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IFN Working Paper No. 881, 2011

# **Reaping the Benefits of Deeper Euro-Med Integration through Trade Facilitation**

Yves Bourdet and Maria Persson

# Reaping the Benefits of Deeper Euro-Med Integration Through Trade Facilitation\*

Yves Bourdet<sup>†</sup> and Maria Persson<sup>‡</sup>

August 19, 2011

## *Abstract*

The current political turmoil in the Arab world has contributed to renewed interest in the Barcelona Process. This paper explores whether deeper integration in the form of trade facilitation – i.e. improved and simplified trade procedures – could be an important part of a reform agenda. Adopting a Southern perspective by focusing on exports from non-EU Mediterranean countries to the EU, we test whether the efficiency of trade procedures affects (i) bilateral volumes of exports, and (ii) the number of products exported. Our findings suggest that trade facilitation could lead to substantially increased export volumes and export diversification.

*JEL classification: F15, O19, O24*

*Keywords: Barcelona Process; Mediterranean Union; European Union; Deeper Integration; Trade Facilitation; Export volumes; Export Diversification*

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# 1 Introduction

The current political turmoil in the Arab world has contributed to renewed interest in the Barcelona Process and how it can be improved in order to promote inclusive growth in the non-EU Mediterranean countries. A main objective of the Barcelona Process has been to boost trade between the EU and non-EU Mediterranean countries and to contribute to the catching up of the southern Mediterranean countries in terms of economic growth and well-being. Some sixteen years after its start in 1995 most observers admit that its outcome has fallen short of expectations. Trade creation has been limited, particularly when it comes to exports from non-EU Mediterranean countries, and signs of catching up and economic convergence are difficult to find for the majority of the non-EU Mediterranean countries. These mixed results contributed to the launching of a new initiative, the “Union for the Mediterranean”, in 2008. The new initiative was lively debated at the onset before it was eventually brought into the framework of the Barcelona Process and renamed the Euro-Mediterranean Partnership. How the new initiative will contribute to deepening the process of Euro-Med integration remains to be clarified.

In this paper, we explore whether deeper integration in the form of *trade facilitation* – i.e. improved and simplified trade procedures – could be an important part of a reform agenda. The hypothesis is that falling trade costs due to less inefficient trade procedures can lead to rising volumes of trade as well as export diversification. Adopting a southern perspective by focusing on exports from non-EU Mediterranean countries to the EU, we use data from the World Bank’s *Doing Business Database* on the efficiency of trade procedures to formally test whether the efficiency of trade procedures affects (i) bilateral volumes of exports, and (ii) the number of products exported. Specifically, we include indicators for the efficiency of cross-border procedures in the exporting as well as importing countries to be able to identify with more precision where reforms would bring the strongest benefits.<sup>1</sup>

Previous studies relating to the trade effects of Euro-Med integration have primarily focused on the trade volume effects resulting from tariff liberalization and/or trade preferences. The two main contributions of this paper are therefore, first, that we focus on a new type of trade barrier with potentially large effects on trade and, second, that we not only analyze volume effects, but also investigate the export diversification that trade facilitation would bring about.

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<sup>1</sup> The non-EU Mediterranean countries studied in this paper are: Albania, Algeria, Bosnia and Herzegovina, Croatia, Egypt, Israel, Jordan, Lebanon, Mauritania, Montenegro, Morocco, Syria, Tunisia, Turkey and West Bank and Gaza (Palestinian Authority).

The paper is structured as follows. In the second section we provide a short overview of the development and limits of the trade agreements between the EU and the non-EU Mediterranean countries. In the third section we illustrate how trade procedures vary among the countries participating in the Euro-Mediterranean Partnership. The fourth section estimates the impact of export and import procedures on the volume of exports from non-EU Mediterranean countries to EU countries. Using this estimate, the gains from trade facilitation reforms in the form of increased exports for non-EU Mediterranean countries are simulated. The fifth section assesses the impact of trade procedures on the range of products exported and simulates the impact of trade facilitation reforms on export diversification. In a final section, the main results are summarized and some policy conclusions are drawn on the content of the Euro-Mediterranean Partnership.

## **2 Limits of Euro-Med Integration**

The birth of Euro-Med integration dates back to the late 1960s and early 1970s when the first cooperation agreements between the EU and individual countries of the southern and eastern Mediterranean rim were signed. These agreements included non-reciprocal trade preferences, technical cooperation and financial assistance. Trade preferences granted to Mediterranean countries were rather generous with respect to product coverage, preference margin and the scope of safeguard clauses. In terms of generosity, they ranked just after those granted to ACP countries but before those granted to GSP countries in the so-called EU pyramid of trade privileges.

A new EU strategy towards the non-EU Mediterranean countries, the Barcelona Process, was launched in 1995 to regroup the individual association agreements under a common platform and to put new life into the integration process. The ultimate goal of the Barcelona process was the creation of an enlarged free trade area, comprising both EU countries and non-EU Mediterranean countries, by 2010. Although some progress has been achieved, there is still a long way to go. Trade between the EU and the non-EU Mediterranean countries is still governed by bilateral agreements. Further, the bilateral agreements between the EU and some Mediterranean countries were considerably delayed, some of them only coming into force in the mid-2000s, and the one with Syria has not been signed yet. The creation of an enlarged Euro-Med free trade area also requires non-EU Mediterranean countries to establish free trade agreements among themselves. While this is a necessary condition, much remains to be done to fulfill it. Some progress has been achieved within the Pan Arab Free Trade Area (PAFTA) with the removal of

most tariffs since 2005.<sup>2</sup> However, there are still tariff exemptions remaining for sectors with large trade potential and a myriad of non-tariff barriers (Hoekman and Zarrouk 2009, Hoekman and Sekkat 2010, and Shui and Walkenhorst 2010). A new integration initiative, the Agadir Agreement, entered into force in mid-2006. Only four Arab countries, Egypt, Jordan, Morocco and Tunisia, participate in this new initiative, which aims at a deeper form of integration, with the elimination of non-tariff barriers, the harmonization of rules of origin, a broader product coverage (including agriculture and services), common competition rules, etc.

Empirical studies provide evidence of the mixed impacts of Euro-Med integration on trade, in particular on exports from non-EU Mediterranean countries to the EU. Persson and Wilhelmsson (2007) show that trade preferences to Mediterranean countries increased their exports to the EU by some 14 % over the period 1960-2002. Other studies provide estimates that are somewhat larger, probably because of the different periods studied. For example, Peridy (2005) finds that EU preferences led to a 20-27 % increase in exports from Mediterranean countries over the period 1995-2001, i.e. the period covering the first six years of the Barcelona Process. A recent survey of empirical studies confirms the mixed results of Euro-Med integration in terms of trade creation. Since the start of the Barcelona Process, exports to the EU from Mediterranean countries benefiting from the EU preference scheme have actually increased less than their exports to the rest of the world (De Wulf and Maliszewska 2009).

In addition, some studies suggest that EU trade preferences may have contributed to diversifying exports from non-EU Mediterranean countries (see e.g. Amurgo Pacheco 2006 and Bensassi *et al.* 2010). Still, a main conclusion is that export of new products accounts for a minor share of total export expansion, which essentially concerns the products that were already exported prior to the start of the Barcelona process. For example, Amurgo-Pacheco and Pierola (2008) show that only 3 percent of the growth of exports from selected Mediterranean countries (Morocco, Tunisia and Turkey) between 1995 and 2005 could be ascribed to export of new product categories. These results are confirmed in a new study by Bensassi *et al.* (2010), which points out that export diversification mainly concerns one sector, chemicals and related products (SITC 5), and one North African country, Morocco.

Several factors can be put forward to explain why export creation from non-EU Mediterranean countries has fallen short of expectation. We here discuss four of them which we consider to be critical. First, the product coverage of the association agreements matters greatly. While the agreements cover mainly industrial products, trade in agricultural products is still

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<sup>2</sup> The PAFTA comprises not only the Arab countries that participate in the Euro-Mediterranean Partnership but also the other Arab countries.

highly regulated, in particular when it comes to CAP products. This has been particularly damaging to some southern Mediterranean countries because of their potential comparative advantage in exporting agricultural products. As regards services trade, the bilateral association agreements contain no binding commitment. Second, the Barcelona process has run parallel with the enlargement of the EU by inclusion of the countries of central and eastern Europe. A consequence of this is that the competitive advantages of the southern Mediterranean countries on the markets of the EU countries have been gradually reduced over the past sixteen years (an illustration of preference erosion). Third, the lack of significant progress of the internal integration process among non-EU Mediterranean countries has probably contributed to hampering their international vertical specialization and the exploitation of their trade potential with the EU. Fourth, an important factor is the fact that there are substantial remaining trade obstacles, even regarding products where traditional trade policy measures have been reduced. Thus, while EU tariffs on manufactured imports from non-EU Mediterranean countries have been removed, there remain plenty of administrative and technical non-tariff trade barriers and rather restrictive rules of origin. These remaining trade barriers are the focus of this paper.

### **3 Trade Procedures Affecting Non-EU Mediterranean Exports**

One potential explanation for the mixed results of Euro-Med integration is thus the remaining administrative and technical barriers to trade. Until now, Euro-Med integration has focused on traditional trade barriers, in particular tariffs. The ambition of the newly established Euro-Mediterranean Partnership is to engage in deeper forms of integration and thus to target non-tariff measures, like cumbersome trade procedures, divergent standards or technical regulations.

#### **3.1 What Are Trade Procedures and How Do They Affect Exports?**

Trade procedures refer to customs practices and documents that are required for goods crossing national borders. Customs practices cover routines like the use of information technology, computerized container scanning, risk management techniques, degree of reliance on importing and exporting firms, skill level of staff, bureaucratic structures and extent of corruption. Documentary requirements are, for example, insurance certificate, certificate of conformity with product standards, carrier declaration and certificate of origin. Business surveys provide evidence of the perceived negative impact of customs rules and regulations on southern Mediterranean export (see e.g. De Wulf and Maliszewska 2009, p. 116 and pp. 126-128). Lack of transparency and consistency in the application of customs regulations, lack of trained customs officials and complexity of customs procedures are the kinds of grievances that are most often mentioned.

Inefficient import and export procedures incur direct costs for trading firms because they have to devote resources to complying with the procedures rather than directly productive activities. However, there are also considerable indirect costs because of the delays caused by unnecessarily complex procedures. These costs may arise in several ways. The most straightforward is that there may be depreciation costs, either because products quickly lose their market value – examples include fashion and advanced technology – or in terms of physical depreciation. Delays also cause costs for international traders because companies have to keep goods in store instead of just being able to quickly ship them. Long delays are also associated with increased uncertainty about delivery times, which means that companies may be unable to take advantage of business and export opportunities or use modern just-in-time production techniques.

Given that inefficient import and export procedures give rise to trade costs, new heterogeneous firm trade theory would predict that they have a negative effect on both the intensive and the extensive margins of trade (see e.g. Melitz 2003 and Chaney 2008). In other words, the costs associated with inefficient procedures should not only affect the *volumes* of trade, but also *how many* products are traded internationally. See Persson (2011) for a more detailed discussion.

### **3.2 Empirical Measure**

To illustrate empirically the trade barriers caused by trade procedures, we use the number of days it takes to comply with all necessary trade procedures. The data comes from the World Bank's (2010) *Doing Business Database*. In the *Trading across borders* section of this survey, local freight forwarders, shipping lines, customs brokers, port officials and banks are asked about how long it would take for a hypothetical trading firm to comply with all the necessary procedures to export or import a well-defined, standardized good.<sup>3</sup> The procedures range from the factory gate to the departure from the port of exit for export goods, and from the arrival at the port of entry to the delivery at the importer's warehouse for import goods. The same measure has been used by,

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<sup>3</sup> The hypothetical trading firm, that is a private limited liability company, fully domestically owned with a minimum of 60 employees, is located in the country's most populous city but does not operate within an export processing zone (EPZ) or an industrial estate with special export or import privileges. The good is assumed to be non-hazardous, not to include any military arms or equipment, not to require refrigeration or any special environment, or any special phytosanitary or environmental safety standards, and to be shipped in a dry-cargo, 20-foot, full container load. Trade is assumed to take place by ocean transportation. For more specifics, see World Bank (2010), or Djankov *et al.* (2010).

for instance, Djankov *et al* (2010), Martínez-Zarzoso and Márquez-Ramos (2008), Persson (2008; 2011) and Bourdet and Persson (2011).<sup>4</sup>

As outlined above, inefficient trade procedures give rise to both direct and indirect costs. We argue that since the time delays that are caused by trade procedures reasonably must be very correlated with the procedures' degree of complexity and inefficiency, this measure should do a good job of capturing both types of costs.

While data from the *Doing Business Database* has been used in several studies, it is important to point out that the data is not ideal. First, it does not differentiate between products, between different destination or origin countries or between large and small firms, even though, of course, such differences are likely to exist. Another problem is that there is (in practice) little real time series variation, which means that the researcher must primarily rely on the cross-sectional variation between countries. Econometrically, this makes controlling for unobserved heterogeneity much more difficult. Obviously, it also becomes a lot harder to draw conclusions on causality rather than correlation. These issues all pose problems for the empirical analysis, but it should be emphasized that no other available data is better in this respect, and that the possible alternative data sources also tend to have poorer geographical coverage.

### **3.3 Patterns of Euro-Med Trade Procedures**

When investigating how trade procedures affect export opportunities for non-EU Mediterranean countries, it is important to take into account the fact that trade flows may be influenced by the export procedures in the exporting countries themselves *and* import procedures in the importing EU countries. We therefore present summary statistics for both these two types of procedures in Table 1. The individual data for each non-EU Mediterranean country and EU country can be found in Tables 6 and 7, respectively, in the Appendix. In addition, Table 1 also contains summary statistics for the number of days needed to comply with *export procedures* in the EU countries. These are included because, from a policy perspective, it can be useful to contrast the degree of efficiency of export procedures in the non-EU Mediterranean countries with the efficiency of the corresponding export procedures in the EU countries. We will return to this issue when we perform policy simulations below.

In the empirical investigations, we focus on the total number of days needed to comply with all export or import procedures. This is found in Table 1. However, to illustrate how this time is divided among different types of procedures, the table also includes data on the number of days needed to comply with four individual types of procedures. This disaggregated data is not

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<sup>4</sup> Other empirical papers in the literature on trade procedures include Wilson *et al.* (2003; 2005), Lee and Park (2007), Nordås *et al.* (2006), Iwanow and Kirkpatrick (2007) and Sadikov (2007).

(publicly) available for all years in our sample, so while we include it here to facilitate the discussion of trade procedures, in the regressions below, we use the total number of days in order to maximize our number of observations. The types of procedures for which there is information in the disaggregated data are: documentation preparation, customs clearance and technical control, ports and terminal handling, and inland transportation and handling.<sup>5</sup>

**Table 1. Number of Days Needed to Comply with Export and Import Procedures**

	<i>Documentation preparation</i>	<i>Customs clearance and technical control</i>	<i>Ports and terminal handling</i>	<i>Inland transportation and handling</i>	<i>Total</i>
<i>Export procedures in non-EU Mediterranean countries</i>					
Minimum	4	1	2	2	12
Maximum	21	6	9	6	39
Average	9	3	4	3	18
<i>Import procedures in EU countries</i>					
Minimum	1	1	1	1	5
Maximum	19	6	6	7	25
Average	7	2	2	2	13
<i>Export procedures in EU countries</i>					
Minimum	1	1	1	1	5
Maximum	15	4	4	7	23
Average	6	1	2	2	12

*Notes:* The data on the time in days needed to comply with all relevant trade procedures in 2010 comes from the *Doing Business Database* (World Bank 2010). The total time needed is divided into four separate parts, which specify in more detail how this time is spent.

First, focusing on the export procedures in the exporting non-EU Mediterranean countries, Table 1 illustrates that the number of days needed to comply with all necessary procedures varies greatly between countries, and goes from 12 days for Israel to no less than 39 days for Mauritania. The number of days required for the same good to cross the national border is thus more than three times higher in the poorest performing countries than in the best performing ones. The majority of countries (9 out of 13) are in the range 12-17 days. This relatively narrow range reflects the trade facilitation reforms that have been undertaken by several Mediterranean

<sup>5</sup> All affect the cost of crossing borders and can be considered barriers to trade. However, there are some differences with the former two being under the supervision of customs authorities in the exporting countries while the latter two are mainly the responsibility of private operators, even if the regulatory framework has an impact on them. Economic integration, which is the process of reducing and removing barriers to trade, is primarily concerned with the two former types of procedures, but also concerned with harbour and transport infrastructures because of their potential impact on trade creation.

countries since the mid-2000s (De Wulf and Maliszewska 2009, and World Bank 2009). Table 1 also indicates that directly customs-related procedures are much more time consuming than ports and terminal handling, or inland transportation and handling. On average, some two thirds of the total number of days needed to comply with export procedures in non-EU Mediterranean countries can be ascribed to documentation preparation, and customs clearance and technical control. Documentation preparation is the procedure that requires most time, on average half of the total number of days needed.

Second, exploring the import procedures in the importing EU countries, as shown in Table 1, the number of days needed to comply with all necessary procedures varies considerably, ranging from 5 days in Cyprus, Denmark and Estonia to no less than 25 days in Greece, Poland and the Slovak Republic! The time required for the same good to cross the national border is thus five times longer in the poorest performing countries than in the best performing ones. On average, as illustrated in Table 1, directly customs-related procedures (document preparation and customs clearance and technical control) account for more than two thirds of the total time needed to comply with import procedures across the EU countries.<sup>6</sup>

Third, Table 1 also provides information on *export* procedures in EU countries so as to put the complexity of export procedures in non-EU Mediterranean countries in perspective. The data indicates that the time needed to comply with export procedures is much longer in the non-EU Mediterranean countries than in the EU countries: on average, 18 days compared to 12 days. Directly customs-related export procedures (document preparation and customs clearance) are substantially more time demanding in the non-EU Mediterranean countries and necessitate 12 days compared to 7 days for EU countries. Note that the average difference in inland transportation and handling between the two groupings of countries is substantially smaller: only one day.

## **4 The Impact of Trade Procedures on Export Volumes**

### **4.1 Model Specification and Estimation Method**

To investigate the impact of more or less cumbersome cross-border export or import procedures on the volume of non-EU Mediterranean exports, we estimate a gravity equation on bilateral imports to EU27 countries from non-EU Mediterranean countries. The gravity equation is the workhorse model for estimating the trade effects of various trade costs, and its theoretical basis has been established by papers such as Anderson (1979), Bergstrand (1985; 1989), Helpman and

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<sup>6</sup> For a discussion of these differences, and their implications for whether or not the EU can be said to follow the intent of the regulations concerning customs unions, see Bourdet and Persson (2011).

Krugman (1985), Deardorff (1998) and Anderson and van Wincoop (2003). The estimated model is:

$$(1) \quad M_{ijt} = \exp(\beta_1) Days_{it}^{\beta_2} Days_{jt}^{\beta_3} GDP_{it}^{\beta_4} GDP_{jt}^{\beta_5} GDPpc_{it}^{\beta_6} GDPpc_{jt}^{\beta_7} Dist_{ij}^{\beta_8} \\ \exp(\beta_9 Lang_{ij} + \beta_{10} Colony_{ij} + \beta_{11} Border_{ij}) \\ MRDist_{ij}^{\beta_{12}} MRLang_{ij}^{\beta_{13}} MRColony_{ij}^{\beta_{14}} MRBorder_{ij}^{\beta_{15}} \exp(\mu_d + \lambda_t) \varepsilon_{ijt}$$

where  $M_{ijt}$  is imports in two-digit division  $d$  to the importing EU country  $i$  from non-EU Mediterranean exporting country  $j$  in year  $t$ .<sup>7</sup> The explanatory variables of main interest are  $Days_{it}$  and  $Days_{jt}$ . These variables measure the number of days it takes to comply with all relevant import procedures in the importing EU27 country and all relevant export procedures in the exporting non-EU Mediterranean country, respectively. As discussed above, these measures should capture to a large degree the costs for traders caused by inefficient procedures. The other explanatory variables include the importing and exporting countries' GDP and GDP *per capita*, the distance in kilometres between the largest cities in the importing and exporting country respectively, and dummy variables taking the value one if the trading countries have the same official language, a joint colonial history or a common border.  $MRDist_{ij}$ ,  $MRLang_{ij}$ ,  $MRColony_{ij}$  and  $MRBorder_{ij}$  are theoretically motivated multilateral resistance terms constructed according to the methodology outlined in Baier and Bergstrand (2009).  $\mu_d$  is a specific effect for every product division, and  $\lambda_t$  is a specific effect for every year.<sup>8</sup>  $\varepsilon_{ijt}$  is a disturbance term. For data sources and details concerning the construction of variables, see Table 8 in the Appendix.

We use a fixed effects Poisson Pseudo-Maximum-Likelihood (PPML) estimation of the equation in its original multiplicative form. This solution was first suggested by Santos Silva and Tenreyro (2006), who noted that this estimator has two advantages over the traditional approach of making the model linear by using logarithms and then estimating it with a Least Squares (LS) estimator. First, the PPML estimator can be used on the model in its original multiplicative form, implying that the observations with zero trade flows do not have to be dropped. Given that the value of trade is zero for a lot of the observations in our dataset, this is particularly relevant.

<sup>7</sup> Our dependent variable is created by measuring, for all bilateral pairs and years, the volume of imports for each of the two-digit *divisions* in the Standard International Trade Classification (SITC; Third revision). The advantage of studying trade volumes on such a detailed level is that we can control for unobserved heterogeneity between different types of products. Note that we include data for 2006-2009 in the regressions. This is the longest time period for which we can find data on all included variables.

<sup>8</sup> Note that, due to the fact that all importing EU27 countries have the same import tariffs, these fixed effects broadly capture the level of tariff protection that different types of products from various exporters face.

Second, the PPML estimator is consistent, even in the presence of heteroskedasticity. This is not true for the LS estimator. To test the robustness of the results, we also re-run the model with alternative estimation methods. First, we use a negative binomial model, which is the most common alternative to the Poisson model, and has the advantage of being less restrictive, since it does not assume that the mean equals the variance. Second, we include a fixed effects OLS. As just argued, this is not ideal and does indeed lead to many observations being dropped, but since it is still not uncommon to see gravity studies which employ this type of model, we include it to facilitate comparisons. Third, we also employ zero-inflated Poisson and zero-inflated Negative Binomial models, where non-zero and zero outcomes have different probability models. For a discussion of these latter models, see Burger, van Oort and Linders (2009).<sup>9</sup>

It is important to note that while we do have access to data for four years (2006-2009), in practice there is not much time-series variation in the *Doing Business* Data, implying that we must primarily rely on cross-sectional variation to capture the effects of inefficient trade procedures. This reduces the options when it comes to controlling for unobserved heterogeneity. In a panel gravity model, one would normally want to include both exporter and importer fixed effects to capture all the time-invariant unobserved heterogeneity that is common for all observations pertaining to the same exporter (importer), but differs between exporters (importers). However, in our baseline setting, it would be unwise to include such fixed effects because they would capture almost all of the trade procedure effects which we are trying to assess. The inclusion of theoretically motivated multilateral resistance terms (constructed following Baier and Bergstrand 2009) reduces this problem, and we also perform robustness analyses to test the sensitivity of our main results. However, we do want to stress that the cross-sectional nature of the data must be kept in mind when interpreting the results.

## 4.2 Estimation results

The results of all baseline and robustness regressions of Equation 1 are displayed in Table 2. In the baseline Poisson regression – the results of which can be found in Column (a) – the estimated coefficients for both import and export procedures are highly significant and have negative signs. The coefficients may be interpreted as elasticities, so a one-percent decrease in the time needed to comply with import and export procedures is associated with increases in exports from non-EU Mediterranean countries of 0.33 percent and 0.56 percent, respectively. In other words, the results

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<sup>9</sup> Another alternative to the PPML estimation would be to follow Helpman *et al* (2008), who propose using a form of sample selection estimation to solve the problem of zero trade flows being dropped. While theoretically appealing due to its basis in a heterogeneous-firm type trade theory (see Melitz 2003), this method introduces the new difficulty of finding a suitable exclusion restriction for identification of the second-stage equation. This is in practice quite difficult to do.

suggest that simplification of import *and* export procedures would have significant and sizeable positive impacts on export volumes.

**Table 2. Regression Results: Effects on Trade Volumes**

<i>Dependent variable: Volumes of import per SITC division</i>	<i>Poisson</i>	<i>Negative Binomial</i>	<i>Fixed Effects OLS</i>	<i>Zero- Inflated Poisson</i>	<i>Zero- Inflated Negative Binomial</i>	<i>Poisson</i>	<i>Poisson</i>
	(a)	(b)	(c)	(d)	(e)	(f)	(g)
Import facilitation ( $Day_{it}$ )	-0.325*** (0.000)	-0.281*** (0.000)	-0.250*** (0.002)	-0.303*** (0.000)	-0.140*** (0.000)	-0.238*** (0.000)	
Export facilitation ( $Day_{jt}$ )							-1.089*** (0.000)
GDP importer	0.958*** (0.000)	0.434*** (0.000)	1.044*** (0.000)	0.901*** (0.000)	0.774*** (0.000)	0.982*** (0.000)	
GDP exporter	1.054*** (0.000)	0.374*** (0.000)	1.026*** (0.000)	1.021*** (0.000)	0.825*** (0.000)		0.840*** (0.000)
GDP per capita importer	-0.475*** (0.000)	-0.251*** (0.000)	-0.431*** (0.000)	-0.456*** (0.000)	-0.311*** (0.000)	-0.475*** (0.000)	
GDP per capita exporter	0.0532*** (0.000)	0.277*** (0.000)	0.449*** (0.000)	0.0110*** (0.000)	0.201*** (0.000)		1.116*** (0.000)
Distance	-1.373*** (0.000)	-0.725*** (0.000)	-1.696*** (0.000)	-1.279*** (0.000)	-1.459*** (0.000)	-1.533*** (0.000)	-1.858*** (0.000)
Common language	0.267*** (0.000)	0.0370 (0.212)	0.580*** (0.000)	0.267*** (0.000)	0.359*** (0.000)	0.277*** (0.000)	0.0378*** (0.000)
Colony	0.535*** (0.000)	0.349*** (0.000)	0.864*** (0.000)	0.409*** (0.000)	0.431*** (0.000)	0.562*** (0.000)	0.877*** (0.000)
Common border	0.262*** (0.000)	0.476*** (0.000)	0.883*** (0.000)	0.257*** (0.000)	0.332*** (0.000)	0.240*** (0.000)	0.0189*** (0.000)
Multilateral resistance	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>
Year Effects	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>
SITC Division effects	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>No</i>	<i>No</i>
Exporter-Division effects	<i>No</i>	<i>No</i>	<i>No</i>	<i>No</i>	<i>No</i>	<i>Yes</i>	<i>No</i>
Importer-Division effects	<i>No</i>	<i>No</i>	<i>No</i>	<i>No</i>	<i>No</i>	<i>No</i>	<i>Yes</i>
No of observations	79,794	79,794	36,857	79,794	79,794	76,527	80,340

*Note:* Results from estimation of equation (1) using various estimation methods. The dependent variable is the imported (bilateral) volume per SITC (2-digit) division, except in the OLS estimation where the natural log of this variable is used. “Multilateral resistance” signifies that the model includes multilateral resistance terms calculated according to Baier and Bergstrand (2009) – for more details see Table 8 in the Appendix. In columns (f) and (g), the fixed effects for each SITC division have been replaced by fixed effects for every combination of exporter and SITC division and importer and SITC division, respectively. Robust *p*-values in brackets. Asterisks denote significance at the 1% (\*\*\*) , 5% (\*\*) and 10% (\*) levels.

The other gravity variables behave as expected. The trading countries’ GDPs have significantly positive coefficients, which indicates that the larger either economy is, the larger the traded volumes. Unlike GDP, where anything but positive coefficients would be unexpected, there are no strong priors for the coefficients for GDP per capita. We find that richer importers tend to

import smaller volumes, while richer exporters tend to export somewhat larger volumes. Distance has a significantly negative impact on export, while sharing a common language, a colonial history or a common border all have positive and significant impacts on exports from non-EU Mediterranean countries to the EU.

In order to test the sensitivity of the results, we also perform robustness regressions. The results are shown in Table 2. First, we use alternative estimation methods: a negative binomial model (column b), fixed effects OLS (column c), zero-inflated Poisson (column d) and zero-inflated negative binomial (column e). In all cases, the coefficients of main interest remain significantly negative. Second, to test whether the problem of properly controlling for unobserved heterogeneity affects the results, we also perform two separate Poisson regressions where all exporter-division specific (column f) and importer-division specific (column g) heterogeneity is controlled for by means of fixed effects. Of course, this means that we can only assess the impact of one type of procedure in each regression (since the other – due to the lack of time-series variation – will be captured by the country-division specific effects). Reassuringly, this does very little to change the main results. All in all, we therefore conclude that our results seem robust.

### **4.3 What Could be Gained by Adopting Best-Practice Trade Procedures?**

How much would exports from the non-EU Mediterranean countries to the EU countries be affected by a simplification and improvement of customs-related procedures? To offer some understanding of what the data and estimation results mean for economic integration, we use the estimates of the impact of time delays and calculate how trade volumes respond to three scenarios. These three scenarios can be said to represent different degrees of integration between the EU and the non-EU Mediterranean countries, from improvement of trade procedures in only the worst performing countries to the harmonisation towards the most efficient trade procedures in all the members of the enlarged Euro-Med free trade area. The outcomes of the three scenarios are presented in Table 3.

A first step in the process of integration can be to concentrate efforts on the poorest performers. Our first scenario is therefore to improve trade procedures in the countries performing worse than average (within each of the two groups of countries, i.e. non-EU Mediterranean exporters and EU importers) so that the time to export or import is reduced to the average within the group. The situation in the countries performing better than the average is thus left unchanged. In such a scenario (scenario 1 in Table 3), aggregated exports from individual non-EU Mediterranean countries to the EU are expected to increase by 9 % on average (5 % for improved export procedures and 4 % for improved import procedures). Potential export gains reflect the effectiveness of export procedures at the outset, with Mauritania, Lebanon and West

Bank and Gaza being the main beneficiaries of reforms. Concerning the reform of import procedures, Montenegro and Albania are the main non-EU Mediterranean beneficiaries of the improvement of import procedures in the poorest EU performers. A reason is probably that the simplification of import procedures is concentrated to the EU countries that import most from these countries.

**Table 3. Simulation Results: Percentage Effects on Export Volumes from non-EU Mediterranean Countries**

Mediterranean Country	Importer Reforms		Exporter Reforms		
	Scenario 1	Scenario 2	Scenario 1	Scenario 2	Scenario 3
Albania	9	22	6	24	43
Algeria	3	18	0	17	40
Bosnia and Herzegovina	6	18	0	14	39
Croatia	6	18	4	23	42
Egypt, Arab Rep.	3	16	0	8	36
Israel	2	14	0	0	33
Jordan	4	16	1	21	42
Lebanon	2	14	17	31	46
Mauritania	4	19	26	37	48
Montenegro	11	23	0	8	36
Morocco	1	16	0	8	36
Syrian Arab Republic	6	18	0	11	38
Tunisia	3	18	0	17	40
Turkey	3	16	0	8	36
West Bank and Gaza	1	15	14	29	45
Average	4	17	5	17	40

*Note:* The figures illustrate how much aggregated exports (to the whole EU) from individual Mediterranean countries would increase following trade facilitation reforms in either the importing or exporting country. Data for 2009 is used. Three scenarios are considered. In Scenario 1, the importing or exporting countries with border delays above the average improve so that they reach the average, while the others do nothing. In Scenario 2, all importing or exporting countries reach the level of border delays of the currently most efficient countries within their country group. In Scenario 3, all exporting non-EU Mediterranean countries reach the level of export border delays of the currently most efficient EU countries. Note that Montenegro and West Bank and Gaza are not part of the estimation sample due to missing data on some control variables.

The second scenario goes one step further in the process of Euro-Med integration with the improvement of trade procedures to the level of the best performer in each group of countries. In other words, this scenario is a lot more ambitious, and requires deepened integration in each group of countries. In the case of EU countries, this requires the harmonisation of import procedures in order to prevent import deflection, which is import through the country with the most efficient import procedure for re-export to other EU countries. In the case of non-EU

Mediterranean countries, this requires the harmonisation of export procedures in order to prevent export deflection and the localisation of some activities in the country, or countries, with the most efficient export procedures. As regards import procedures, in the best performers, i.e. Cyprus, Denmark and Estonia, it takes 5 days to comply with procedures, while in the worst performers, Greece, Poland and Slovakia, it takes 25 days for the same operation for the same good. Adapting the EU import procedures of all the EU countries to the best practice level is expected to increase aggregated exports from individual non-EU Mediterranean countries by 17 %.<sup>10</sup> The export gains are rather evenly distributed among the non-EU Mediterranean countries, with increases ranging from 14 % to 23 %. Regarding export procedures, the results are more diverse with the largest gains naturally concentrated to the countries with the least efficient export procedures today. On average, reforms that improve export procedures to the level of the best performer, Israel, are expected to boost aggregated exports from individual non-EU Mediterranean countries by 17 %. Together, improving import and export procedures to the best practices of each group of countries is thus expected to increase aggregated exports from individual non-EU Mediterranean countries by an average of 34 %.

The third scenario is the most ambitious, and corresponds well with the high aspirations of the Euro-Mediterranean Partnership. In this scenario, export procedures in the non-EU Mediterranean countries become as efficient as the *export* procedures in the currently most efficient *EU* countries. This would be a very large reform, but it could be achieved by increased cooperation and technical assistance in the field of trade facilitation. Improving the export procedures of all the non-EU Mediterranean countries to this level is expected to increase their individual aggregated export to the EU by 40 % on average. The gains are rather evenly distributed among the non-EU Mediterranean countries. If export facilitation of this sort is accompanied by the improvement of EU import procedures to the best practice level (scenario 2), aggregated exports from individual non-EU Mediterranean countries are expected to increase by an impressive 57 % (40 % + 17 %).

It is worth reiterating that, due to the lack of time-series variation in the data, these results must not be taken too literally, and should only be seen as indicative of what the magnitude of effects might be. We would also like to point out that these are not general equilibrium results. To illustrate that the results, at least to some extent, depend on the choice of estimation method, we have repeated this simulation exercise using estimates from the main alternative estimation model, i.e. the negative binomial model. Results can be found in Table 9 in the Appendix.

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<sup>10</sup> Using all countries in the rest of the world as the sample of exporting countries, Bourdet and Persson (2011) find that the same EU reform would increase aggregated exports from individual countries by 20 %.

## 5 The Impact of Trade Procedures on Export Diversification

As noted above, given that inefficient import and export procedures give rise to trade costs, new heterogeneous firm trade theory would predict that they have a negative effect on not only the intensive margin – which we have studied empirically above – but also the extensive margin of trade. If this is the case, reform of inefficient import procedures in the EU or export procedures in the exporting non-EU Mediterranean countries could widen the range of products that are traded, and thereby induce export diversification.

The question of to what extent the improvement of trade procedures contributes to export diversification is important from a policy perspective, because the countries of North Africa and the Middle East are currently characterized by high levels of export concentration, or, to put it differently, low levels of export diversification (see e.g. Gourdon 2010). Given that there is a well-established empirical relationship between export diversification and the sustainability of economic growth (see e.g. Hesse 2009), this issue is well worth analyzing.

### 5.1 Model Specification, Estimation Method and Estimation results

While there is less of a consensus regarding the theoretical underpinnings of an empirical model to explain the number of traded products, the few existing studies have tended to use a gravity-like model. We therefore use the following model:

$$(2) \quad \begin{aligned} NO_{ijt} = & \exp(\beta_1) Days_{it}^{\beta_2} Days_{jt}^{\beta_3} GDP_{it}^{\beta_4} GDP_{jt}^{\beta_5} GDPpc_{it}^{\beta_6} GDPpc_{jt}^{\beta_7} Dist_{ij}^{\beta_8} \\ & \exp(\beta_9 Lang_{ij} + \beta_{10} Colony_{ij} + \beta_{11} Border_{ij}) \\ & MRDist_{ij}^{\beta_{12}} MRLang_{ij}^{\beta_{13}} MRColony_{ij}^{\beta_{14}} MRBorder_{ij}^{\beta_{15}} \exp(\mu_d + \lambda_t) \varepsilon_{ijt} \end{aligned}$$

Clearly, equation (2) is very similar to equation (1), except that the dependent variable is now the number of products being imported in SITC division  $d$  to EU27 country  $i$  from non-EU Mediterranean country  $j$  in time  $t$ . Note that our trade data include all products at the 5-digit SITC level. The dependent variable is constructed by counting, for every bilateral pair (and year) the number of such 5-digit products exported in every 2-digit division.

Estimation of this model gives rise to many of the same econometric concerns as the estimation of Equation (1) above. Hence, we again use a Poisson model as our baseline choice, and test the robustness of the results with negative binomial, fixed effects OLS, zero-inflated Poisson and zero-inflated negative binomial models. We also repeat the testing of whether the problem of properly controlling for unobserved heterogeneity affects the results of main interest, by performing two separate Poisson regressions where all exporter-division specific (column f)

and importer-division specific (column g) heterogeneity is controlled for by means of fixed effects. All regression results are reported in Table 4.

**Table 4. Regression Results: Effects on Number of Traded Products**

<i>Dependent variable: Number of imported products per SITC division</i>	<i>Poisson</i>	<i>Negative Binomial</i>	<i>Fixed Effects OLS</i>	<i>Zero- Inflated Poisson</i>	<i>Zero- Inflated Negative Binomial</i>	<i>Poisson</i>	<i>Poisson</i>
	(a)	(b)	(c)	(d)	(e)	(f)	(g)
Import facilitation ( $Day_{it}$ )	-0.294*** (0.000)	-0.335*** (0.000)	-0.243*** (0.000)	-0.240*** (0.000)	-0.290*** (0.000)	-0.258*** (0.000)	
Export facilitation ( $Day_{jt}$ )							-0.386*** (0.000)
GDP importer	0.359*** (0.000)	0.400*** (0.000)	0.257*** (0.000)	0.273*** (0.000)	0.308*** (0.000)	0.363*** (0.000)	
GDP exporter	0.539*** (0.000)	0.478*** (0.000)	0.367*** (0.000)	0.493*** (0.000)	0.490*** (0.000)		0.435*** (0.000)
GDP per capita importer	-0.250*** (0.000)	-0.281*** (0.000)	-0.178*** (0.000)	-0.198*** (0.000)	-0.171*** (0.000)	-0.241*** (0.000)	
GDP per capita exporter	0.289*** (0.000)	0.335*** (0.000)	0.207*** (0.000)	0.210*** (0.000)	0.209*** (0.000)		0.330*** (0.000)
Distance	-0.772*** (0.000)	-0.760*** (0.000)	-0.576*** (0.000)	-0.648*** (0.000)	-0.809*** (0.000)	-0.839*** (0.000)	-1.010*** (0.000)
Common language	0.0502*** (0.000)	-0.0147 (0.548)	0.0442 (0.162)	0.0608*** (0.000)	0.101*** (0.000)	0.276*** (0.000)	0.129*** (0.000)
Colony	0.512*** (0.000)	0.502*** (0.000)	0.318*** (0.000)	0.374*** (0.000)	0.351*** (0.000)	0.322*** (0.000)	0.244*** (0.000)
Common border	0.291*** (0.000)	0.431*** (0.000)	0.449*** (0.000)	0.275*** (0.000)	0.385*** (0.000)	0.221*** (0.000)	0.250*** (0.000)
Multilateral resistance	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
SITC Division effects	Yes	Yes	Yes	Yes	Yes	No	No
Exporter-Division effects	No	No	No	No	No	Yes	No
Importer-Division effects	No	No	No	No	No	No	Yes
No of observations	79,794	79,794	36,857	79,794	79,794	76,527	80,340

*Note:* Results from estimation of equation (2) using various estimation methods. The dependent variable is the (bilateral) number of imported products per SITC (2-digit) division, except in the OLS estimation where the natural log of this variable is used. “Multilateral resistance” signifies that the model includes multilateral resistance terms calculated according to Baier and Bergstrand (2009) – for more details see Table 8 in the Appendix. In columns (f) and (g), the fixed effects for each SITC division have been replaced by fixed effects for every combination of exporter and SITC division and importer and SITC division, respectively. Robust  $p$ -values in brackets. Asterisks denote significance at the 1% (\*\*\*), 5% (\*\*) and 10% (\*) levels.

The estimated coefficients for export and import procedures are highly statistically significant and have the expected negative signs. The shorter the time needed to comply with trade procedures, the larger the number of export products. According to the baseline estimation in Table 4 (column

(a)), a one-percent decrease in the time needed to comply with import and export procedures is associated with increases in the number of products exported by the non-EU Mediterranean countries by 0.29 percent and 0.19 percent, respectively. The other control variables are all significant and have the expected signs.

Repeating the same robustness analyses as for the volumes of trade (see Table 4), we find that the results are – with one exception – robust. We always find significantly negative coefficients, except in the fixed effects OLS regressions, where export procedures still have a negative, but no longer significant, coefficient. Considering that we lose more than half the observations in this regression, this discrepancy is not overly alarming.

## **5.2 What Could be Gained by Reforms in Terms of Export Diversification?**

How many more products would be exported by non-EU Mediterranean countries as a result of improved trade procedures? While again strongly cautioning against interpreting the results too literally, we offer some simulation results to illustrate what the regression results imply in terms of improvements.

To facilitate comparison, we use the same three scenarios as in the case of export volumes. Our first scenario is therefore to improve trade procedures so that the number of days needed to comply with all necessary import or export procedures is reduced to the average for each group of countries, leaving the situation in the countries performing better than the average unchanged. In such a scenario (scenario 1 in Table 5), the gains in terms of export diversification are moderate. The total number of products exported by individual non-EU Mediterranean countries to the EU is expected to increase by 6 % on average (4 % for improvement of import procedures and 2 % for improvement of export procedures). The gains in terms of export diversification are rather evenly distributed across countries in the case of improved import procedures, but unevenly distributed in the case of improved export procedures, where the gains are of course concentrated to the countries with the least efficient export procedures at the outset.

The second scenario reflects a much higher degree of harmonisation with all EU and non-EU Mediterranean countries adopting each separate group's best practices. The gains in terms of export diversification in this second scenario are sizeable. The total number of products exported by individual non-EU Mediterranean countries is expected to increase by 21 % (15 % for import facilitation and 6 % for export facilitation). The impact of import facilitation on export diversification is rather evenly distributed across countries. In contrast, the impact of export facilitation on export diversification is unevenly distributed with the largest effects found for Mauritania, West Bank and Gaza, Lebanon, Albania and Croatia. This outcome reflects not only the wide disparities in the level of border delays across non-EU Mediterranean countries today,

but also the current specialisation of these countries, and the broader scope for the extensive margin in countries with a less-diversified production structure.

**Table 5. Simulation Results: Percentage Effects on the Number of Exported Products**

Mediterranean Country	Importer Reforms		Exporter Reforms		
	Scenario 1	Scenario 2	Scenario 1	Scenario 2	Scenario 3
Albania	6	18	2	8	14
Algeria	3	16	0	6	13
Bosnia and Herzegovina	5	16	0	5	13
Croatia	5	16	1	7	14
Egypt, Arab Rep.	4	14	0	3	12
Israel	3	14	0	0	11
Jordan	2	12	0	7	14
Lebanon	2	12	6	10	15
Mauritania	2	15	9	12	16
Montenegro	6	17	0	3	12
Morocco	3	15	0	3	12
Syrian Arab Republic	3	12	0	4	12
Tunisia	3	15	0	6	13
Turkey	4	15	0	3	12
West Bank and Gaza	2	13	5	10	15
Average	4	15	2	6	13

*Note:* The figures illustrate how much the total number of exported products from individual non-EU Mediterranean countries would increase following trade facilitation reforms in either the importing or exporting country. Data for 2009 is used. Three scenarios are considered. In Scenario 1, the importing or exporting countries with border delays above the average improve so that they reach the average, while the others do nothing. In Scenario 2, all importing or exporting countries reach the level of border delays of the currently most efficient countries within their own group of countries. In Scenario 3, all exporting non-EU Mediterranean countries reach the level of export border delays of the currently most efficient EU countries. Note that Montenegro and West Bank and Gaza are not part of the estimation sample due to missing data on some trade cost variables. It also important to note that, in the simulations, the maximum number of products exported by any non-EU Mediterranean country has been used as a ceiling for each bilateral pair, so that no country can export more products than that to any single market.

In the third scenario, export procedures in non-EU Mediterranean countries are lowered to reach the number of days it takes to comply with all *export* procedures in the most efficient EU countries (i.e. a total of 5 days for documentation preparation, customs clearance and technical control, ports and terminal handling, and inland transportation and handling). Achieving such ambitious export facilitation reforms is expected to increase the number of products exported by the non-EU Mediterranean countries by 13 %. If export facilitation is accompanied by the improvement of EU import procedures to the best practice level (scenario 2), the number of

products exported by non-EU Mediterranean countries is expected to increase by no less than 28 % (13 % + 15 %).<sup>11</sup>

To investigate the robustness of these figures, we have repeated this simulation exercise using estimates from the main alternative estimation model, i.e. the negative binomial model. Results can be found in Table 10 in the Appendix.

## **6 Summary and Policy Implications**

Against the background of the current political turmoil in the Arab world, the fact that the Barcelona Process so far has fallen short of expectations when it comes to boosting exports from non-EU Mediterranean countries to the EU is increasingly being noted. In this paper, we therefore explore whether deeper integration in the form of trade facilitation – i.e. improved and simplified trade procedures – could have a positive effect on export volumes and the number of products that are exported. Importantly, we allow both import procedures in EU countries *and* export procedures in exporting non-EU Mediterranean countries to have an effect on trade.

Focusing at first on the potential effects on volumes of trade, we find that the efficiency of trade procedures has a statistically significant effect on bilateral export volumes. Our results indicate that in a best case scenario with harmonization of import and export procedures to the level of the currently most efficient EU countries, aggregated exports from individual non-EU Mediterranean countries would increase by as much as 57 %. It should be noted that this increase is the result of both EU reform (leading to increases of 17 %) and reform in the exporting countries themselves (bringing about a 40 % increase). Thus, our results clearly suggest that improving trade procedures is a way to substantially increase export volumes from non-EU Mediterranean countries. In fact, comparing our results with those found in the literature on trade preferences, the sole improvement of import procedures in the EU to the best practice level without any reform in the exporting countries is likely to boost exports from non-EU Mediterranean countries by the same order of magnitude as earlier studies have found for EU trade preferences for the Mediterranean countries. Given that there is also plenty of room for reform in the exporting countries themselves, this implies that trade facilitation is indeed an interesting policy option.

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<sup>11</sup> In order to correctly interpret these percentage changes, it is important to remember that most of the countries concerned export very few products to begin with. For instance, the average number of products exported for a bilateral pair in 2009 was 247 products. This implies that even rather large percentage changes do not necessarily correspond to dramatic increases in the number of products.

When we look at the potential effects on the number of exported products, we again find that the efficiency of trade procedures has a statistically significant effect. Considering the same reform scenario with full harmonization to the best-practice levels, our results indicate that this would on average be associated with a 28 % increase in the number of products exported by an individual non-EU Mediterranean country. Again, this increase is the result of both EU reform (leading to increases of 15 %) and reform in the exporting countries themselves (bringing about a 13 % increase). In other words, the efficiency of trade procedures does not only affect *how much* non-EU Mediterranean countries export, but also *how many products* that can be exported, establishing a link between trade facilitation and export diversification.

Altogether then, our results indicate that reform of trade procedures would have positive effects on trade. The contrast between the increases in volumes and in the number of export products suggests that most of the increase is likely to take place at the intensive margin, with a large increase in the volumes of products already exported. However, the increases in the number of products exported by non-EU Mediterranean countries are hardly negligible. Moreover, from a policy perspective, export diversification is particularly vital if the aim of integration is to put the economies of these countries on a less volatile growth path. Hence, the fact that trade facilitation is found to be associated with both increased export volumes and export diversification suggests that it is a useful policy option.

We note that the main objective of the new initiative, the Euro-Mediterranean Partnership, is to revitalize and deepen the process of integration between the EU and non-EU Mediterranean countries. So far, most of the measures on the integration agenda have been proposed by the EU and its member countries. Examples are measures of more positive integration character in the fields of environment, higher education and research, and governance. Our results suggest that large trade and economic gains can be reaped by non-EU Mediterranean countries by shifting the focus of attention towards measures of more negative integration character. Simplified customs practices, automated procedures, improved training of customs officials, better transparency and consistency in the application of customs regulations, improved risk management programs, container scanning, improved harbor and transport infrastructures etc are the kinds of trade facilitation reforms that can boost and diversify the exports of non-EU Mediterranean countries and thereby improve their longer term growth prospects. Although we suspect documentation preparation, and customs clearance and technical control to be major constraints (since they account for some two thirds of the total number of days required to comply with trade procedures), our study does not provide evidence of the relative impact of the four types of trade procedures. It should be the task of future research, equipped with richer data sets

on trade procedures, to disentangle the significance of each of them for the export volume and diversification of non-EU Mediterranean countries.

Lastly, given that we identify fairly substantial effects on both export volumes and export diversification, policy makers might wonder whether the reforms we study in this paper are realistic? In addition to the methodological caveats which we have discussed in the paper, it should certainly be acknowledged that the reforms which bring the greatest benefits are very ambitious indeed. Less ambitious – and perhaps more realistic – reforms would lead to smaller benefits. However, it should also be emphasized that the reforms we simulate are not in any way impossible. Since we use the current best practice levels as the goals to strive towards, it is obviously not impossible for countries to reach those levels – indeed, other countries already have.

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## Appendix

**Table 6. Number of days needed to comply with export procedures in non-EU Mediterranean Countries**

<i>Non-EU Mediterranean Countries</i>	<i>Documentation preparation</i>	<i>Customs clearance and technical control</i>	<i>Ports and terminal handling</i>	<i>Inland transportation and handling</i>	<i>Total</i>
Albania	11	2	3	3	19
Algeria	8	4	2	3	17
Bosnia and Herzegovina	6	2	5	3	16
Croatia	8	4	5	3	20
Egypt	9	1	2	2	14
Israel	5	1	3	3	12
Jordan	10	2	3	2	17
Lebanon	12	4	4	6	26
Mauritania	21	6	9	3	39
Montenegro	4	3	5	2	14
Morocco	6	2	2	4	14
Syria	7	4	2	2	15
Tunisia	9	2	2	2	15
Turkey	6	3	3	2	14
West Bank and Gaza	12	6	3	4	25

*Notes:* The data on the time in days needed to comply with all export procedures in 2010 comes from the *Doing Business Database* (World Bank 2010). The total time needed is divided into four separate parts to specify in more detail how this time is spent. All countries belonging to the Euro-Mediterranean Partnership are included, i.e. even those like Jordan and Mauritania, which do not have direct access to the Mediterranean Sea.

**Table 7. Number of days needed to comply with import procedures in EU Countries**

<i>EU countries</i>	<i>Documentation preparation</i>	<i>Customs clearance and technical control</i>	<i>Ports and terminal handling</i>	<i>Inland transportation and handling</i>	<i>Total</i>
Cyprus	2	1	1	1	5
Denmark	2	1	1	1	5
Estonia	1	1	2	1	5
Luxembourg	2	2	1	1	6
Netherlands	3	1	1	1	6
Sweden	2	1	2	1	6
Germany	3	1	1	2	7
Austria	3	1	1	3	8
Finland	3	2	2	1	8
United Kingdom	4	1	1	2	8
Belgium	5	2	1	1	9
Spain	4	2	2	2	10
France	5	1	3	2	11
Lithuania	5	2	2	2	11
Ireland	5	2	2	3	12
Latvia	5	2	3	2	12
Romania	8	1	2	2	13
Portugal	10	1	3	1	15
Hungary	10	1	2	4	17
Italy	10	2	3	3	18
Czech Republic	11	1	2	6	20
Bulgaria	13	2	4	2	21
Slovenia	13	3	3	2	21
Greece	12	6	5	2	25
Poland	19	2	2	2	25
Slovak Republic	10	2	6	7	25

*Notes:* The data on the time in days needed to comply with all import procedures in 2010 comes from the *Doing Business Database* (World Bank 2010). The total time needed is divided into four separate parts to specify in more detail how this time is spent. There is no data for Malta in the *Doing Business Database*.

**Table 8. Variables and Data Sources**

<i>Variable</i>	<i>Definition and Data Source</i>
Imports	Data on imports to EU27 countries at the 5-digit Standard International Trade Classification (SITC; Revision 3) level from United Nations Statistics Division (2011). Used to calculate the dependent variables which measure (i) the bilateral volume of imports at the 2-digit (i.e. division) level, and (ii) the number of products at the 2-digit level.
Time for imports or exports	The number of days needed to comply with all procedures necessary to import or export a product. Data from World Bank (2010).
GDP	Data from World Bank (2011).
GDP per capita	Data from World Bank (2011).
Distance	Distance in kilometres between the largest cities in the importing and exporting country. Data from CEPII (2010).
Common language	Takes the value one if the importer and exporter share a common language. Data from CEPII (2010).
Colonial history	Takes the value one if the importer and exporter have had a colonial relationship after 1945. Data from CEPII (2010).
Common border	Takes the value one if the importer and exporter share a common border. Data from CEPII (2010).
Multilateral Resistance	MRDist, MRLang, MRColony and MRBorder are multilateral resistance terms using data on bilateral distance, common language, colonial history and common border (as defined above, and with data from CEPII 2010), and GDP (with data from the World Bank 2011), constructed using the methodology outlined in Baier and Bergstrand (2009). Note that all countries in the world have been included to construct these measures.

**Table 9. Robustness Simulation: Percentage Effects on Export Volumes Using Estimates from a Negative Binomial Model**

Mediterranean Country	Importer Reforms		Exporter Reforms		
	Scenario 1	Scenario 2	Scenario 1	Scenario 2	Scenario 3
Albania	8	19	2	6	11
Algeria	2	16	0	4	10
Bosnia and Herzegovina	5	15	0	4	10
Croatia	5	16	1	6	11
Egypt, Arab Rep.	3	14	0	2	9
Israel	2	12	0	0	8
Jordan	3	14	0	5	10
Lebanon	2	12	4	8	12
Mauritania	3	16	7	9	12
Montenegro	9	20	0	2	9
Morocco	1	14	0	2	9
Syrian Arab Republic	6	16	0	3	9
Tunisia	3	15	0	4	10
Turkey	3	14	0	2	9
West Bank and Gaza	1	13	4	7	11
Average	4	15	1	4	10

*Note:* See the notes to Table 3 for explanations of all scenarios. As a robustness check, these simulations use the estimation coefficients from a negative binomial model.

**Table 10. Robustness Simulation: Percentage Effects on Number of Exported Products using Estimates from a Negative Binomial Model**

Mediterranean Country	Importer Reforms		Exporter Reforms		
	Scenario 1	Scenario 2	Scenario 1	Scenario 2	Scenario 3
Albania	7	21	1	3	6
Algeria	4	18	0	2	6
Bosnia and Herzegovina	6	18	0	2	6
Croatia	6	18	1	3	6
Egypt, Arab Rep.	4	16	0	1	5
Israel	4	16	0	0	5
Jordan	3	14	0	3	6
Lebanon	2	13	3	5	7
Mauritania	3	17	4	5	7
Montenegro	7	19	0	1	5
Morocco	3	17	0	1	5
Syrian Arab Republic	3	14	0	2	5
Tunisia	4	17	0	2	6
Turkey	5	17	0	1	5
West Bank and Gaza	3	15	2	4	6
Average	4	17	1	2	6

*Note:* See the notes to Table 5 for explanations of all scenarios. As a robustness check, these simulations use the estimation coefficients from a negative binomial model.