

Learning Networks in South Mediterranean Countries

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Abstract

This paper aims at exploring the links between firms' exporting activities in Egypt, their innovation activity and absorptive capacity and their participation in production networks. The main findings indicate that innovation and absorptive capacity are relevant in determining not only the decision to export, but also the amount exported; whereas importing foreign intermediates fosters the extensive and intensive margin of trade in South Mediterranean countries.

JEL classification: F10

Keywords: innovation activity, absorptive capacity, exporting firms, production networks, internationalization.

1. Introduction

Recent theoretical work links firm individual ability to innovate to their decision to start exporting. Bernard et al. (2011) argue that a firm productivity is a combination of firm-level ability and firm-product-level expertise. While they rely on the assumption that both firm-level ability and firm-product-level expertise are exogenous, their contribution lies in emphasizing the importance of a firm's ability to create new products for increasing its productivity. Innovation activities are also linked to the degree of internationalization of the firm. The latter could in turn increase with changes in the international environment. A decrease in trade costs induced by a trade policy measure, as for example the change in the rules of origin (RoO) for products traded between European Union (EU) and South Mediterranean countries (Bensassi et al, 2011), could possibly change production processes in South Mediterranean countries. This is partly because with the new RoO firms will have access to cheaper imported inputs from the EU. Simultaneously, the bilateral interim agreements that gradually eliminate tariffs of imported products from the EU will also increase competition and force some firms to exit the market. According to recent trade theories (Melitz, 2003) less productive firms will disappear and the average productivity will rise as a consequence of the increase in market size. Whereas the benefits obtained by most productive firms will increase in the medium term, less productive firms will earn less after trade liberalization and those at the low end of the productivity spectrum will exit the market. The World Bank Enterprise Survey dataset gathers information concerning firms' production processes, innovative capacity and their degree of internationalization for a number of years and for a representative number of firms in different countries. According to these data, in 2004 only around 19 percent of Egyptian firms were exporters, whereas in 2005 this

percentage significantly increased. Evidence shows that exporting firms also present a higher propensity to use imported inputs than non exporters.

We aim at exploring the links between firms' exporting and importing activities in Egypt, their innovation activity and absorptive capacity and their participation in production networks. We measure the use of imported inputs as the share of imported inputs with respect to all inputs used in production. Innovation activity is proxied with the introduction of new products and processes and absorptive capacity is proxied with the use of new information technologies and the use of technology licensed from foreign companies. A number of explanatory variables that have been proved to be important in the literature (firm size, wages, financial constrains) are considered as control variables (Seker, 2009).

We find that innovation activity and absorptive capacity are important in relation to other factors in determining both the decision to export and the amount exported. Importing foreign intermediates also fosters the extensive and intensive margin of trade in Egypt. The results can be used to extract some policy recommendations for developing countries concerning their participating in regional integration processes and their industrial policies.

2. Literature review

Despite the increasing number of studies that investigate the state of technology and the relationship between trade and innovation using micro data, only a few of them focus on firms located in Northern Africa. As regards to studies covering the Middle East and North Africa (MENA) Region, it is worth to mention two recent studies. The first study, Brach (2010), assesses the role of technological readiness in the MENA region and the implications for Egypt. The author takes a closer look at the technological progress and innovative activities in the MENA region and investigates the implications for economic development and job creation as well as the main economic policy recommendations in this context. She finds that one of the major constraints to an improved economic performance and sustainable job

creation is a general lack of technological capacities of the MENA countries. Innovation in these countries is mainly linked to the adaptation and modification of existing and innovation and productivity are negatively impacted by the low level of technological readiness. In the second study, Atiyas (2011) summarizes the research that uses firm-level data in MENA countries to analyze productivity and its relation to trade, trade policy and financial constraints. He also identifies the main research questions that could be addressed in the near future using the firm-level data available. He emphasizes the fact that the recently available firm-level data covering MENA countries provided by the World Bank Enterprise Survey (WBES) have not yet been utilized by researchers to investigate the relationship between trade and productivity.

To the best of our knowledge, Johannsen, Márquez-Ramos and Martínez-Zaroso (2011) is the only study that analyzed the relationship between technological innovation and international trade using firm-level panel data in Egypt to study the dynamics of the relationship between participation in international trade markets and absorptive capacity. They found that innovation and absorptive capacities have an important effect on trade decisions; however, they did not distinguish between the effect on the intensive (the size of each exporter's exports) and the extensive margin (the set of exporters) of trade. Additionally, they did not deal with the role of imports of intermediates and increasing participation in production networks, as we do in the present paper.

As regards to studies for other countries, Seker (2009) uses WBES data from 43 developing countries to analyze the relationship between international trade and evolution of the firms, finding differences in evolution of firms according to their trade orientation. The author grouped firms according to their exposure to foreign markets as two-way traders, only exporter and only importers, results show that importing and exporting firms grow faster and innovate more than only exporters, and that non-traders are the least growing and innovating

firms. Boler et al (2012) study the relation between innovation and imports of intermediate goods and their joint impact on productivity. They use Norwegian firm-level data on R&D and trade in intermediates. Results show that imports and R&D investment play a key role in explaining firm-level productivity growth and that they can be complementary as trade can amplify productivity gains more than upgrading technology in new innovating firms. Augier et al (2011) analyze the effect of import decisions on firm-level total factor productivity for a panel of 3,462 Spanish firms from the *Encuesta Sobre Estrategias Empresariales (ESEE)*, showing a positive impact to raise the total factor productivity for firms that import foreign intermediates and capital goods. Additionally, firms that have a more skilled working force benefit the most because they can better use these intermediate and capital goods.

3. Empirical strategy

3.1. Data and variables

In this paper, we analyze data from the World Bank Enterprise Survey dataset (World Bank, 2012) for Egyptian firms. The dataset includes interviews for 977 firms in the year 2004 and 1339 firms in 2007, where 695 firms are available for both years (see Table A.1, Appendix). Information is available for a number of variables in the years 2003-2005.

The dataset shows that in 2003 most Egyptian firms were not involved in international trade, however, their participation in foreign markets has increased over time, especially for firms that participate in both exporting and importing activities. Table 1 shows that more than 20 percent of Egyptian firms that trade only import, whereas the percentage of firms that import and export have double since 2003. Table 1 also shows that around 50 percent of imports for only importers (45 percent for firms that both exports and import) are intermediate goods.. These figures indicate that imports of intermediates might play a key role in the participation of Egyptian firms on international markets.

Table 1. Participation of Egyptian firms on international markets

Panel	% observations			Percent of imported inputs
	2003	2004	2005	2005
Exporters	14	19.4	19.3	-
Importers	20.3	24.6	24.3	-
Export only	7	7	5.9	-
Import only	13.3	11.7	10.5	50.08
Import and Export	6.9	12.7	13.8	44.96
Domestic sales	72.7	67.2	69.6	-
Total	100	100	100	

Table 2 displays the relative importance of each sector in the interviewed firms. 53 percent of interviewed firms in Egypt pertain to four main sectors, namely textiles; dairy, seeds, and liquids; garments and metal, fertilizers and fuel.

Table 2. Percentage of firms by sector in Egypt

Sector	% of firms
Textiles	14.82
Dairy, Seeds, and Liquids	13.81
Garments	13.09
Metal Products	11.94
Plastics and Rubber	8.35
Faience, Gypsum, and Glass	7.48
Leather	4.89
Chemical Products	4.46
Electrical Appliances	4.17
Iron, Copper, and Aluminum Manufactures	3.74
Furniture	2.73
Wooden Products	2.73
Perfumes and Soap	2.45
Mechanical Appliances	2.3
Meat and Fish	1.44
Automobiles, Ships, and Bicycles	1.15
Vegetables and Fruits	0.29
Metals, Fertilizers, and Fuel	0.14
Total	100

Table 3 shows trade patterns by sector and year. The main sector for which firms only export but not import is vegetable and fruits; whereas firms in the sectors metals, fertilizers and fuel, and automobiles, ships, and bicycles are both importers and exporters. Finally, the sectors electrical apparel; and meat and fish present a higher proportion of firms that only participate in international markets as importers. This descriptive analysis shows that the nature of different sectors might influence the number of firms in those sectors that are more likely to participate in international markets. In Egypt, the sectors that are less involved in international

trade are wooden products with a 95 per cent of firms that do not trade internationally, followed by faience, gypsum, and glass manufactures; furniture and garments with 88, 84 and 82 percent of firms, respectively.

Table 3. Trade patterns by sector and year

Sector code - Pane data	2003				2004				2005			
	Exporter	Importer	Both	Domestic	Exporter	Importer	Both	Domestic	Exporter	Importer	Both	Domestic
Meat and fish	20%	30%	0%	50%	30%	40%	10%	20%	10%	40%	20%	30%
Vegetables and fruits	50%	0%	0%	50%	50%	0%	50%	0%	100%	0%	0%	0%
Dairy, seeds, and liquids	14%	14%	6%	67%	11%	7%	15%	64%	8%	7%	17%	71%
Plastics and rubber	2%	12%	3%	83%	2%	12%	5%	79%	2%	12%	5%	78%
Metals, fertilizers, and fuel	0%	0%	100%	0%	0%	0%	100%	0%	0%	0%	100%	0%
Chemical products	6%	26%	16%	52%	6%	19%	39%	35%	3%	19%	29%	39%
Perfumes and soap	6%	24%	6%	65%	6%	12%	29%	47%	12%	12%	29%	47%
Wooden products	5%	5%	0%	89%	5%	5%	5%	79%	0%	5%	5%	95%
Leather	12%	15%	6%	68%	6%	12%	9%	71%	3%	12%	21%	68%
Textiles	8%	17%	7%	69%	5%	20%	14%	60%	4%	20%	18%	67%
Garments	4%	3%	4%	88%	5%	2%	7%	86%	7%	2%	4%	82%
Faience, gypsum, and glass manufactures	0%	6%	8%	87%	2%	0%	8%	87%	6%	0%	6%	88%
Iron, copper, and aluminium manufacture	8%	12%	12%	69%	8%	15%	8%	65%	4%	15%	12%	77%
Metal products	7%	7%	8%	77%	10%	6%	12%	72%	7%	6%	13%	73%
Automobiles, ships, and bicycles	0%	13%	38%	50%	0%	25%	38%	38%	0%	25%	50%	38%
Electrical appliances	3%	52%	10%	34%	3%	45%	17%	28%	3%	45%	24%	24%
Mechanical appliances	19%	25%	0%	56%	0%	0%	19%	63%	6%	0%	6%	63%
Furniture	0%	0%	0%	100%	11%	16%	0%	89%	16%	16%	0%	84%

With respect to innovation activity (introduction of a new product line, upgrading an existing product line) and absorptive capacity (existence of a research and development -R&D department, internationally quality certification, use of foreign technology and Internet), Table 4 shows the evolution of the different indicators considered in the present analysis; firms that operate only domestically participate less in both innovation activity and absorptive capacity in 2003-2004 and 2004-2005 than firms that import/export or both. Among firms that operate internationally, both exporting and importing firms perform well in both innovation activities and absorptive capacity indicators, although in the period 2004-2005 the percentage of firms that introduced a new product line, upgraded an existing product line, had an R&D department or used foreign technology, has decreased with respect to the former period. This is not the case for only exporters and only importers, who have experienced an increase in most of the selected indicators. The entry into force of the new RoO in Egypt in the year 2004

might have intensified the efforts to innovate and to increase firms' absorptive capacities, which might also foster participation in international markets.

Table 4. Percent of firms according to innovation activities and absorptive capacity by type of participation on international markets

	2003-2004				2004-2005			
	Only exporters	Only importers	Exporters and Importers	Non traders	Only exporters	Only importers	Exporters and Importers	Non traders
New product line	28.3	18.5	38.6	7.5	31.7	27.4	28.1	9.5
Upgrading an existing product line	32.6	33.3	59.1	13.28	41.5	34.3	40.6	13.6
R&D Department	32.6	34.6	61.4	6.2	34.2	20.6	46.9	3.7
Internationally quality certification	28.3	12.4	35.2	0.9	36.7	22	40.6	3.3
Foreign technology	21.7	16.1	27.3	3.9	2.4	13.7	20.8	2.1
Internet	45.7	35.8	62.5	6.2	61	41.1	71.9	12.2

Note: The values indicate percentage of firms in each category

Finally, firms that are both exporters and importers have a higher size, in terms of working force, than firms not involved in international trade. Only importers are smaller than only exporters. Since the size of the firms differs by type of participation in international markets, we control for this variable in the empirical analysis.

Table 5. Working force by type of participation in international markets

Number of median workers (Panel)	2003	2004	2005
Only exporters	196	194	199
Only importers	166	168	164
Exporters and importers	633	782	567
Non-traders	55	49	46

3.2. Model specification

In order to estimate the importance of innovation and absorption capacity as determinants of exporting decisions, we estimate a model of the export market participation. Two dependent variables are considered. First, the value of exports of existing exporting firms (the intensive

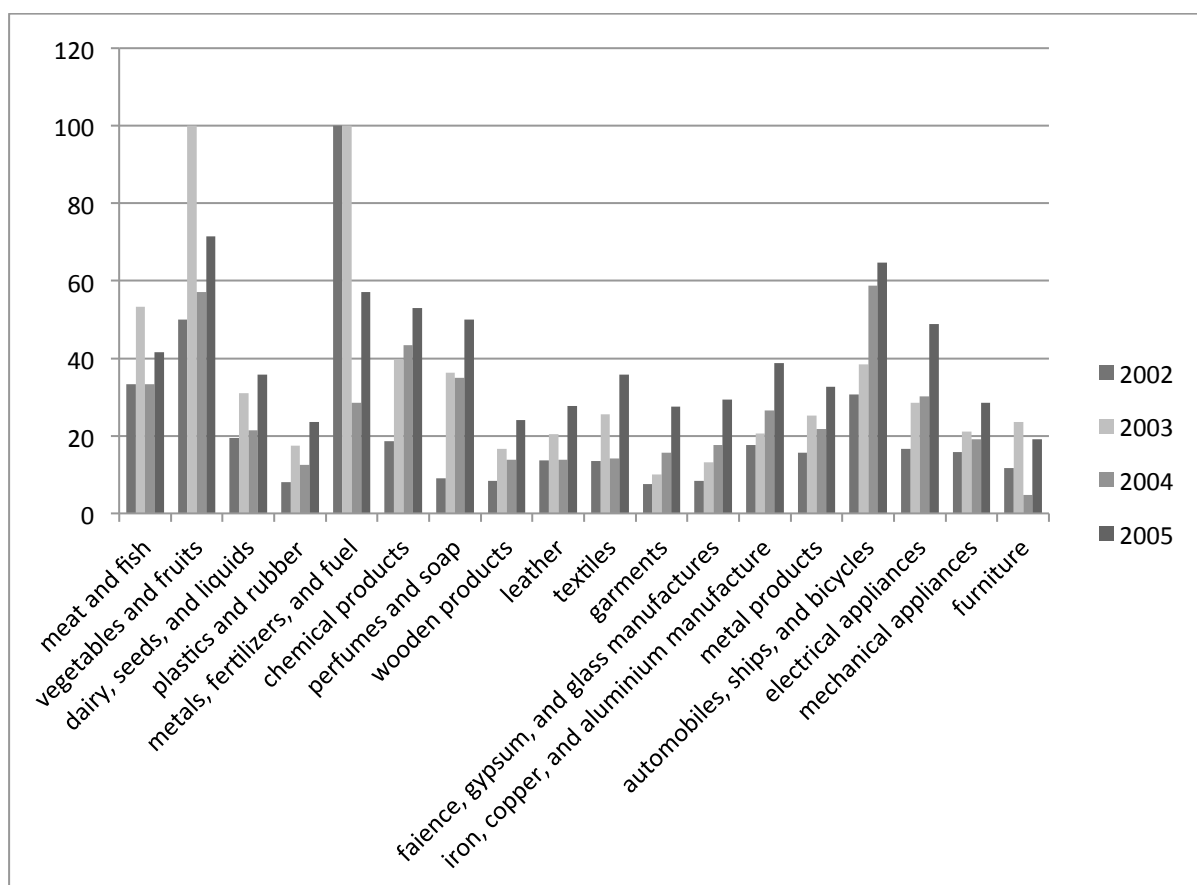
margin of trade) and second, the number of exporting firms (the extensive margin of trade). The main explanatory variables are the use of imported intermediate inputs (*md*), the total value of intermediate inputs (*inputs*), the participation in innovation activity (*innov*) and absorptive capacity (*abs*), as well as a number of control variables described below. The estimated model is given by equation (1):

$$EXP_{it} = \delta_0 + \alpha_1 \cdot \ln inputs_{it} + \alpha_2 \cdot innov_{it} + \alpha_3 \cdot abs_{it} + \alpha_4 \cdot \ln work_{it} + \alpha_5 \cdot \ln labp_{it} + \alpha_6 \cdot antiq_{it} + \alpha_7 \cdot md + \alpha_8 (X_{kit}) + \text{industry dummies} + \text{timedummy} + \varepsilon_{it} \quad (1)$$

where \ln denotes natural logarithms, the subscript i indexes firms; and t , time. EXP_{it} is either a variable that proxies the intensive margin of trade in Egypt (*pcexp*; percentage of exports on total sales of firm i in year t), or the extensive margin of trade in Egypt (*xd*; a dummy variable equal to 1 if firm i exports in year t , and 0 otherwise). $Inputs_{it}$ denotes total purchases of raw materials and intermediate goods from abroad by firm i , in year t , *md* is a dummy variable equal to 1 if firm i import intermediate inputs in year t , $Innov_{it}$ denotes innovation activities in firm i in year t , measured with two proxies: introduction of a new product line (*NEWPR*) and the upgrade of an existing product line (*UPGRADE*). Abs_{it} denotes absorptive capacity proxied with several variables: existence of a R&D department (*RDD*), to have an internationally quality certification (*QUALCER*), to use foreign technology (*FOREIGNTEC*) and to use Internet (*INTERNET*). *Work*, *Labp* and *Antig* are included in the regression as control variables commonly used as determinants of the decision to export, namely number of workers, labor productivity and age of the firm (see, for example, Greenaway, Guariglia and Kneller, 2007). Table A.2 in the Appendix describes the variables and sources used in the empirical analysis and Table A.3 shows descriptive statistics of the variables included in equation (1) for both exporters and non-exporters in Egypt. This table also performs an analysis of mean differences, which shows that all differences in means are statistically significant between exporters and non-exporters.

Finally, Figure 1 shows the importance of exporting firms by sector and year. As the sample includes a larger participation of firms in a number of sectors, we include industry dummies in equation (1). We also include time dummies in equation (1) when the pooled regression, including data for both years 2004 and 2005, is estimated.

Figure 1. Percentage of exporting firms per sector in Egypt



4. Main results

Equation (1) is estimated separately for 2004, 2005 and in a pooled regression which considers both years 2004 and 2005 (see Table A.1 for the surveys summary). Table 6 presents the results for the intensive margin of trade and Table 7 for the extensive margin of

trade. Columns (1), (2) and (3) in Tables 6 and 7 denote regressions for the year 2004, 2005 and both years, respectively.

The findings in Table 6 indicate the relative importance of the determinants of exports on sales by firms in Egypt. As regards the target variables, a number of indicators of both innovation activity and absorptive capacity, namely to introduce a new product line, to have an internationally quality certification, and to use internet, are positive and significantly related to the intensive margin of exports. On the one hand, obtained results show that firms that have a quality certification export on average around 5 percent more than firms without it, according to results in column 3. On the other hand, firms that use internet export on average around 10 percent more than firms that do not use it (column 3, Table 6).

Concerning the importance of production networks, the variable *inputs* is positively signed but not statistically significant in any of the regressions, therefore, the quantity of total purchases of raw material does not affect the percentage exported by the firm. By contrast the use of imported inputs has a positive and significant effect especially in 2005. This fact could be interpreted as follows: the bilateral interim agreement with the EU came into force in 2004 and tariffs on import from European Union countries were gradually eliminated. Simultaneously, the change in the RoO in 2004 could also play a role. With respect to the control variables, labor productivity and years of experience are positive signed and significant in 2005 and in the pooled regression and number of workers only in the pooled regression.

In summary, innovation activity, absorptive capacity and importing foreign intermediates seem to have a relevant effect increasing the intensive margin of trade in Egypt.

Table 6. Main results for the intensive margin of trade

variables	pcexp04 (1)	pcexp05 (2)	Pooled (3)
LNWORK3	0.532 (0.955)	1.038 (0.695)	0.960* (0.558)
LNLABP3	0.594	1.332***	0.953***

	(0.472)	(0.486)	(0.349)
ANTIG	0.006	0.116***	0.082***
	(0.045)	(0.040)	(0.031)
LINPUTS04	0.309	0.322	0.230
	(0.504)	(0.449)	(0.337)
MD	1.176	7.887***	5.749***
	(2.938)	(2.395)	(1.874)
NEWPR	11.772***	2.693	6.214***
	(3.585)	(2.527)	(2.100)
UPGRAD	1.010	1.649	1.269
	(2.450)	(2.204)	(1.645)
RDDEP	2.779	2.738	2.225
	(3.338)	(2.795)	(2.169)
QUALCER	6.487**	5.141***	5.526***
	(2.626)	(1.293)	(1.178)
FOREIGNTEC	0.107	3.586	1.477
	(4.233)	(3.609)	(2.733)
INTERNET	8.745***	12.473***	10.871***
	(2.358)	(2.127)	(1.582)
CONSTANT	-19.944	-244.434***	-174.102***
	(89.675)	(81.579)	(61.920)
NOBS	600.000	803.000	1403.000
R2	0.2551639	0.3435559	0.2960918
AIC	5255.186	7172.791	12427.51
BIC	5378.3	7308.754	12584.9
RMSE	18.88724	20.68863	20.07335

Notes: ***, **, * indicate significance at 1%, 5% and 10%, respectively. *pcexp04* denotes the percentage of exports on total sales in 2004; *pcexp05* the percentage of exports on total sales in 2005 and *pooled* the percentage of exports on total sales in both 2004 and 2005. Robust standard errors are presented below coefficients.

Table 7 shows the results for the extensive margin. The involvement of a firm in importing activities is positively related to the exporting status, as well as the use of imported inputs, especially in 2005 and in the pooled sample. With respect to innovation activity, firms that have an R&D department have a higher probability to become exporters, as well as firms that introduced a new product line. The proxies for absorptive capacity, namely, to have an internationally quality certification and to use internet, also show positive and significant estimated coefficients, indicating that these variables influence the extensive margin of exports in 2004, 2005, and also when estimating the pooled sample. These results point towards the importance of both innovative activity and absorptive capacity, as well as the role of intermediate imports, which might have being fostered due to the entry into force of new RoO in 2004 in Egypt, increasing the number of firms participating in international markets as exporters.

As regards to the control variables, in this case the size of the firm (number of workers) and labor productivity positively influence the decision to exports, whereas the variable experience is not relevant.

Table 7. Main results for the extensive margin of trade

variables	xd04 (1)	xd05 (2)	Pooled (3)
LNWORK3	0.054*** (0.018)	0.041*** (0.013)	0.048*** (0.011)
LNLABP3	0.020** (0.009)	0.022** (0.009)	0.019*** (0.006)
ANTIG	-0.000 (0.001)	-0.001* (0.001)	-0.001 (0.001)
LINPUTS04	0.011 (0.009)	0.017** (0.009)	0.013** (0.006)
MD	0.078 (0.052)	0.173*** (0.044)	0.143*** (0.034)
NEWPR	0.138** (0.054)	0.018 (0.042)	0.062* (0.034)
UPGRAD	-0.015 (0.044)	0.054 (0.038)	0.032 (0.029)
RDDEP	0.155*** (0.059)	0.165*** (0.044)	0.155*** (0.035)
QUALCER	0.092** (0.041)	0.075*** (0.019)	0.081*** (0.017)
FOREIGNTEC	0.021 (0.063)	-0.065 (0.053)	-0.030 (0.041)
INTERNET	0.210*** (0.047)	0.249*** (0.038)	0.226*** (0.029)
CONSTANT	0.006 (1.860)	2.485 (1.604)	1.035 (1.211)
NOBS	602.000	803.000	1405.000
R2	.3975928	.4725931	.4407627
AIC	418.8504	656.8432	1069.877
BIC	542.0576	792.8055	1227.311
RMSE	.3352489	.3578403	.350372

Notes: ***, **, * indicate significance at 1%, 5% and 10%, respectively. xd04 denotes the decision to export in 2004; xd05 the decision to export in 2005 and pooled the decision to export in both 2004 and 2005. Robust standard errors are presented below coefficients.

5. Conclusions

This research uses a new dataset to investigate the importance of production networks, innovation activity and absorptive capacity at the firm level in Egypt.

The main findings are twofold. On the one hand, the use of foreign intermediate inputs, which is used as a proxy for production networks, positively influences the decision to export, but it does not affect the amount exported. On the other hand, innovation and adoption of new technologies are relevant in determining both the decision to export (extensive margin), and also the amount exported (intensive margin).

Finally, firms having an internationally quality certification and using internet, which are proxies for absorptive capacity seem to be the more successful than other firms concerning their participation in export activities and their exploitation of their comparative advantages.

Appendix

Table A.1 Surveys Summary

Egypt WBES	2004	2005	Total observations	Panel
Number of Firms	977	1339	2316	695

Table A.2. List of variables and sources

Variable	Description	Units	Source
Sales	Total sales in thousands of Egyptian pounds	National currency	WBES
Work	Average number of workers	Count	WBES
XD: Exporting status	Takes the value of 1 if a firm is exporting in a given year	NA	WBES
MD: Importing status	Takes the value of 1 if a firm is importing inputs in a given year	NA	WBES
Capital	Net book value of machinery and equipment	National currency	WBES
Skill	Number of workers with secondary or tertiary education	Count	WBES
Labor cost	Total payment to workers	National currency	WBES
LNLABP: Labor productivity	Sales per employee	National currency per worker	WBES
LNINPUTS: Value of imported inputs	Total purchases of raw materials	National currency	WBES
Total factor productivity	Estimated values from a production function	National currency	WBES
ANTIG: Age of the firm	Year since the creation	Years	WBES
Industry Price Index Egypt	Producer annual price index by main groups	Base year 2005	Central Agency for Public Mobilization and Statistics. Arab Republic of Egypt.
Newpr	Dummy that takes the value of 1 if the firm introduced a new product line	NA	WBES
Upgrad	Dummy that takes the value of 1 if firm upgraded an existing product line	NA	WBES
Rddep	Dummy that takes the value of 1 if the firm has an R&D department	NA	WBES
Qualcer	Dummy that takes the value of 1 if the firm have an internationally quality certification	NA	WBES
Foreigntec	Dummy that takes the value of 1 if the firm use foreign technologies	NA	WBES
Internet	Dummy that takes the value of 1 if the firm use Internet	NA	WBES
Pcinputsm	Percent of inputs imported	percent	WBES

Note: WBES denotes World Bank Enterprise Survey.

Table A.3. Descriptive statistics for exporters and non-exporters (Egypt)

EGYPT Variable	Untreated (non-Exporters)			Treated (Exporters)			
	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.	t-test
Tfp_2004	1106	7575.614	51584.67	513	41890.35	96458.23	9.31
Tfp_2005	1259	6610.16	41120.1	552	36369.62	78240.78	10.57
Sales_2004	1205	8081.589	47208.56	540	100863.9	842926.8	3.81
Sales_2005	1358	15804.28	147730	579	100990.4	8.61E+05	3.53
Labp_2004	1205	82.603614	120.15025	540	164.33142	436.74059	2.34
Labp_2005	1358	166.10261	398.24613	579	189.08664	669.82832	3.02
labp_va_2004	1177	158.8151	2254.133	530	542.5858	6.29E+03	1.85
labp_va_2005	1349	124.489	1744.945	571	337.7803	3509.007	1.77
K_2004	1186	133.3828	890.835	528	778.6787	4601.085	4.64
K_2005	1289	32012.83	400966.1	561	96909.68	649732.3	2.62
Nwork_2004	1364	97.83578	392.9127	577	613.7834	1930.04	9.43
Nwork_2005	1388	95.14769	370.9515	584	534.0959	1285.404	11.63
Firm age	913	23.39869	16.32842	423	26.13002	18.62538	2.72
Manufacture	1662	81.49759	36.85632	654	87.26911	30.87312	3.54
Newpr	1388	0.10	0.30	584	0.33	0.47	12.73
Upgrad	1387	0.16	0.37	583	0.46	0.50	14.58
Rddep	1661	0.09	0.29	652	0.39	0.49	18.01
Qualcer	1660	0.12	0.47	653	0.70	0.95	19.57
Foreigntec	1648	0.06	0.23	648	0.17	0.38	9.19
Internet	1662	0.18	0.38	654	0.69	0.46	27.10
Pcinputsm04	1651	5.12	18.10	651	22.65	49.32	12.77
Pcinputsm05	1661	12.25	26.88	654	33.65	33.90	15.96

Note: All differences in means are statistically significant, most of them at the 1 percent level (with the only exception of labp_va_2004 and labp_va_2005, significant at the 5 percent level).

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