Impact of hard and soft infrastructure: Evidence from the EU partners, North Africa and CEECs

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Abstract

In this paper, we analyze how a set of slow moving determinants affect trade between the EU on one hand, and CEECs (Central and Eastern European countries) and African countries on the other hand, over the period 2005-2012. We focus on two sets of slow moving determinants, doing business institutions and logistical infrastructure, as well as embassies and ambassadors, by controlling for many other possible time-invariant trade cost determinants. Trade is disentangled for three types of goods: primary goods, parts and components and capital goods. Methodologically, we first derive dyadic country-pair fixed effects and in a second stage we correlate fixed effects with a set of influential factors. In our analysis, (i) we identify the beneficial effects of soft and hard infrastructure; (ii) we compare the latter with the benefit of opening an embassy and also compute the extra trade that would follow a move towards a better score of the trade facilitation and doing business indicators; and (iii) we show that a huge part of the missing bilateral trade fixed effect of North African countries is accounted for by soft and hard infrastructure, and that diplomatic activity is also a powerful driver of regional integration.

Keywords: Gravity, trade facilitation, regionalism

JEL classification : C33, F14, F15, F49, O52

LA FERDI EST UNE FONDATION RECONNUE D'UTILITÉ PUBLIQUE.
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1 Introduction

Deeper regional integration is crucial for North Africa development. Despite close historical and linguistic ties between these countries, North African economies remain mostly isolated towards each other's and toward the EU, which is one of their most important trade partners. A recent UNECA report estimated that they were barely at 50% of their trade potential. Yet, the creation of the Arab Maghreb Union in 1989 should have been the starting point of closer economic relationships in North Africa, through trade liberalization, but trade barriers are still present. North African countries are not only isolated from each other, they are also secluded from the rest of the world, and constitute one of the less integrated zone in the global trade area.

One can instinctively blame the high tariffs for this lack of integration. However, recent findings in the trade literature suggest that this is maybe only one part of the explanation. An always more liberalized international trade has led economists to rethink the determinants of such sub-optimal trade integrations. Non-tariffs measures and trade facilitation policies have recently occupied a large place in the economic theory. The message from the report companion of the Logistic Performance Index is clear: "Connecting to Compete". With the production chain being spread over countries, it is now necessary to have strong and reliable trade facilitation infrastructures and services. Insufficient political investment in this area may indeed lead to the exclusion from some global production networks requiring a reactive supply chain.

Globally, according to the Logistic Performance Index ranking, the least performing countries are landlocked or in civil war. North African countries may well have an access to the sea, they under-perform in terms of trade facilitation. Comparable countries in Central and Eastern Europe have been able to create efficient trade infrastructures, and to restructure their trade dramatically after the fall of the Berlin Wall on November 9th, 1989 and the dissolution of the Soviet Block. Western countries and firms entered Eastern markets; inversely Western markets are nowadays more open for Eastern goods − trade no longer being organized by the Council of Mutual Economic Assistance (CMEA). Trade reorientation is one of Nauro Campos and Fabrizio Corricelli's (2002) "magnificent seven stylized facts of ten years of transition". Simultaneously with this economical reorientation, one witnessed the births of new diplomatic relationships, while older ties were renewed. Export promotion often is made explicit as one of the objectives of a foreign diplomatic mission. For example France explicitly sees the (fu-

ture) role for embassies differing according to the level of development of the bilateral partner, where, especially in the case of emerging economies, "il faut faire fructifier les relations". [1] Andrew Rose (2007) computed the impact of foreign missions on exports using a cross-section of 22 big exporters and found a small, but positive significant effect of more foreign permanent representations on unilateral exports. Afman and Maurel (2014) who built on the Rose model to consider trade between OECD and transition countries find that opening an embassy is equivalent to an ad valorem tariff reduction of 2% to 8%.

This paper considers trade in a sample of North African countries, transition economies and their main trade partners. There are two reasons for this choice. Firstly, the big trade reorientation that took place in the last decennium of the twentieth century could shed important light on the determinants of regional integration. Secondly, European transition countries have been perceived as diverting trade from the historical older EU partners of the Mediterranean Sea. From a policy point of view it is interesting to see whether countries that "stayed out" diplomatically, and lag behind in terms of their quality of their logistical infrastructure and institutions have profited less from the potential export opportunities and have been more exposed to this trade diversion effect.
From a methodological point of view, our research is inspired by a recent paper of Hanousek and Kočenda (2014). The panel structure of the dataset allows including pairwise fixed effects and controlling for country-pair heterogeneity in the bilateral relationship, or for time invariant typical characteristics between different pairs of countries. This overcomes the problem of biased estimates due to omitted variables, as argued by Cheng and Wall (2004). We add foreign missions of the importing country in the exporting country and vice versa as our variables of interest in addition to the trade facilitation variables (since this type of diplomatic relation could facilitate imports). In a comparative way, we also emphasize the extent to which the effect of doing business and logistical infrastructure facilities the opening of new trade ties and magnifying diplomatic action.
In sum, our empirical contribution to the issue of foreign missions and exports is twofold. We compare missing trade opportunities due to the lack of foreign missions or due to the poor quality of soft and hard infrastructure aiming at facilitating business, in two

[1] <http://www.diplomatie.gouv.fr/fr/le-ministere-et-son-reseau/metiers-de-la-diplomatie/metiers-et-services/#so_2>

regions that constitute the EU neighbourhood. Our findings echo a recent publication of Melo and Wagner (2016), who conclude that the effect of improving trade facilitation indicators, of reducing the time spent on customs, the number of documents needed to trade, etc. is substantial. We apply a method of analysis exploiting the panel structure of the data, which corrects for the heterogeneity and simultaneity bias and focuses on the determinants of country-pair specific fixed effects. The remainder of this paper is organized as follows. Section 2 exposes the review of the literature, section 3 discusses the methodology and data. Section 4 comments on the results and Section 5 concludes.

2 Related literature

The trading literature builds on factors, which facilitate the trading network and increase the performance of trading flows. When analysing OECD countries, Wang (2010) concludes that geographical distance is the most important determinant of recent trade flows in terms of magnitude followed by Research & Development stock, GDP level and finally foreign direct investment. More recent research also focuses on new determinants such as the beneficial effects of soft and hard infrastructure as well as the trade direction to determine the impacts of trading from developed countries to less developed ones and vice et versa. Association and trade agreements were found to have a positive and significant impact on trade flows between transformation and EU countries (Caporale et al., 2009; Egger and Larch, 2011). Second, despite existing economic differences among countries, the new EU members quickly became an important part of the EU-wide manufacturing and distribution network (Kaminski and Ng, 2005). The EU is a functioning free trade area and strong tariff reduction in the EU has been shown to be trade-creating (Eicher and Henn, 2011). New EU members were accepted to the free trade area after their accession in 2004 and 2007 but, as argued earlier, they were already removing trade barriers before and during the accession process (Egger and Larch, 2011).

A traditional topic in the literature has been the focus on tariff reductions, which are a core side effect of economic liberalisation. While one can argue that these effects are marginal in modern economies, the research of Hoekman and Nicita (2011) has shown that tariffs barriers still matter, especially for the agricultural sector and the developing

countries. The authors also demonstrate that economic policies linked to trade facilitation have to be given more importance in their role of determining trade flows, as more gains can be made by improving logistic performances. Freund and Rocha (2011) for instance stress transit delays and show that a one day reduction in travel times leads to a 7 percent increase in exports. Similarly, Arvis et al. (2013) find that trade facilitation policies, and especially the logistic side, account for a very large part of trade costs, in a comparable size of order than the ones due to geography.
One of the most important issues is the role of trade costs within global production networks (GPNs). Hanson et al. (2005), analyses the role of trade costs in U.S. multinational firms' decision to export intermediate goods to their affiliates abroad for processing. The authors find that affiliate demand for imported inputs is higher in host countries with lower trade costs. Another approach consists in employing Input-Output tables. Hummels et al. (2001) computes the degree of vertical specialization for OECD countries, showing that 30 to 40 percent of exports (OECD and World) are imputable to vertical specialization. They argue that small decreases in trade barriers provide strong incentives for vertical specialization. Using a gravity model and distinguishing trade in final goods from trade in parts and components, Saslavsky and Sheperd (2012) presents evidence that trade in the latter within international production networks is more sensitive to logistics performance than is trade in final goods. The difference between the two effects is quantitatively significant: the semi-elasticity of trade with respect to importer logistics performance is about 45% larger for parts in components than for final goods. Recent research therefore aims at understanding the mechanisms of fragmentation in production networks, which is also one objective of this paper.

Trade literature focusing specifically on the North African region is relatively scarce. Research typically focuses on the non-Euro Mediterranean area as a whole, analysing the trade volume effects resulting from tariff liberalization and trade preferences. Empirical studies (Persson and Wilhelmsson, 2007) have shown that Mediterranean countries benefiting from EU preference schemes increased their exports to the EU with a more pronounced effect in recent years (Peridy, 2005). However, results also indicate that exports from the region have actually increased less than their exports to the rest of the world (De Wulf and Maliszewska 2009). Furthermore, Pacheco (2006) and Bensassi (2010) point out that EU trade preferences have also contributed to a higher degree of export diversification from these countries. Overall, the effects on exports of new products remains

relatively small and only accounts for a minor share of total export expansion. They do not affect a wide range of sectors (Amurgo-Pacheco and Pierola, 2008). Building up on this literature, Bourdet and Persson (2011) show that deeper integration in the form of trade facilitation − specifically improved and simplified trade procedures aimed at reducing time to export − lead to rising volumes of trade as well as export diversification. A specific focus on North Africa has been given in a unpublished World Bank Report assessing the restrictions imposed by the high trade costs in the region and sheds light on the sizable lack of investment in trade facilitation in North Africa compared to other competitive countries. The lack of cooperation in the region can be held responsible for this situation. The research carried out by Lapeyronie (2015) provides empirical evidence supporting the determinant role played by trade facilitation policies on bilateral exports and therefore its positive effects for the region's integration in the international trading network. The author has shown that insufficient investment in trade facilitation can be responsible for the exclusion of the entire region from international trade.

Regarding the countries from Central and Eastern Europe, a key element is the economic transformation and radical liberalisation of foreign trade in ex-Soviet bloc countries following the collapse of the iron curtain. The role played by foreign trade has been constantly emphasized by the literature in the nineties, with Drabek and Smith (1995) pointing out the full-scale geographical reorientation of international trade from East to West. They highlight how trade with the EU has been associated with relatively little change in the structure of that trade, which suggests that policy should be oriented towards facilitating rather than slowing industrial adjustment. Brenton and Di Mauro (1999) empirically demonstrate how regional economic integration in the area provides and important stimulus to Foreign Direct Investment. Later on, Gross and Steinherr (2004) show that the share of exports to industrialized countries from Poland, Hungary and Czechoslovakia increased significantly from 20/30% to 50/60% between 1989 and 1992. Some of the most recent results covering the period under research are in Frensch et al. (2012a, 2012b), who demonstrate that East-West European trade in final goods as well as in parts and components, measured as wages or GDP per capita, is driven by supply-side country differences relative to the world average.

A last dimension that deviates from the purely economic analysis is to integrate diplomatic (or political) factors and their effects on the trading mechanism and economic

integration. In central and Eastern Europe, diplomatic relationships were particularly relevant after the dissolution of the Soviet Block, which brought new economic and political ties between countries. However, the fall in communication costs in the last decade has made information about foreign countries become quickly and cheaply available through alternative sources. The general consensus is that resources invested in the Foreign Service have now shifted to promoting exports, playing a key role in developing and maintaining export markets. The topic therefore becomes particularly relevant to analyse in the trade literature context, given how export promotion often is made explicit as one of the objectives of a foreign diplomatic mission. The effects of foreign missions on exports were analysed by Rose (2007) who found a positive significant effect of more foreign permanent representations on unilateral exports. In particular, each additional consulate is associated with slightly higher exports in a non-linear way with the first foreign mission having a larger effect on exports than successive missions. In the context of post-transition trade reorientation, these diplomatic relations were investigated by Afman and Maurel (2014) who built on the Rose model to consider trade between OECD and transition countries. They conclude that "economic diplomacy" is indeed associated with higher exports, suggesting that export promotion through the creation of permanent missions is effective where trade with transition countries is concerned. Using Anderson's and Van Wincoop's estimates for the elasticity of substitution, they find that opening an embassy is equivalent to an ad valorem tariff reduction of 2% to 8%. These results contrast with the view that the pattern of international trade is increasingly determined by macro-economic factors and that there is no role left for diplomacy.

3 Methodology and Data

3.1 The gravity model

Empirical studies of foreign trade flows typically implement the gravity equation which specifies that bilateral trade flows are determined by the economic sizes of, and the bilateral distance between the two countries (see Tinbergen 1962 and Poyhonen 1963). Trade patterns have classically been analysed in the context of gravity models, introduced by Anderson (1979) as a workhorse for more than three decades. Anderson and van Win-

coop (2003) later introduced fixed effects that tackled the omitted variable bias common when analysing trading links and the extent of trade between countries by substituting for imperfect knowledge of the factors that are potentially correlated with the extent of the analysed bilateral trade as well as with explanatory variables. Country-pair fixed effects thus allow capturing influences that are difficult to quantify but that nevertheless affect the pattern and extent of bilateral trade. In addition, research which deviates from the traditional gravity models, like the one undertook by Hanousek and Kočenda (2014),have shown to be in line with the underlying theoretical foundations of the literature. In their study, the authors derive country-pair fixed effects over all possible pairs of export-import partners and − in a second stage − proceed to relate fixed effects to a set of influential factors. Hanoucek and Kočenda's methodology has two major advantages. The first one is that it allows us to properly estimate our trade facilitation indicators by taking into account the low variation over time. The second one is that the use of fixed effects in the first step can potentially cope for some endogeneity issues such as missing variables and unobserved heterogeneity that are often left aside in the trade facilitation literature.
First, we regress the log of the bilateral exports of our area on a bunch of fixed effects:

$$logExports_{ij,t} = \sum_{i=1}^{N}\sum_{t=1}^{T} \delta_{i,t} a_i \times I_t + \sum_{j=1}^{N}\sum_{t=1}^{T} \gamma_{j,t} a_j \times I_t + \sum_{i=1}^{N}\sum_{j=1}^{N} \mu_{ij} a_{ij} + \sum_{t=1}^{T} \beta_t I_t + \epsilon_{ij,t} \quad (1)$$

In the above equation, *logExports* represents all the trade pairs in our sample according to the classification of goods that we describe in our data section. The coefficient $\delta_{i,t}$ is associated to the exporter-time fixed effects and $\gamma_{i,t}$ to the importer-time ones. Similarly, μ_{ij} correspond to the country-pairs fixed effects while β_t is related to the time fixed-effects.
We take out the estimated country pair-fixed effects $\hat{\mu}_{ij}$ which is supposed to have absorbed the effect of all time invariant regressors. In equation (2) we regress it on a set x_{ij} of time invariant factors.

$$\hat{\mu}_{ij} = \sum_{i=1}^{N} \sum_{j=1}^{N} \alpha_{ij} x_{ij} + u_{ij} \tag{2}$$

3.2 Time invariant gravity factors

Our trade data is taken from the BACI database, whose specificity is to improve the COMTRADE database where values associated to the same bilateral flow might differ across the importer and exporter declarations. This dataset covers more than 200 countries over almost 5000 products (6 digit of HS classification) between 1994 and 2013. We keep only the countries of our area of interest, North Africa and CEECs (see table in the appendix) over the period 2006-2012. We aggregate data up to 3 broad categories of goods according to the BEC classification, namely "Primary goods", "Parts and components" and "Capital goods". Being located at different stages of the world supply chain those goods are expected to have different sensitivities (degrees of response) to variations in trade facilitation infrastructures, doing business variables, as well as soft infrastructure like diplomatic missions. The dataset reaches a maximum of "1681" country pairs.

Following the existing literature we borrow the most commonly used gravity control variables from the CEPII gravity database:

- the population-weighted distance in kilometers
- a dummy contiguity equal to the unity if two countries are sharing a common border
- a dummy common language equal to the unity if two countries are sharing an official language
- a dummy common legal origin equal to the unity if two countries are sharing a legal system based on the same legal foundations (the English legal system has often been considered as easing trade relationships comparing to the French one)

In addition we built "regional dummies" in order to control for any non-included missing factors that would have explained the differences in trade integration that we observe.

We therefore include a dummy EU15 equal to the unity if both countries were already EU members when the 2004 enlargement towards the EAST occurred. A dummy variable CEECs equal to the unity if both countries are considered as part of the Central and Eastern European Countries (CEECs). We include an OECD dummy for the group of countries comprising Albania, Bulgaria, Croatia, the Czech Republic, Hungary, Poland, Romania, the Slovak Republic, Slovenia, and the three Baltic States: Estonia, Latvia and Lithuania. A dummy North Africa is equal to one if both countries are part of the North Africa, which comprises Algeria, Egypt, Libya, Mauritania, Morocco, Tunisia and Sudan.

We use the population to proxy for the mass variables in place of the classical GDP measure. Hanousek and Kočenda (2014) argues that population sizes are better than income based indicators to account for the fact that bigger countries trade proportionally less.

3.3 Trade facilitation indicators

We rely upon two groups of trade facilitation indicators that are produced by the World Bank. The first is the *Doing Business* dataset "Trading across the Border" component which measures the direct (monetary) cost and fees associated to the export and import of a 20 foot container but also to the trade frictions linked to the action of trading abroad. More precisely, we resort to the costs related to export and import merchandises in US$, the number of legal document required for exporting and importing and the average time needed to ship a container for each country in our sample. Our second group of trade facilitation indicators is borrowed from the *Logistic Performance Index (LPI)*. It aims at measuring the quality of the logistic, infrastructures and services related to the trading activities. Contrary to the doing business, the *LPI* is available in only three years: 2007, 2010 and 2012.

Trade facilitation is a broad and generic term for which can be associated to a wide range of aspects that are more or less closely related to the action of facilitating trade. While it is hard to define precisely what trade facilitation is, *Doing Business* and the *LPI* allow to distinguish two dimensions. *Doing Business* is directly related to what happen inside a country at the firm level, from a burdensome regulatory environment to insufficient

institutional capacities that could prevent firms to trade with other countries. The *LPI* ranks the countries according to their efficiency in the soft and hard infrastructures.[2] As such it is a measure of countries' competitiveness. This distinction is clearly written in the 2015 *Doing Business* Report as follows:

"Thus through these indicators Doing Business provides a narrow perspective on the infrastructure challenges that firms face, particularly in the developing world. It does not address the extent to which inadequate roads, rail, ports and communications may add to firms' costs and undermine competitiveness (except to the extent that the trading across borders indicators indirectly measure the quality of ports and roads)."

Finally, it is worth to notice than these variables are not perfect. In our case, an important issue is that trade facilitation indicators do not vary per products or per sectors. Indeed, it seems obvious that some goods need specific procedures or/and infrastructures while other do not. In the case for example of perishable goods, the cost linked to the delays should be higher compared to the cost experienced by manufactured goods. Another problem is that these variables are highly correlated, which calls for a separate estimation in order to avoid multicollinearity complications.

3.4 Diplomatic variables

In order to measure the impact of diplomacy on trade, we look at bilateral diplomatic representation. Broadly speaking, we can define a diplomatic representation as the appointment of an official from another country in order to promote and defend its national interests.

From an economic perspective, foreign missions are acknowledged to play an important role in trade promotion, a stronger diplomatic presence through higher diplomatic representation levels being associated with more trade. In modern diplomacy, we can distinguish various levels of diplomatic representation: at the lowest extreme, the *Chargé d'affaires* is a permanent or temporally diplomatic agent appointed if diplomatic relationships are not deep enough to motivate the creation of an embassy; at the highest extreme,

[2]We borrow this term from Portugal and Wilson who make the distinction between tangible trade infrastructures (hard) such as ports, roads and non-tangible infrastructures (soft) such as road transport companies.

the *Ambassador* represents the highest ranking in modern diplomacy.

We construct our variables from the correlates of war project, which is a well-known and reliable source of international relation data. In the diplomatic exchange dataset, the authors have created a categorical variable with 3 levels: *Chargé d'affaires*, Minister, and *Ambassador*. As Minister does not appear in our sample, we have consequently reshaped this variable in four distinct dummies. A first one called *Chargé d'affaires* $I \rightarrow X$ is equal to one if a *Chargé d'affaires* is appointed by the importing country in the exporting country. Symmetrically, *Chargé d'affaires* $X \rightarrow I$ is equal to one if the *Chargé d'affaires* is send by the exporting country in the importing country. Secondly, we have created a dummy *Ambassador* $I \rightarrow X$ equal to one if a there is an ambassador appointed by the importing country in the exporting country. Conversely, a dummy *Ambassador* $X \rightarrow I$ is equal to one if the *Ambassador* in the importing country comes from the exporting country.

An important thing to notice is that the data are available only until 2005. Indeed, the correlates of war project stopped the actualization of the diplomatic exchange dataset in 2006. As there is, to our knowledge, no other free and detailed data on diplomatic relationship, we keep the last entry (2005) for our study.

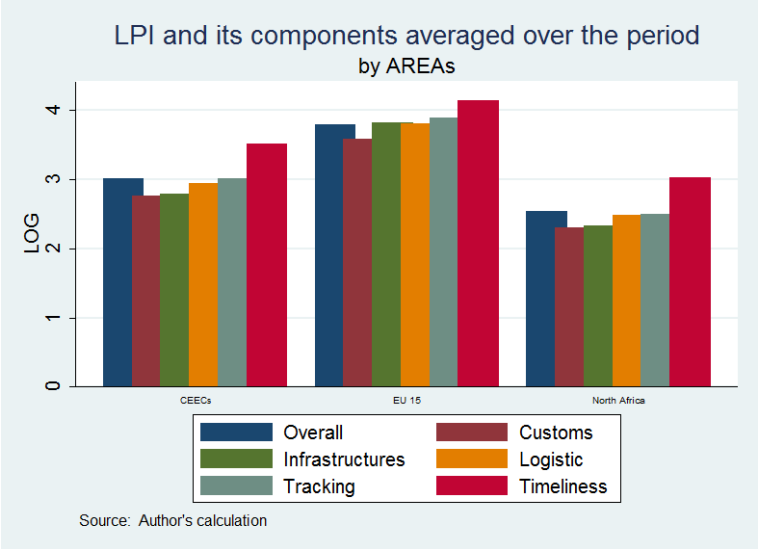
Another essential point is that the *Chargé d'affaires* variable can, in some cases, represent the transition from an *Ambassador* to a lowest level of diplomatic representation (mostly *Chargé d'affaires*). This only happens when an ambassador is "expelled, recalled, or withdrawn." Even if the authors do not specify the exact nature of the variable, we can assume than the shutting down of an embassy is a sufficiently rare event to ignore this possibility. In all cases, the *Chargé d'affaires* can be considered as the lowest degree of diplomatic representation.

3.5 Analyzing trade facilitation performances in our Area of study

Trade facilitation indicators display strong disparities across the regions of our area of study. First, the *LPI* and its components that range from 0 to a maximum of 5 show clearly that North Africa lags behind in terms of logistic competitiveness. If we focus exclusively on the overall indicator, which is the mean of five sub-components, we see

than EU15 dominates (as expected) the area. Despite strong improvements over the last two decades, CEECs are still lagging behind the standards of the most developed countries.

Figure 1



The *Doing Business* variables show up similar patterns. Obviously, the EU15 countries record the best performances in these trade facilitation measures (which are correlated with GDP per capita). However, we must notice the discrepancies between North Africa and the CEECs. It is striking to see how much North Africa is outperformed by the CEECs.

Figure 2

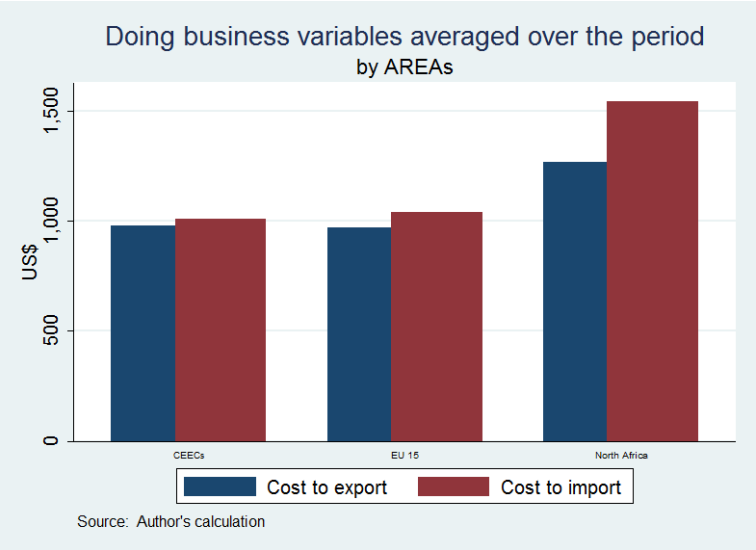


Figure 3

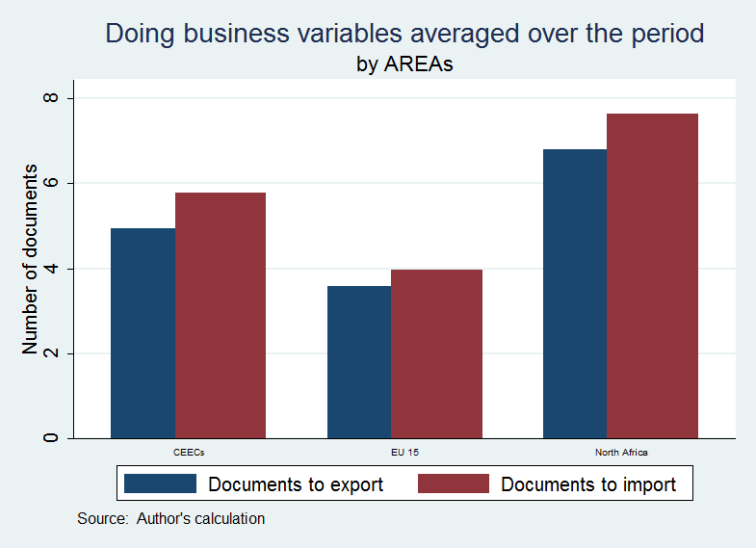
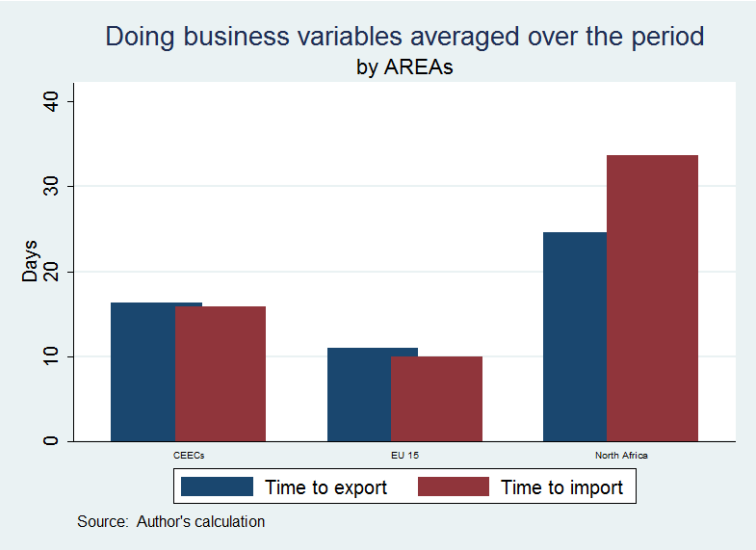
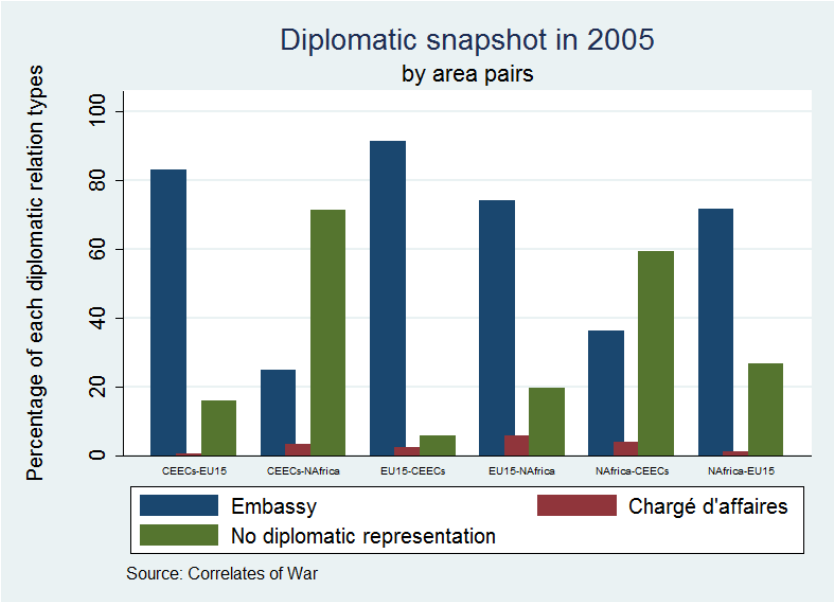


Figure 4



In term of diplomacy, North Africa is obviously less integrated in the area than the CEECs. The diplomatic snapshot graph shows than countries in North Africa have no diplomatic representation in CEECs countries in the majority of cases, while CEECs opened foreign missions in North Africa. The same pattern emerges if one focuses on diplomatic representation of both regions in the EU15, which is the main trade partner.

Figure 5



4 Results

Tables 1 and 2 examine the relationship between bilateral export fixed effects and *LPI* (table 1) or *Doing Business* (Table 2) as well as diplomatic representation levels at the total trade level. Looking at the control variables linked to cultural and geographic proximity between the countries, we observe that distance is significant and negative across all regression, as expected in the standard trade theory: the trade between two countries is negatively correlated with the cost of trading, and the respective cost is positively correlated with the distance between the two countries. It follows that for any country in the world it should normally be cheaper to exchange goods with its neighbours than with distant partners and consequently to trade more with countries with which it shares a common border. However, this is not always the case and recent studies proved that the exchanges between neighbours represented in 2003 only 25% of total trade (Piana, 2006). As shown by Arvis et all (2013), it is more expensive for Tunisia to trade manufactured goods with Algeria than with France, while trading agricultural goods between Algeria and Morocco is more than twice as expensive as between Algeria and Spain. This is the case in our sample of countries, where the common border variable is not significant.

Sharing a common language is unexpectedly found to not always have a positive impact on export promotion across all regressions. In Table 1, a common legal origin between the two trading countries is significant and positive across all regressions. The EU15 and North Africa dummies serve at controlling for any non-included missing factors to explain residual differences in trade integration, which explains why their sign might switch from negative (Table 1) to positive (Table 2), depending on the variables that are included in the specification (*LPI* or *Doing Business*).

In Table 1 we introduce the variables linked to trade facilitation. Looking at the results, the *LPI* estimates are robust and equally significant across all specifications. They have a positive sign and their magnitude suggests a strong effect of logistic performance indices on the promotion of exports. This is the expected result and confirms the importance of the quality of trading activities in promoting the level of exports, be it the quality of the logistic, of infrastructures or services related to the trading activities. Table 2 displays the results of the same equation with *LPI* being replaced by *Doing Business* variables. The associated coefficients are now negative, indicating that a reduction of the costs incurred for importing or exporting improves the bilateral trade fixed effect. Looking at our second set of variables of interest, the diplomatic representation vari-

Table 1: Diplomatic Representation and LPI

	$\hat{\mu}_{ij}$	$\hat{\mu}_{ij}$	$\hat{\mu}_{ij}$	$\hat{\mu}_{ij}$	$\hat{\mu}_{ij}$	$\hat{\mu}_{ij}$
lnpop_X	0.799***	0.878***	0.782***	0.741***	0.800***	0.650***
	(21.69)	(23.35)	(20.09)	(19.47)	(21.37)	(17.85)
lnpop_I	0.734***	0.768***	0.715***	0.695***	0.731***	0.643***
	(19.93)	(20.42)	(18.36)	(18.26)	(19.55)	(17.69)
lndist	-1.640***	-1.789***	-1.623***	-1.827***	-1.656***	-1.524***
	(-18.42)	(-19.88)	(-17.25)	(-19.79)	(-18.33)	(-17.11)
contiguity	0.188	0.0687	0.175	-0.0455	0.135	0.281
	(0.92)	(0.33)	(0.81)	(-0.22)	(0.66)	(1.39)
commonleg	0.677***	0.638***	0.485***	0.646***	0.550***	0.667***
	(5.67)	(5.29)	(3.87)	(5.20)	(4.57)	(5.60)
comlang_off	-0.385	-0.413	-0.359	-0.225	-0.270	-0.157
	(-1.40)	(-1.49)	(-1.24)	(-0.79)	(-0.98)	(-0.58)
EU15	-0.642***	-0.479**	-0.323	-0.478**	-0.611***	-0.418*
	(-3.83)	(-2.86)	(-1.84)	(-2.75)	(-3.57)	(-2.54)
CEECs	-0.264	-0.291	0.109	-0.446*	-0.0369	-0.706***
	(-1.29)	(-1.41)	(0.50)	(-2.11)	(-0.18)	(-3.47)
NAfrica	0.635	0.200	0.247	0.232	0.599	0.507
	(1.54)	(0.49)	(0.57)	(0.55)	(1.43)	(1.24)
Chargé d'affaires $I \to X$	0.277	0.248	0.313	0.266	0.356	0.376
	(0.92)	(0.81)	(0.98)	(0.85)	(1.16)	(1.25)
ChargÃl'é d'affaires $X \to I$	0.0578	0.0495	-0.0263	0.0483	0.151	0.163
	(0.19)	(0.16)	(-0.08)	(0.15)	(0.49)	(0.54)
Ambassador $I \to X$	0.652***	0.797***	0.824***	0.741***	0.721***	0.689***
	(4.16)	(5.05)	(4.99)	(4.55)	(4.54)	(4.42)
Ambassador $X \to I$	0.308*	0.405*	0.437**	0.363*	0.352*	0.342*
	(1.96)	(2.57)	(2.65)	(2.23)	(2.21)	(2.19)
LPIscore_X	10.94***					
	(34.66)					
LPIscore_I	6.035***					
	(19.17)					
Customs_X		8.830***				
		(33.54)				
Customs_I		4.775***				
		(18.19)				
Infrastructure_X			7.887***			
			(30.11)			
Infrastructure_I			4.204***			
			(16.09)			
LogisticsServices_X				9.197***		
				(31.44)		
LogisticsServices_I				5.081***		
				(17.44)		
Tracking_X					9.971***	
					(33.53)	
Tracking_I					5.343***	
					(18.00)	
Timeliness_X						13.90***
						(34.98)
Timeliness_I						7.259***
						(18.33)
Constant	-32.23***	-28.17***	-25.90***	-26.03***	-30.40***	-36.82***
	(-25.76)	(-23.66)	(-21.02)	(-21.77)	(-24.38)	(-27.23)
N	1710	1710	1710	1710	1710	1710
adj. R^2	0.780	0.775	0.755	0.763	0.774	0.781

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Note: X stands for the exporting country side and I for the importing one.

I $\to$ X means that a representative agent has been sent to the exporting country by the importing one.

ables remain significant and positive across the specifications, implying that the Foreign Service is acting a stimulant for exports. We note that having a *Chargé d'affaires* does not influence the level of the bilateral trade effect, while having an *Ambassador* matters, with a diplomatic representation of the importing country in the exporting country having an effect about one and half as big as having a representation in the importing country.

Table 2: Diplomatic Representation and Doing Business

	$\hat{\mu}_{ij}$	$\hat{\mu}_{ij}$	$\hat{\mu}_{ij}$	$\hat{\mu}_{ij}$	$\hat{\mu}_{ij}$	$\hat{\mu}_{ij}$
lnpop_X	0.671***	0.749***	0.920***	1.081***	0.889***	0.806***
	(14.14)	(15.65)	(20.43)	(23.39)	(20.42)	(18.99)
lnpop_I	0.515***	0.547***	0.681***	0.787***	0.721***	0.663***
	(10.87)	(11.43)	(15.14)	(17.05)	(16.55)	(15.64)
lndist	-1.760***	-1.680***	-1.613***	-1.617***	-1.875***	-1.965***
	(-15.31)	(-14.79)	(-15.42)	(-15.84)	(-18.25)	(-19.20)
contiguity	0.0963	0.169	0.399	0.391	0.0320	-0.0836
	(0.37)	(0.65)	(1.67)	(1.67)	(0.14)	(-0.36)
commonleg	-0.401**	-0.314*	-0.00121	0.140	0.259	0.255
	(-2.71)	(-2.15)	(-0.01)	(1.04)	(1.91)	(1.89)
comlang_off	0.818*	0.891**	-0.0658	0.0330	-0.154	0.146
	(2.33)	(2.58)	(-0.20)	(0.11)	(-0.49)	(0.47)
EU15	1.843***	1.735***	1.024***	0.670***	0.294	0.235
	(9.68)	(9.22)	(5.70)	(3.73)	(1.57)	(1.25)
CEECs	-0.592*	-0.697**	-0.100	-0.207	-0.843***	-0.928***
	(-2.23)	(-2.67)	(-0.42)	(-0.88)	(-3.57)	(-3.96)
NAfrica	-3.724***	-3.641***	-1.995***	-1.393**	-1.557***	-1.933***
	(-7.42)	(-7.37)	(-4.29)	(-3.03)	(-3.39)	(-4.27)
Chargé d'affaires I $\rightarrow$ X	0.950*	0.848*	0.585	0.532	0.673	0.521
	(2.44)	(2.21)	(1.65)	(1.54)	(1.94)	(1.51)
Chargé d'affaires X $\rightarrow$ I	0.328	0.304	0.193	0.219	0.159	0.282
	(0.84)	(0.79)	(0.55)	(0.63)	(0.46)	(0.82)
Ambassador I $\rightarrow$ X	1.946***	1.819***	1.441***	1.197***	1.340***	1.343***
	(9.89)	(9.36)	(8.00)	(6.74)	(7.53)	(7.61)
Ambassador X $\rightarrow$ I	1.171***	1.102***	0.966***	0.772***	0.742***	0.911***
	(5.95)	(5.67)	(5.36)	(4.35)	(4.17)	(5.17)
costexport_X	-1.279***					
	(-7.28)					
costexport_I	-0.324					
	(-1.84)					
costimport_X		-1.803***				
		(-10.46)				
costimport_I		-0.445**				
		(-2.58)				
timeexport_X			-2.437***			
			(-20.53)			
timeexport_I			-0.874***			
			(-7.35)			
timeimport_X				-2.219***		
				(-22.90)		
timeimport_I				-0.934***		
				(-9.63)		
docexport_X					-3.505***	
					(-21.54)	
docexport_I					-1.927***	
					(-11.87)	
docimport_X						-3.370***
						(-22.78)
docimport_I						-1.413***
						(-9.57)
Constant	3.537	5.967**	-6.235***	-10.62***	-4.362***	-1.876
	(1.77)	(3.21)	(-5.60)	(-9.58)	(-3.97)	(-1.69)
N	1710	1710	1710	1710	1710	1710
adj. R^2	0.633	0.644	0.698	0.712	0.707	0.712

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Note: X stands for the exporting country side and I for the importing one.

I $\rightarrow$ X means that a representative agent has been sent to the exporting country by the importing one.

Tables 3 and 4 further investigate the relationship at the level of three categories of goods, namely primary goods, parts and components, and capital goods. The control variables linked to cultural and geographic proximity display results similar to those of the aggregate regressions; we observe that geographical distance (measured in km), common border and geographical dummies, are significantly correlated to exports. However, primary goods are less sensitive to distance (negatively) but more sensitive to sharing a common border (positively, although this variable looses its significance for parts and components and capital goods). Speaking the same language increases bilateral trade fixed effect only for primary goods, not for the other two categories. It is interesting to note that having a common legal origin is significant most of the time. The variables of geographical localisation maintain the relationships found in the first set of regression with the EU15 and North Africa dummies being statistically significant across all regression groups with positive, respectively negative signs. We turn now to our primary interest, which is in the coefficients on the *LPI* and *Doing Business* variables. The results show that both clearly matter for trade performance: the exporter and importer *LPIs* both have coefficients that are positive and 1% statistically significant. This result is in line with other findings in the trade literature, such as Hoekman and Nicita (2010). More importantly, our estimates suggest that the elasticity of trade with respect to importer and exporter trade facilitation performance is stronger for parts and components than for either capital goods or primary goods. This makes sense, as it implies that trade costs are more detrimental (logistic performance is more crucial) for parts and components which are traded between the suppliers and customers of a value-chain, and have to travel fast and efficiently to avoid any disturbance in the production chain.

Looking at our second set of variables of interest, we notice that the variable *Chargé d'affaires* is prominently insignificant across all regressions, indicating that the presence of a *Chargé d'affaires* alone has no impact on a country's export volume. In contrast, the presence of an *ambassador* is highly significant and positive for both importer and exporter country in all regressions and across all categories of goods. These results point to an improvement of the trade volume when a high representative of foreign affairs is present in both the source and destination country. In particular when looking at the total trade volume, we note that the impact on export is higher if the ambassador is present in the exporting country as opposed to the importing one. This result hold for

Table 3: Diplomatic representation levels and LPI per category of goods

	Primary goods						Parts and components						Capital goods					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
lnpop_X	1.087***	1.076***	1.079***	1.081***	1.087***	1.059***	0.877***	0.989***	0.859***	0.858***	0.880***	0.713***	0.515***	0.652***	1.079***	0.494***	0.525***	0.343***
	(14.26)	(14.02)	(14.12)	(14.16)	(14.25)	(13.88)	(25.14)	(27.19)	(23.52)	(24.01)	(24.95)	(20.56)	(12.93)	(15.85)	(14.12)	(12.26)	(13.64)	(8.35)
lnpop_I	0.796***	0.839***	0.797***	0.795***	0.776***	0.731***	0.690***	0.727***	0.675***	0.679***	0.686***	0.601***	0.655***	0.655***	0.797***	0.650***	0.664***	0.590***
	(10.51)	(10.98)	(10.50)	(10.48)	(10.25)	(9.65)	(19.82)	(19.99)	(18.49)	(19.02)	(19.50)	(17.38)	(16.36)	(15.87)	(10.50)	(16.06)	(17.19)	(14.34)
lndist	-1.099***	-1.119***	-1.100***	-1.130***	-1.113***	-1.050***	-1.586***	-1.659***	-1.580***	-1.667***	-1.642***	-1.455***	-1.856***	-1.922***	-1.100***	-1.934***	-1.907***	-1.740***
	(-5.86)	(-5.94)	(-5.85)	(-6.00)	(-5.93)	(-5.58)	(-18.53)	(-18.67)	(-17.62)	(-18.98)	(-18.98)	(-17.08)	(-18.90)	(-19.07)	(-5.85)	(-19.47)	(-20.10)	(-17.18)
contiguity	1.039*	1.023*	1.024*	1.000*	1.013*	1.083**	0.333	0.282	0.301	0.233	0.252	0.448*	0.171	0.121	1.024*	0.0718	0.0935	0.274
	(2.55)	(2.51)	(2.51)	(2.45)	(2.49)	(2.65)	(1.78)	(1.45)	(1.53)	(1.21)	(1.33)	(2.40)	(0.80)	(0.55)	(2.51)	(0.33)	(0.45)	(1.24)
commonleg	0.769**	0.668**	0.724**	0.757**	0.648**	0.771**	0.611***	0.489***	0.438***	0.521***	0.497***	0.596***	0.719***	0.607***	0.724**	0.637***	0.701***	0.675***
	(3.10)	(2.70)	(2.93)	(3.06)	(2.63)	(3.10)	(5.37)	(4.16)	(3.70)	(4.48)	(4.35)	(5.27)	(5.51)	(4.56)	(2.93)	(4.85)	(5.60)	(5.03)
comlang_off	2.330***	2.397***	2.299***	2.379***	2.435***	2.414***	-0.546*	-0.513*	-0.572*	-0.366	-0.458	-0.300	-1.308***	-1.276***	2.299***	-1.142***	-1.303***	-1.060***
	(4.37)	(4.48)	(4.29)	(4.46)	(4.57)	(4.53)	(-2.22)	(-2.01)	(-2.22)	(-1.46)	(-1.85)	(-1.23)	(-4.65)	(-4.42)	(4.29)	(-4.02)	(-4.80)	(-3.67)
EU15	0.433	0.641	0.478	0.444	0.585	0.505	-0.851***	-0.583***	-0.619***	-0.711***	-0.895***	-0.618***	-0.298	-0.0451	0.478	-0.170	-0.524**	-0.0310
	(1.30)	(1.96)	(1.45)	(1.35)	(1.75)	(1.55)	(-5.58)	(-3.74)	(-3.91)	(-4.57)	(-5.78)	(-4.16)	(-1.71)	(-0.26)	(1.45)	(-0.97)	(-3.09)	(-0.18)
CEECs	-0.551	-0.537	-0.386	-0.587	-0.470	-0.729	0.474*	0.508**	0.909***	0.385*	0.720***	-0.00366	0.308	0.339	-0.386	0.223	0.553**	-0.127
	(-1.37)	(-1.33)	(-0.95)	(-1.46)	(-1.17)	(-1.80)	(2.56)	(2.65)	(4.68)	(2.03)	(3.85)	(-0.02)	(1.45)	(1.56)	(-0.95)	(1.04)	(2.70)	(-0.58)
NAfrica	-2.551**	-2.905**	-2.568**	-2.551**	-2.751**	-2.550**	-0.0578	-0.577	-0.289	-0.201	0.119	-0.122	0.992	0.489	-2.568**	0.847	1.409**	0.869
	(-2.63)	(-3.01)	(-2.64)	(-2.63)	(-2.83)	(-2.63)	(-0.13)	(-1.24)	(-0.61)	(-0.43)	(0.26)	(-0.27)	(1.94)	(0.94)	(-2.64)	(1.64)	(2.85)	(1.65)
Chargé d'affaires I → X	0.0137	0.0727	-0.130	-0.0483	0.129	0.0535	0.297	0.328	0.286	0.318	0.376	0.428	0.0614	0.0740	-0.130	0.0870	0.103	0.226
	(0.02)	(0.11)	(-0.19)	(-0.07)	(0.19)	(0.08)	(0.97)	(1.03)	(0.89)	(1.01)	(1.21)	(1.40)	(0.17)	(0.21)	(-0.19)	(0.24)	(0.30)	(0.62)
Chargé d'affaires X → I	-0.521	-0.529	-0.463	-0.478	-0.542	-0.436	0.965**	0.960**	0.770*	0.935**	1.011**	1.182***	1.291***	1.307***	-0.463	1.250***	1.328***	1.456***
	(-0.78)	(-0.79)	(-0.69)	(-0.71)	(-0.81)	(-0.65)	(3.14)	(3.01)	(2.39)	(2.97)	(3.26)	(3.87)	(3.67)	(3.62)	(-0.69)	(3.51)	(3.91)	(4.02)
Ambassador I → X	0.939**	1.029**	0.938**	0.900**	1.031**	0.908**	0.617***	0.786***	0.767***	0.631***	0.676***	0.633***	0.334	0.506**	0.938**	0.342	0.331*	0.413*
	(2.86)	(3.14)	(2.86)	(2.73)	(3.14)	(2.76)	(4.08)	(5.03)	(4.85)	(4.07)	(4.43)	(4.21)	(1.93)	(2.86)	(2.86)	(1.95)	(1.98)	(2.32)
Ambassador X → I	1.000**	1.098***	1.067**	1.009**	1.062**	1.030**	0.679***	0.783***	0.788***	0.676***	0.679***	0.692***	0.925***	1.013***	1.067**	0.918***	0.840***	0.914***
	(3.04)	(3.35)	(3.25)	(3.06)	(3.23)	(3.13)	(4.49)	(5.01)	(4.99)	(4.36)	(4.45)	(4.60)	(5.34)	(5.72)	(3.25)	(5.24)	(5.03)	(5.12)
LPIscore_X	1.070						12.44***						14.44***					
	(1.59)						(40.28)						(41.00)					
LPIscore_I	5.813***						6.370***						3.097***					
	(8.70)						(20.81)						(8.85)					
Customs_X		0.277						9.646***						11.39***				
		(0.51)						(37.29)						(39.03)				
Customs_I		4.409***						4.827***						2.088***				
		(8.16)						(18.81)						(7.20)				
Infrastructure_X			0.961						9.395***						0.961			
			(1.79)						(36.69)						(1.79)			
Infrastructure_I			4.383***						4.638***						4.383***			
			(8.27)						(18.31)						(8.27)			
LogisticsServices_X				1.115						10.56***						12.38***		
				(1.90)						(38.38)						(40.05)		
LogisticsServices_I				4.923***						5.303***						2.425***		
				(8.48)						(19.46)						(7.89)		
Tracking_X					0.174						11.48***						13.97***	
					(0.28)						(39.38)						(43.92)	
Tracking_I					5.214***						6.001***						3.439***	
					(8.33)						(20.69)						(10.84)	
Timeliness_X						1.600						15.83***						17.77***
						(1.87)						(40.74)						(38.76)
Timeliness_I						7.156***						7.777***						3.790***
						(8.45)						(20.22)						(8.32)
Constant	-31.79***	-29.38***	-29.75***	-30.33***	-29.81***	-33.96***	-35.91***	-31.78***	-29.57***	-31.10***	-34.18***	-41.40***	-26.14***	-22.27***	-29.75***	-21.67***	-26.08***	-30.65***
	(-12.37)	(-11.94)	(-12.37)	(-12.47)	(-11.84)	(-12.19)	(-30.38)	(-27.09)	(-25.58)	(-27.15)	(-29.24)	(-32.56)	(-19.30)	(-16.75)	(-12.37)	(-16.74)	(-20.36)	(-20.32)
N	1525	1525	1525	1525	1525	1525	1544	1544	1544	1544	1544	1544	1544	1544	1525	1544	1544	1544
adj. R^2	0.456	0.454	0.453	0.454	0.456	0.454	0.829	0.816	0.812	0.820	0.825	0.831	0.784	0.772	0.453	0.779	0.798	0.770

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Note: X stands for the exporting country side and I for the importing one.

I → X means that a representative agent has been sent to the exporting country by the importing one.

Table 4: Diplomatic representation levels and Doing Business per category of goods

	Primary goods						Parts and components						Capital goods					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
lnpop_X	0.968***	0.968***	1.134***	1.236***	1.077***	1.043***	0.801***	0.843***	0.996***	1.160***	1.046***	0.972***	0.501***	0.536***	0.706***	0.877***	0.762***	0.683***
	(12.57)	(12.41)	(14.52)	(15.23)	(13.65)	(13.38)	(16.21)	(16.98)	(21.12)	(24.31)	(23.69)	(22.00)	(8.73)	(9.24)	(12.88)	(15.86)	(15.12)	(13.90)
lnpop_I	0.796***	0.820***	0.965***	1.096***	0.918***	0.866***	0.439***	0.452***	0.597***	0.713***	0.668***	0.625***	0.352***	0.369***	0.482***	0.551***	0.566***	0.542***
	(10.43)	(10.60)	(12.48)	(13.63)	(11.70)	(11.18)	(8.92)	(9.13)	(12.72)	(15.01)	(15.15)	(14.17)	(6.13)	(6.35)	(8.78)	(9.95)	(11.20)	(10.99)
lndist	-1.107***	-1.087***	-1.122***	-1.138***	-1.143***	-1.141***	-1.605***	-1.586***	-1.572***	-1.594***	-1.671***	-1.692***	-1.867***	-1.853***	-1.849***	-1.869***	-1.945***	-1.971***
	(-5.72)	(-5.66)	(-5.97)	(-6.09)	(-6.01)	(-5.98)	(-12.97)	(-13.01)	(-13.86)	(-14.53)	(-15.74)	(-15.71)	(-12.96)	(-12.98)	(-13.98)	(-14.65)	(-16.02)	(-16.39)
contiguity	1.060*	1.072*	1.223**	1.208**	1.031*	1.012*	0.336	0.362	0.550*	0.540*	0.311	0.268	0.172	0.193	0.366	0.348	0.146	0.0922
	(2.55)	(2.57)	(2.99)	(2.98)	(2.50)	(2.45)	(1.25)	(1.35)	(2.21)	(2.24)	(1.34)	(1.13)	(0.55)	(0.62)	(1.27)	(1.25)	(0.55)	(0.35)
commonleg	0.280	0.311	0.805***	0.944***	0.651**	0.575*	-0.792***	-0.718***	-0.249	-0.0733	-0.0206	-0.0609	-0.584**	-0.515**	-0.0877	0.0514	0.166	0.158
	(1.17)	(1.29)	(3.32)	(3.89)	(2.64)	(2.33)	(-5.13)	(-4.65)	(-1.70)	(-0.51)	(-0.15)	(-0.43)	(-3.25)	(-2.85)	(-0.51)	(0.31)	(1.05)	(1.01)
comlang_off	2.829***	2.851***	2.006***	2.090***	2.348***	2.551***	0.794*	0.837*	-0.0896	-0.0282	-0.166	0.153	-0.0558	-0.0161	-0.878*	-0.797*	-0.998**	-0.706*
	(5.24)	(5.28)	(3.73)	(3.94)	(4.34)	(4.74)	(2.28)	(2.42)	(-0.27)	(-0.09)	(-0.55)	(0.50)	(-0.14)	(-0.04)	(-2.31)	(-2.18)	(-2.87)	(-2.06)
EU15	1.426***	1.403***	0.636*	0.323	0.647*	0.751*	1.941***	1.872***	1.101***	0.711***	0.320	0.285	2.310***	2.244***	1.529***	1.206***	0.719***	0.626**
	(4.85)	(4.75)	(2.11)	(1.05)	(2.00)	(2.28)	(10.23)	(9.90)	(6.00)	(3.91)	(1.76)	(1.52)	(10.47)	(10.15)	(7.16)	(5.71)	(3.46)	(3.00)
CEECs	-0.638	-0.673	-0.447	-0.558	-0.782	-0.756	0.373	0.266	0.625*	0.507*	0.0275	0.00402	0.208	0.105	0.447	0.339	-0.131	-0.174
	(-1.53)	(-1.61)	(-1.11)	(-1.40)	(-1.91)	(-1.84)	(1.39)	(0.99)	(2.55)	(2.14)	(0.12)	(0.02)	(0.66)	(0.34)	(1.57)	(1.23)	(-0.50)	(-0.67)
NAfrica	-4.220***	-4.221***	-3.061**	-2.496**	-3.198***	-3.450***	-4.407***	-4.450***	-3.195***	-2.501***	-2.469***	-2.710***	-3.104***	-3.144***	-1.921**	-1.340*	-1.158	-1.389*
	(-4.40)	(-4.41)	(-3.24)	(-2.64)	(-3.33)	(-3.60)	(-7.00)	(-7.13)	(-5.47)	(-4.40)	(-4.50)	(-4.88)	(-4.31)	(-4.39)	(-2.87)	(-2.06)	(-1.88)	(-2.28)
Chargé d'affaires I → X	-0.180	-0.151	-0.424	-0.366	-0.223	-0.119	1.115*	0.968*	0.778	0.692	0.829*	0.705	1.499**	1.320**	0.833	0.646	0.861*	0.590
	(-0.26)	(-0.22)	(-0.63)	(-0.54)	(-0.33)	(-0.17)	(2.54)	(2.22)	(1.91)	(1.76)	(2.19)	(1.83)	(2.93)	(2.59)	(1.76)	(1.42)	(1.99)	(1.38)
Chargé d'affaires X → I	-0.0750	-0.136	-0.197	-0.267	-0.145	-0.221	0.858	0.921*	0.788	0.864*	0.925*	1.026**	0.520	0.621	0.823	1.011*	0.943*	1.180**
	(-0.11)	(-0.20)	(-0.29)	(-0.40)	(-0.22)	(-0.33)	(1.95)	(2.11)	(1.94)	(2.20)	(2.44)	(2.66)	(1.02)	(1.22)	(1.74)	(2.21)	(2.18)	(2.75)
Ambassador I → X	1.168***	1.145***	0.863**	0.709*	0.949**	1.046**	2.001***	1.915***	1.623***	1.355***	1.279***	1.317***	2.024***	1.899***	1.447***	1.157***	1.040***	1.002***
	(3.56)	(3.48)	(2.67)	(2.19)	(2.89)	(3.17)	(9.44)	(9.09)	(8.24)	(7.06)	(6.91)	(7.01)	(8.21)	(7.71)	(6.32)	(5.20)	(4.92)	(4.79)
Ambassador X → I	1.575***	1.556***	1.341***	1.109***	1.267***	1.311***	1.559***	1.537***	1.337***	1.148***	1.165***	1.254***	1.355***	1.379***	1.382***	1.279***	1.240***	1.366***
	(4.79)	(4.73)	(4.15)	(3.43)	(3.86)	(3.98)	(7.35)	(7.30)	(6.79)	(5.99)	(6.29)	(6.68)	(5.50)	(5.60)	(6.03)	(5.75)	(5.86)	(6.53)
costexport_X	0.186						-0.871***						-0.242					
	(0.61)						(-4.44)						(-1.06)					
costexport_I	-0.857**						-0.0204						-0.581*					
	(-2.80)						(-0.10)						(-2.55)					
costimport_X		0.150						-1.377***						-0.982***				
		(0.47)						(-6.84)						(-4.18)				
costimport_I		-0.938**						-0.0322						-0.331				
		(-2.97)						(-0.16)						(-1.41)				
timeexport_X			-1.302***						-2.187***						-2.586***			
			(-5.75)						(-16.17)						(-16.40)			
timeexport_I			-1.668***						-1.048***						-0.410**			
			(-7.41)						(-7.80)						(-2.62)			
timeimport_X				-1.165***						-2.147***						-2.531***		
				(-6.23)						(-19.68)						(-19.97)		
timeimport_I				-1.667***						-1.056***						-0.340**		
				(-8.96)						(-9.72)						(-2.70)		
docexport_X					-0.739*						-3.815***						-4.589***	
					(-2.51)						(-23.18)						(-24.46)	
docexport_I					-1.923***						-1.595***						-0.690***	
					(-6.55)						(-9.75)						(-3.70)	
docimport_X						-0.403						-3.334***						-4.255***
						(-1.51)						(-21.99)						(-25.21)
docimport_I						-1.575***						-1.339***						-0.465**
						(-5.91)						(-8.86)						(-2.76)
Constant	-17.71***	-17.35***	-19.66***	-23.37***	-21.31***	-20.81***	-3.965	-1.230	-7.327***	-11.43***	-8.094***	-6.600***	3.724	6.346*	0.590	-3.194*	-0.0790	1.528
	(-4.73)	(-4.78)	(-9.38)	(-11.34)	(-10.14)	(-9.80)	(-1.65)	(-0.53)	(-5.75)	(-9.36)	(-6.85)	(-5.46)	(1.34)	(2.35)	(0.40)	(-2.25)	(-0.06)	(1.13)
N	1525	1525	1525	1525	1525	1525	1544	1544	1544	1544	1544	1544	1544	1544	1544	1544	1544	1544
adj. R^2	0.431	0.431	0.455	0.462	0.444	0.441	0.648	0.654	0.700	0.720	0.738	0.731	0.541	0.544	0.608	0.635	0.670	0.677

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Note: X stands for the exporting country side and I for the importing one.

I → X means that a representative agent has been sent to the exporting country by the importing one.

the primary goods and part and components categories but is reversed for the capital goods category where it becomes more efficient to have an ambassador in the importing country in order to promote exports.

Table 5 and 6 illustrate the results and gives an idea of their magnitude by answering the following questions: by how much would increase the bilateral trade fixed effects if the level of *LPI* achieved by CEECs (respectively *Doing Business*) was adopted by north African countries (table 6)? Similarly what is the equivalent of opening an embassy in terms of *LPI* (respectively *Doing Business*) improvement (table 5)? From table 6 we can infer that much of the missing bilateral trade fixed effect of North African countries could be realized by switching *LPI* and *Doing Business* indices to the level achieved in CEECs, which are comparable emerging countries but more advanced in the area of trade facilitation and more friendly in their *Doing Business* institutions. The growth rate of the bilateral trade fixed effect induced by an improvement in the *LPI* or *Doing Business* indices represents up to 85% of the rate of growth that is needed to fill in the gap between the average trade bilateral fixed effects in the CEECs and North Africa. The benefit from opening an embassy in the exporting or importing country plays also an important role. According to column F in table 5 (bottom table), opening an embassy is equivalent to a reduction of trade cost by a factor ranging from 14% to 52% of the average import-export cost. It also yields an increase in the bilateral trade fixed effect equivalent to a reduction of the average time needed to ship a container to export by 41%, and to a reduction of the number of legal documents by about 24%.

5 Conclusion

This paper has shown that most of the trade diversion, which occurred at the expense of North African countries and to the benefit of transition European countries can be imputed to the poor quality of soft infrastructure and hard infrastructure, as measured by the *Doing Business* and *LPI* indicators of the World Bank. In the soft infrastructure category we included the role played by foreign missions. Our results suggest that reducing the cost and fees for trading across the border (namely the fees associated to the export and import of a 20 foot container), the number of legal documents, the average

time needed to ship a container and the quality of the logistic, infrastructures and services related to trading activities, would fill in the gap between the average bilateral fixed effect of North Africa and of CEECs, the latter being significantly higher. Opening an embassy also plays a role equivalent to an improvement of the trade logistic variable by up to 52%.

Those results have policy implications, as they contribute to the discussion on the relative role of traditional trade policy tools − tariffs and non-tariffs measures − and trade facilitation measures, the latter being powerful drivers of regional trade integration. More specifically they suggest that the implementation of the Trade Facilitation Agreement (TFA), which would help to move toward the frontier value of the *LPI* or *Doing Business* indicators for the CEECs, could allow North African countries to achieve a better trade integration, through a reduction of their trade costs.[3] Opening embassies as additional measures could reinforce TFA in promoting regional trade integration.

[3]This conclusion is drawn also by de Melo and Wagner (2016), who put the emphasis on the reduction in trade costs, while this paper provides complementary evidence on the substantial increase in trade.

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6 Tables

Table 5: Opening an embassy versus trade facilitation (*LPI and Doing Business*)

	Explanatory variables (X)	**Coefficients (from table 1 and 2) of X**	**Mean of X for the whole sample**	**Embassy coefficient**	**Improvement in X equivalent to the opening of an embassy**	**In % of the mean of X**
		(A)	(B)	(C)	(D*)	(E**)
	LPIscore_X	10.94	1.15	0.652	0.059	5.19
	LPIscore_I	6.035	1.15	0.308	0.051	4.45
	Customs_X	8.83	1.07	0.797	0.0902	8.43
	Customs_I	4.775	1.07	0.405	0.085	7.92
	Infrastructures_X	7.887	1.11	0.824	0.104	9.42
	Infrastructures_I	4.204	1.11	0.437	0.104	9.37
	Logisticservices_X	9.197	1.13	0.741	0.080	7.12
	Logisticservices_I	5.081	1.13	0.363	0.071	6.31
	Tracking_X	9.971	1.16	0.721	0.072	6.24
	Tracking_I	5.343	1.16	0.352	0.066	5.68
	Timeliness_X	13.9	1.28	0.689	0.095	3.88
	Timeliness_I	7.259	1.28	0.342	0.047	3.69
	Costexport_X	-1,279	6.95	1,946	-1,521	-21.90
	Costexport_I	-0,324	6.95	1,171	-3,614	-52.03
	Costimport_X	-1,803	7.03	1,819	-1,009	-14.34
	Costimport_I	-0,445	7.03	1,102	-2,476	-35.21
	Timeexport_X	-2,437	2.63	1,441	-0,591	-22.45
	Timeexport_I	-0,874	2.63	0,966	-1,105	-41.97
	Timeimport_X	-2,219	2.64	1,197	-0,539	-20.39
	Timeimport_I	-0,934	2.64	0,772	-0,826	-31.24
	Docexport_X	-3,505	1.57	1,34	-0,382	-24.39
	Docexport_I	-1,927	1.57	0,742	-0,385	-24.57
	Docimport_X	-3,37	1.70	1,343	-0,398	-23.37
	Docimport_I	-1,413	1.70	0,911	-0,645	-37.81

* D=(C/A)

**$E = (D/B) \times 100$

Table 6: Improving trade facilitation performance to fill in the gap between the average trade bilateral fixed effect in the CEECs and North Africa

	Explanatory variables (X)	Coefficients of X (from table 1 and 2)	Mean of X for CEECs	Mean of X for North Africa	Change in X if North Africa adopted the average quality of X found in the CEECs	Increase in $e^{\hat{\mu}_{ij}}$, the exponential of the bilateral trade fixed effect, implied by the change in X	In % of the rate of growth which allows to achieve the average bilateral fixed effect in the CEECs
		(A)	(B)	(C)	(D*)	(E**)	(F***)
	LPIscore_X	10,940	1,098	0,931	1.82	5.21	62.67
	LPIscore_I	6,035	1,098	0,931	1.01	1.74	20.91
	Customs_X	8,830	1,011	0,832	1.586	3.88	46.68
	Customs_I	4,775	1,011	0,832	0.858	1.36	16.32
	Infrastructures_X	7,887	1,023	0.840	1.45	3.25	39.05
	Infrastructures_I	4,204	1,023	0,840	0.77	1.16	13.98
	Logisticservices_X	9,197	1,074	0,905	1.55	3.73	44.80
	Logisticservices_I	5,081	1,074	0,905	0.86	1.36	16.33
	Tracking_X	9,971	1,096	0,917	1.78	4.96	59.64
	Tracking_I	5,343	1,096	0,917	0.957	1.60	19.27
	Timeliness_X	13,900	1,255	1,105	2.08	7.03	84.49
	Timeliness_I	7,259	1,255	1,105	1.09	1.97	23.65
	Costexport_X	-1,279	6,853	7,014	0,205	0.23	2.73
	Costexport_I	-0,324	6,853	7,014	0,051	0.05	0.64
	Costimport_X	-1,803	6,895	7,213	0,573	0.77	9.30
	Costimport_I	-0,445	6,895	7,213	0,141	0.15	1.83
	Timeexport_X	-2,437	2,732	3,074	0,832	1.30	15.61
	Timeexport_I	-0,874	2,73	3,074	0,298	0.35	4.18
	Timeimport_X	-2,219	2,70	3,394	1,545	3.69	44.31
	Timeimport_I	-0,934	2,70	3,394	0,650	0.92	11.01
	Docexport_X	-3,505	1,577	1,887	1,088	1.97	23.66
	Docexport_I	-1,927	1,577	1,887	0,598	0.82	9.84
	Docimport_X	-3,37	1,731	2,022	0,979	1.66	19.97
	Docimport_I	-1,413	1,731	2,022	0,410	0.51	6.10

* $D = (B - C) \times A$

** $E = [(e^{D+\hat{\mu}_{ij}})/e^{\hat{\mu}_{ij}}] - 1$

*** $F = [E/8.32] * 100$, where 8.32 is the rate of growth that is needed to fill in the gap between the average trade bilateral fixed effects in the CEECs and North Africa.

"Sur quoi la fondera-t-il l'économie du monde qu'il veut gouverner? Sera-ce sur le caprice de chaque particulier? Quelle confusion! Sera-ce sur la justice? Il l'ignore."

Pascal

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