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Mediterranean food trade and Non-Tariff Measures

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Abstract. Since the last decades, Southern and Eastern Mediterranean Countries (SEMCs) are following a process of progressive trade liberalization. As a consequence of such process, the significance and interest on Non-Tariff Measures (NTMs) has increased. The aim of this paper is to discuss the underlying factors affecting the implementation of NTMs. NTMs include specific food safety concerns. However, there could also be economic and political reasons affecting the frequency of implementation of food safety measures (border alerts). We thus explore the significance of two hypotheses that provide an explanation of NTMs in Mediterranean countries. The first one is the “reputation effect” or the influence of past history of notifications on border rejections. The second one refers to the policy substitution hypothesis or the trade-off between NTMs and tariffs. These two approaches intend to give an overview of the implementation of NTMs situation across Mediterranean trade food area. Both suggest that there are economic and political factors affecting NTM implementation.

Keywords. Non-tariff measures – Southern and Eastern Mediterranean countries – Trade protection – Agro-food trade.

Commerce alimentaire et mesures non tarifaires dans la Méditerranée

Résumé. Depuis les dernières décennies, les pays du Sud et de l'Est de la Méditerranée suivent un processus de libéralisation progressive des échanges. Comme conséquence de ce processus, l'importance et l'intérêt des mesures non tarifaires a augmenté. Le but de cet article est de considérer les facteurs sous-jacents pour l'application des mesures non tarifaires au-delà des préoccupations spécifiques en matière de sécurité alimentaire. Pour ce faire, nous examinons l'importance de deux hypothèses qui fournissent une explication aux MNT dans les pays méditerranéens. La première est l'«effet de réputation» ou l'influence du passé historique des notifications sur les refus à la frontière. La deuxième fait référence à l'hypothèse de la politique de substitution ou compromis entre les mesures non tarifaires et les tarifs douaniers. Ces deux points de vue visent à donner une image de la mise en œuvre et la situation des MNT dans le commerce alimentaire méditerranéen. Les deux hypothèses suggèrent qu'il existe des facteurs économiques et politiques qui affectent la mise en œuvre des MNT.

Mots-clés. Mesures non tarifaires – Pays du Sud et de l'Est de la Méditerranée – Protection des échanges – Commerce agro-alimentaire.

I – Introduction

Tariffs on imports have been reduced to relatively low levels in the EU and Southern and Eastern Mediterranean Countries (SEMCs) especially as the result of the periodic rounds of multilateral and bilateral trade negotiations. This process has led to an increasing interest in the extent to which existing Non-Tariff Measures (NTMs)¹ may distort or restrict international trade. On one side, regulations are often necessary to alleviate market failures, but on the other side, domestic

¹Bradford (2005) defines non-tariff barriers as political or governmental practices, in addition to tariffs, which increase the domestic price of a well above their import price. In this paper, we use the more general term “Non-Tariff Measures” because these measures could be welfare improving when they provide information to consumers and decrease the impact of asymmetric information problem (Bureau *et al.*, 2001; Movchan, 1999, Disdier *et al.*, 2008).

regulations may be imposed simply to restrict imports from foreign competitors (Beghin, 2008). In order to address the issues involving the impact of NTMs, accurate and reliable studies on the actual reasons that explain NTMs are needed.²

What explains NTMs? There are, of course, health and technical justifications. NTMs are employed for many purposes, including the correction of information asymmetries and market failures very frequently related to food safety concerns. The use of NTMs is endorsed by the implementation of the WTO Agreements on Sanitary and Phytosanitary Measures (SPS) and Technical Barriers to Trade (TBT), which provide an international legal framework to regulate the implementation of NTMs. When countries implement such measures, they are protecting values such as public health, animal or vegetal health, or consumers' rights. However, they may also have potential protectionism purposes. While tariff barriers have been alleviated under multilateral liberalization agreements, NTMs have become a common trade restriction. NTMs can be used as disguised protection aiming at restricting the entrance of foreign produce (Hoeckman and Nicita, 2008; Nimenya *et al.*, 2012).

Harmonization of NTMs in the Euro-Mediterranean regions is a basic goal of the deep and comprehensive free trade area (DCFTA) launched by the EU and most SEMCs. The process, agreed in 1995 in Barcelona, and its follow-up, the Union for the Mediterranean (2008) has aimed at creating an area of shared prosperity, which is translated in the economic field by the establishment of a free trade area between the EU and its Mediterranean partners. Particularly, the agro-food trade has followed a gradual liberalization process over the last decades, as subsequent revisions of the Association Agreements have eliminated or reduced the trade barriers in a preferential and reciprocal basis. Nowadays, the most of agro-food products from SEMCs enter at the EU in a duty-free basis, but NTMs still appear as significant obstacles and their removal or harmonization involve a pre-condition for a deep integration process.

To date, the EU has largely dominated the agricultural trade relations of SEMCs. Morocco shows a positive agricultural trade balance with the EU but other SEMCs, in particular Algeria and Egypt, show a large deficit vis-à-vis the EU (Tudela *et al.*, 2014). According to EU data (European Commission, 2013), trade between the EU and the SEMCs in agricultural and fishery products shares about 5.5% of total EU imports and about 7.6% of total EU exports nowadays. With respect to the products traded, Petit (2009) explains that EU exports to SEMCs are much more diversified than the reverse trade flows from SEMC to the EU. In fact, SEMCs exports are concentrated on fruits and vegetables, with slight and continuous yearly increases. In these goods, SEMCs exploit their competitive advantage, as well as the traditional trade linkages, the aforementioned trade preferences and the geographical proximity to EU markets. On the other hand, in agricultural goods the EU main exporting section is some processed goods such as beverages or prepared foodstuffs. Other relevant agricultural products exported from the EU to SEMCs are dairy products and cereals, mostly wheat that helps to balance the low food self-sufficiency ratio suffered in many SEMCs.

In parallel and partially linked to the bilateral EU-SEMC agreements, some SEMCs are involved in a multilateral South-South integration. This process, namely the Agadir Agreement, has incorporated since 2007 Morocco, Tunisia, Egypt and Jordan in a gradual trade liberalization process. To date, its impact seems to be minor in agro-food trade.

Together with the Association Agreements between the EU and SEMCs, the institutional framework devised in the Euro-Mediterranean partnership has included financial instruments to foster the development of SEMCs. The process is supported by the Support to the European Neighbourhood Programme for Agriculture and Rural Development (ENPARD)³, which is a

² Detailed descriptions on NTMs and their quantification can be found in Deardoff and Stern (1999), Bora *et al.* (2002), and Ferrantino (2006).

³ In April 2014 CIHEAM launched a web site providing information regarding the ENPARD on SEMCs. The website presents various activities developed in the Southern Mediterranean countries which are partners of EU through the South ENPARD programme. See <http://www.enpard.iamm.fr/en/>

policy initiative that is part of the EU's commitment to inclusive growth and stability in its neighbourhood, recognising the importance of agriculture in terms of food security, sustainable production and rural employment. Among the axis of action in ENPARD, emphasis is put on achieving food security objectives, and, simultaneously, contributing to increasing food safety and raising quality standards to better benefit from export markets. Then, it is expected that in the next years these programs contribute to a further strengthening in the value chains of key exports from SEMCs to the EU. Such strengthening would imply a better ability of countries involved to comply with public and private standards on imported products.

Most of the literature dealing with NTMs in the Mediterranean region focuses on the role of NTMs on exports from SEMCs to the EU. Emlinger (2010) analysed the implications of NTMs in the entry of fruits and vegetables from different sources into the European markets. Cieslik and Hagemeyer (2009) found that even though the new EU Association Agreements liberalised imports of EU products from SEMCs, they did not contribute to the expansion of their exports to the EU markets. This happens as SEMC export success not only depends on a greater access to EU markets, but also on production adaptation to the EU standards, oriented to enhance quality systems and good agricultural practices (González Mellado *et al.*, 2010; Rau and Kavallari, 2013).

With this background, this paper presents the results of the recent research carried out at the Universitat Politècnica de València to analyze the underlying factors that affect the use of NTMs applied on agricultural and food trade. We focus on two hypothesis, which are: (i) whether the implementation of NTMs by the EU is motivated by a systematic behaviour, guided by economic and political considerations beyond the appearance of specific food alerts and safety concerns; and (ii) whether the implementation of NTMs in SEMCs is related to the removal of tariffs to trade, so a substitution of policies could take place. In summary, we are interested in dealing with an explanation of the NTM implementation that is not directly or solely linked to food safety issues.

To do so, in the next section, we will explore the EU behaviour expressed by the agro-food notifications on food alerts by the EU on imports with Mediterranean origin. Afterwards, the links between tariffs and non-tariff measures will be investigated by looking at the possible trade-off between tariff and non-tariff protection. The last section summarizes the main findings and offers some policy conclusions.

II – Explaining EU food alerts

As mentioned above, the EU is a major agro-food trade partner for SEMCs. Accomplishing the EU sanitary and safety standards is a challenge for Mediterranean exporters (García Álvarez-Coque *et al.*, 2012). A way of dealing with this issue is to monitor border rejections, since they are indicators of exporting countries to comply with food safety and quality requirements imposed by importing countries. During the period 2003 – 2008, the European Rapid Alert System for Food and Feed (RASFF) reported a total of 1,123 border rejection notifications concerning fruits and vegetables imported from the SEMCs to the EU (Grazia *et al.*, 2009).

RASFF supplies information on food alerts and border rejections. This database provides a direct measure of NTMs, expressed by the number of notifications of SPS measures applied by EU countries on imports from its trade partners. RASFF does not provide information of food alerts expressed in terms of notifications in given trade chapters of the Harmonized System (HS)⁴, which could facilitate their analysis. To solve that, we designed an Excel lexicographic tool to facilitate the conversion of over 1792 observations from the RASFF dataset into notifications classified by HS code.

⁴Harmonized Commodity Description and Coding Systems, used to describe products in trade statistics at 6-digit, 4-digit and 2-digit levels.

Focusing on notifications from the main EU importers concerning SEMCs as origin countries, Fig. 1 shows the number of notifications applied by EU authorities on exports from Turkey, Morocco and others SEMCs with destination to Spain, Netherlands, France, UK and Germany, between 2000 and 2013. Figure 2 reflects the notifications of the considered dataset classified by trade chapter at 2-digit level. Figure 3 provides its classification by type of food alert.

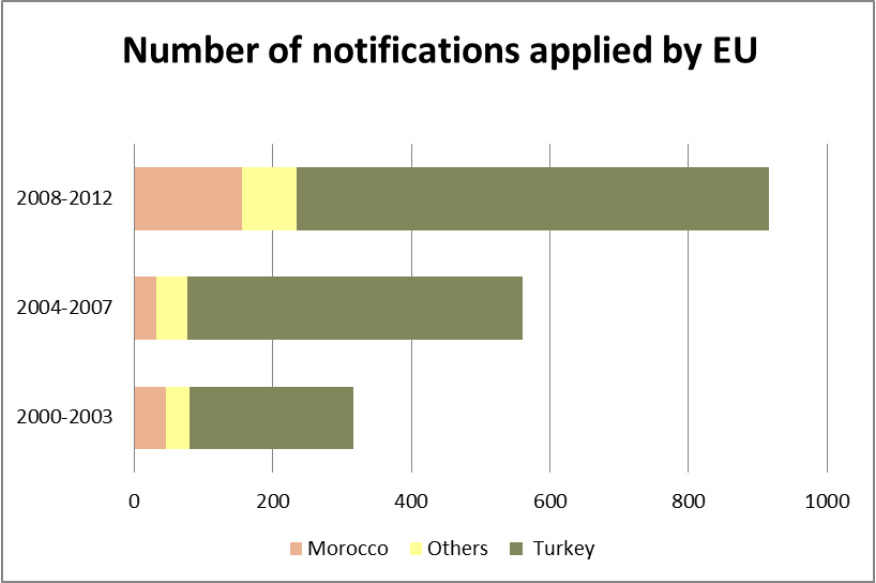


Fig. 1. Number of notifications applied by selected EU Member States^a on agrofood SEMC^b exports (a: Spain, Netherlands, France, UK and Germany, b: Morocco, Tunisia, Turkey, Egypt, Lebanon, Algeria and Jordan). Source: Authors' calculations from RASFF database.

The number of food alerts in the EU has increased in recent years. The observed increase can probably be attributed to the rise in notifications for products found to be unfit for consumption, but also, due to the increased control related to regulations and standards imposing reinforced checks for a list of products from outside the EU. Turkey is one of the countries –overall in the world, not only in the SEMC group- with highest number of notifications, which is highlighted in every RASFF annual report (see, for example, RASFF 2012). When border rejections are measured as a frequency, expressed in rejections per 1000 imported tons, Grazia *et al.* (2009) report an average rejection rate of 0.0493 rejections per 1000 tons of imported fruit and vegetables from the Mediterranean region, with Turkey having a frequency rate of 0.0975/1000 tons.

Figure 2 shows those trade chapters that accumulate more notifications. The significant number of notifications in the product category "Fruits and nuts" (HS 08) is mainly due to the notifications on aflatoxins in dried figs from Turkey. The 111 notifications in the category "Tea and spices" relate to different spices such as: chilli powder, paprika, curry powder and camomile tea, etc. Concretely 89 notifications concern spices and herbs originating from Turkey and 15 from Egypt. Table 1 summarises the main problems appeared on EU imports from selected SEMCs.

Fish and crustaceans (HS03) is the most-notified category of food of animal origin. In this case, the results show clearly that heavy metals and bad hygienic state are still the most reported hazards.

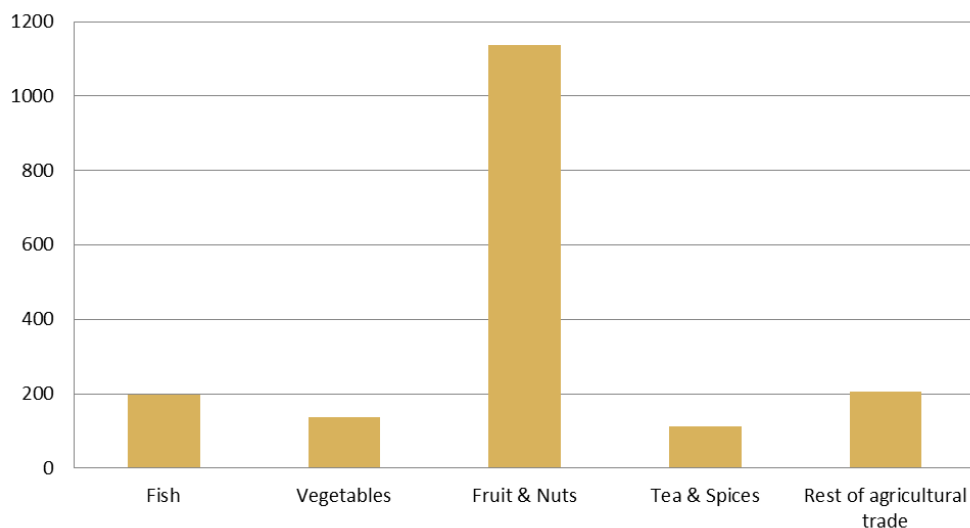


Fig. 2. Notifications at different trade chapters, by selected EU Member States^a on agrofood SEMC^b exports a: Spain, Netherlands, France, UK and Germany, b: Morocco, Tunisia, Turkey, Egypt, Lebanon, Algeria and Jordan) Source: Authors' calculations from RASFF database.

Table 1. Main hazard type, origin and product category (2012). Notifications by selected EU Member States^a on agrofood SEMC^b exports. Source: Authors calculations based on RASFF

Origin	Main risks	Main products
Egypt	Aflatoxins Methomyl	Groundnuts and peanuts Fresh strawberries
Morocco	Too high content of sulphite and Heavy metals Bad hygienic state and parasitic infestation	Fresh and frozen fish
Tunisia	Mycotoxins Aflatoxin	Pistachios and hazelnuts Dried Figs.
Turkey	Too high content of sulphite Aflatoxins Methamidophos	Dried apricots Dried figs and hazelnut Green peppers
Lebanon	Aflatoxins	Pistachios and nuts

a: Spain, Netherlands, France, UK and Germany; b: Morocco, Tunisia, Turkey, Egypt, Lebanon, Algeria and Jordan.

Figure 3 shows the different types of classifications based on RASFF. Since 2008, RASFF differentiates between "market notifications" (alerts and information) "border rejections" and "news information" (notifications for attention and for follow-up). Market notifications are about products found on the Community territory for which a health risk was reported, 1919 in total for the countries and period covered. Products that are subject of a border rejection never entered the Community and were sent back to the country of origin, destroyed or sent to another destination, accounting to 712 cases.

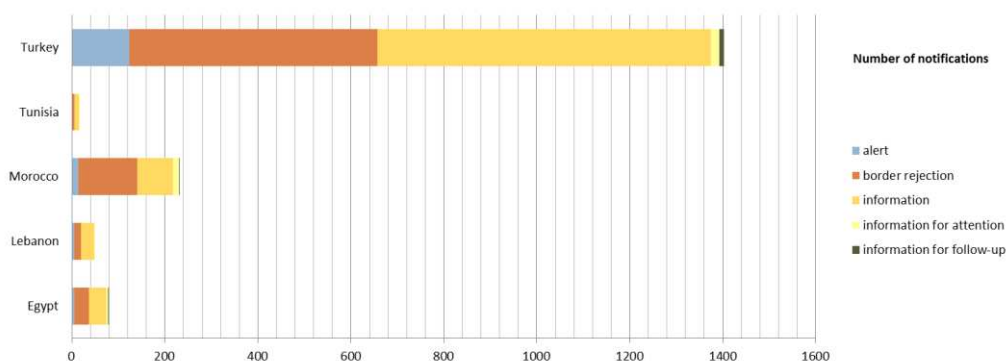


Fig. 3. Classification by type of food alert and by year, by selected EU Member States^a on agrofoodSEMC^b exports (a: Spain, Netherlands, France, UK and Germany, b: Morocco, Tunisia, Turkey, Egypt, Lebanon, Algeria and Jordan). Source: Authors' calculations from RASFF database.

Impacts of NTMs largely depend on the type of standard required and policies designed by EU with their partners (Disdier *et al.*, 2008; Anders and Caswell, 2009; Disdier and Maret, 2010; Martí-Selva and García Álvarez-Coque, 2007). The literature shows that NTMs have basically two contradictory sets of effects for developing countries. Essaji (2008) found that the NTMs lead to increasing production and compliance costs. By contrast, Maertens and Swinnen (2009) suggested that foreign standards push up the production quality and help firms to realize beneficial productivity gains. In the same line, Chemnitz *et al.* (2007), state that SPS and TBT measures can bring significant social benefits even to low income countries, such as reduced agrochemical use and a framework that guides good agricultural and management practices. The EU is an attractive destination for emerging countries exporters, given its relevant agro-food demand size, the historical relations of trade and the geographical proximity in the case of Mediterranean partners. Despite the harmful effect of NTMs, they may aid to improve the quality level representing strong motivation to develop trade flows of agro-food products through countries.

Taghouti and García Álvarez-Coque (2013) provided a test for the hypothesis that one product's border rejections in one year may affect the probability of future rejections, and that such effects may appear at product, sector and country level. Thus, the quoted authors tested to which level that past history of food alerts or notifications, that is to say "reputation", significantly influences EU behaviour on actual notifications⁵. At each year (t), the EU authorities may implement NTMs based on present risk assessment criteria, but they are also influenced by the past. Hence, the hypothesis that the product notifications of the year (t-1) and previous years could raise the notifications of the year (t) was examined.

Taghouti and García Álvarez-Coque (2013)⁶ applied a conditional fixed-effects negative binomial regression to determine the effects of certain variables in the number of notifications in the year (t). Among the explanatory variables, the "reputation effects" refer to notifications issued at (t-1) on the same product (4-digit HS code), on the sector where such product belongs to (similar products of the corresponding 2-digit HS code), to the country of origin, and to the corresponding geographic area (e.g. Mediterranean region, South America). Other explanatory variables influencing current notifications are the per capita GDP of the originating country, and the import volume and growth.

⁵By doing that, Taghouti and García Álvarez-Coque introduce the reputation effects in the analysis of EU agricultural imports, which is comparable to the studies carried out in the USA by Jouanjean *et al.*, 2012.

⁶See also Taghouti (2013)

The per capita GDP was taken as a measure of economic development and capacity of the exporting country to face NTMs. The level of development of partner countries is expected to be negatively correlated with border rejection figures. Indeed, in the quoted study, the per capita GDP was statistically significant at 1% significance level which means that the EU rejections depend on variables correlated by the per capita GDP of the countries (infrastructure, human capital, etc). Import growth was also found a relevant determinant of the total number of refusals, as EU behaviour could be affected in agri-food trade by a protectionist behaviour. Indeed, the positive coefficient of this variable means that, as a general trend, a sharp import flow increase from a given exporter with a history of non compliance is accompanied by a stricter control in the borders so more rejections and notifications by the EU authorities could be expected. The impact of the sector and country reputation were also found to be statistically significant.

The variable representing the reputation effect of countries belonging to the Mediterranean region was statistically significant but came with a negative sign. In the case of SEMCs, given their export specialization in products competing with Southern European production (fruit and vegetables and olive oil), the historical partnership and the geographical proximity in the case of SEMC might have a positive effect on the compliance to the required standards.

Linking these results with the figures depicted earlier, there is no evidence that the EU shows a specific protectionist behaviour against products from the Mediterranean region, compared to products from other regions. Moreover, it is true noting that significant EU investments in the agro-exporting sectors in these countries help to overcome NTMs. Such relation can improve the capacity of these countries to achieve the quality and standards required by the EU, as the financial tools like ENPARD can do as well.

III – Non-Tariff Measures applied in Southern and Eastern Mediterranean countries

1. The hypothesis of policy substitution

As a part of their integration process, SEMCs are in different stages of harmonization of their NTMs (González-Mellado *et al.*, 2010). Providing knowledge on NTM harmonization in the Mediterranean area may be helpful to foster trade rather than restricting it. Tudela *et al.* (2013, 2014) used the estimates of ad valorem equivalents of NTMs (AVEs) by Kee *et al.* (2009) to identify "peak levels" in several SEMCs. The AVEs reflect what would be the theoretical tariff levels that would produce equivalent effects to the NTMs applied by a given country on a given product. It was found that most SEMCs have AVEs that can be considered as "peaks"⁷. It appears that stringency of applying measures by the own SEMCs seems to be relatively stronger at the borders as compared to a less effective monitoring in the domestic market (De Wulf *et al.*, 2009).

Some authors have suggested the hypothesis of "policy substitution" between tariffs and NTMs. The policy substitution hypothesis in the context of large-country terms-of-trade motives for tariffs and regulations has been studied in Staiger and Sykes (2009). Going deeper into the subject, results by Gourdon *et al.* (2012) suggest the presence of correlation between the use of NTMs and traditional forms of trade policy. In fact, the possibility emerges that tariff and NTMs can act as substitute or complementary, in both cases showing the impact to domestic political economic pressures (Bown and Tovar, 2011). The evidence is not conclusive as the restrictiveness of NTMs can be seen as depending on the sector or the country income (Dean *et al.*, 2009).

⁷This paper kept the "usual" criteria for identifying peaks: literature identifies as tariff peaks those above 20% (mentioned in ICSTD, 2009).

In order to explore possible interdependence between NTMs and tariffs in agro-food trade we studied NTMs situation in a subset of SEMCs gathering the available data for comparing tariffs and NTMs equivalents. The products include the whole range of agro-food products at the 6-digit level of the Harmonized System (HS chapters 01 to 22).

The NTMs are collected from the data on AVE of Non-Tariff Measures (labelled from now on as Non-Tariff Equivalents NTEs) estimated by Kee *et al.* (2009). NTEs are expressed as percentage of the value of the product, which make them directly comparable with tariffs. The countries selected are those in the Agadir Agreement, due to their relevant level of integration across SEMCs.

The tariffs data are collected from the World Integrated Trade Solution (WITS) database. Concretely for the study, the Most Favoured Nation (MFN) applied tariffs at HS 6-digit were collected, corresponding to the same period when the NTE were available.

Obviously, these estimates are not free of limitations⁸. We are also aware that the tariffs selected in WITS database are multilateral, so they only reflect the general trade policy of a country and not the expression of the bilateral trade policy with specific partners.

2. Is trade protection significant?

We first explore the overall scope of agricultural protection. Descriptive statistics on the incidence of tariffs and NTMs in terms of frequency, mean, standard deviation and ratio NTE/tariffs were calculated, in order to get a general overview. Table 2 depicts the simple average NTEs and tariff levels on agricultural imports. The table shows the relatively high protection level in the set of countries studied⁹, with the exception of Jordan. The situation changes from one HS chapter to another, as indicated by the relatively high standard deviations calculated, with some chapters with low protection -in particular fish- and some others with relatively high protection. Across countries, Egypt shows the highest level of standard deviation due to almost prohibitive tariffs in HS chapters 21 and 22. Tariffs and NTE figures displayed in Table 2 are "multilateral", showing the general orientation of trade policy (total agricultural imports of the selected set of countries). Figures don't correspond to the bilateral trade liberalization undertaken among countries in the region or with respect the EU.

Table 2. Non-Tariff Equivalents and Tariffs on agricultural imports^a in Agadir countries (ad valorem %). Source: Authors' calculations

	Tunisia	Morocco	Jordan	Egypt
NTEs				
Mean	41.1	35.9	6.4	44.2
Standard deviation	55.2	53.5	25.0	56.2
Tariffs				
Mean	73.5	52.9	21.9	66.6
Standard deviation	53.2	45.9	24.2	376.0
Ratio NTE/Tariff	0,56	0.68	0.29	0.66

Note: Calculations carried out including HS Chapters 1 to 22.

⁸Kee *et al.* (2009) offer a comprehensive set of NTEs. Other estimates with a different or more limited scope can be found in Deardoff and Stern (1999), Dean *et al.* (2003) and Vaughan (2005). Nimenya *et al.* (2010) extended the price comparison method to account for imperfect substitution and factor endowment under monopolistic competition. Sanjuán *et al.* (2013) suggest an alternative way of measuring NTE based on the gravity equation.

⁹Although the list of countries can be extended to more SEMC, care was taken for incomplete datasets or inconsistent figures, so the sample of countries is limited in this paper.

3. Are trade policies transparent?

In average, NTEs are lower than tariff levels in the four countries considered, although ratios of NTEs to multilateral tariffs range from 0.29 in Jordan to 0.68 in Morocco and Algeria. This indicates that although tariff liberalization remains an issue in agricultural trade, non-tariff protection is also relevant, in particular because NTMs are not as transparent as tariff protection. The fact that the ratios NTE/tariffs are lower in some countries than others suggests that transparency of trade policies is not uniform in SEMCs. In the next paragraphs we explore protection and transparency in trade rules, showing that both concepts may not necessarily overlap.

The comprehensive set of data regarding protection extracted from the sources quoted in Section 3.1 can be classified with the aim of creating a systematic or "taxonomy" of the protection. The frequency of the so-called "peak" equivalents was measured, to highlight both tariff and NTEs exceeding a certain threshold. To define such peaks, the starting point was the modalities document prepared by the Committee of Agricultural Negotiations circulated in the Doha current negotiations (WTO, 2008). For developing countries, it suggests that the highest tariffs reductions shall be done in those products where the bound tariff or ad valorem equivalent is greater than 75 per cent. Besides, when the tariff values are between 0 and 30 per cent, the lowest rates of reduction shall be applied. After that, two alternative thresholds for tariffs peaks were established at 30% and 75%. On the same token, we identified as NTE peaks those values greater than 75%, with the aim of identifying cases where the price effects of NTMs were of utmost magnitude.

Thus, for each country, the taxonomy of products according to their trade protection pattern was developed combining the NTE and the tariff level. This allows comparing protection across countries and groups of products. To do so, four categories have been defined:

(i) High protection: The first category contains all products where tariffs are relatively high (above 30 or 75 per cent) and also high NTM are applied (NTEs greater than 75 per cent).

(ii) Disguised protection: The second category contains all products where tariffs are relatively low (less than 30 or 75 per cent) but high NTM are applied (NTEs greater than 75 per cent).

(iii) Low protection: The third category contains all products where tariffs are relatively low (less than 30 or 75 per cent) and also low NTM are applied (NTEs below 75 per cent).

(iv) Transparent protection: The fourth category contains all products where tariffs are relatively high (above 30 or 75 per cent) but low NTM are applied (NTEs below 75 per cent).

Thus, the protection for some products can rely on high tariffs and low NTEs, which means a protectionist approach but transparent in the sense that tariffs are less trade-distorting. On the other extreme, there are products with relatively low tariffs but the NTMs applied have high NTEs, situation that has been considered as "Disguised" protectionism. There are of course groups of "High Protection" and "Low Protection", grouping products where both tariffs and NTEs are high or low, respectively.

The taxonomy of protection is illustrated in Table 3, which shows that a significant number of products can be considered as receiving transparent or low protection levels.

Disguised protection is significant in Morocco, Tunisia and Egypt if thresholds are set at 75%, ranging from 19 percent of total products in Tunisia to 26 percent in Egypt. When thresholds are lowered for tariffs to 30%, the disguised protection group diminishes in Morocco and Tunisia, but in turn, the high protection group increases in both countries to 22 percent in Morocco and

23 percent in Tunisia. This indicates that, in spite of the criterion for setting the level of tariff peaks, the NTE keep a protective role in a significant number of cases.

Table 3. Taxonomy of agricultural trade protection (Percentage of products in each group) Source: Authors' calculations

Category of protection	Egypt		Jordan		Morocco		Tunisia	
	%	Highest frequency HS chapter	%	Highest frequency HS chapter	%	Highest frequency HS chapter	%	Highest frequency HS chapter
Thresholds: NTE 75% and Tariff 75%								
High	1	22	0	-	2	02	9	02,03
Disguised	26	08	4	02	21	03	19	03
Low	71	03	95	03	71	03	48	03
Transparent	1	22	2	22	5	02	25	07
Thresholds: NTE 75% and Tariff 30%								
High	6	20	0	-	22	03	23	03
Disguised	21	08, 15	3	02	2	12	5	12
Low	57	03	52	03	15	15	14	12
Transparent	15	20	45	08	61	03	58	03

Note: HS chapters: 02: Meat and edible meat offal; 03: Fish and crustaceans; 07: Edible Vegetables; 08: Edible Fruits and Nuts; 12: Oil seeds and oleaginous; 15: Animal or vegetable fats and oils; 20: Preparations of vegetables and fruits; 22: Beverages.

Jordan shows a low protection level, irrespective of the criteria set. It does not have products in the high protection group, and the percentage of products in the disguised group is only 4 percent taking the first criterion (75%, 75%) and 3 percent in the second criterion (75%, 30%). In Egypt, the high protection group keeps at only 6 percent of total products with the same thresholds but the disguised protection group still represents 21 percent of products for the same criterion. As a conclusion, data on tariff and NTE show that: (i) high NTE are still significant in several SEMCs countries; and (ii) high NTE appear both in products with relatively high and in products with relatively low tariff levels.

IV – Concluding remarks

In this paper, the protection applied by SEMCs to agro-food products is analyzed. The general argument to be explored was that NTMs are affected by economic and political reasons that are not necessarily connected to specific sanitary and safety concerns. This was approached following two main specific hypotheses. The first is that EU import border rejections and food alerts are explained by a range of variables, including the history of past notifications ("reputation" effect), the import volumes and growth, and per capita GDP of exporting countries. The second hypothesis deals with the possibility of a policy substitution or complementarity between tariffs and NTMs. Both hypotheses were investigated in the context of the Euro-Mediterranean DCFTA.

EU Notifications included in the RASFF database appeared to have been influenced by real SPS and TBT problems. However, beyond specific safety problems, there is a wider common behaviour on the way standards are applied. EU notifications are affected firstly by the own reputation of a product and the sector reputation in a given zone, with relatively stronger effect of the reputation built at a product level. Notifications are also pushed up by the import volume,

with a clear response of the alert system to import growth, suggesting possible protectionist reactions. Implementation of NTMs by the EU vary according the per capita GDP of the exporter, suggesting that investment in infrastructure and human capacities favour the integration of agro-exporting firms in the global value chains to comply with EU requirements regarding the quality of imported products.

However, no special disguised protection was found in the way EU policies affect export flows from Mediterranean countries to the EU member states, compared to flows originated in other world's regions.

The policy substitution analysis was carried out by combining information regarding the protection via tariffs and via NTMs, using comprehensive datasets, which allow a product-by-product detailed view of the issue. Means of achieving agricultural protection are varied in the Mediterranean region. There are different possibilities at stake: only-tariff protection, in other cases NTMs may be used as a substitute for tariffs, while in other cases significant NTMs coincide with tariffs.

To ascertain these elements, a taxonomy or categorization of the products has been made, considering simultaneously the protection via tariffs and via NTMs. The dominant category observed is low protection. However, the general picture shows that a relatively high level of transparent protection (e.g., high tariffs and relatively low NTEs) still remains as well as significant disguised protection (e.g. low tariffs and relatively high NTEs) in the four countries considered. Nevertheless, there are some country differences, as Jordan and Egypt seem to have lower number of products with significant protection. The general conclusion is consistent with other estimates (see Rau and Kavallari, 2013). In addition, another remarkable fact is that the values of the NTEs are lower than the tariffs.

The level of protection in the considered sample of SEMCs varies depending on the products, although certain product chapters 02 (meat), 03 (fish), 20 and 22 (processed fruit and vegetables) are more protected which is in line with some previous results from Tudela *et al.*, (2013).

While this analysis indicates that there could be certain relationship between NMTs and tariffs, it cannot be stated that SEMCs are implementing NTMs as a substitute of the (gradually declining) protection via tariffs; neither a clear complementarity among both types of protection takes place. Consequently, future research could consider a more detailed statistical analysis on how the NTE levels depend on tariff levels and on a range of product specificities.

Our results suggest that the food safety policies in the Mediterranean region do not respond to a systematic behaviour or general logic of relationship between NTEs and tariff levels. In any case, the analysis requires further exploration at the country level, with focus on identified SPS and TBT problems.

As pointed out in OECD (2011), the challenge for NTMs remains to separate protectionist and non-protectionist policies and to identify alternative approaches for trade policies, in particular in processes involving DCFTAs. In the case of the SEMCs and their bilateral liberalization, the results described above highlight the role of harmonization in NTMs. Indeed, as the NTMs applied in the region do not appear to be motivated by tariff liberalization, a case-by-case approach could be helpful to foster the harmonization of SPS and TBT standards across the countries involved. Such approach could merit from the support of the institutions fostering trade liberalization, or from other funds like the ENPARD program.

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