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Investment climate and Trade Margins in Egypt: Which Factors Do Matter?

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Abstract

In this paper, we explore the nexus between firms' exports performance and components of the investment climate in Egypt. We include a variety of factors affecting investment, such as political and institutional factors, in addition to factors related to physical infrastructure, macroeconomic policies and competition in the market. We do this for the manufacturing sector, using firm-level data from the World Bank Enterprise Survey. We also account for both the extensive and the intensive trade margins. Our results suggest that, in fact, political, macroeconomic, institutional and competition-related factors are the most important impediments that hinder the increase in the modest number of exporters and/or the quantity of exports. While political instability and corruption affect the quantity of exports, tax payments and competition from the informal sector affect the firms' decision to become exporters. Finally, access to finance affects both extensive and intensive trade margins.

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1. Introduction

The Egyptian economy has experienced serious challenges since the uprising in 2011, which, in turn, affected investments flows, exports and overall economic performance. Despite significant investment-related reforms and export promotion incentives carried out heavily between 2004 and 2008 and continued in the aftermath of the uprising, the volume of exports as well as the number of exporters continued to decline. According to the World Bank Enterprise Survey, exporting firms represent only 11.8% of total firms. Our objective is therefore to understand which elements of the investment climate hinder firms from entering the export market. We also try to determine which of these elements has an impact on the volume of exports, once these firms become exporters.

The literature on investment climate and exports performance mostly relies on the framework of heterogeneous firms established by Roberts and Tybout, (1997), Bernard et al (2003), and Melitz (2003), which link the firms' decision to enter the exports market to their observed (ex-ante) level of productivity. Earlier studies (Dollar et al (2002,2004), Bastos and Nasir (2004), Subramanian et al (2005), Hallward-Driemeier et al (2006), and Escribano et al (2010)) focus only on components of investment climate and their impact productivity gains rather than export performance in developing countries. Most importantly, customs delays, power outages and utility services access and quality are among the most important determinants of total factor productivity. However, more recent studies established the link between the investment climate and exports performance, such as Kinda et al. (2009) who point out to poor investment climate in the Middle East and North Africa (MENA) region, and Şeker (2011)'s work on 137 countries with different income levels. A more recent study by Yushi and Borojo (2018) examines the impact of several components of the investment climate on intra-African trade. In particular, physical infrastructure, cross-border trade procedures and the quality of political and economic institutions are significant determinants not only of the volume of trade flows, but also of the probability of African countries to enter the trade market.

In our paper, we contribute to the literature on three stances: First, we combine the link between investment climate and firm productivity and the link between productivity and exports, to explore the nexus between firms' exports performance and various factors affecting the investment climate. Second, we use firm-level data to examine the differential impact of investment climate on both the intensive and the extensive margins. Third, we do this exercise for Egypt, a MENA country who has extensively reformed its business-related regulations to enhance the overall investment climate and diversify its exports. Using the World Bank Enterprise Survey for Egypt, we proceed in several steps: first, we estimate the Total Factor Productivity by sector (TFP) extending hereby the work of Dollar et al (2004). Second, we examine the impact of productivity and investment climate components on the likelihood of becoming an exporter (extensive margin), and the quantity of exports (intensive margin). Given the low number of exporters, we use a Heckman selection procedure in order to overcome the selection bias. This helps us identify whether investment climate variables are perceived as a fixed cost (and hence affects the extensive margin) or a variable cost (and hence affects the intensive one).

In line with the international trade model with heterogeneous firms, we find that exporters perform better than non-exporters. The results are significant for the extensive margin and insignificant for the intensive margin. This conclusion is in line with the idea that the productivity level is an important determinant of engagement in international trade. In the case of Egypt, productivity gains occur in traditional sectors such as textiles and garments, and in some relatively small -yet emerging- sectors like wood, leather and chemicals.

Our findings on the components of the investment climate and their impact on exports are generally in line with vast scope of studies on developing countries (for example, Bellone et al., 2010; Abor et al., 2014; and Baglan and Yilmazkuday, 2018) and Kiendrebeogo and Minea (2013) on Egyptian firms. Most importantly, we find that lack of credit represents a barrier to entering the exports market, and limits the capacity of already exporting firms to expand (i.e. affects both trade margins). Meanwhile, firms with better access to credit were found to export broader varieties, expand to new export markets and increase export volumes of already existing products at a higher rate. We also find that political instability and corruption affect the quantity of exports (i.e. the intensive trade margin). Our findings on corruption are similar to those on African and Latin American economies (Musila and Sigué, 2010; Charoensukmongol and Sexton, 2011). Complicated tax payments and competition from the informal sector affect the firms' decision to become exporters (the extensive trade margin). Among the important determinants of exports performance are also foreign ownership and the share of imported inputs.

The paper is organized as follows: Section 2 presents some stylized facts about Egypt's performance in investment-related matters, and exporters performance vis-à-vis non-exporters in the Egyptian manufacturing sector. Section 3 presents the estimation framework. Section 4 discusses the empirical results. Section 5 concludes.

2. Stylized Facts

2.1. Components of the Investment Climate in Egypt

In this section, we evaluate several components of the investment climate in Egypt, and place this evaluation within a comparative framework including MENA and lower middle-income countries.

Components of the investment climate can be divided into physical infrastructure (electricity and power outages), factors related to macroeconomic policies (tax rates, access to finance), institutional factors (labor regulations, number of days to export, corruption), political factors (political instability) and competition (competition with the informal sector). Table 1 illustrates the performance of the Egyptian economy across some of these indicators and compares it to MENA and lower middle-income countries.

As far as infrastructure is concerned, the number of power outages in a typical month in Egypt reaches up to 16.3, slightly below MENA average and significantly higher than the group of lower middle-income countries. Meanwhile, losses in sales due to power outage are as high as 5.6% of total sales value in Egyptian firms, higher than MENA and lower middle-income

averages (4.7% and 4% respectively). Delays to get an electricity connection are also significantly higher in Egypt than MENA and lower middle-income countries, with nearly 76 days compared to only 41 and 29 days for both groups respectively. According to the Doing Business Report, Egypt ranks 144th in access to electricity, which requires 7 procedures and costs 272.9% of income per capita.

As for elements related to macroeconomic policy, Egypt lags behind in the ease of paying taxes, with a global ranking of 151, and ranks of 18 and 35 between MENA and lower middle-income countries subgroups respectively. According to the Doing Business Reports, Egyptian firms make 29 tax payments a year, spend 392 hours a year filing, preparing and paying taxes, and pay total taxes amounting to 45% of profit. In matters of access to credit, Egypt ranks 79th globally and first among MENA countries. However, financial intermediation remains relatively low and the non-government loans-to-deposits ratio dropped from 54.2% in June 2010 to 43.8% in June 2015 (Ministry of Finance, 2015). More specifically, firms operating in the trade sector receive only 16.4% of total non-government credit facilities, compared to 44.1% for firms in the industrial sector (Ministry of Finance, 2015). SMEs represent around 97% of total enterprises in the manufacturing sector (of which only 6% are exporting), yet their share of credit is limited to a mere 25%. Limited access to finance is thought to be due to reluctance of banks to lend small entrepreneurs due to high risk and low returns, in addition to the lack of awareness of small entrepreneurs with procedures and required documents and overall lack of financial education. The enterprise survey depicts limited efficiency of the financial intermediation market, with 89.1% of firms relying on internal funds and informal sources (such as family) to finance their activities, compared to 72% in both other groups. Only 6% of firms have bank loans or other forms of credit, and 59.6% have a bank account.

Table 1: Selected indicators from the Enterprise Survey (2013): Egypt, MENA and lower middle-income countries

Indicator	Egypt	MENA	Lower middle-income countries
Number of power outages/month	16.3	17.6	8.4
% of firms with bank loans/line of credit	6	25.6	30.5
Days to obtain and operating license	138.9	33.4	28.1
Incidence of Graft Index (%)*	47	23.7	20.2
% of exporter firms	11.8	24.2	17

Source: Constructed by the authors using Enterprise Surveys (2013)

Concerning institutional factors, Egypt is among those countries with the lowest Labor Market Rigidity Index in the MENA region. MENA labor markets are also generally less restrictive than labor markets in Latin America and Caribbean (LAC) and Sub-Saharan Africa (Selwaness and Zaki, 2019). Delays at the border and the cost of clearing exports and imports remain problematic to Egyptian firms. The country's global rank in the ease of trading across borders is 157, and it comes at the 14th place among 20 MENA countries. Exporting firms have reported an average of 7.4 days to clear exports through customs, which is one day higher than MENA average. As for corruption, indicators are higher in Egypt than in both benchmark groups. For example, more than 71.9% of Egyptian firms responding to the survey reported having been expected to give gifts to obtain operating licenses, compared to around 20% in the

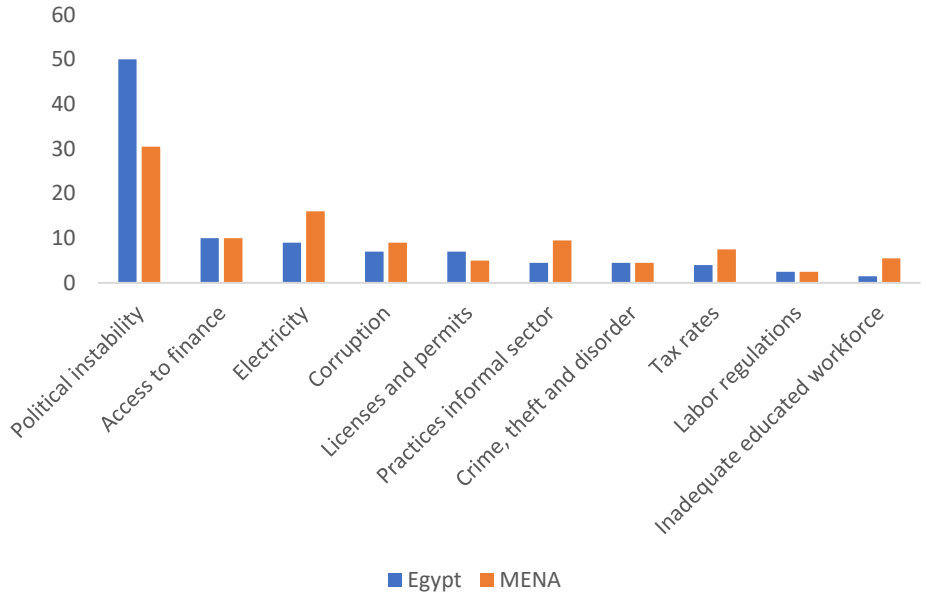
* The Graft Index is the proportion of instances in which firms were either expected or requested to pay a gift or informal payment when applying for six different public services.

two other groups. This could be related to the persistence of lengthy and complicated licensing procedures, especially for SMEs. In fact, Table 1 shows that Egyptian firms need longer time to obtain all types of licenses than their peers in MENA and in lower middle-income countries. In the case of operating licenses, the delay is 4 to 5 times higher in Egypt (138.9 days compared to 33.4 and 28.1 days in both groups respectively).

Lengthy licensing procedures, costly taxation and corruption are, among other reasons, three important causes of the prevalence of informality in Egypt. About 90% of firms responding to the enterprise survey reported having started their business without being formally registered. Indeed, cheaper products offered by informal sector may harm the performance of formally registered firms.

This brief overview shows that investment climate is still facing serious problems despite the reforms mentioned above. These problems may also explain why exporting firms represent only 11.8% in the manufacturing sector, which is very low compared to MENA and lower-middle income countries (24.2% and 17% respectively). Figure 1 summarizes the percent of firms identifying a specific problem as the main obstacle. It is obvious that political instability is the most serious constraint perceived by Egyptian firms, followed by access to finance, access to electricity, corruption and licensing procedures. Meanwhile, labor market regulations, tax rates and competition from the informal sector do not seem represent serious impediments from the viewpoint of Egyptian firms.

Figure 1. Percent of Firms identifying the problem as the main obstacle



Source: Constructed by the authors using the WBES.

2.2. Exporters Characteristics in Egypt

Table 2 depicts the distribution of manufacturing firms by sector and by exporting status, as well as the ratio of exporting and non-exporting firms within each sector. Manufacturing firms -whether exporting or not- are concentrated in food, textiles and garments, furniture and other manufactures. Exporters represent a modest share of 11.8% of total firms. At the sectoral level, the ratio of exporters to non-exporters is highest in other manufactures (26.1%) and rubber and plastic (23.7%). The ratio of exporting firms is also relatively important in other minor –yet emerging- sectors such as chemicals, publishing and furniture, in addition to the traditional textiles and garments sector. Meanwhile, only 8.3% of firms in the food sector are exporters, which could be explained by the significance of sanitary and phyto-sanitary measures in Egypt's main export destinations.

Table 2: Exporters vs. Non-Exporters by Sector

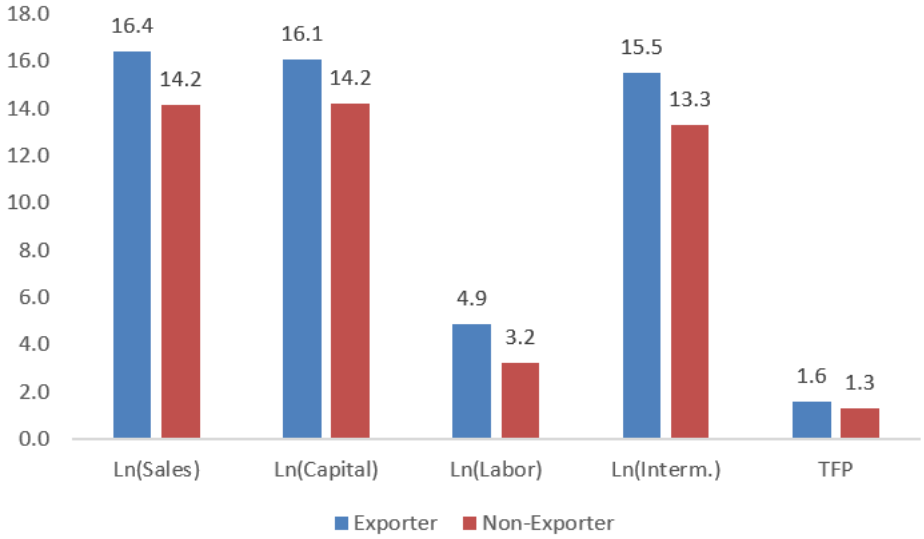
	Non-Exporters	Exporters	Total		Non-Exporters	Exporters	Total
Food	13.1%	1.2%	14.3%	Food	91.7%	8.3%	100.0%
Tex. and Gar.	8.3%	1.7%	10.0%	Tex. and Gar.	83.1%	16.9%	100.0%
Leather	2.0%	0.2%	2.2%	Leather	91.4%	8.6%	100.0%
Wood	3.3%	0.2%	3.5%	Wood	95.4%	4.6%	100.0%
Publishing	1.5%	0.3%	1.8%	Publishing	82.6%	17.4%	100.0%
Chemicals	0.9%	0.2%	1.1%	Chemicals	80.7%	19.3%	100.0%
Rub. Plast.	1.1%	0.3%	1.4%	Rub. Plast.	76.3%	23.7%	100.0%
Non-metal.	3.4%	0.4%	3.8%	Non-metal.	89.2%	10.8%	100.0%
Fab. metals	4.1%	0.3%	4.4%	Fab. metals	94.3%	5.7%	100.0%
Furniture	5.3%	0.9%	6.2%	Furniture	85.3%	14.7%	100.0%
Other Manuf.	5.0%	1.8%	6.7%	Other Manuf.	73.9%	26.1%	100.0%
Services	40.4%	4.4%	44.8%	Services	90.2%	9.8%	100.0%
All	88.2%	11.8%	100.0%	All	88.2%	11.8%	100.0%

Source: Constructed by the authors using the WBES.
Note: Variance scaled to handle strata with a single sampling unit.

Figure 2 depicts differences between exporters and non-exporters. It is worthy to note that exporters are – in line with the literature[†]- consistently larger in terms of sales, capital, labor, use of intermediate inputs and total factor productivity. The differences between the two groups are also statistically significant as shown in Figure 3. Yet, the relative weight of exporters is modest (11.8 % of the total number of firms).

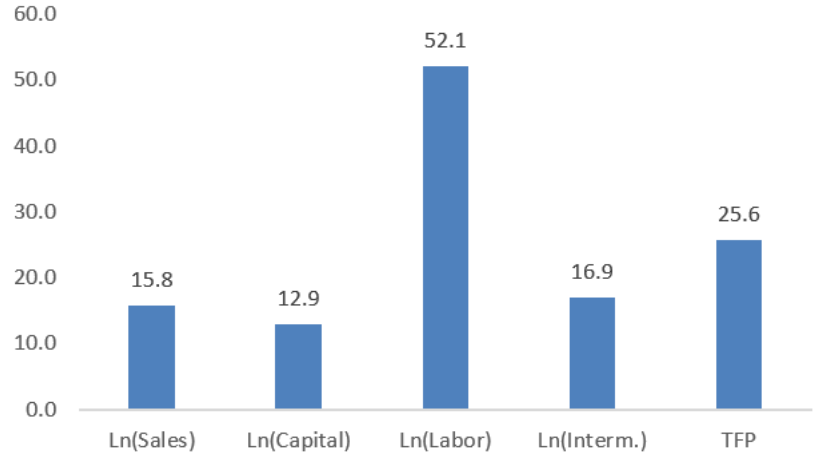
[†] For example, see Melitz (2003)

Figure 2: Characteristics of Exporters vs. Non-Exporters



Source: Constructed by the authors.
Note: Variance scaled to handle strata with a single sampling unit.

Figure 3: Difference between Exporters and Non-Exporters



Source: Constructed by the authors using the WBES.
Note: Differences are significant at 1% level of significance.

In a nutshell, exporting firms are performing better than non-exporting firms in terms of sales, productivity and different factors of production, yet continue to face a number impediments related to the investment climate in Egypt. Despite major reforms implemented by the government in the period of 2004-2008 and in the aftermath of 2011, exports and the number of exporting firms failed to increase. In the sections to follow, we therefore estimate and discuss the impact of the investment climate on exports performance at both the extensive and the intensive margin.

3. Methodology and Data

To examine the impact of investment climate variables on exports performance, we carry out our empirical analysis in several steps, extending hereby the work of Berman and Hericourt (2010), Lawless (2010) and Dollar et al (2004) who examined the effect of different investment climate components on trade margins (access to finance, trade costs and other dimensions respectively). Since productivity is one of the most important determinants of becoming an exporter (Melitz, 2003), we first estimate the total factor productivity through the logarithmic form of production function and retrieve the logarithm of TFP as the residual at the sectoral level[‡]. The production function, which takes a general Cobb-Douglas form, is as follows:

$$Y_{ijg} = A_{ijg} L_{ijg}^{\alpha} K_{ijg}^{\beta} I_{ijg}^{\sigma} \quad (1)$$

where Y is total output, K is capital, L is labor, I is total intermediate inputs, A is technology efficiency parameter, i denotes individual plant, j denotes sector and g denotes governorate. By log-linearizing equation (1), we obtain an estimable equation as follows:

$$logY_{ijg} = logA_{ijg} + \alpha\, log\, L_{ijg} + \beta\, log\, K_{ijg} + \sigma\, log\, I_{ijg} + \varepsilon_{ijg} \quad (2)$$

We estimate the TFP at the sectoral level as follows:

$$TFP_{ijg} = logA_{ijg} = logY_{ijg} - \ log\hat{Y}_{ijg} \quad (3)$$

with $log\hat{Y}_{ik}$ the estimated production.

As it was mentioned before, the share of exporters in Egypt is very low (slightly higher than 11%). In order to overcome the selection bias, we estimate our regressions using a Heckman selection procedure (Heckman, 1976). Our estimable equation is:

$$Ln(Exp_{ijg}) = V_{ijg}\, \beta + \eta_{ijg} \quad (4)$$

The dependent variable is not, however, observed for all firms since most of them are not exporting. It is only observed if

$$Z_{ijg}\gamma + \varepsilon_{ijg} > 0$$

With *Ln(Exp)* is the quantity of exports of firm i in sector j and governorate g, V is the vector of explanatory variables including the share of imported input (*ImpInput*), the share of private, foreign and government ownerships in the firm (*Own*) and a vector of investment climate variables. The latter includes five groups of variables measuring the investment climate, and that are likely to affect the decision to export and/or the quantity of exports. The first group incorporates infrastructure measured by obstacles related to electricity. The second is dedicated macroeconomic policies obstacles related to tax rates and access to finance. Third, a bunch of variables measuring the quality of institutions including labor market regulations, corruption and

[‡] See Appendix 1 for a list of sectors.

customs procedures are covered. Fourth, we include the risks coming from political instability. Fifth, we include some variables measuring competition coming from the informal sector. All of these constraints are dummy variables that take the value of 1 if the obstacle is severe or major and zero otherwise. We finally add sector (*dj*) and governorate (*dg*) dummies to control for sectoral and regional characteristics. Our selection variable *Z* is the total factor productivity (TFP) since it affects the probability of exporting and not the quantity of exports (Melitz, 2003). Indeed, each firm, depending on its productivity, decides whether to export or not. Finally, η_{ijg} and ε_{ijg} are the discrepancy terms.

While the first step (the probability of exporting measuring the extensive margin) is estimated using a probit model, the second step (quantity of exports measuring the intensive margin) corrects for self-selection by incorporating a transformation of the predicted export probabilities. The Heckman selection technique helps us therefore to overcome the problem of selection bias. It is also worthy to note that we run a regression for each investment climate variable individually before introducing them all into one regression.

We use manufacturing establishment surveys carried out by the World Bank (World Bank Enterprise Survey) in most developing countries over the last decade and a half, including several from the Arab world. For Egypt, we use the 2013 survey. Given that the World Bank Enterprise Survey includes both exporting and non-exporting firms, this dataset will be used to examine the effect of different variables assessing the investment climate on the probability of becoming an exporter (firm-extensive margin). For a detailed discussion of the variables construction, see Appendix 2.

From a technical perspective, three remarks are worth mentioning: First, we estimate our TFP regressions using Ordinary Least Squares (OLS) with governorate and sector dummies. While other techniques would have been more robust (such as Olley and Pakes, 1992 and Levinsohn and Petrin, 2003), these techniques need several rounds of the World Bank Enterprise Surveys. However, we remain constrained by the OLS technique since we rely on a cross section data of 2013. Second, all the regressions were run taking into account the fact that the data are complex survey and to reduce the selection bias that we might have in the regression. Hence, weights and stratum identifiers were included. Third, as argued in Fernandes (2008), the lack of time variability will prevent us from using firm-level fixed effects estimation, and exploring the impact of changes over time. In line with the literature, this procedure has implications for issues of potential endogeneity. It is therefore crucial to note that our results should be interpreted more as correlates between trade margins and the different business environment variables.

4. Empirical Findings

In order to examine the impact of investment climate on exports, we first estimate the TFP, which is an important determinant of exports (Melitz, 2003). Table 3 shows the results of the production function at both the aggregate and the sectoral levels. The regressions are run by sector so that labor/capital are allowed to affect sales differently across sectors. The results show that both labor and capital are positive and highly significant. Furthermore, the elasticity of production with respect to intermediate inputs is high and statistically significant. The R-squared of the model is in general high (ranging from 70% to 94%).

Table 3a: Production Functions

	All	Food	Tex. and Gar.	Leather	Wood	Publishing	Chemicals
		15	17	19	20	22	24
	Ln(Sales)	Ln(Sales)	Ln(Sales)	Ln(Sales)	Ln(Sales)	Ln(Sales)	Ln(Sales)
Ln(Cap)	0.131***	0.0930	0.255***	0.0234	0.106**	0.0822	0.265**
	(0.0367)	(0.114)	(0.0732)	(0.0812)	(0.0468)	(0.165)	(0.108)
Ln(Lab)	0.360***	0.324*	0.234**	0.197	0.791***	0.301	0.242***
	(0.0612)	(0.168)	(0.115)	(0.275)	(0.197)	(0.223)	(0.0776)
Ln(Input)	0.538***	0.614***	0.534***	0.565*	0.431***	0.609***	0.615***
	(0.0421)	(0.0744)	(0.117)	(0.286)	(0.0602)	(0.122)	(0.0958)
Constant	4.225***	3.527***	2.650	4.951*	4.489***	4.037***	1.370***
	(0.580)	(1.304)	(1.839)	(2.677)	(0.615)	(1.097)	(0.459)
Sector dummies	YES	NO	NO	NO	NO	NO	NO
Gov. dummies	YES	YES	YES	YES	YES	YES	YES
Observations	1,445	173	304	77	73	76	101
R-squared	0.851	0.899	0.842	0.675	0.937	0.818	0.950

Table 3b: Production Functions

	Rub. Plast.	Non-metal.	Fab. metals	Furniture	Other Manuf.	Services
	25	26	28	36	99	999
	Ln(Sales)	Ln(Sales)	Ln(Sales)	Ln(Sales)	Ln(Sales)	Ln(Sales)
Ln(Cap)	0.0820***	0.100	0.135	0.225	-0.144	0.491**
	(0.0274)	(0.109)	(0.115)	(0.139)	(0.0955)	(0.201)
Ln(Lab)	0.220***	0.395***	0.195	0.402**	0.213	0.639**
	(0.0695)	(0.132)	(0.149)	(0.183)	(0.183)	(0.270)
Ln(Input)	0.681***	0.703***	0.691***	0.504***	0.847***	-0.124
	(0.0438)	(0.0592)	(0.0961)	(0.0935)	(0.208)	(0.143)
Constant	3.597***	2.749**	2.487	3.125	4.794***	6.939**
	(0.492)	(1.238)	(1.580)	(2.593)	(1.706)	(2.699)
Sector dummies	NO	NO	NO	NO	NO	NO
Gov. dummies	YES	YES	YES	YES	YES	YES
Observations	98	135	157	85	131	35
R-squared	0.970	0.924	0.909	0.820	0.914	0.732

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Note: Variance scaled to handle strata with a single sampling unit.

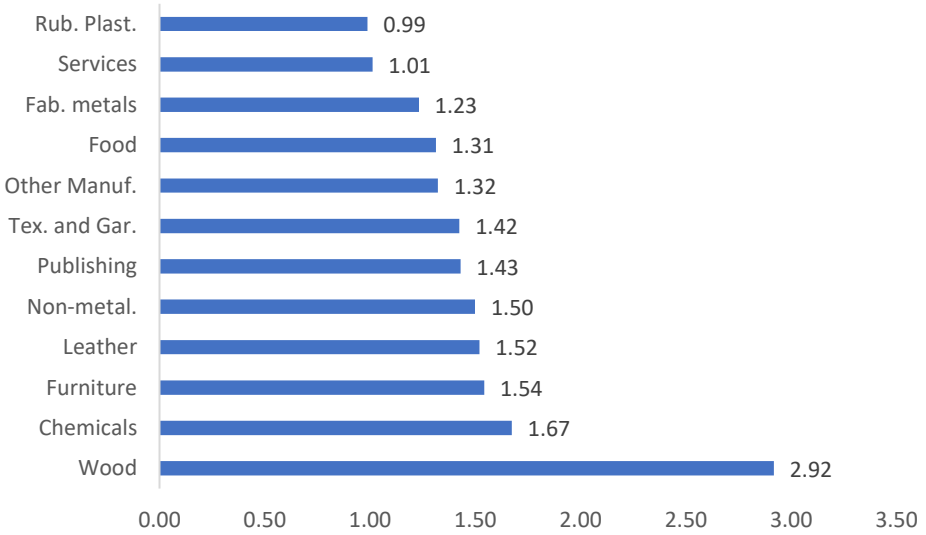
Table 4 and Figure 4 show the estimated TFP by sector. It is obvious that some sectors experienced productivity gains such as leather, textiles and garments, wood, fabricated metals and chemicals. As shown in Table 2, these sectors are among those with the largest proportion of exporters. The variance of the firms within each sector is also very large, especially for textiles and garments where the difference between the lowest and the highest productivity is important.

Table 4: Estimated TFP by sector

	Mean	Stand. Dev.	Min.	Max.
Food	1.21	1.76	0.03	25.61
Tex. and Gar.	1.53	8.01	0.07	171.55
Leather	1.68	2.43	0.04	23.24
Wood	1.50	2.51	0.24	22.73
Publishing	1.21	1.97	0.08	15.20
Chemicals	1.27	1.13	0.20	9.88
Rub. Plast.	1.23	1.06	0.22	9.66
Non-metal.	1.09	0.93	0.17	7.58
Fab. metals	1.45	1.72	0.04	19.03
Furniture	1.04	0.63	0.00	4.64
Other Manuf.	1.05	0.86	0.11	9.22
Services	0.96	0.25	0.07	4.56
All	1.22	3.42	0.00	171.55

Source: Constructed by the authors.
Note: Variance scaled to handle strata with a single sampling unit.

Figure 4: Estimated TFP by sector



Source: Constructed by the authors.
Note: Variance scaled to handle strata with a single sampling unit.

If the estimated TFP is compared for exporters and non-exporters (Table 5), we can see that exporters do better in terms of their TFP. Figure 5 also shows the Kernel density for exporters and non-exporters. It is obvious that TFP is highly skewed to the right for exporters showing that the most productive firms who serve the domestic market have a greater potential to serve the international one as well. This is in line with the Melitz (2003) model of heterogeneous firms, according to which firms face uncertainties about their future productivity when making an irreversible costly investment decision to enter the domestic market. Following entry, firms produce with different productivity levels. In addition to sunk entry costs, firms face fixed production costs, resulting in increasing returns to scale of production. Fixed production costs lead to the exit of inefficient firms whose productivities are lower than a threshold level, as they do not expect to earn positive profits in the future. As each firm is a monopolist for the variety it produces, it sets the price of its product at a constant markup over its marginal cost. The decision to export occurs only after the firms observe their productivity, since a firm enters export markets if and only if net profits generated from its exports in a given country are sufficient to cover the fixed exporting costs (see Figure 6). This is why Table 6 shows that, while TFP is positively and significantly associated to the extensive margin of exports, it is insignificant in the intensive margin equation. Hence, TFP can be used later as a selection variable for the extensive margin compared to the intensive one.

Table 5: TFP Descriptive Statistics

Non-Exporters			Exporters		
	Percentiles	Smallest		Percentiles	Smallest
1%	0.264	0.001	1%	0.298	0.107
5%	0.532	0.028	5%	0.557	0.182
10%	0.712	0.04	10%	0.802	0.193
25%	0.939	0.041	25%	0.939	0.217
50%	0.939		50%	0.939	
	Percentiles	Largest		Percentiles	Largest
75%	0.939	13.665	75%	0.939	15.196
90%	1.218	19.029	90%	1.406	17.228
95%	1.732	22.73	95%	2.122	23.241
99%	4.29	25.612	99%	6.477	171.552
Obs	3623		Obs		974
Mean	1.057		Mean		1.325
Std. Dev.	0.943		Std. Dev.		5.608
Variance	0.889		Variance		31.455
Skewness	13.253		Skewness		28.869
Kurtosis	265.622		Kurtosis		873.501

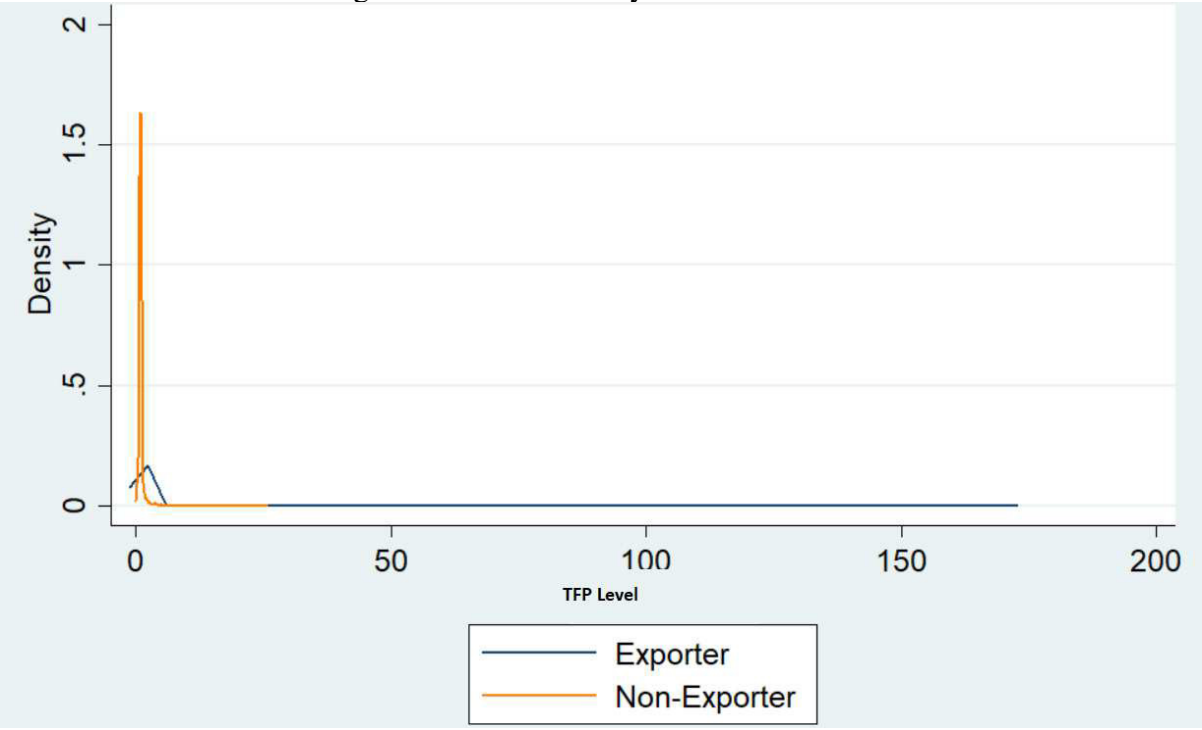
Source: Constructed by the authors.
Note: Variance scaled to handle strata with a single sampling unit.

Table 6: Productivity and Exports

	Ln(Exp)	Exp.
TFP	0.00387	0.134**
	(0.00707)	(0.0646)
Imp. Input.	-0.0634	0.101**
	(0.0604)	(0.0502)
Gov. Own.	-0.232**	0.347***
	(0.106)	(0.0899)
For. Own.	0.273***	0.368***
	(0.0639)	(0.127)
Priv. Own.	0.0814	0.473***
	(0.0683)	(0.145)
Constant	2.366***	-3.652***
	(0.538)	(0.728)
Observations	328	2,012

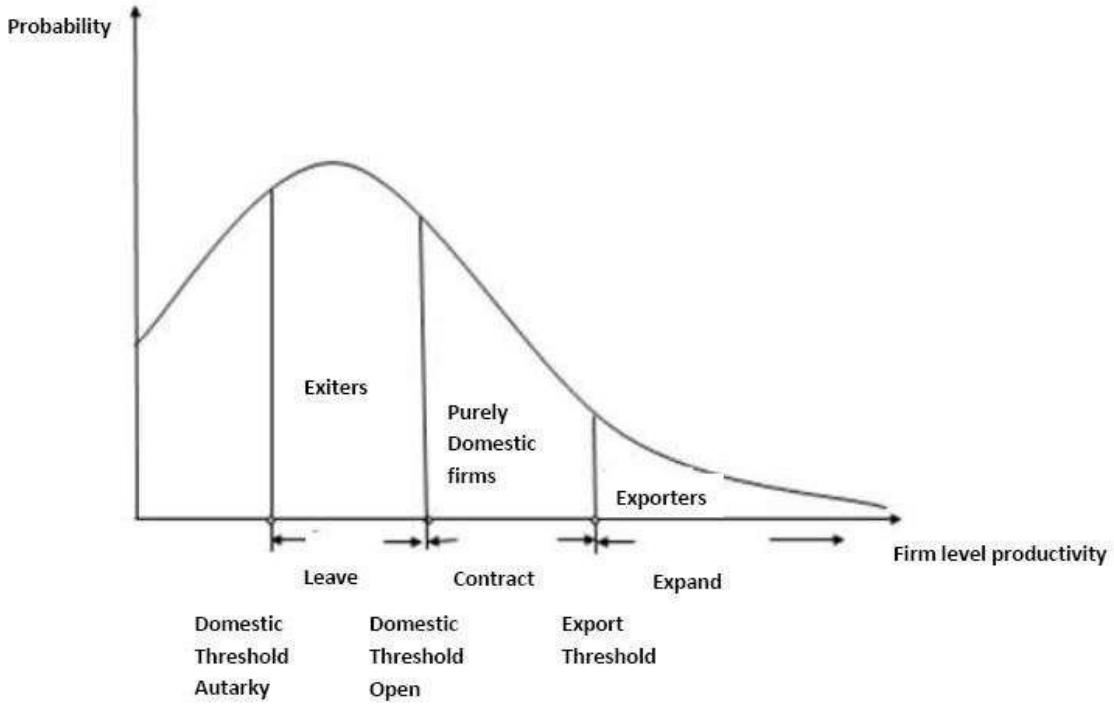
Notes: (i) Standard errors in parentheses
(ii) *** p<0.01, ** p<0.05, * p<0.1
(iii) Note: Variance scaled to handle strata with a single sampling unit.
(iv) Governorate and sector dummies are included in all the regressions.

Figure 5: Kernel Density Estimate for TFP



Source: Constructed by the authors.
Note: Variance scaled to handle strata with a single sampling unit.

Figure 6: Exports and Firm Productivity Level



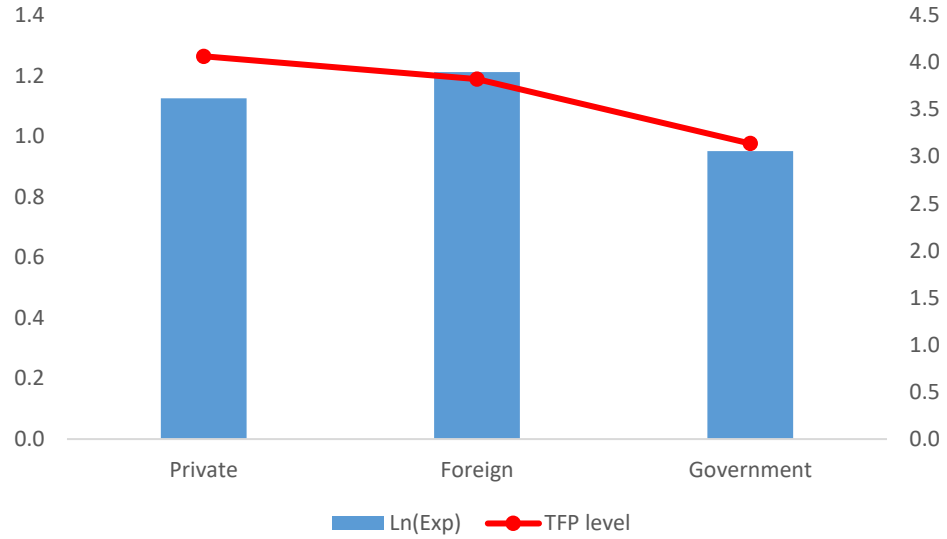
Source: Constructed by the authors based on Metliz (2003).

Amongst the different determinants of the likelihood of becoming an exporter, Tables 7 and 8 show that firms' productivity does matter. This is in line with what has been previously mentioned. Furthermore, inputs of foreign origin positively affect the probability of entering the exports market.

Ownership across all types of capital (private, foreign, government ownership) appears to have a significantly positive impact on the decision to enter the exports market. When investment climate components are introduced in single or multiple dimensions (Tables 7 and 8), we observe that the coefficient for foreign ownership is always higher and strongly significant at the extensive margin, followed by that of government ownership, and private ownership in the last place. This implies a relative disadvantage for the domestic private sector to enter the exports market in comparison to firms with a share of foreign or government capital. Our results on foreign ownership and extensive margin are in line with Francisco et al (2007)'s study on firms in Ecuador, and Bernard et al (2010)'s findings for transition economies. These conclusions – however- do not apply to the intensive margin. Government ownership is negative and significant, suggesting the inability of state owned firms or firms with a share of government capital to compete internationally. The results are interesting since they provide an insight into the Egyptian manufacturing sector, and raise questions on transparency, access to information and competitiveness of firms located in Egypt. While state owned firms seem to enjoy the privilege of entering the exports market due to the lack of barriers and privileged access to information, in addition to formal (and informal) communication channels with the authorities, these are – however- unable to compete later on and expand their export activity. These findings are in line with Fakih and Ghazalian (2014), who find a negative impact of government

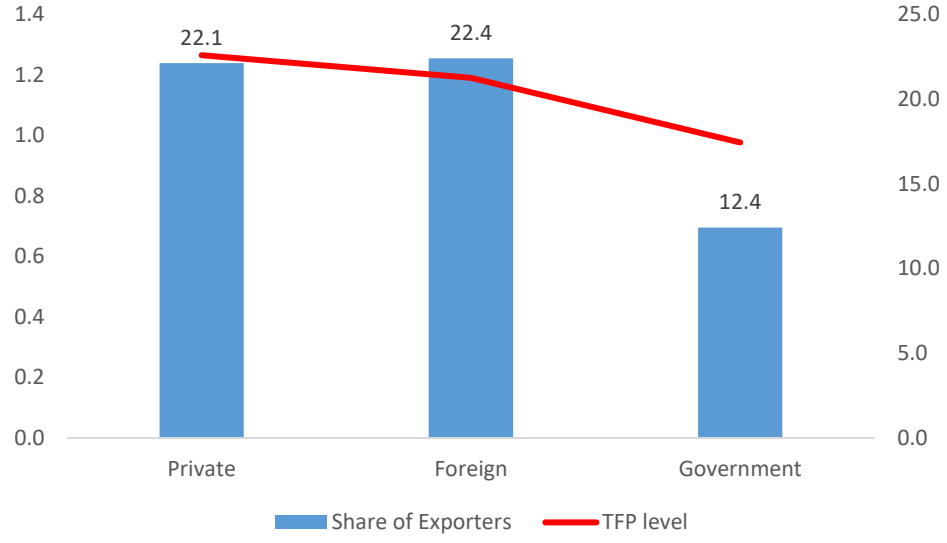
ownership on exports in the MENA region. As in the case of the extensive margin, the more foreign capital in the firm, the more the firm is able compete internationally due to their connections, overall better exposure and better access to credit (as in the findings of Manova et al (2015)). Figures 7 and 8 also support our findings, since firms with state capital are linked to lower productivity, whereas foreign ownership is associated to better exports performance at both trade margins. It is also important to note that foreign establishments in the Egyptian manufacturing sector aim at serving the regional market and at using the country's location as an export hub.

Figure 7. Ownership and Intensive Margin



Source: Constructed by the authors using the WBES.
Note: Variance scaled to handle strata with a single sampling unit.

Figure 8. Ownership and Extensive Margin



Source: Constructed by the authors using the WBES.
Note: Variance scaled to handle strata with a single sampling unit.

In terms of investment climate variables, we introduce single components (Table 7) before introducing all components together (results in Table 8). In the single dimension regressions, infrastructure (electricity) and institutional variables related to customs clearance and labor regulations appear to be insignificant for both the extensive and intensive trade margins. Similar conclusions on infrastructure were drawn by Francisco et al (2007) for Ecuador. Yet, in their study, labor regulations are found to be statistically significant. Also, Matthee and Santana-Gallego (2017) highlight the importance of the time to export for both trade margins in African Economies, which is contradictory to our results.

Factors affecting only the extensive trade margin, i.e. fixed costs affecting the decision to enter the exports market, are tax payments and competition from the informal sector. Informal firms in Egypt increased significantly in recent years, and provide cheaper products as compared to the formal sector. Therefore, formal firms' sales decrease, which negatively affects their decision to become an exporter.

Table 7: Empirical Results – Single Dimensions 1

	Infrastructure		Macro Policies				Institutions					
	Electricity		Tax Rates		Access to Finance		Customs		Lab. Regulations		Corruption	
	Ln(Exp)	Exp.	Ln(Exp)	Exp.	Ln(Exp)	Exp.	Ln(Exp)	Exp.	Ln(Exp)	Exp.	Ln(Exp)	Exp.
TFP		0.0517**		0.0518**		0.0515**		0.0512**		0.0508**		0.0506**
		-0.0224		-0.0224		-0.0225		-0.0223		-0.0223		-0.0224
Imp. Input.	0.0333	0.173***	0.0349	0.174***	0.0365	0.174***	0.0345	0.174***	0.0305	0.174***	0.0281	0.174***
	-0.0453	-0.0203	-0.0454	-0.0203	-0.0454	-0.0204	-0.0455	-0.0203	-0.0457	-0.0203	-0.0454	-0.0203
Gov. Own.	0.00784	0.154**	-0.00159	0.142*	0.0151	0.153**	-0.00068	0.149**	-0.00076	0.149**	-0.0234	0.149**
	-0.11	-0.074	-0.111	-0.0739	-0.111	-0.0739	-0.111	-0.0741	-0.11	-0.0741	-0.11	-0.0742
For. Own.	0.170**	0.220***	0.156**	0.208***	0.148**	0.208***	0.160**	0.214***	0.158**	0.214***	0.135**	0.213***
	-0.0675	-0.0483	-0.0672	-0.0483	-0.0671	-0.0483	-0.0673	-0.0482	-0.0674	-0.0482	-0.0681	-0.0484
Priv. Own.	0.0483	0.114**	0.0295	0.0990*	0.0212	0.0987*	0.0356	0.106*	0.033	0.107*	-0.00201	0.105*
	-0.0775	-0.058	-0.0773	-0.058	-0.077	-0.0579	-0.0771	-0.0578	-0.0771	-0.0578	-0.0786	-0.0584
Inv. Climate	0.15	0.127	-0.134	-0.163*	-0.259*	-0.149*	0.814	-2.449	-0.123	0.0617	-0.271**	-0.00424
	-0.124	-0.0795	-0.155	-0.0911	-0.143	-0.084	-2.927	-1.683	-0.189	-0.116	-0.126	-0.0761
Constant	1.899***	-1.958***	2.040***	-1.816***	2.133***	-1.803***	0.384	2.989	2.054***	-1.878***	2.323***	-1.868***
	-0.604	-0.318	-0.595	-0.315	-0.594	-0.316	-5.874	-3.434	-0.606	-0.314	-0.615	-0.324
art(ρ)		0.554***		0.571***		0.568***		0.564***		0.559***		0.579***
		-0.178		-0.177		-0.178		-0.177		-0.179		-0.179
Ln(σ)		0.139*		0.147**		0.143*		0.145*		0.142*		0.142*
		-0.0735		-0.0745		-0.0744		-0.074		-0.0742		-0.0754
Observations	1,895	1,895	1,895	1,895	1,895	1,895	1,895	1,895	1,895	1,895	1,895	1,895

Notes: (i) Standard errors in parentheses
(ii) *** p<0.01, ** p<0.05, * p<0.1
(iii) Note: Variance scaled to handle strata with a single sampling unit.
(iv) Governorate and sector dummies are included in all the regressions.
(v) While represents *art(ρ)* the inverse hyperbolic tangent of the correlation coefficient between η_{ijg} and ε_{ijg}, *Ln(σ)* represents the standard error of the residual in the intensive margin equation.

Table 7 (continued): Empirical Results – Single Dimensions 1

	Competition		Politics	
	Competition Informal		Political Instability	
	Ln(Exp)	Exp.	Ln(Exp)	Exp.
TFP		0.0514**		0.0500**
		-0.0223		-0.0224
Imp. Input.	0.0281	0.172***	0.0404	0.175***
	-0.0456	-0.0204	-0.0457	-0.0203
Gov. Own.	-0.00656	0.142*	-0.0204	0.140*
	-0.11	-0.0742	-0.111	-0.0744
For. Own.	0.154**	0.207***	0.147**	0.207***
	-0.0669	-0.0484	-0.0671	-0.0484
Priv. Own.	0.0326	0.104*	0.0124	0.0971*
	-0.0769	-0.058	-0.0776	-0.0581
Inv. Climate	-0.215	-0.231***	-0.277**	-0.124
	-0.162	-0.0895	-0.137	-0.0851
Constant	2.088***	-1.798***	2.270***	-1.746***
	-0.595	-0.316	-0.596	-0.324
art(ρ)		0.557***		0.587***
		-0.178		-0.179
Ln(σ)		0.142*		0.149**
		-0.0738		-0.0758
Observations	1,895	1,895	1,895	1,895

Notes: (i) Standard errors in parentheses
(ii) *** p<0.01, ** p<0.05, * p<0.1
(iii) Note: Variance scaled to handle strata with a single sampling unit.
(iv) Governorate and sector dummies are included in all the regressions.
(v) While represents *art(ρ)* the inverse hyperbolic tangent of the correlation coefficient between η_{ijg} and ε_{ijg}, *Ln(σ)* represents the standard error of the residual in the intensive margin equation.

Yet, factors affecting only the intensive trade margin, i.e. the decision to increase exports, are found to be corruption and political instability. As for corruption, the results are logic when firms have to do more informal payments in order to their clear exports more quickly, and hence can be interpreted as a variable cost. Musila and Sigué (2010) and Charoensukmongol and Sexton (2011) reached similar conclusions on corruption in African economies and Latin American and Caribbean countries respectively. As for political instability, the resulting overall drop in the economy's performance is likely to prevent exporting firms from expanding their sales in the existing or to new markets.

Finally, access to finance is a factor that negatively affects both extensive and intensive trade margins. Lack of credit represents a barrier to entering the exports market, and limits the capacity of already exporting firms to expand. Meanwhile, firms with better access to credit were found to export broader varieties, expand to new export markets and increase export volumes of already existing products at a higher rate. Our findings are generally in line with a vast scope of theoretical and empirical literature on this matter (for example, Bellone et al (2010), Abor et al (2014) on SMEs in Ghana, Kiendrebeogo and Minea (2013) on Egyptian firms and Baglan and Yilmazkuday (2018)).

When introducing all variables together (Table 8), the results are insignificant for the intensive margin because of the potential collinearity between different dimensions when they are simultaneously introduced in the same regression. Meanwhile, access to finance, tax payments and competition from the informal sector remain negative and significant for the extensive margin. This goes also in line with the findings from the single dimension regressions.

Table 8: Empirical Results – Multiple Dimensions

	All	
	Ln(Exp)	Exp.
TFP		0.0502**
		(0.0229)
Imp. Input.	0.0257	0.173***
	(0.0461)	(0.0206)
Gov. Own.	-0.00665	0.143*
	(0.111)	(0.0739)
For. Own.	0.135**	0.206***
	(0.0672)	(0.0486)
Priv. Own.	0.00317	0.106*
	(0.0782)	(0.0587)
Electricity	0.265**	0.185**
	(0.131)	(0.0844)
Days Exp.	0.653	-2.268
	(2.908)	(1.689)
Tax Rate	-0.0451	-0.187*
	(0.165)	(0.0979)
Lab. Reg.	0.0136	0.160
	(0.194)	(0.122)
Acc. Fin.	-0.210	-0.157*
	(0.153)	(0.0924)
Corruption	-0.174	0.107
	(0.149)	(0.0921)
Comp. Inf.	-0.133	-0.221**
	(0.166)	(0.0950)
Pol. Inst.	-0.162	-0.108
	(0.149)	(0.0935)
Constant	1.103	2.698
	(5.842)	(3.448)
art(ρ)		0.557***
		(0.184)
Ln(σ)		0.127*
		(0.0753)
Observations	1,895	1,895

Notes: (i) Standard errors in parentheses
(ii) *** p<0.01, ** p<0.05, * p<0.1
(iii) Note: Variance scaled to handle strata with a single sampling unit.
(iv) Governorate and sector dummies are included in all the regressions.
(v) While represents *art(ρ)* the inverse hyperbolic tangent of the correlation coefficient between η_{ijg} and ε_{ijg}, *Ln(σ)* represents the standard error of the residual in the intensive margin equation.

5. Conclusion and Policy Recommendations

The objective of this paper is threefold: first, we combine, components of the investment climate, productivity and exports performance in a two-step empirical exercise. Second, we differentiate between extensive and intensive trade margins. Third, we do this exercise for Egypt, a developing Middle East and North African country with serious economic and political challenges, yet one of the top reformers in business-related matters and export promotion and diversification.

We use the World Bank Enterprise Survey data for Egypt and estimate total factor productivity per sector, before estimating the impact of different components of the investment climate on exports extensive and intensive margins. Our results are generally in line with the literature on investment climate components and exports performance. In fact, firms in Egypt suffer from a number of macroeconomic, institutional and political barriers that affect their export potential. Most importantly, these barriers affect the extensive trade margin, which explains the very low proportion of exporting firms in the Egyptian manufacturing sector, compared to peer economies from the MENA region and lower middle-income countries. Along the lines of Melitz (2003), firms make the decision to enter the exports market given a certain level of productivity, and if and only if expected profits cover fixed costs related to entering the exports market. Some elements of the investment climate seem to affect these fixed costs. According to our findings, institutional factors, namely access to finance and tax payments, and factors related to competition with the informal sector, affect exports at the extensive margin. Meanwhile, political instability and corruption, as well as access to finance, seem to affect the decision of exporters to increase their exports.

Another important conclusion is related to ownership: our findings suggest that state ownership increases the probability of becoming an exporter, at the same time where it is associated with a decrease in exports at the intensive margin due to limited competitiveness. These results can be explained by the ability of state owned firms to overcome barriers related to entering the exports market due to easier communication with government authorities and privileged access to information in comparison to domestic private firms. Finally, the share of imported inputs is also positive and significant for the probability of becoming an exporter.

Enhancing the overall investment climate is a topic of particular interest for developing countries in general and Egypt in particular. It is currently one of the national priorities, and the reforms recently carried out should enhance the business climate and rebuild domestic and foreign investors' confidence in Egyptian institutions and market. Indeed, institutional factors related to access to finance, fiscal policy and corruption continue to increase costs associated with becoming and exporter and/or increasing exports. Competition coming from the informal sector, in addition to unequal access to information (compared to state or foreign owned firms) leave domestic private firms underprivileged, and remain major obstacles hindering their market entry and later engagement in exporting activities.

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Appendix 1: List of sectors

Sector	Number
Food	15
Textiles and Garments	17
Leather	19
Wood	20
Publishing,	22
Chemicals	24
Rubber + plastics	25
Non-metallic minerals	26
Fabricated metals	28
Furniture	36
Construction	45
Other Manuf.	99
Services	999

Appendix 2: Variables construction

Variable	Definition
Ln(Sales)	The establishment's total annual sales in last fiscal year
Ln(Lab)	Ln of number of permanent full-time employees at end of last fiscal year
Ln(Cap)	Ln of value of total assets.
Ln(Int)	Ln of cost of raw materials and intermediate goods used in production in last fiscal year
Ln(Exp)	Direct exports as a percentage of sales
Pr(Exp)	A dummy variable that takes the value of 1 if the establishment exports and zero otherwise.
TFP	Total factor productivity has been estimated using the production function mentioned above.
Imp. Input	Percentage of material inputs and supplies of foreign origin In last fiscal year.
Ln(Gov. Own)	The share of government ownership constructed using the question: "what is the percentage owned by Government/State?"
Ln(For. Own)	The share of foreign ownership constructed using the question: "what is the percentage owned by private foreign individuals, companies or organizations?"
Ln(Priv. Own)	The share of private ownership constructed using the question: "what is the percentage owned by private domestic individuals, companies or organizations?"
Elect	A dummy variable that takes the value of 1 if the obstacle is sever or major and zero otherwise. It has been constructed using this question: "How much of an obstacle: electricity to operations of this establishment?"
Tax rate	A dummy variable that takes the value of 1 if the obstacle is sever or major and zero otherwise. It has been constructed using this question: "How much of an obstacle: tax rates to operations of this establishment?"
Ln(Days Exp.)	The number of days to export
Lab. Reg.	A dummy variable that takes the value of 1 if the obstacle is sever or major and zero otherwise. It has been constructed using this question: "How much of an obstacle: labor regulations to operations of this establishment?"
Acc. Fin	A dummy variable that takes the value of 1 if the obstacle is sever or major and zero otherwise. It has been constructed using this question: "How much of an obstacle: access to finance to operations of this establishment?"
Corr.	A dummy variable that takes the value of 1 if the obstacle is sever or major and zero

	otherwise. It has been constructed using this question: "How much of an obstacle: corruption to operations of this establishment?"
Comp Inf.	A dummy variable that takes the value of 1 if the obstacle is sever or major and zero otherwise. It has been constructed using this question: "How much of an obstacle: practices of competitors in informal sector to operations of this establishment?"
Pol. Stab.	A dummy variable that takes the value of 1 if the obstacle is sever or major and zero otherwise. It has been constructed using this question: "How much of an obstacle: to operations of this establishment?"