunisia and Egypt on their imports. In order to avoid endogeneity, we aggregate trade data on the HS4 level and include

a frequency index. The frequency index is defined as the proportion of HS6 product items notified by the importing country (Tunisia or Egypt) within a HS4 product category (cf. Disdier et al. (2008).

The estimated model is then written as follows :

$$\ln(Imp_{ijkt}) = \beta' + \alpha_1 \ln(GDP_{it}) + \alpha_2 \ln(GDP_{jt}) + \alpha_3 \ln(distance_{ij}) + \alpha_4 Contig_{ij} + \alpha_5 Lang_{ij} + \alpha_6 Colony_{ijt} + \alpha_7 ln(freq.index\ of NTMs_{ijkt}) + \varepsilon \quad (4)$$

In the third specification, we just include a dummy variable for NTBs taking the value 1 if there is at least one HS6 product (among all commodities in the same hs4 class) on which a NTM is imposed and 0 otherwise.

$$\ln(Imp_{ijkt}) = \beta' + \alpha_1 \ln(GDP_{it}) + \alpha_2 \ln(GDP_{jt}) + \alpha_3 \ln(distance_{ij}) + \alpha_4 Contig_{ij} + \alpha 5 Lang\ ij + \alpha 6 Colony\ ijt + \alpha 7\ \text{dummy}(NTM)ijkt + \varepsilon \quad (5)$$

The second and third specifications are in a first step implemented using all NTMs. Then, in a second step, we decompose the NTMs to seven categories: A, B, C, D, F, H, P for Tunisia and six categories: A, B, C, D, F, P for Egypt. This allows us to refine the analysis and to detect which of the different types of NTBs affect positively/negatively the trade flows.

The specifications described above do not take into account the potential bias due to zero trade flows. Indeed, a couple of countries could have no trade between each other in a given product/year. This is particularly true when one works on disaggregated data. The log linear specification obviously eliminates these observations, which potentially include valuable information. The recent literature has paid a good deal of attention to the "zero problem". Solutions include:

- Log-linear specifications adding a constant (log(1+cst)) to all observations. If the constant is very low, log(x+0.0001) ≈ log(x). This solution, while easy to implement has no theoretical basis.
- Tobit estimations, with left censuring by a number lower than the lowest positive observation in the data, which is arbitrary and could bias results.
- Heckman sample selection models: A two steps procedure can be implemented: a first set of covariates determine the probability that two countries engage in trade at all (i.e., that they are in the sample). Then, a second set of covariates determine the intensity of bilateral trade, subject to the existence of a trade relationship.
- Poisson Pseudo-Maximum Likelihood (PPML) model: Santos Silva and Tenreyro (2006) propose the use of a Poisson Maximum Likelihood (PPML) model, which is commonly used for count data. They argue that the estimator is consistent under weak assumptions, and the data need not be distributed as Poisson. PPML model enables us to estimate a gravity model which includes the zeros: the dependent variable is trade, not log(trade). The independent variables still enter in logs, and the coefficients can still be interpreted as elasticities.

We used the PPML model in order to deal with zero trade flows as an alternative to the simple OLS.

Four data sources are used in the econometric study described below: BACI (2012) for bilateral trade flows, the World Development Indicators (WDI (2013)), for the variable GDP, GeoDist (2012) database for Distance, Common language, Common Border and Colonial links variables, and the World Bank database for NTMs[3] .

[3] See footnote 2.

We kept as much information as possible. Our sample includes imports of all goods (1240 products at the HS4 digits level) from all partner countries (181 for Tunisia and 175 for Egypt) from 1989 to 2009.

4.2 Impact of NTBs on Imports: Econometric results

The first two tables display the empirical results when considering the NTMs globally, i.e. without distinction between different categories of NTMs.

All coefficients but common border have the expected sign: distance deters imports; GDP and the use of the same language as well as colonial links favor trade flows.

As for common border, it has a negative effect for both cases: imports from Algeria and Lybia for Tunisia, and Lybia, Sudan, Jordan and Israel are less important than imports from other countries. Notice that, when taking into account the zero trade flows, this variable has the expected sign for Tunisia.

Moreover, the distance effect is higher according to the PPML model in both cases.

Turning to the effect of NTMs, there is an important difference between the results found for:

- Tunisia and Egypt
- The measure of NTMs (frequency index or dummy)
- Econometric method (OLS or PPML)

For Tunisian imports, NTMs generally have positive effects (either significant or not, depending on the method). But if we measure them by a simple dummy, the sign becomes negative and significant.

For the Egyptian case, the imposition of NTMs has a deterrent effect on imports when implementing OLS and without taking into account zero trade flows: an increase of 1% in the number of NTMs adopted lowers Egyptian imports by 0.016%. Nevertheless, when implementing the PPML, the signs become positive and significant.

The results displayed in the first two tables are not very informative. Tables 4.3 and 4.4 present econometric results for different categories of NTMs.[4] Results are described in what follows:

We first note that for all (but border) control variables, the coefficients are still significant with the expected sign.

Second, the variables constructed for NTMs (the log of the frequency of NTMs notifications and the dummy) have (almost) the same effect both for Tunisia and Egypt if we compare the same method (OLS or PPML).

Third, the results are very different for Tunisia and Egypt.

Fourth, different econometric methods give different results.

Finally, the different categories of NTMs do not have the same effects on imports. Indeed, for Tunisia, only category B of NTMs (technical barriers to trade) has a negative and significant effect on imports. Categories A, C, D, H and P have a significant positive effect. But if we analyze results of the PPML, only category D has a significant negative effect. A possible explanation could be the endogeneity of these measures. Tunisian authorities impose probably new measures for products with high import levels. Our treatment of the endogeneity (the aggregation of import on the HS4) doesn't seem to completely deal with this problem.

[4] Results with NTMs measured by a dummy are reported in Appendix A

As for Egypt, according to the OLS model, categories B (TBT), C (pre-shipment clearance and other formalities) and F (anti-competitive measures) have a negative significant effect on imports, whereas category A (SPS) has a positive effect. Taking into account the zero trade flows changes considerably the results: categories A (SPS), D and P (export-related measures) are those which have a negative significant effect.

This first part of our study concentrates on the imports flows. This approach relies on a model in which all firms are symmetric, all trade costs are iceberg (proportional to the value shipped) in form, and all varieties are traded. Under these assumptions, aggregate trade values respond to frictions in precisely the same way as firm-level and commodity-level quantities.

We study, in what follows, the effects of NTBs on the intensive and extensive margins to trade. This will allow distinguishing between both types of adjustments of trade flows to NTBs.

5. NTBs and the extensive vs. intensive margins of trade

Since a decade, the empirical literature on international trade has emphasized the importance of the extensive margin of international trade (see for example Helpman et al. 2008; Hummels and Klenow 2005; or Felbermayr and Kohler 2006). The extensive margin could be defined differently: the entry of new firms to export markets, the export to new destinations or the export of new commodities. Indeed, it is now well established that countries differ in the proportion of exporting firms, in the variety of goods that they trade and also in the range of countries with which they trade. Moreover, the sets of countries, goods, or sectors change over time and vary more than traditional models would indicate.

For example, Hummels and Klenow (2005) decompose variation in countries' aggregate exports into the contributions of the following terms: (a) the quantity of each good exported (the intensive margin); (b) the set of goods exported (the extensive margin); (c) the quality of goods exported. They find that the extensive margin accounts for around 60 percent of the greater exports of larger economies, while the remaining intensive margin contribution of 40 percent consists of higher quantities being exported at modestly higher prices. Kehoe and Ruhl (2003) establish an important role for the extensive margin in explaining the growth of trade following trade liberalizations. Hillberry and Hummels (2008) show that trade frictions such as distance primarily reduce the aggregate value of trade through the number of commodities shipped and the number of establishments shipping commodities (the extensive margin) rather than through the average value of shipments (the intensive margin). Bergin and Lin (2010) or Berthou and Fontagné (2008) focused on the impact of the exchange rate regime and the change in trade structure induced by the creation of the Euro, Felbermayr and Kohler (2010) studied the effect of the membership in WTO on the extensive margin to trade and Debaere and Mostashari (2010) showed that tariffs affect trade mainly through the extensive margin.

The growing attention to the extensive margin is closely linked to the recent focus on firm heterogeneity both in theoretical and empirical work. The theoretical literature on the extensive margin (Melitz 2003) emphasizes the role of fixed costs of trade interacting with producer heterogeneity in models of international trade with imperfect competition.

We decompose import flows into two components: mean value of imports and the number of varieties imported.

$$Imp_{ijkt} = \left(\frac{Imp_{ijkt}}{Nb_{ijkt}}\right) * Nb_{ijkt} = Mean_{ijkt} * Nb_{ijkt} \quad (6)$$

With Imp_{ijkt} representing trade flows of products k from country i to country j (as before country j is either Tunisia or Egypt) in year t and Nb_{ijkt} represents the number of varieties traded between the same countries.

Thereby, the first term refers to the intensive margin to trade, i.e. the mean value of imports by variety whereas the number of varieties imported represents the extensive margin. Our decomposition method is closest to the work of Hummels and Klenow (2005) who separate exports into extensive margins (number of commodities) and intensive margins (value per commodity) and examine the response of each margin to exporter characteristics.

This distinction enables us to analyze more deeply the relation between NTMs and international trade. This question is quite informative for policy makers.

5.1 Econometric specification

In the same manner as in section 4, we run the following formulations:

The first does not include NTBs. We just include GDP of the exporting (country i) and the importing countries (country j which are either Tunisia or Egypt), distance and some gravity variables: same language, common border and colonial links. Recall that we are working on the product level at the HS4 (indexed by k). But now, there are two columns: one for the intensive ($Mean_{ijkt}$) and one for the extensive (N_{ijkt}) margins.

$$\ln(Mean_{ijkt}) = \beta' + \alpha_1 \ln(GDP_{it}) + \alpha_2 \ln(GDP_{jt}) + \alpha_3 \ln(distance_{ij}) + \alpha_4 Contig_{ij} + \alpha 5 Lang_{ij} + \alpha 6 Colony_{ijt} + \varepsilon \quad (7)$$

$$\ln(N_{ijkt}) = \beta' + \alpha_1 \ln(GDP_{it}) + \alpha_2 \ln(GDP_{jt}) + \alpha_3 \ln(distance_{ij}) + \alpha_4 Contig_{ij} + \alpha_5 Lang_{ij} + \alpha_6 Colony_{ijt} + \varepsilon \quad (8)$$

We include in a second step the frequency index of NTMs notifications imposed by Tunisia and Egypt on their imports.

$$\ln(Mean_{ijkt}) = \beta' + \alpha_1 \ln(GDP_{it}) + \alpha_2 \ln(GDP_{jt}) + \alpha_3 \ln(distance_{ij}) + \alpha_4 Contig_{ij} + \alpha_5 Lang_{ij} + \alpha_6 Colony_{ijt} + \alpha_7 ln(freq.index\_NTM_{ijkt}) + \varepsilon \quad (9)$$

$$\ln(N_{ijkt}) = \beta' + \alpha_1 \ln(GDP_{it}) + \alpha_2 \ln(GDP_{jt}) + \alpha_3 \ln(distance_{ij}) + \alpha_4 Contig_{ij} + \alpha 5 Lang_{ij} + \alpha 6 Colony_{ijt} + \alpha 7\ ln(freq.index\_NTMijkt) + \varepsilon \quad (10)$$

In the third specification, we just include a dummy variable for NTBs taking the value 1 if there is at least one HS6 product on which a NTB is imposed and 0 otherwise.

$$\ln(Mean_{ijkt}) = \beta' + \alpha_1 \ln(GDP_{it}) + \alpha_2 \ln(GDP_{jt}) + \alpha_3 \ln(distance_{ij}) + \alpha_4 Contig_{ij} + \alpha 5 Lang_{ij} + \alpha 6 Colony_{ijt} + \alpha 7\ \text{dummy}\_NTBijkt + \varepsilon \quad (11)$$

$$\ln(N_{ijkt}) = \beta' + \alpha_1 \ln(GDP_{it}) + \alpha_2 \ln(GDP_{jt}) + \alpha_3 \ln(distance_{ij}) + \alpha_4 Contig_{ij} + \alpha 5 Lang_{ij} + \alpha 6 Colony_{ijt} + \alpha 7\ \text{dummy}\_NTBijkt + \varepsilon \quad (12)$$

The second and third specifications are in a first step implemented using all NTBs. Then, in a second step, we decompose the NTBs into seven categories: A, B, C, D, F, H, P for Tunisia and A, B, C, D, F, P for Egypt. This allows us to detect which of the different types of NTBs affect positively/negatively the intensive and/or extensive margins to trade.

The zero trade flow problem is again treated through the estimation of a PPML model alternatively to OLS. Hopefully, this model allows one to deal with another specificity of the

extensive margin specification. Indeed, N_{ijkt} is a count variable defined in the ℕ space rather than on ℝ.

5.2 Results

In describing the results, we proceed in the same way as in section 4. We aggregate all NTMs categories first, then, we display results by NTM category. Results with NTMs measured by the log of the number of notifications are displayed in what follows whereas those with NTMs measured by a dummy variable are in the Appendix.

Again, results differ from a method to another.

According to OLS the method, results confirm those of the previous section: NTMs don't have a significant effect on Tunisian imports: the effect is even positive although not significant on the intensive margin. For the Egyptian case, NTMs have a significant negative effect on both the intensive and extensive margins.

As for the PPML model effect, they are completely different: NTMs have a negative (positive) effect on the intensive margin in Tunisia (Egypt). For the extensive margin, results are the same. At this point, one should note that NTMs affect trade through the extensive margin more than the intensive margin.

Said differently, the imposition of new NTMs lowers the number of commodities imported in Egypt and increases them in Tunisia. No unanimous effect is found for the intensive margin.

The next tables (5.3(a), 5.3(b), 5.4(a) and 5.4(b)) display the results by category of NTMs for the intensive margin: mean imports at the HS4. Results are the same as for the previous section:

- In the Tunisian case: Apart from categories D and F, which have a negative significant effect, there is no clear effect found for both models.
- For Egypt, categories C and F (according to the OLS and PPML) deter the value of imports by product.

Turning to the extensive margin, the results confirm those when aggregating NTMs: they do affect imports mainly through the intensive margin, and none of the NTMs categories have a persistent effect on the number of varieties imported by Tunisia and Egypt.

6. Conclusion

This study aims to investigate the impact of NTMs on Tunisian and Egyptian imports. Moreover, we test whether NTMs affect the extensive margin by reducing the range of imported varieties and/or the intensive margin by reducing the imports by variety. Finally, we distinguish between the effects of the different categories of NTMs.

Using a traditional gravity model of international trade, we show an important difference between the results found for Tunisia and Egypt. Contrary to the Tunisian case, NTMs have a deterrent effect on Egyptian imports: an increase of 1% in the proportion of products notified by at least one NTM lowers Egyptian imports by 0.016%.

However, when estimating a gravity model, a potential bias is due to the existence of zero trade flows. We chose to run a Poisson-Pseudo Maximum Likelihood Model (Santos Silva and Tenreyro 2006). Results are different for both Tunisia and Egypt which highlights the unclear effect of NTMs on imports.

As for the distinction between different categories of NTMs, our results reveal that they do not have the same effects. For example, in the case of OLS, for Tunisia, only technical barriers to trade have a negative and significant effect on imports. On the other hand, for Egypt, technical barriers to trade, pre-shipment clearance and other formalities and anti-competitive measures all have a negative significant effect on imports.

Turning to the distinction between the intensive and extensive margins, results confirm those of the previous section: Contrary to the Tunisian case, NTMs have a significant negative effect on both the intensive and extensive margins in Egypt. Moreover, NTMs affect trade through the intensive margin more than the extensive one.

In the Tunisian case, all barriers (except for TBT) don't negatively affect import values by variety (the intensive margin). For Egypt, technical barriers to trade, pre-shipment clearance and other formalities and charges, taxes, and other para-tariff measures affect negatively the intensive margin.

Finally, it seems that NTMs don't affect the extensive margin for both Tunisia and Egypt. An exception to this result comes from the technical barriers to trade that affect the extensive margin in Egypt.

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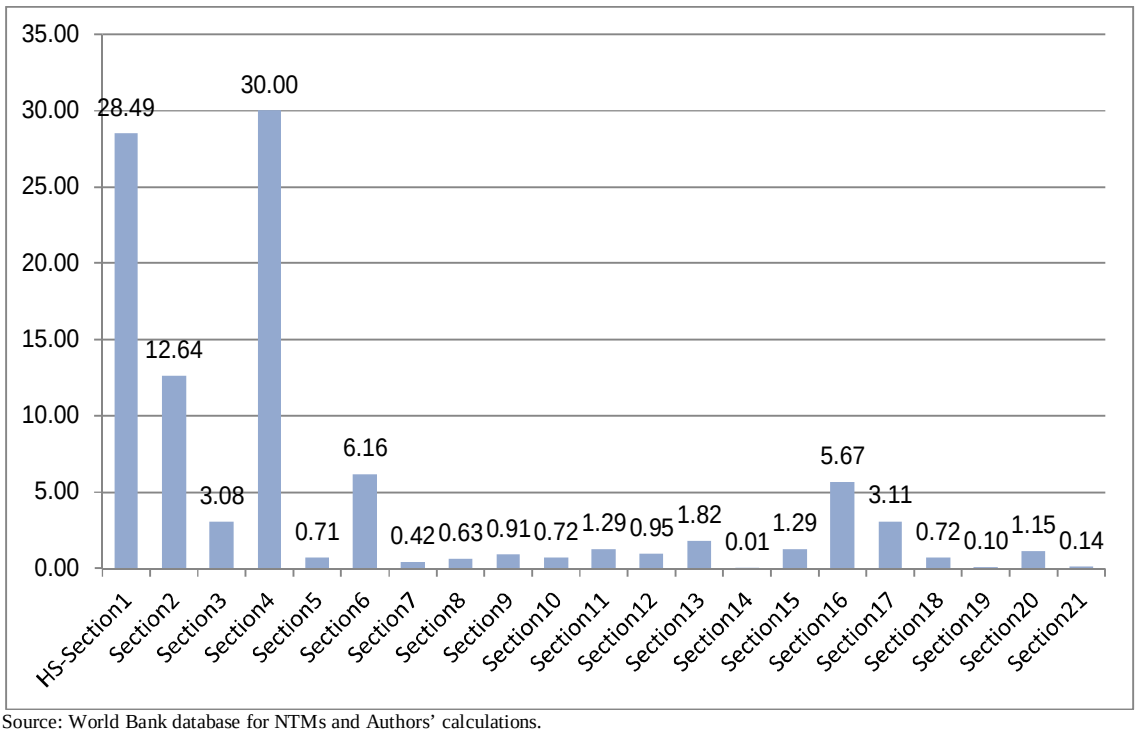
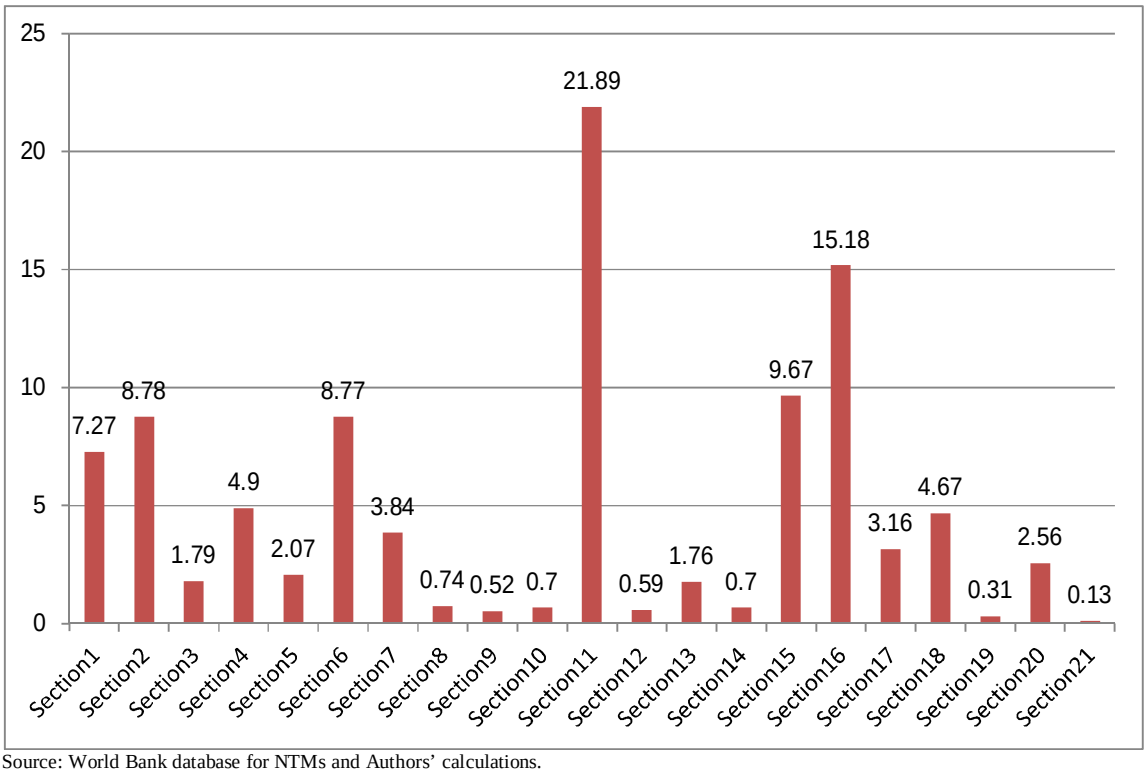
Figure 1: Tunisia: Distribution of the NTMs by Group of Product (%)



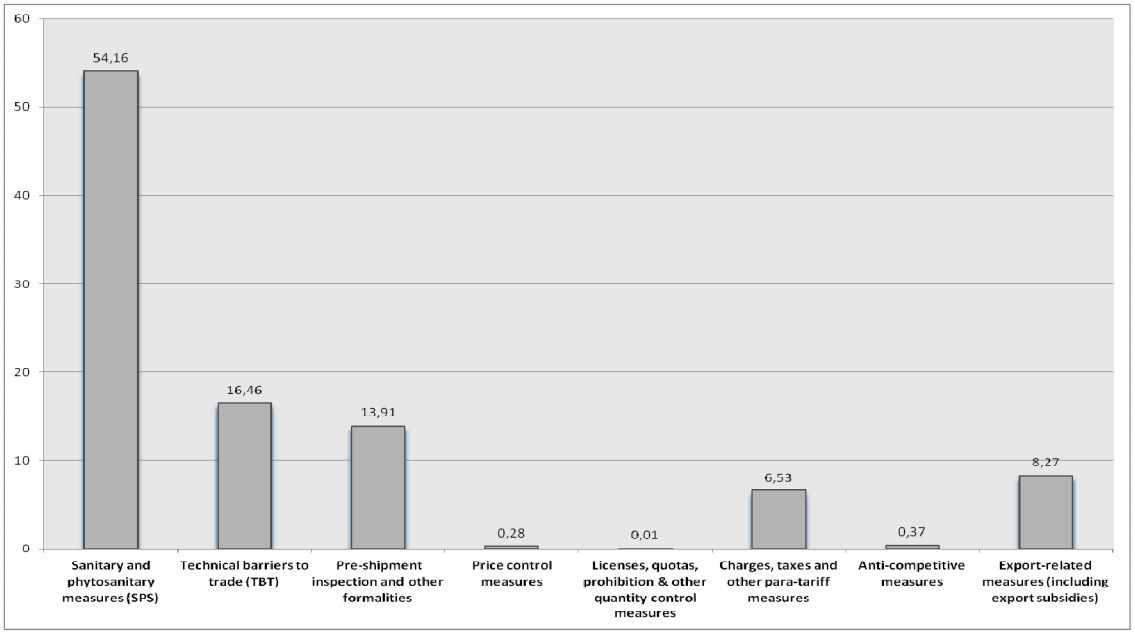
Source: World Bank database for NTMs and Authors' calculations.

Figure 2: Egypt: Distribution of the NTMs by Group of Product (%)



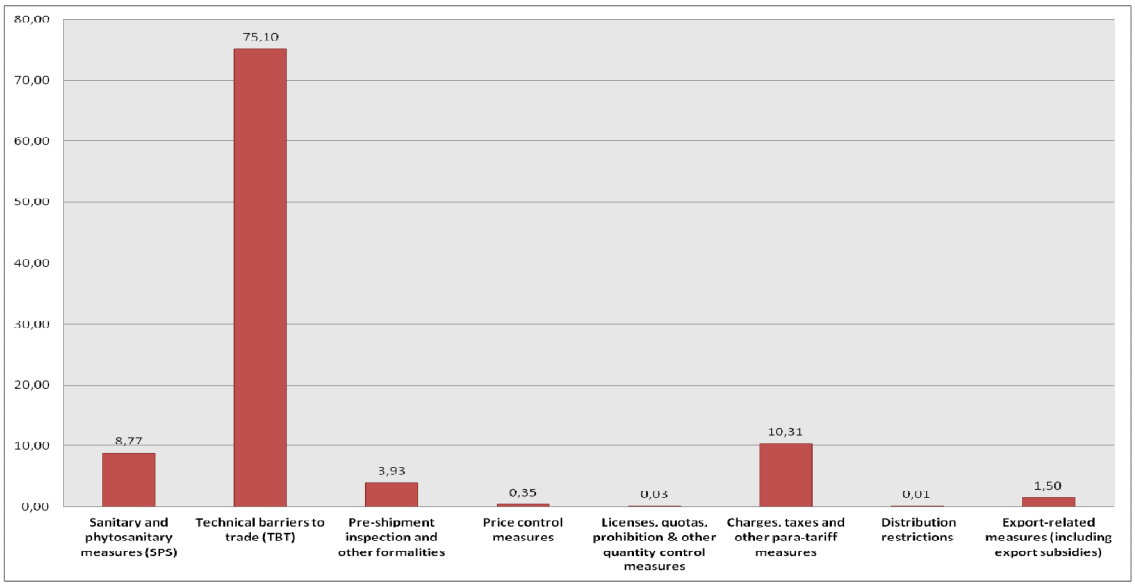
Source: World Bank database for NTMs and Authors' calculations.

Figure 3: Tunisia, Percentage of Total NTBs by Category (%)



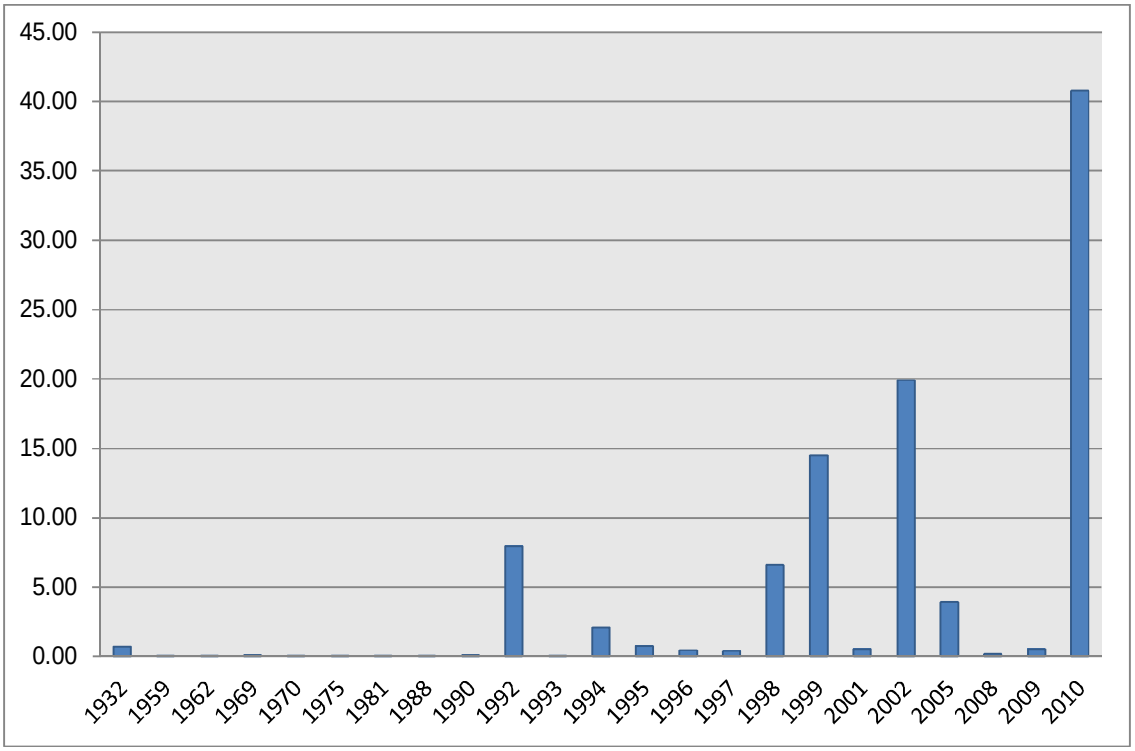
Source: World Bank database for NTMs and Authors' calculations.

Figure 4: Egypt, Percentage of Total NTBs by Category (%)



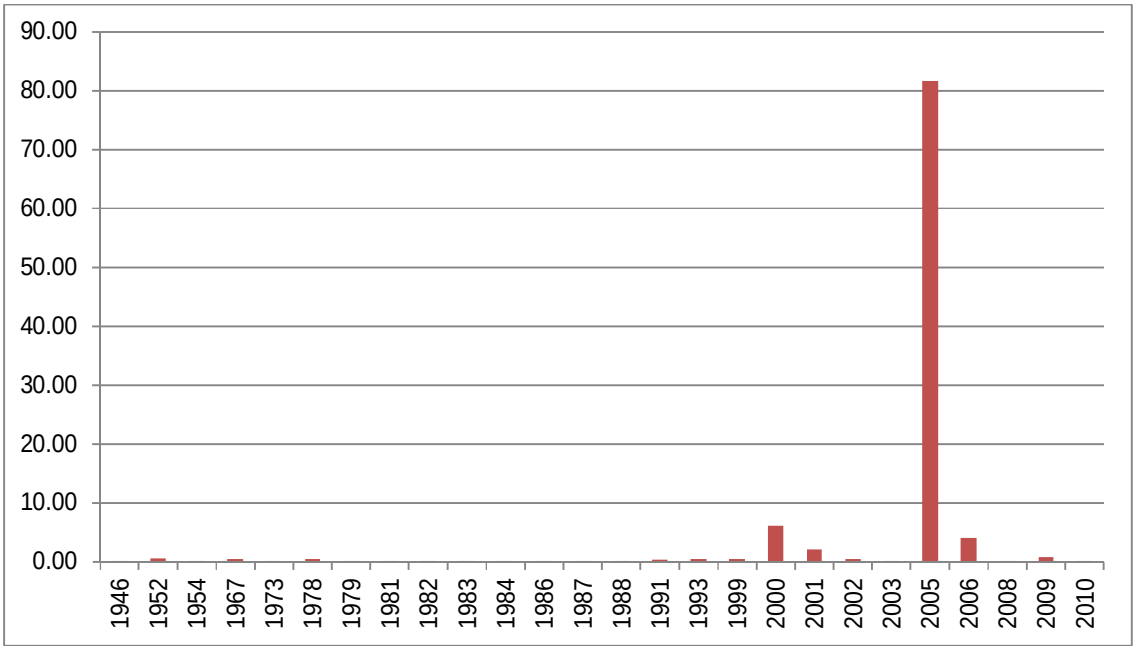
Source: World Bank database for NTMs and Authors' calculations.

Figure 5: Tunisia: Distribution of the NTMs by Year of Implementation



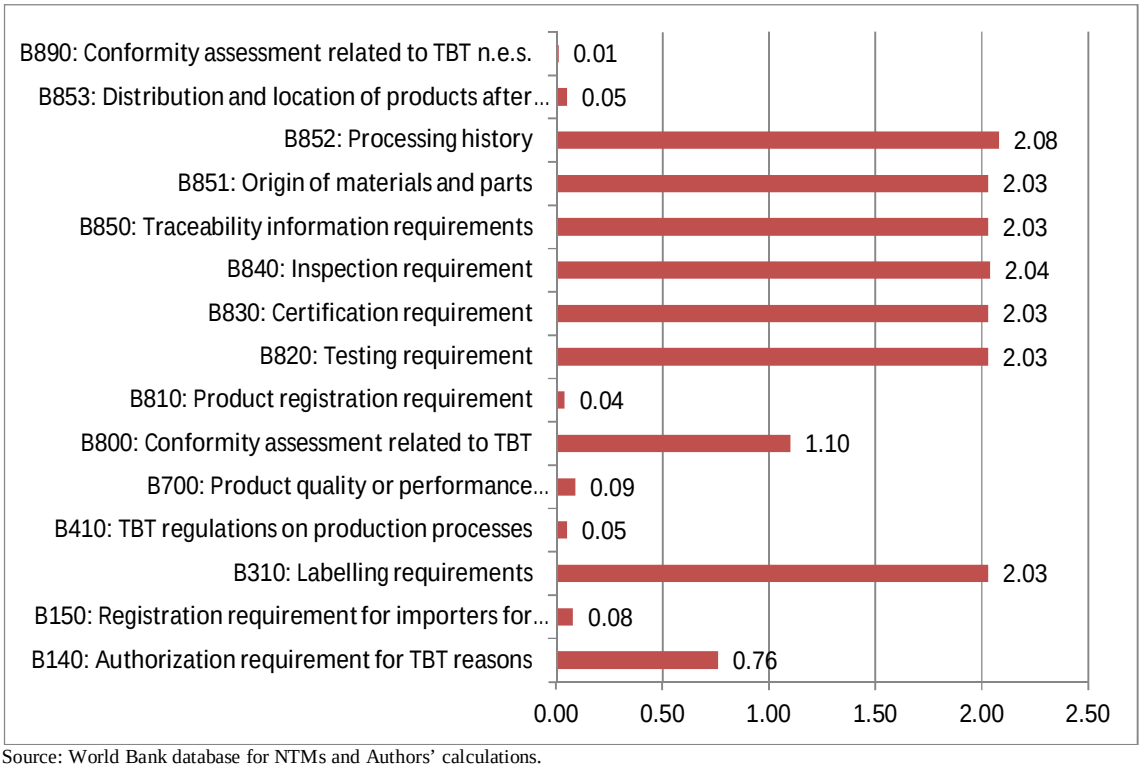
Source: World Bank database for NTMs and Authors' calculations.

Figure 6: Egypt: Distribution of the NTMs by Year of Implementation



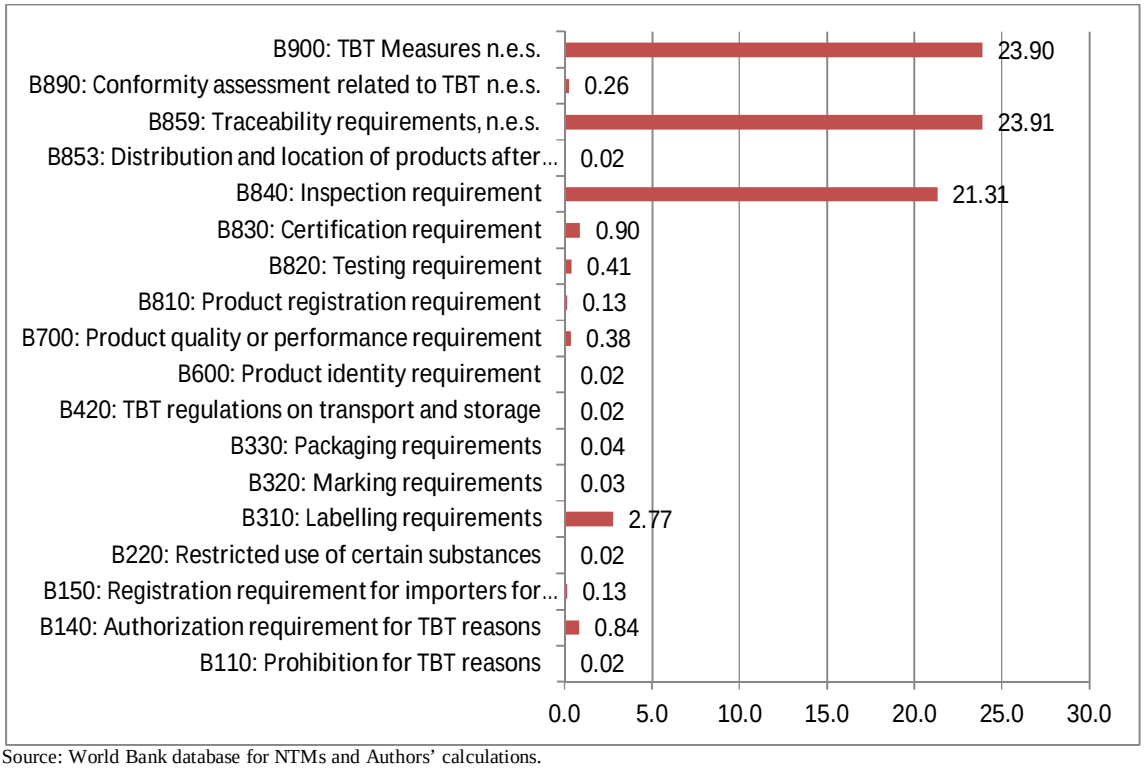
Source: World Bank database for NTMs and Authors' calculations.

Figure 7: Tunisia: TBT Measures by Sub-Type (%)



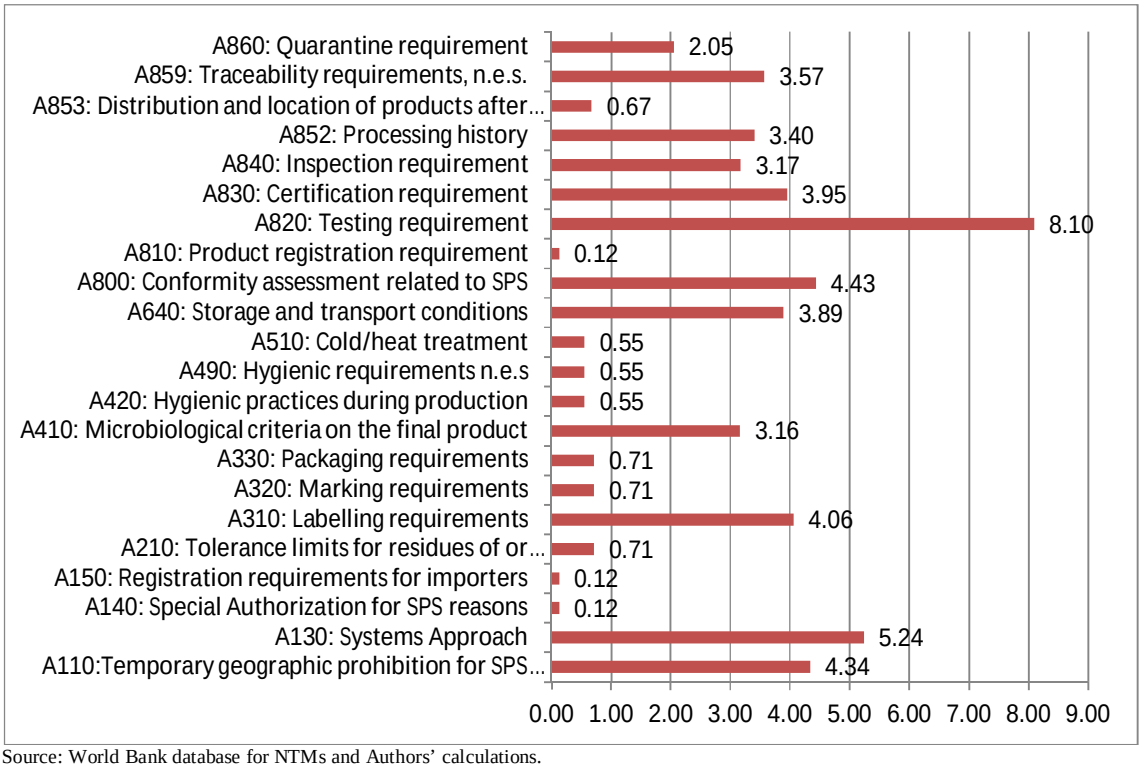
Source: World Bank database for NTMs and Authors' calculations.

Figure 8: Egypt: TBT Measures by Sub-Type (%)



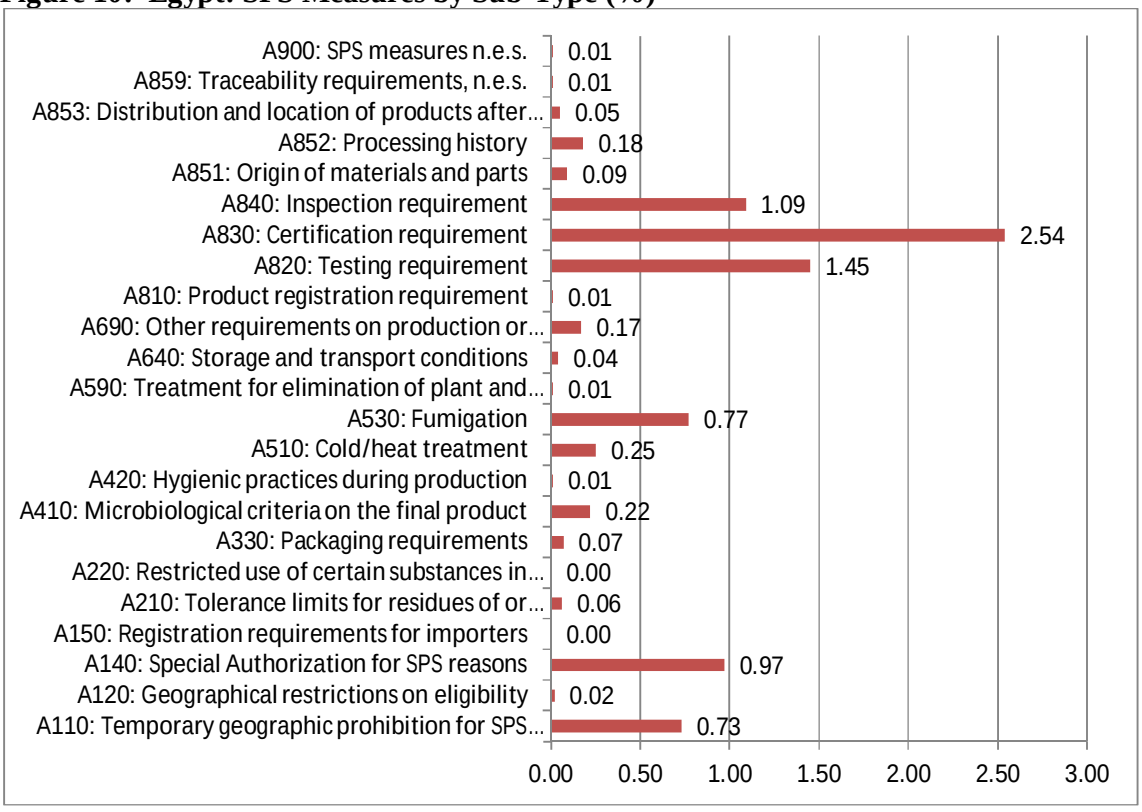
Source: World Bank database for NTMs and Authors' calculations.

Figure 9: Tunisia: SPS Measures by Sub-Type (%)



Source: World Bank database for NTMs and Authors' calculations.

Figure 10: Egypt: SPS Measures by Sub-Type (%)



Source: World Bank database for NTMs and Authors' calculations.

Table 1: Effects of NTMs on Tunisian Imports

	OLS model			PPML model		
Model	**1**	**2**	**3**	**4**	**5**	**6**
ln(distance)	-0.62***	-0.62***	-0.62***	-1.18***	-1.18***	-1.18***
	(-118)	(-118)	(-118)	(-11366)	(-11366)	(-11366)
ln(GDP_Exporter)	0.598***	0.598***	0.598***	.918***	.918***	.918***
	(213)	(213)	(213)	(16238)	(16238)	(16238)
ln(GDP_Tun)	0.529***	0.529***	0.529***	.135***	.135***	.136***
	(12.1)	(12.1)	(12.1)	(176)	(175)	(177)
Common language	0.307***	0.307***	0.307***	.319***	.319***	.319***
	(29.1)	(29.1)	(29.1)	(1425)	(1425)	(1425)
Common border	-0.416***	-0.416***	-0.416***	.752***	.752***	.752***
	(-11)	(-11)	(-11)	(1928)	(1928)	(1928)
Colonial links	0.772***	0.772***	0.772***	.635***	.635***	.635***
	(50.5)	(50.5)	(50.5)	(2575)	(2575)	(2575)
ln(freq.index NTMs)		0.00428			.000501***	
		(0.79)			(5.79)	
Dummy(NTMs)			0.0203			-.011***
			(0.828)			(-28.7)
Intercept	-19.8***	-19.8***	-19.8***			
	(-19.7)	(-19.6)	(-19.7)			
R-squared	0.328	0.328	0.328			
No. Observations	295137	295137	295137	3129356	3129356	3129356

Note: Standard-errors (z statistic) are reported for OLS (PPML) in parentheses with ***,** and * respectively denoting significance at the 1%, 5% and 10% levels. All specifications include product-fixed effects and time trend.

Table 2: Effects of NTMs on Egyptian Imports

	OLS model			PPML model		
Model	**1**	**2**	**3**	**4**	**5**	**6**
ln(distance)	-0.309***	-0.31***	-0.31***	-.516***	-.515***	-.515***
	(-47.8)	(-47.8)	(-47.8)	(-5955)	(-5941)	(-5941)
ln(GDP_Exporter)	0.618***	0.619***	0.619***	.871***	.871***	.871***
	(217)	(217)	(217)	(25075)	(25063)	(25064)
ln(GDP_Egy)	0.374***	0.381***	0.381***	.772***	.773***	.772***
	(15.7)	(15.9)	(15.9)	(2575)	(2562)	(2559)
Common language	0.0613***	0.0624***	0.0623***	.672***	.67***	.67***
	(4.03)	(4.11)	(4.1)	(3314)	(3303)	(3304)
Common border	-0.67***	-0.67***	-0.67***	-1.14***	-1.13***	-1.13***
	(-20.4)	(-20.4)	(-20.4)	(-1935)	(-1933)	(-1933)
Colonial links	0.134***	0.133***	0.133***	-.223***	-.222***	-.222***
	(8.48)	(8.42)	(8.42)	(-1038)	(-1033)	(-1033)
ln(freq.index of NTMs)		-0.016***			.0465***	
		(-5.39)			(1166)	
Dummy(NTMs)			-0.0731***			.209***
			(-5.42)			(1168)
Intercept	-18.4***	-18.7***	-18.6***			
	(-31.2)	(-31.6)	(-31.5)			
R-squared	0.303	0.303	0.303			
No. Observations	319211	319211	319211	2455760	2455760	2455760

Note: Standard-errors (z statistic) are reported for OLS (PPML) in parentheses with ***,** and * respectively denoting significance at the 1%, 5% and 10% levels. All specifications include product-fixed effects and time trend.

Table 3a: Effect of the Number of NTMs Notifications (by category) on Tunisian Imports – OLS Model

Model	A	B	C	D	F	H	P
ln(distance)	-0.62***	-0.62***	-0.62***	-0.62***	-0.62***	-0.62***	-0.62***
	(-118)	(-118)	(-118)	(-118)	(-118)	(-118)	(-118)
ln(GDP_Exporter)	0.598***	0.598***	0.598***	0.598***	0.598***	0.598***	0.598***
	(213)	(213)	(213)	(213)	(213)	(213)	(213)
ln(GDP_Tun)	0.531***	0.541***	0.556***	0.53***	0.531***	0.528***	0.545***
	(12.2)	(12.4)	(12.7)	(12.1)	(12.1)	(12.1)	(12.4)
Common language	0.306***	0.307***	0.307***	0.307***	0.307***	0.307***	0.307***
	(29)	(29.1)	(29)	(29.1)	(29.1)	(29.1)	(29.1)
Common border	-0.416***	-0.417***	-0.416***	-0.415***	-0.416***	-0.416***	-0.416***
	(-11)	(-11)	(-11)	(-11)	(-11)	(-11)	(-11)
Colonial links	0.773***	0.772***	0.773***	0.773***	0.772***	0.772***	0.773***
	(50.6)	(50.5)	(50.6)	(50.5)	(50.5)	(50.5)	(50.5)
ln(No.Notifs)	0.049***	-0.028***	0.0651***	0.0874**	0.0136	0.17**	0.0311***
	(6.24)	(-4.52)	(7.7)	(2.34)	(1.24)	(2.02)	(4.12)
Intercept	-19.6***	-20.2***	-20.1***	-19.4***	-19.8***	-19***	-20***
	(-19.5)	(-20)	(-20)	(-19)	(-19.6)	(-17.6)	(-19.9)
R-squared	0.328	0.328	0.328	0.328	0.328	0.328	0.328
No. Obs	295137	295137	295137	295137	295137	295137	295137

Note: Standard-errors are reported in parentheses with ***,** and * respectively denoting significance at the 1%, 5% and 10% levels. All specifications include product-fixed effects and time trend. Columns A, B, C, D, F, H and P refer to kind of NTM included in the estimation.

Table 3b: Effect of the Number of NTMs Notifications (by category) on Tunisian Imports – PPML Model

	A	B	C	D	F	H	P
ln(distance)	-1.18***	-1.18***	-1.18***	-1.18***	-1.18***	-1.18***	-1.18***
	(-11366)	(-11366)	(-11366)	(-11366)	(-11366)	(-11366)	(-11367)
ln(GDP_Exporter)	.918***	.918***	.918***	.918***	.918***	.918***	.918***
	(16238)	(16236)	(16238)	(16238)	(16238)	(16238)	(16239)
ln(GDP_Tun)	.136***	.103***	.14***	.134***	.135***	.135***	.161***
	(177)	(132)	(181)	(174)	(176)	(175)	(209)
Common language	.319***	.319***	.319***	.319***	.319***	.319***	.319***
	(1425)	(1425)	(1425)	(1425)	(1425)	(1425)	(1425)
Common border	.752***	.751***	.752***	.752***	.752***	.752***	.752***
	(1928)	(1927)	(1928)	(1928)	(1928)	(1928)	(1928)
Colonial links	.635***	.635***	.635***	.635***	.635***	.635***	.635***
	(2575)	(2576)	(2575)	(2575)	(2575)	(2575)	(2574)
ln(No.Notifs)	.0129***	.0254***	.0172***	-.0999***	.00226***	.0313***	.0425***
	(81.6)	(344)	(99.2)	(-146)	(11)	(28.3)	(327)
N	3129356	3129356	3129356	3129356	3129356	3129356	3129356

Note: z-statistics are reported in parentheses with ***,** and * respectively denoting significance at the 1%, 5% and 10% levels. All specifications include product-fixed effects and time trend. Columns A, B, C, D, F, H and P refer to kind of NTM included in the estimation.

Table 4a: Effect of the Number of NTMs Notifications (by category) on Egyptian Imports: OLS Model

Model	A	B	C	D	F	P
ln(distance)	-0.309***	-0.31***	-0.309***	-0.309***	-0.309***	-0.309***
	(-47.8)	(-47.9)	(-47.8)	(-47.8)	(-47.9)	(-47.8)
ln(GDP_Exporter)	0.618***	0.619***	0.618***	0.618***	0.618***	0.618***
	(217)	(217)	(217)	(217)	(217)	(217)
ln(GDP_Egy)	0.377***	0.386***	0.382***	0.374***	0.385***	0.374***
	(15.8)	(16.1)	(16)	(15.7)	(16.1)	(15.7)
Common language	0.0613***	0.0627***	0.0623***	0.0613***	0.0623***	0.0613***
	(4.03)	(4.13)	(4.1)	(4.04)	(4.1)	(4.03)
Common border	-0.669***	-0.67***	-0.669***	-0.67***	-0.67***	-0.67***
	(-20.4)	(-20.4)	(-20.4)	(-20.4)	(-20.4)	(-20.4)
Colonial links	0.134***	0.133***	0.133***	0.134***	0.133***	0.134***
	(8.48)	(8.4)	(8.4)	(8.48)	(8.4)	(8.48)
ln(No.Notifs)	0.0152**	-0.018***	-0.0483***	-0.0126	-0.0365***	0.00285
	(2.19)	(-6.08)	(-8.38)	(-0.322)	(-10.5)	(0.0681)
Intercept	-18.4***	-18.8***	-18.8***	-18.4***	-18.9***	-18.4***
	(-31.2)	(-31.8)	(-31.9)	(-29.6)	(-32)	(-29.8)
R-squared	0.303	0.303	0.303	0.303	0.303	0.303
No. Obs	319211	319211	319211	319211	319211	319211

Note: Standard-errors are reported in parentheses with ***,** and * respectively denoting significance at the 1%, 5% and 10% levels. All specifications include product-fixed effects and time trend. Columns A, B, C, D, F and P refer to kinds of NTM included in the estimation.

Table 4b: Effect of the Number of NTMs Notifications (by category) on Egyptian Imports: PPML Model

	A	B	C	D	F	P
ln(distance)	-.516***	-.514***	-.516***	-.516***	-.516***	-.516***
	(-5953)	(-5932)	(-5952)	(-5955)	(-5955)	(-5955)
ln(GDP_Exporter)	.871***	.87***	.871***	.871***	.871***	.871***
	(25073)	(25054)	(25073)	(25075)	(25075)	(25075)
ln(GDP_Egy)	.754***	.75***	.767***	.773***	.772***	.772***
	(2504)	(2480)	(2555)	(2574)	(2574)	(2575)
Common language	.672***	.669***	.672***	.672***	.672***	.672***
	(3315)	(3300)	(3312)	(3314)	(3314)	(3314)
Common border	-1.13***	-1.13***	-1.13***	-1.14***	-1.14***	-1.14***
	(-1935)	(-1932)	(-1935)	(-1935)	(-1935)	(-1935)
Colonial links	-.223***	-.222***	-.223***	-.223***	-.223***	-.223***
	(-1038)	(-1030)	(-1037)	(-1038)	(-1038)	(-1038)
ln(No.Notifs)	-.0489***	.0501***	.0568***	-.0148***	.00314***	-.01***
	(-658)	(1235)	(658)	(-26.6)	(73.9)	(-12.6)
N	2455760	2455760	2455760	2455760	2455760	2455760

Note: z-statistics are reported in parentheses with ***,** and * respectively denoting significance at the 1%, 5% and 10% levels. All specifications include product-fixed effects and time trend. Columns A, B, C, D, F and P refer to kind of NTM included in the estimation.

Table 5a: NTMs and the Intensive vs. Extensive Margin of Trade – Egypt OLS Model

Dependent variable	Mean value of imports			Number of varieties		
ln(distance)	-0.181***	-0.181***	-0.181***	-0.128***	-0.128***	-0.128***
	(-30.9)	(-31)	(-31)	(-89)	(-89)	(-89)
ln(GDP_Exporter)	0.446***	0.447***	0.447***	0.172***	0.172***	0.172***
	(173)	(173)	(173)	(271)	(271)	(271)
ln(GDP_Egy)	0.347***	0.353***	0.353***	0.0272***	0.0277***	0.0277***
	(16)	(16.3)	(16.3)	(5.11)	(5.2)	(5.21)
Common Language	0.0771***	0.0781***	0.0781***	-0.0158***	-0.0158***	-0.0158***
	(5.61)	(5.68)	(5.68)	(-4.68)	(-4.66)	(-4.66)
Common border	-0.33***	-0.33***	-0.33***	-0.339***	-0.339***	-0.339***
	(-11.1)	(-11.1)	(-11.1)	(-46.5)	(-46.5)	(-46.5)
Colonial links	0.0476***	0.0467***	0.0467***	0.0863***	0.0862***	0.0862***
	(3.33)	(3.27)	(3.27)	(24.6)	(24.5)	(24.5)
ln(No.Notifs)		-0.0148***			-0.00115*	
		(-5.52)			(-1.74)	
NTM (dummy)			-0.0675***			-0.00566*
			(-5.52)			(-1.88)
Intercept	-14.8***	-15.1***	-15***	-3.55***	-3.57***	-3.56***
	(-27.9)	(-28.3)	(-28.2)	(-27.1)	(-27.1)	(-27.2)
R-squared	0.269	0.269	0.269	0.461	0.461	0.461
No. Obs	319211	319211	319211	319211	319211	319211

Note: Standard-errors are reported in parentheses with ***,** and * respectively denoting significance at the 1%, 5% and 10% levels. All specifications include product-fixed effects and time trend.

Table 5b: NTMs and the Intensive vs. Extensive Margin of Trade – Tunisia PPML Model

	Mean value of imports			Number of varieties		
ln(distance)	-.937***	-.937***	-.937***	-.793***	-.793***	-.793***
	(-6207)	(-6207)	(-6207)	(-514)	(-514)	(-514)
ln(GDP_Exporter)	.746***	.746***	.746***	.725***	.725***	.725***
	(10104)	(10104)	(10104)	(954)	(954)	(954)
ln(GDP_Tun)	.46***	.46***	.461***	-.905***	-.907***	-.907***
	(382)	(382)	(383)	(-68.9)	(-69)	(-69)
Common language	.202***	.202***	.202***	.307***	.307***	.307***
	(625)	(625)	(625)	(89.8)	(89.8)	(89.8)
Common border	1.07***	1.07***	1.07***	-1.25***	-1.25***	-1.25***
	(2066)	(2066)	(2066)	(-91.8)	(-91.8)	(-91.8)
Colonial links	.49***	.49***	.49***	.0881***	.0881***	.0881***
	(1273)	(1273)	(1273)	(19.5)	(19.5)	(19.5)
ln(No.Notifs)		-.000992***			.00941***	
		(-6.85)			(5.83)	
NTM (dummy)			-.0282***			.0394***
			(-43.1)			(5.48)
N	3129356	3129356	3129356	3129356	3129356	3129356

Note: z-statistics are reported in parentheses with ***,** and * respectively denoting significance at the 1%, 5% and 10% levels. All specifications include product-fixed effects and time trend.

Table 5c: NTMs and the Intensive vs. Extensive Margin of Trade – Egypt PPML Model

	Mean value of imports			Number of varieties		
ln(distance)	-.333***	-.332***	-.332***	-.709***	-.71***	-.71***
	-2583	-2571	-2571	-362	-362	-362
ln(GDP_Exporter)	.789***	.789***	.789***	.706***	.706***	.706***
	15886	15874	15874	965	965	965
ln(GDP_Tun)	.748***	.753***	.75***	.0718***	.0781***	.0775***
	1641	1637	1632	10	10.9	10.8
Common language	1.15***	1.15***	1.15***	-.106***	-.106***	-.106***
	4333	4322	4322	-21.5	-21.5	-21.5
Common border	-.74***	-.74***	-.74***	-1.34***	-1.34***	-1.34***
	-1014	-1014	-1014	-114	-114	-114
Colonial links	-.273***	-.271***	-.271***	.0725***	.0721***	.0721***
	-760	-755	-755	16.6	16.6	16.6
ln(No.Notifs)		.0712***			-.00999***	
		1179			-11.1	
NTM (dummy)			.322***			-.0446***
			1184			-10.9
N	2455760	2455760	2455760	2455760	2455760	2455760

Note: z-statistics are reported in parentheses with ***,** and * respectively denoting significance at the 1%, 5% and 10% levels. All specifications include product-fixed effects and time trend. Columns A, B, C, D, F and P refer to kind of NTM included in the estimation.

Table 6a: Number of NTMs (by category) and the Intensive Margin Of Trade – Tunisia OLS Model

Model	A	B	C	D	F	H	P
ln(distance)	-0.433***	-0.433***	-0.433***	-0.433***	-0.433***	-0.433***	-0.433***
	(-91.2)	(-91.2)	(-91.2)	(-91.2)	(-91.2)	(-91.2)	(-91.2)
ln(GDP_Exporter)	0.425***	0.425***	0.425***	0.425***	0.425***	0.425***	0.425***
	(167)	(167)	(167)	(167)	(167)	(167)	(167)
ln(GDP_Tun)	0.737***	0.747***	0.759***	0.736***	0.736***	0.735***	0.749***
	(18.7)	(18.9)	(19.2)	(18.6)	(18.6)	(18.6)	(18.9)
Common language	0.207***	0.208***	0.208***	0.208***	0.208***	0.208***	0.208***
	(21.7)	(21.8)	(21.7)	(21.8)	(21.8)	(21.8)	(21.8)
Common border	-0.104***	-0.105***	-0.104***	-0.103***	-0.104***	-0.104***	-0.104***
	(-3.04)	(-3.06)	(-3.04)	(-3.02)	(-3.03)	(-3.03)	(-3.04)
Colonial links	0.638***	0.637***	0.639***	0.638***	0.638***	0.638***	0.638***
	(46.2)	(46.1)	(46.2)	(46.1)	(46.1)	(46.1)	(46.1)
ln(No.Notifs)	0.0458**	-0.0273***	0.0594**	0.0825**	0.00872	0.129*	0.027***
	(6.45)	(-4.87)	(7.76)	(2.44)	(0.877)	(1.7)	(3.95)
Intercept	-21.7***	-22.3***	-22.2***	-21.6***	-21.9***	-21.3***	-22.1***
	(-23.9)	(-24.4)	(-24.4)	(-23.4)	(-24.1)	(-21.9)	(-24.3)
R-squared	0.292	0.292	0.292	0.292	0.292	0.292	0.292
No. Obs	295137	295137	295137	295137	295137	295137	295137

Note: Standard-errors are reported in parentheses with ***,** and * respectively denoting significance at the 1%, 5% and 10% levels. All specifications include product-fixed effects and time trend. Columns A, B, C, D, F, H and P refer to kind of NTM included in the estimation.

Table 6b: Number of NTMs (by category) and the Intensive Margin of Trade – Tunisia PPML Model

	A	B	C	D	F	H	P
ln(distance)	-.937***	-.937***	-.937***	-.937***	-.937***	-.937***	-.937***
	-6207	-6206	-6207	-6207	-6207	-6207	-6207
ln(GDP_Exporter)	.746***	.745***	.746***	.746***	.746***	.746***	.746***
	10104	10100	10103	10104	10104	10104	10105
ln(GDP_Tun)	.457***	.386***	.449***	.457***	.459***	.459***	.498***
	379	317	372	380	382	382	410
Common language	.202***	.202***	.202***	.202***	.202***	.202***	.202***
	625	625	625	625	625	625	625
Common border	1.07***	1.07***	1.07***	1.07***	1.07***	1.07***	1.07***
	2066	2064	2066	2066	2066	2066	2066
Colonial links	.49***	.491***	.49***	.49***	.49***	.49***	.49***
	1273	1275	1273	1273	1273	1273	1272
ln(No.Notifs)	-.021***	.0446***	-.0246***	-.12***	-.00102***	.0349***	.0361***
	-108	434	-119	-138	-3.54	15.5	225
N	3129356	3129356	3129356	3129356	3129356	3129356	3129356

Note: z-statistics are reported in parentheses with ***,** and * respectively denoting significance at the 1%, 5% and 10% levels. All specifications include product-fixed effects and time trend. Columns A, B, C, D, F and P refer to kind of NTM included in the estimation.

Table 7a: Number of NTMs (by category) and The Intensive Margin of Trade – Egypt OLS Model

Model	A	B	C	D	F	P
ln(distance)	-0.181***	-0.181***	-0.181***	-0.181***	-0.181***	-0.181***
	(-30.9)	(-31)	(-31)	(-30.9)	(-31)	(-30.9)
ln(GDP_Exporter)	0.446***	0.447***	0.446***	0.446***	0.447***	0.446***
	(173)	(173)	(173)	(173)	(173)	(173)
ln(GDP_Egy)	0.347***	0.358***	0.357***	0.347***	0.358***	0.347***
	(16.1)	(16.5)	(16.5)	(16.1)	(16.6)	(16)
Common language	0.0771***	0.0784***	0.0784***	0.0771***	0.0782***	0.0771***
	(5.61)	(5.7)	(5.7)	(5.61)	(5.69)	(5.61)
Common border	-0.33***	-0.33***	-0.33***	-0.33***	-0.33***	-0.33***
	(-11.1)	(-11.1)	(-11.1)	(-11.1)	(-11.1)	(-11.1)
Colonial links	0.0476***	0.0464***	0.046***	0.0476***	0.0462***	0.0476***
	(3.33)	(3.24)	(3.22)	(3.33)	(3.23)	(3.33)
ln(No.Notifs)	0.00431	-0.017***	-0.0612***	-0.017	-0.0393***	0.00648
	(0.687)	(-6.32)	(-11.7)	(-.481)	(-12.4)	(0.171)
Intercept	-14.8***	-15.3***	-15.4***	-14.9***	-15.4***	-14.8***
	(-27.9)	(-28.4)	(-28.8)	(-26.5)	(-28.8)	(-26.5)
R-squared	0.269	0.269	0.269	0.269	0.269	0.269
No. Obs	319211	319211	319211	319211	319211	319211

Note: Standard-errors are reported in parentheses with ***,** and * respectively denoting significance at the 1%, 5% and 10% levels. All specifications include product-fixed effects and time trend. Columns A, B, C, D, F and P refer to kind of NTM included in the estimation.

Table 7b: Number of NTMs (by category) and the Intensive Margin of Trade – Egypt PPML Model

	A	B	C	D	F	P
ln(distance)	-.333***	-.331***	-.333***	-.333***	-.333***	-.333***
	-2580	-2565	-2581	-2583	-2582	-2583
ln(GDP_Exporter)	.789***	.788***	.789***	.789***	.789***	.789***
	15883	15865	15885	15886	15886	15886
ln(GDP_Tun)	.716***	.717***	.745***	.749***	.746***	.748***
	1561	1556	1632	1642	1638	1641
Common language	1.15***	1.15***	1.15***	1.15***	1.15***	1.15***
	4334	4319	4333	4333	4333	4333
Common border	-.74***	-.739***	-.74***	-.74***	-.74***	-.74***
	-1014	-1013	-1014	-1014	-1014	-1014
Colonial links	-.272***	-.27***	-.272***	-.273***	-.273***	-.273***
	-759	-753	-759	-760	-760	-760
ln(No.Notifs)	-.0702***	.0657***	.0604***	-.0457***	-.0196***	-.106***
	-658	1073	357	-45.7	-284	-113
N	2455760	2455760	2455760	2455760	2455760	2455760

Note: z-statistics are reported in parentheses with ***,** and * respectively denoting significance at the 1%, 5% and 10% levels. All specifications include product-fixed effects and time trend. Columns A, B, C, D, F and P refer to kind of NTM included in the estimation.

Table 8a: The Effect of The Number of NTMs (by category) on the Number of Varieties Imported – Tunisia

Model	A	B	C	D	F	H	P
ln(distance)	-0.187***	-0.186***	-0.187***	-0.186***	-0.186***	-0.186***	-0.186***
	(-158)	(-158)	(-158)	(-158)	(-158)	(-158)	(-158)
ln(GDP_Exporter)	0.173***	0.173***	0.173***	0.173***	0.173***	0.173***	0.173***
	(274)	(274)	(274)	(274)	(274)	(274)	(274)
ln(GDP_Tun)	-0.206***	-0.206***	-0.204***	-0.206***	-0.206***	-0.206***	-0.204***
	(-21)	(-20.9)	(-20.7)	(-21)	(-20.9)	(-21)	(-20.7)
Common language	0.099***	0.099***	0.099***	0.099***	0.099***	0.099***	0.099***
	(41.7)	(41.7)	(41.7)	(41.7)	(41.7)	(41.7)	(41.7)
Common border	-0.312***	-0.312***	-0.312***	-0.312***	-0.312***	-0.312***	-0.312***
	(-36.8)	(-36.8)	(-36.8)	(-36.8)	(-36.8)	(-36.8)	(-36.8)
Colonial links	0.135***	0.135***	0.135***	0.135***	0.135***	0.135***	0.135***
	(39.2)	(39.2)	(39.2)	(39.2)	(39.2)	(39.2)	(39.2)
ln(No.Notifs)	0.00316*	-0.000672	0.00575***	0.00487	0.00489**	0.0408**	0.00411**
	(1.79)	(-0.483)	(3.02)	(0.58)	(1.98)	(2.16)	(2.42)
Intercept	2.15***	2.13***	2.11***	2.16***	2.14***	2.32***	2.11***
	(9.49)	(9.36)	(9.31)	(9.41)	(9.47)	(9.58)	(9.29)
R-squared	0.485	0.485	0.485	0.485	0.485	0.485	0.485
No. Obs	295137	295137	295137	295137	295137	295137	295137

Note: Standard-errors are reported in parentheses with ***,** and * respectively denoting significance at the 1%, 5% and 10% levels. All specifications include product-fixed effects and time trend. Columns A, B, C, D, F, H and P refer to kind of NTM included in the estimation.

Table 8b: The Effect of The Number of NTMs (by category) on the Number of Varieties Imported – Tunisia PPML Modem

	A	B	C	D	F	H	P
ln(distance)	-.793***	-.793***	-.793***	-.793***	-.793***	-.793***	-.793***
	-514	-514	-514	-514	-514	-514	-514
ln(GDP_Exporter)	.725***	.725***	.725***	.725***	.725***	.725***	.725***
	954	954	954	954	954	954	954
ln(GDP_Tun)	-.905***	-.905***	-.897***	-.905***	-.903***	-.906***	-.898***
	-68.8	-68.7	-68.1	-68.9	-68.7	-69	-68.1
Common language	.307***	.307***	.307***	.307***	.307***	.307***	.307***
	89.8	89.8	89.8	89.8	89.8	89.8	89.8
Common border	-1.25***	-1.25***	-1.25***	-1.25***	-1.25***	-1.25***	-1.25***
	-91.8	-91.8	-91.8	-91.8	-91.8	-91.8	-91.8
Colonial links	.0881***	.0881***	.0881***	.0881***	.0881***	.0881***	.0881***
	19.5	19.5	19.5	19.5	19.5	19.5	19.5
ln(No.Notifs)	.0141***	-.000271	.029***	.0348***	.0122***	.0778***	.0171***
	5.21	-.152	9.73	2.67	3.64	3.4	6.98
N	3129356	3129356	3129356	3129356	3129356	3129356	3129356

Note: z-statistics are reported in parentheses with ***,** and * respectively denoting significance at the 1%, 5% and 10% levels. All specifications include product-fixed effects and time trend. Columns A, B, C, D, F and P refer to kind of NTM included in the estimation.

Table 9a: The Effect of the Number of NTMs (by category) on the Number of Varieties Imported – Egypt OLS Model

Model	A	B	C	D	F	P
ln(distance)	-0.128***	-0.128***	-0.128***	-0.128***	-0.128***	-0.128***
	(-89)	(-89)	(-89)	(-89)	(-89)	(-89)
ln(GDP_Exporter)	0.172***	0.172***	0.172***	0.172***	0.172***	0.172***
	(271)	(271)	(271)	(271)	(271)	(271)
ln(GDP_Egy)	0.0293***	0.0279***	0.025***	0.027***	0.0263***	0.0271***
	(5.51)	(5.23)	(4.71)	(5.09)	(4.95)	(5.11)
Common language	-0.0159***	-0.0158***	-0.0161***	-0.0158***	-0.0159***	-0.0158***
	(-4.69)	(-4.66)	(-4.76)	(-4.69)	(-4.71)	(-4.68)
Common border	-0.339***	-0.339***	-0.34***	-0.339***	-0.339***	-0.339***
	(-46.5)	(-46.5)	(-46.5)	(-46.5)	(-46.5)	(-46.5)
Colonial links	0.0864***	0.0862***	0.0866***	0.0863***	0.0864***	0.0863***
	(24.6)	(24.5)	(24.6)	(24.6)	(24.6)	(24.5)
ln(No.Notifs)	0.0108***	-0.00106	0.0129***	0.00442	0.0028***	-0.00363
	(7.04)	(-1.61)	(10.1)	(0.508)	(3.59)	(-0.39)
Intercept	-3.55***	-3.57***	-3.43***	-3.52***	-3.51***	-3.56***
	(-27.1)	(-27.1)	(-26.1)	(-25.4)	(-26.7)	(-25.9)
R-squared	0.461	0.461	0.461	0.461	0.461	0.461
No. Obs	319211	319211	319211	319211	319211	319211

Note: Standard-errors are reported in parentheses with ***,** and * respectively denoting significance at the 1%, 5% and 10% levels. All specifications include product-fixed effects and time trend. Columns A, B, C, D, F and P refer to kind of NTM included in the estimation.

Table 9b: Effect of the Number of NTMs (by category) on the Number of Varieties Imported – Egypt PPML Model

	A	B	C	D	F	P
ln(distance)	-.71***	-.71***	-.709***	-.709***	-.709***	-.709***
	-362	-362	-362	-362	-362	-362
ln(GDP_Exporter)	.706***	.706***	.706***	.706***	.706***	.706***
	965	964	964	965	965	965
ln(GDP_Tun)	.0762***	.0786***	.0653***	.072***	.07***	.0719***
	10.6	10.9	9.11	10	9.76	10
Common language	-.106***	-.106***	-.106***	-.106***	-.106***	-.106***
	-21.5	-21.5	-21.6	-21.5	-21.5	-21.5
Common border	-1.34***	-1.34***	-1.34***	-1.34***	-1.34***	-1.34***
	-114	-114	-114	-114	-114	-114
Colonial links	.0725***	.0721***	.0727***	.0725***	.0725***	.0725***
	16.6	16.6	16.7	16.6	16.7	16.6
ln(No.Notifs)	.0347***	-.00843***	.0331***	-.00983	.00382***	.0447***
	15.3	-9.29	21.3	-.749	3.85	2.67
N	2455760	2455760	2455760	2455760	2455760	2455760

Note: z-statistics are reported in parentheses with ***,** and * respectively denoting significance at the 1%, 5% and 10% levels. All specifications include product-fixed effects and time trend. Columns A, B, C, D, F and P refer to kind of NTM included in the estimation.

Appendix A: Effect of NTMs on Tunisian and Egyptian Imports: NTMs Measured by Dummies

Table A1 (a): Effect of NTMs Notifications (by category) on Tunisian Imports OLS Model

Model	A	B	C	D	F	H	P
ln(distance)	-0.62***	-0.62***	-0.62***	-0.62***	-0.62***	-0.62***	-0.62***
	(-118)	(-118)	(-118)	(-118)	(-118)	(-118)	(-118)
ln(GDP_Exporter)	0.598***	0.598***	0.598***	0.598***	0.598***	0.598***	0.598***
	(213)	(213)	(213)	(213)	(213)	(213)	(213)
ln(GDP_Tun)	0.531***	0.54***	0.555***	0.53***	0.531***	0.528***	0.545***
	(12.2)	(12.3)	(12.7)	(12.1)	(12.1)	(12.1)	(12.4)
Language	0.306***	0.307***	0.307***	0.307***	0.307***	0.307***	0.307***
	(29)	(29.1)	(29)	(29.1)	(29.1)	(29.1)	(29.1)
Common border	-0.416***	-0.417***	-0.416***	-0.415***	-0.416***	-0.416***	-0.416***
	(-11)	(-11)	(-11)	(-11)	(-11)	(-11)	(-11)
Colonial links	0.773***	0.772***	0.773***	0.773***	0.772***	0.772***	0.773***
	(50.6)	(50.5)	(50.6)	(50.5)	(50.5)	(50.5)	(50.5)
NTM	0.222***	-0.118***	0.297***	0.379**	0.0589	0.76**	0.137***
	(6.15)	(-4.28)	(7.64)	(2.27)	(1.2)	(1.98)	(4.02)
Intercept	-19.8***	-20***	-20.4***	-19.8***	-19.8***	-19.8***	-20.1***
	(-19.7)	(-19.9)	(-20.2)	(-19.7)	(-19.7)	(-19.7)	(-19.9)
R-squared	0.328	0.328	0.328	0.328	0.328	0.328	0.328
No. Obs	295137	295137	295137	295137	295137	295137	295137

Note: Standard-errors are reported in parentheses with ***,** and * respectively denoting significance at the 1%, 5% and 10% levels. All specifications include product-fixed effects and time trend. Columns A, B, C, D, F, H and P refer to kind of NTM included in the estimation.

Table A1 (b): Effect of NTMs Notifications (by category) on Tunisian Imports PPML Model

	A	B	C	D	F	H	P
ln(distance)	-.793***	-.793***	-.793***	-.793***	-.793***	-.793***	-.793***
	-514	-514	-514	-514	-514	-514	-514
ln(GDP_Exporter)	.725***	.725***	.725***	.725***	.725***	.725***	.725***
	954	954	954	954	954	954	954
ln(GDP_Tun)	-.905***	-.905***	-.897***	-.905***	-.904***	-.906***	-.898***
	-68.8	-68.7	-68.1	-68.9	-68.7	-69	-68.1
Common language	.307***	.307***	.307***	.307***	.307***	.307***	.307***
	89.8	89.8	89.8	89.8	89.8	89.8	89.8
Common border	-1.25***	-1.25***	-1.25***	-1.25***	-1.25***	-1.25***	-1.25***
	-91.8	-91.8	-91.8	-91.8	-91.8	-91.8	-91.8
Colonial links	.0881***	.0881***	.0881***	.0881***	.0881***	.0881***	.0881***
	19.5	19.5	19.5	19.5	19.5	19.5	19.5
NTM (dummy)	.0648***	-.00282	.133***	.154***	.0523***	.355***	.0766***
	5.19	-.363	9.66	2.62	3.5	3.39	6.98
N	3129356	3129356	3129356	3129356	3129356	3129356	3129356

Note: z-statistics are reported in parentheses with ***,** and * respectively denoting significance at the 1%, 5% and 10% levels. All specifications include product-fixed effects and time trend. Columns A, B, C, D, F and P refer to kind of NTM included in the estimation.

Table A2 (a): Effect of NTMs Notifications (by category) on Egyptian Imports OLS Model

Model	A	B	C	D	F	P
ln(distance)	-0.309***	-0.31***	-0.309***	-0.309***	-0.309***	-0.309***
	(-47.8)	(-47.9)	(-47.8)	(-47.8)	(-47.9)	(-47.8)
ln(GDP_Exporter)	0.618***	0.619***	0.618***	0.618***	0.618***	0.618***
	(217)	(217)	(217)	(217)	(217)	(217)
ln(GDP_Egy)	0.376***	0.385***	0.381***	0.374***	0.385***	0.374***
	(15.8)	(16.1)	(16)	(15.7)	(16.1)	(15.7)
Common language	0.0613***	0.0626***	0.0622***	0.0613***	0.0623***	0.0613***
	(4.03)	(4.12)	(4.1)	(4.04)	(4.1)	(4.03)
Common border	-0.669***	-0.67***	-0.669***	-0.67***	-0.67***	-0.67***
	(-20.4)	(-20.4)	(-20.4)	(-20.4)	(-20.4)	(-20.4)
Colonial links	0.134***	0.133***	0.133***	0.134***	0.133***	0.134***
	(8.48)	(8.4)	(8.41)	(8.48)	(8.4)	(8.48)
NTM	0.0653**	-0.0801***	-0.2***	-0.0205	-0.161***	0.0456
	(2.06)	(-5.92)	(-7.95)	(-0.141)	(-10.3)	(0.274)
Intercept	-18.4***	-18.7***	-18.6***	-18.4***	-18.7***	-18.4***
	(-31.3)	(-31.7)	(-31.6)	(-31.2)	(-31.8)	(-31.2)
R-squared	0.303	0.303	0.303	0.303	0.303	0.303
No. Obs	319211	319211	319211	319211	319211	319211

Note: Standard-errors are reported in parentheses with ***,** and * respectively denoting significance at the 1%, 5% and 10% levels. All specifications include product-fixed effects and time trend. Columns A, B, C, D, F and P refer to kind of NTM included in the estimation.

Table A2 (b): Effect of NTMs Notifications (by category) on Egyptian Imports PPML Model

	A	B	C	D	F	P
ln(distance)	-.516***	-.514***	-.516***	-.516***	-.516***	-.516***
	-5953	-5933	-5952	-5955	-5955	-5955
ln(GDP_Exporter)	.871***	.87***	.871***	.871***	.871***	.871***
	25073	25055	25073	25075	25075	25075
ln(GDP_Tun)	.756***	.752***	.766***	.772***	.772***	.772***
	2510	2486	2550	2573	2574	2575
Common language	.672***	.669***	.672***	.672***	.672***	.672***
	3315	3300	3312	3314	3314	3314
Common border	-1.13***	-1.13***	-1.13***	-1.14***	-1.14***	-1.14***
	-1935	-1932	-1935	-1935	-1935	-1935
Colonial links	-.223***	-.222***	-.223***	-.223***	-.223***	-.223***
	-1038	-1031	-1037	-1038	-1038	-1038
NTM (dummy)	-.221***	.224***	.292***	-.0105***	.00904***	-.07***
	-648	1212	834	-7.37	47.2	-28.7
N	2455760	2455760	2455760	2455760	2455760	2455760

Note: z-statistics are reported in parentheses with ***,** and * respectively denoting significance at the 1%, 5% and 10% levels. All specifications include product-fixed effects and time trend. Columns A, B, C, D, F and P refer to kind of NTM included in the estimation.

Table A3 (a): NTMs (by category) and the Intensive Margin of Trade – Tunisia OLS Model

Model	A	B	C	D	F	H	P
ln(distance)	-0.433***	-0.433***	-0.433***	-0.433***	-0.433***	-0.433***	-0.433***
	(-91.2)	(-91.2)	(-91.2)	(-91.2)	(-91.2)	(-91.2)	(-91.2)
ln(GDP_Exporter)	0.425***	0.425***	0.425***	0.425***	0.425***	0.425***	0.425***
	(167)	(167)	(167)	(167)	(167)	(167)	(167)
ln(GDP_Tun)	0.737***	0.746***	0.759***	0.736***	0.736***	0.735***	0.749***
	(18.7)	(18.8)	(19.2)	(18.6)	(18.6)	(18.6)	(18.9)
Common language	0.207***	0.208***	0.208***	0.208***	0.208***	0.208***	0.208***
	(21.7)	(21.8)	(21.7)	(21.8)	(21.8)	(21.8)	(21.8)
Common border	-0.104***	-0.105***	-0.104***	-0.103***	-0.104***	-0.104***	-0.104***
	(-3.04)	(-3.06)	(-3.04)	(-3.02)	(-3.03)	(-3.03)	(-3.03)
Colonial links	0.638***	0.637***	0.639***	0.638***	0.638***	0.638***	0.638***
	(46.2)	(46.1)	(46.2)	(46.1)	(46.1)	(46.1)	(46.1)
NTM	0.208***	-0.115***	0.271***	0.358**	0.0359	0.576*	0.117***
	(6.37)	(-4.64)	(7.71)	(2.37)	(0.809)	(1.66)	(3.81)
Intercept	-22***	-22.2***	-22.5***	-21.9***	-21.9***	-21.9***	-22.2***
	(-24.1)	(-24.3)	(-24.6)	(-24.1)	(-24.1)	(-24.1)	(-24.3)
R-squared	0.292	0.292	0.292	0.292	0.292	0.292	0.292
No. Obs	295137	295137	295137	295137	295137	295137	295137

Note: Standard-errors are reported in parentheses with ***,** and * respectively denoting significance at the 1%, 5% and 10% levels. All specifications include product-fixed effects and time trend. Columns A, B, C, D, F, H and P refer to kind of NTM included in the estimation.

Table A3 (b): NTMs (by category) and the Intensive Margin of Trade – Egypt PPML Model

	A	B	C	D	F	H	P
ln(distance)	-.937***	-.937***	-.937***	-.937***	-.937***	-.937***	-.937***
	-6207	-6206	-6207	-6207	-6207	-6207	-6207
ln(GDP_Exporter)	.746***	.745***	.746***	.746***	.746***	.746***	.746***
	10104	10099	10103	10104	10104	10104	10106
ln(GDP_Tun)	.456***	.377***	.449***	.457***	.459***	.459***	.503***
	379	310	372	380	382	382	415
Common language	.202***	.202***	.202***	.202***	.202***	.202***	.202***
	625	625	625	625	625	625	626
Common border	1.07***	1.07***	1.07***	1.07***	1.07***	1.07***	1.07***
	2066	2064	2066	2066	2066	2066	2066
Colonial links	.49***	.491***	.49***	.49***	.49***	.49***	.49***
	1273	1275	1273	1273	1273	1273	1272
NTM	-.0981***	.211***	-.114***	-.554***	-.0125***	.157***	.174***
	-110	480	-119	-141	-9.64	15.2	254
N	3129356	3129356	3129356	3129356	3129356	3129356	3129356

Note: z-statistics are reported in parentheses with ***,** and * respectively denoting significance at the 1%, 5% and 10% levels. All specifications include product-fixed effects and time trend. Columns A, B, C, D, F and P refer to kind of NTM included in the estimation.

Table A4 (a): NTMs (by category) and the Intensive Margin of Trade – Egypt OLS Model

Model	A	B	C	D	F	P
ln(distance)	-0.181***	-0.181***	-0.181***	-0.181***	-0.181***	-0.181***
	(-30.9)	(-31)	(-31)	(-30.9)	(-31)	(-30.9)
ln(GDP_Exporter)	0.446***	0.447***	0.446***	0.446***	0.447***	0.446***
	(173)	(173)	(173)	(173)	(173)	(173)
ln(GDP_Egy)	0.347***	0.357***	0.356***	0.347***	0.358***	0.347***
	(16.1)	(16.5)	(16.5)	(16)	(16.6)	(16)
Common language	0.0771***	0.0784***	0.0783***	0.0771***	0.0782***	0.0771***
	(5.61)	(5.7)	(5.7)	(5.61)	(5.69)	(5.61)
Common border	-0.33***	-0.33***	-0.33***	-0.33***	-0.33***	-0.33***
	(-11.1)	(-11.1)	(-11.1)	(-11.1)	(-11.2)	(-11.1)
Colonial links	0.0476***	0.0464***	0.0461***	0.0476***	0.0462***	0.0476***
	(3.33)	(3.25)	(3.23)	(3.33)	(3.24)	(3.33)
NTM	0.016	-0.0751***	-0.255***	-0.038	-0.173***	0.049
	(0.556)	(-6.13)	(-11.2)	(-0.29)	(-12.2)	(0.325)
Intercept	-14.8***	-15.2***	-15.1***	-14.8***	-15.2***	-14.8***
	(-27.8)	(-28.3)	(-28.3)	(-27.8)	(-28.5)	(-27.9)
R-squared	0.269	0.269	0.269	0.269	0.269	0.269
No. Obs	319211	319211	319211	319211	319211	319211

Note: Standard-errors are reported in parentheses with ***,** and * respectively denoting significance at the 1%, 5% and 10% levels. All specifications include product-fixed effects and time trend. Columns A, B, C, D, F and P refer to kind of NTM included in the estimation.

Table A4 (b): NTMs (by category) and the Intensive Margin of Trade – Egypt PPML Model

	A	B	C	D	F	P
ln(distance)	-.333***	-.331***	-.333***	-.333***	-.333***	-.333***
	-2580	-2565	-2581	-2583	-2582	-2583
ln(GDP_Exporter)	.789***	.788***	.789***	.789***	.789***	.789***
	15883	15866	15884	15886	15886	15886
ln(GDP_Tun)	.719***	.718***	.743***	.749***	.747***	.748***
	1568	1559	1628	1642	1638	1642
Common language	1.15***	1.15***	1.15***	1.15***	1.15***	1.15***
	4334	4320	4332	4333	4333	4333
Common border	-.74***	-.739***	-.74***	-.74***	-.74***	-.74***
	-1014	-1013	-1014	-1014	-1014	-1014
Colonial links	-.272***	-.27***	-.272***	-.273***	-.273***	-.273***
	-759	-754	-759	-760	-760	-760
NTM (dummy)	-.317***	.298***	.321***	-.103***	-.0909***	-.383***
	-649	1062	507	-35.3	-292	-131
N	2455760	2455760	2455760	2455760	2455760	2455760

Note: z-statistics are reported in parentheses with ***,** and * respectively denoting significance at the 1%, 5% and 10% levels. All specifications include product-fixed effects and time trend. Columns A, B, C, D, F and P refer to kind of NTM included in the estimation.

Table A5 (a): The Effects of NTMs (by category) on the Number of Varieties Imported – Tunisia OLS Model

Model	**A**	**B**	**C**	**D**	**F**	**H**	**P**
ln(distance)	-0.187***	-0.186***	-0.187***	-0.186***	-0.186***	-0.186***	-0.186***
	(-158)	(-158)	(-158)	(-158)	(-158)	(-158)	(-158)
ln(GDP_Exporter)	0.173***	0.173***	0.173***	0.173***	0.173***	0.173***	0.173***
	(274)	(274)	(274)	(274)	(274)	(274)	(274)
ln(GDP_Tun)	-0.206***	-0.206***	-0.204***	-0.206***	-0.205***	-0.206***	-0.204***
	(-21)	(-20.9)	(-20.7)	(-21)	(-20.9)	(-21)	(-20.7)
Common Language	0.099***	0.099***	0.099***	0.099***	0.099***	0.099***	0.099***
	(41.7)	(41.7)	(41.7)	(41.7)	(41.7)	(41.7)	(41.7)
Common border	-0.312***	-0.312***	-0.312***	-0.312***	-0.312***	-0.312***	-0.312***
	(-36.8)	(-36.8)	(-36.8)	(-36.8)	(-36.8)	(-36.8)	(-36.8)
Colonial links	0.135***	0.135***	0.135***	0.135***	0.135***	0.135***	0.135***
	(39.2)	(39.2)	(39.2)	(39.2)	(39.2)	(39.2)	(39.2)
NTM	0.0141*	-0.00234	0.0258***	0.0216	0.0229**	0.184**	0.0195**
	(1.74)	(-0.379)	(2.95)	(0.576)	(2.08)	(2.13)	(2.55)
Intercept	2.13***	2.13***	2.08***	2.13***	2.12***	2.14***	2.08***
	(9.43)	(9.4)	(9.18)	(9.44)	(9.37)	(9.44)	(9.18)
R-squared	0.485	0.485	0.485	0.485	0.485	0.485	0.485
No. Obs	295137	295137	295137	295137	295137	295137	295137

Note: Standard-errors are reported in parentheses with ***,** and * respectively denoting significance at the 1%, 5% and 10% levels. All specifications include product-fixed effects and time trend. Columns A, B, C, D, F and P refer to kind of NTM included in the estimation.

Table A5 (b): The Effects of NTMs (by category) on the Number of Varieties Imported – Tunisia PPML Model

	A	B	C	D	F	H	P
ln(distance)	-.793***	-.793***	-.793***	-.793***	-.793***	-.793***	-.793***
	-514	-514	-514	-514	-514	-514	-514
ln(GDP_Exporter)	.725***	.725***	.725***	.725***	.725***	.725***	.725***
	954	954	954	954	954	954	954
ln(GDP_Tun)	-.905***	-.905***	-.897***	-.905***	-.904***	-.906***	-.898***
	-68.8	-68.7	-68.1	-68.9	-68.7	-69	-68.1
Common language	.307***	.307***	.307***	.307***	.307***	.307***	.307***
	89.8	89.8	89.8	89.8	89.8	89.8	89.8
Common border	-1.25***	-1.25***	-1.25***	-1.25***	-1.25***	-1.25***	-1.25***
	-91.8	-91.8	-91.8	-91.8	-91.8	-91.8	-91.8
Colonial links	.0881***	.0881***	.0881***	.0881***	.0881***	.0881***	.0881***
	19.5	19.5	19.5	19.5	19.5	19.5	19.5
NTM (dummy)	.0648***	-.00282	.133***	.154***	.0523***	.355***	.0766***
	5.19	-.363	9.66	2.62	3.5	3.39	6.98
N	3129356	3129356	3129356	3129356	3129356	3129356	3129356

Note: z-statistics are reported in parentheses with ***,** and * respectively denoting significance at the 1%, 5% and 10% levels. All specifications include product-fixed effects and time trend. Columns A, B, C, D, F and P refer to kind of NTM included in the estimation.

Table A6 (a): The Effect of NTMs (by category) on the Number of Varieties Imported - Egypt OLS Model

Model	A	B	C	D	F	P
ln(distance)	-0.128***	-0.128***	-0.128***	-0.128***	-0.128***	-0.128***
	(-89)	(-89)	(-89)	(-89)	(-89)	(-89)
ln(GDP_Exporter)	0.172***	0.172***	0.172***	0.172***	0.172***	0.172***
	(271)	(271)	(271)	(271)	(271)	(271)
ln(GDP_Egy)	0.0293***	0.0279***	0.0251***	0.027***	0.0263***	0.0271***
	(5.5)	(5.23)	(4.72)	(5.09)	(4.95)	(5.11)
Common language	-0.0159***	-0.0158***	-0.0161***	-0.0158***	-0.0159***	-0.0158***
	(-4.69)	(-4.66)	(-4.76)	(-4.69)	(-4.71)	(-4.68)
Common border	-0.339***	-0.339***	-0.34***	-0.339***	-0.339***	-0.339***
	(-46.5)	(-46.5)	(-46.5)	(-46.5)	(-46.5)	(-46.5)
Colonial links	0.0864***	0.0862***	0.0866***	0.0863***	0.0864***	0.0863***
	(24.6)	(24.5)	(24.6)	(24.6)	(24.6)	(24.5)
NTM	0.0493***	-0.00498*	0.0558***	0.0175	0.0123***	-0.00339
	(6.98)	(-1.65)	(9.99)	(0.543)	(3.54)	(-0.0915)
Intercept	-3.6***	-3.57***	-3.49***	-3.54***	-3.52***	-3.55***
	(-27.4)	(-27.1)	(-26.6)	(-27)	(-26.9)	(-27.1)
R-squared	0.461	0.461	0.461	0.461	0.461	0.461
No. Obs	319211	319211	319211	319211	319211	319211

Note: Standard-errors are reported in parentheses with ***,** and * respectively denoting significance at the 1%, 5% and 10% levels. All specifications include product-fixed effects and time trend. Columns A, B, C, D, F and P refer to kind of NTM included in the estimation.

Table A6 (b): The Effect of NTMs (by category) on the Number of Varieties Imported - Egypt PPML model

	A	B	C	D	f	P
ln(distance)	-.516***	-.514***	-.516***	-.516***	-.516***	-.516***
	-5953	-5933	-5952	-5955	-5955	-5955
ln(GDP_Exporter)	.871***	.87***	.871***	.871***	.871***	.871***
	25073	25055	25073	25075	25075	25075
ln(GDP_Tun)	.756***	.752***	.766***	.772***	.772***	.772***
	2510	2486	2550	2573	2574	2575
Common language	.672***	.669***	.672***	.672***	.672***	.672***
	3315	3300	3312	3314	3314	3314
Common border	-1.13***	-1.13***	-1.13***	-1.14***	-1.14***	-1.14***
	-1935	-1932	-1935	-1935	-1935	-1935
Colonial links	-.223***	-.222***	-.223***	-.223***	-.223***	-.223***
	-1038	-1031	-1037	-1038	-1038	-1038
NTM (dummy)	-.221***	.224***	.292***	-.0105***	.00904***	-.07***
	-648	1212	834	-7.37	47.2	-28.7
N	2455760	2455760	2455760	2455760	2455760	2455760

Note: z-statistics are reported in parentheses with ***,** and * respectively denoting significance at the 1%, 5% and 10% levels. All specifications include product-fixed effects and time trend. Columns A, B, C, D, F and P refer to kind of NTM included in the estimation.

Appendix B: Harmonized System Classification (2007) Sections and Chapters

Section I – Live animals; animal products

Chapters 1, 2, 3, 4, 5.

Section II – Vegetable products

Chapters 6, 7, 8, 9, 10, 11, 12, 13, 14.

Section III – Animal or vegetable fats and oils and their cleavage products; prepared edible fats; animal or vegetable waxes

Chapter 15.

Section IV – Prepared foodstuffs; beverages, spirits and vinegar; tobacco and manufactured tobacco substitutes

Chapters 16, 17, 18, 19, 20, 21, 22, 23, 24.

Section V – Mineral products

Chapters 25, 26, 27.

Section VI – Products of the chemical or allied industries

Chapters 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38.

Section VII – Plastics and articles thereof; rubber and articles thereof

Chapters 39, 40.

Section VIII – Raw hides and skins, leather, furskins and articles thereof; saddlery and harness; travel goods, handbags and similar containers; articles of animal gut (other than silk-worm gut)

Chapters 41, 42, 43.

Section IX – Wood and articles of wood; wood charcoal; cork and articles of cork; manufactures of straw, of esparto or of other plaiting materials; basketware and wickerwork

Chapters 44, 45, 46.

Section X – Pulp of wood or of other fibrous cellulosic material; recovered (waste and scrap) paper or paperboard; paper and paperboard and articles thereof

Chapters 47, 48, 49.

Section XI – Textiles and textile articles

Chapters 50, 51, 52, 53, 54, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63.

Section XII – Footwear, headgear, umbrellas, sun umbrellas, walking-sticks, seat-sticks, whips, riding-crops and parts thereof; prepared feathers and articles made therewith; artificial flowers; articles of human hair

Chapters 64, 65, 66, 67.

Section XIII – Articles of stone, plaster, cement, asbestos, mica or similar materials; ceramic products; glass and glassware

Chapters 68, 69, 70.

Section XIV – Natural or cultured pearls, precious or semi-precious stones, precious metals, metals clad with precious metal and articles thereof; imitation jewellery; coin

Chapter 71.

Section XV – Base metals and articles of base metal

Chapters 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83.

Section XVI – Machinery and mechanical appliances; electrical equipment; parts thereof; sound recorders and reproducers, television image and sound recorders and reproducers, and parts and accessories of such articles

Chapters 84, 85.

Section XVII – Vehicles, aircraft, vessels and associated transport equipment

Chapters 86, 87, 88, 89.

Section XVIII – Optical, photographic, cinematographic, measuring, checking, precision, medical or surgical instruments and apparatus; clocks and watches; musical instruments; parts and accessories thereof

Chapters 90, 91, 92.

Section XIX – Arms and ammunition; parts and accessories thereof

Chapter 93.

Section XX – Miscellaneous manufactured articles

Chapters 94, 95, 96.

Section XXI – Works of art, collectors' pieces and antiques; miscellaneous provisions; non-merchandise trade

Chapters 97, 98, 99.