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On Women Participation and Empowerment in International Trade: Impact on Trade Margins in the MENA Region

Fida Karam and Chahir Zaki



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Abstract

This paper investigates the contribution of female labor participation as well female ownership/management to trade margins using firm-level data for 18 manufacturing and services sectors in 8 MENA countries for 2013. This topic is innovative, and critical for the MENA region where female participation in the export sector is shy, at a time the region is looking for new sources of competitiveness to boost its exports. Our results show that first, female workers have a positive a significant impact on both the probability of export and export volume, and that their effect is relatively higher for small firms than large firms. Female labor participation matters in traditional sectors where the MENA region has a comparative advantage. Second, female management/ownership mainly enhances the probability of large firms to export, this effect being mainly driven by female ownership and not management. In other words, female entrepreneurs matter more for entering the export market. Third, the negative effect of financial constraints on exports is more pronounced female-owned/managed than their male counterparts, and therefore female entrepreneurs tend to rely on self-finance. The same finding holds for the effect of other regulatory barriers on exports, such as the number of days to import.

JEL Classification: D24, F13, F14, J16

Keywords: Gender, Trade margins, MENA

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1. Introduction

Women play a major role in the global economy. Sen (1999) points out that “the empowerment of women in one of the central issues in the process of development for many countries in the world today”, highlighting the role of women’s education, their ownership pattern, their employment opportunities, the nature of the employment arrangements, and the attitude of the society towards women’s economic activities in this process. The progress in gender equality is encouraging, but far from finished. In one of the dimensions of unachieved gender equality, one can highlight the relatively low participation of women in trade, as employees, producers and owners (International Trade Center (ITC), 2015). Female participation in trade can provide an additional boost to the growth potential of openness. Increased female income that arise from international trade is likely to be disproportionately spent on the well-being and education of children, and therefore contributes to lower income inequality and future growth. In addition to the benefit from higher wages, the engagement of women in international trade leads to greater negotiating power within households and communities, improved social status, self-confidence and awareness of rights. Therefore, it is important that women be able to reap the benefits that arise from international trade.

This paper investigates the contribution of female labor participation as well as female ownership/management to the extensive margin (the probability of trade) and intensive margin (volume of trade) in the MENA region. This topic is timely and critical for the MENA region where female labor participation in international trade is weak, not to mention female entrepreneurship. Indeed, more than half of MENA exporting firms have a female participation rate lower than 20%, and only 21% of exporting firms are owned or managed by women (ITC, 2015). At the same time, afflicted by conflicts, political and economic instability, the region is looking for new sources of competitiveness to stimulate exports and economic growth. The latter must rely on human resources rather than on the natural resources relied on in the past. Women remain a huge, untapped reservoir of human potential for countries in the region (Nabli and Nedereh, 2004). A potential source of unexploited growth resides in the participation of the region’s female workforce in international trade. For instance, evidence shows that in the United States, women-owned exporting businesses are on average more than 3.5 times more productive than women-owned businesses that do not export, and that women-owned exporting firms are also about 1.2 times more productive on average than their male counterparts (ITC, 2015).

The bulk of the trade and gender literature investigates whether international trade improves labor market conditions and outcomes for women (Berik et al., 2018; Black and Brainerd, 2004; Boler et al., 2015; Ederington et al., 2009; Juhn et al., 2014; Klein et al., 2013). Apart from the impact of trade on women earnings and gender equality, there is no theoretical or empirical paper, to our knowledge, that tackles the opposite dimension of the subject, namely the role of women in export competitiveness. Evidence is limited to common knowledge and experiences of countries disclosed in reports of international organizations like the United Nations and the Asian Development Bank. For instance, the experiences of the newly industrialized economies have demonstrated the beneficial impact on growth and development of export-oriented strategies. Their success has depended on many factors such as the right policy environment and access to international markets, but equally important was the role of women whose participation was considerable in those export-oriented industries. Economists highlight that industrialization in these countries is as much female-led as it is export-led (United Nations,

2004). Women's involvement was most visible in the textiles and electronics industries in East Asia and has been one of the factors leading to the success of the Asian Tigers. In the People's Republic of China, women employment in export-oriented manufacturing increased by 2.3 million over just 4 years after accession to the World Trade Organization. In Bangladesh, job creation in the export-oriented garment industry created 4 million jobs, more than 75% for women who were mostly from poor families and entering the labor market for the first time (Asian Development Bank, 2019). Others reports have highlighted some key facts about entrepreneurship from the analysis of firm-level data in developing countries: first, only one in five exporting firms is led by women entrepreneurs. Second, women own and manage companies in different export sectors than their male counterparts, with women entrepreneurship being pronounced in textiles and clothing, and in the computer, telecommunications and consumer electronics sector. Third, women tend to own smaller firms in terms of number of employees than men. Small companies often lack the resources to compete on international markets. Fourth, financial, legal and regulatory barriers (limited access to key inputs such land, finance and market information) as well as cultural barriers impede women entrepreneurs from entering global value chains and upgrading into higher-value activities (ITC, 2015). The following key facts have also been highlighted about female labor participation from the analysis of firm-level data: first, large exporting firms employ a higher share of women than smaller firms. Second, women work in different export sectors than men. Export sectors traditionally associated with women's activities are yarn, fabrics and textiles, clothing and leather, and leather products. By contrast, women are least represented in the workforce of exporting firms active in the transport equipment, non-electric machinery and metal, and other basic manufacturing sectors (ITC, 2015). Firm-level evidence also suggests that women's participation as owners and employees in exporting firms is higher than firms that do not export. In addition, foreign-owned firms tend to employ more women than local firms (Asian Development Bank, 2019).

Inspired from the story that the data tells, this paper investigates the effect of women participation and empowerment on the probability of exports for firms (extensive margin of trade) and the export volume of firms (intensive margin of trade) in the MENA region. In spite of the investment in female education, female economic participation is low due to interrelated socioeconomic, cultural, individual, structural and institutional factors. In most MENA countries, women work and entrepreneurship cluster in a narrow number of sectors considered to be culturally appropriate. Women entrepreneurs are fewer than male entrepreneurs, and tend to be operating younger businesses, usually in consumer-related industries or personal services (ITC, 2015). To our knowledge, this paper is a first attempt to tackle the issue of women's contribution to trade in general, and to exports in particular. Since women participate in trade as employees or entrepreneurs of exporting firms, we have recourse to firm level data and get inspired from the seminal work of Melitz (2003) and its extensions. Melitz highlights the importance of firm heterogeneity in terms of productivity and a fixed cost of entering export markets in determining the number and the type of firms that become exporters as well as the gains from trade. Extensions of the Melitz's (2003) model explicitly account for the decision to export - the extensive margin of trade (Chaney, 2008; Helpman et al., 2008; Melitz and Ottaviano, 2008). We use the World Bank's Enterprise Surveys Database that gathers information on private firms operating in 18 manufacturing and services sectors for 8 MENA countries (Egypt, Israel, Jordan, Lebanon, Morocco, Tunisia, West Bank and Gaza, Yemen) in 2013. Our control variables include a vector of plant-characteristics that may impact exports, such as labor productivity, the age and the size of the firm, government ownership, foreign

ownership and the presence of a foreign certification, as well as dummies to control for country, location and sector characteristics. Since export volume is only observed for exporters, we run a Heckman selection model where the selection variable is labor productivity that is seen as a fixed export entry cost. The explanatory variable of our interest is the gender variable that is tackled in different dimensions: the number of female full-time workers in the firm, and whether the firm is owned or managed by a female or not. Then, to capture the concept of empowerment through entrepreneurship, we distinguish between female ownership and female management. We then investigate whether female participation and empowerment in international trade is affected by firm size by running the regressions for 2 categories of firm size: small and medium enterprises, and large firms. In another step, we run the regressions by service and manufacturing sectors to see what sectors are affected by female labor participation. Finally, we account for the different types of barriers faced by female owners/managers. We add a barrier variable to the regression and interact it with female boss. The barrier variable reflects different types of financial constraints faced by the firm as well as other regulatory barriers such as the number of days to import and whether the firm has a website.

Our results show that first, female workers have a positive a significant impact on both the probability of export and export volume, regardless the size of the firm, but their effect is relatively higher for small firms than large firms. Female labor participation matters in traditional sectors where the MENA region has a comparative advantage. Second, female management/ownership matters more for the probability of large firms to export, which this effect being mainly driven by female ownership and not management. In other firms, female entrepreneurship and therefore female empowerment matters for entering the export market. Third, the effect of financial constraints on exports is more pronounced for female-owned/managed firms than for their male counterparts, and therefore female entrepreneurs tend to rely on self-finance. In addition, the effect of a credit line on exports tends to decrease for a female-owned/managed firm, with respect to a men-owned/managed firm. The effect of other regulatory barriers on exports, such as the number of days to import, is more pronounced for female-owned/managed firm, with respect to a men-owned/managed firm.

The paper is organized as follows. Section 2 depicts the female labor participation and female ownership/management in MENA exporting firms. Section 3 describes the methodology and the data. Section 4 is devoted to the discussion of the results and Section 5 concludes.

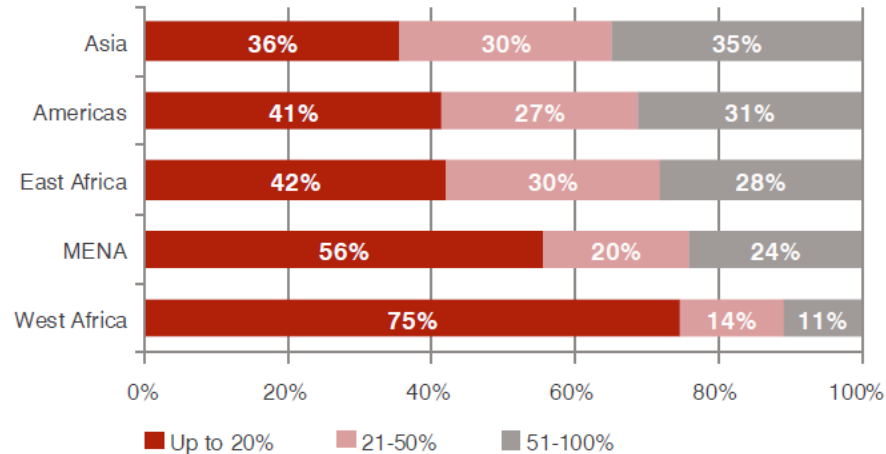
2. Stylized Facts

There is a widespread consensus that women's participation in international trade is limited, although supporting evidence is scarce, highlighting cultural, regulatory, and time barriers that make it difficult for women to effectively engage in the labor force or run a business.

The ITC (2015) report shows that women participation in exporting firms varies across regions, with Asia exhibiting the highest share of female employees and West Africa the lowest. Indeed, 35% of exporting firms in Asia employ at least 50% females – and therefore employ more men than women, followed by 31% of exporting firms in Latin America and the Caribbean. Women's employment is the lowest in exporting firms of West African countries where only 11% of firms employ more than 50% females while for 75% of firms, women represent less than

20% of the workforce. The MENA region stands before West Africa with only 24% of MENA firms having a share of female workers exceeding 50%, while women participation in the workforce is less than 20% for more than half of MENA firms (Figure 10).

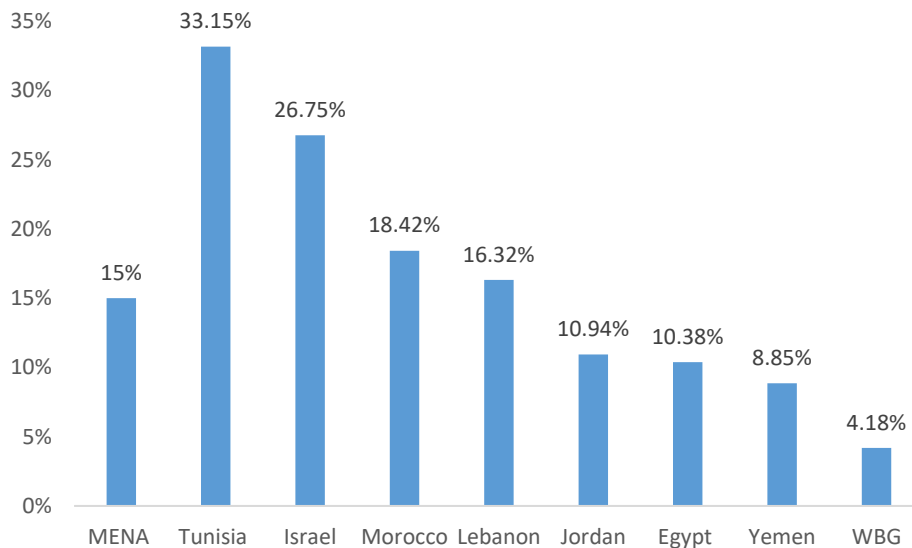
Figure 1: Female participation rate in exporting firms' total workforce, by region



Source: International Trade Center (2015) Non-Tariff Measures Surveys in 20 developing countries, 2010 to 2014. Available at: www.ntmsurvey.org

The aggregate figures for the MENA region hide some heterogeneity among selected MENA countries. Figure 2 shows that Jordan, Egypt, Yemen and West Bank and Gaza are below the region's average women participation rate in the export sector, while Tunisia has the highest female participation rate in the region.

Figure 2: Average female participation rate in the MENA region



Source: Authors' Calculations from the World Bank Enterprise Surveys for 2013.

Those figures are supported by Table 1 that highlights the very low participation rate of female employees in the export sector. Indeed, 0% of Yemeni firms employ more than 50% females, while 86.11% employ less than 20% female workers. In West Bank and Gaza, less than 1% of firms have a female participation rate exceeding 50% and 94% of firms employ less than 20% females. In Egypt and Jordan, respectively 2.87% and 3.83% of firms have a female participation rate exceeding 50% while 84% and 83% of firms have a female participation rate smaller than 20%. By contrast, more than 26% of Tunisian firms employ more women and men, and less than 50% of Tunisian firms employ less than 20% females. This figure is appealing because the female participation rate is less than 20% in more than 70% of the exporting firms in our sample. Israel stands generally well after Tunisia, where the female participation rate is less than 20% in 47.22% of the firms only, and between 21 and 50% in 42.36% of the exporting firms.

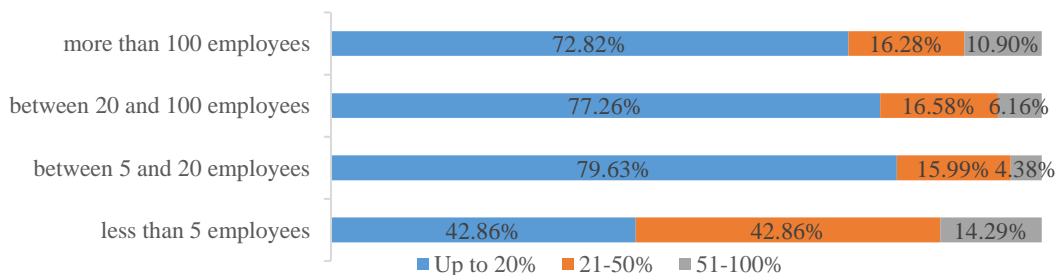
Table 1: Female participation rate in MENA exporting firms' workforce, by country

	Up to 20%	21-50%	51-100%
Egypt	84.10%	13.03%	2.87%
Israel	47.22%	42.36%	10.42%
Jordan	82.98%	13.19%	3.83%
Lebanon	73.17%	21.54%	5.28%
Morocco	70%	18.18%	11.82%
Tunisia	49.33%	24.33%	26.33%
West Bank and Gaza	93.76%	5.31%	0.92%
Yemen	86.11%	13.89%	

Source: Authors' Calculations from the World Bank Enterprise Surveys for 2013.

Surprisingly, when we disentangle women participation according to the size of the firm, our sample show that the average female labor participation rate is the highest for firms with less than 5 employees (47%), followed by firms with more than 100 employees (around 18%), then firms that employ between 20 and 100 employees (14.5%), and finally those that employ between 5 and 20 employees (around 11%). Figure 3 displays the female participation rate according to the size of the firm. Contrary to the documented evidence that large exporting companies employ a larger share of female workers than small exporting companies (ITC, 2015), Figure 3 shows that in the MENA region, men outnumber women in 85% of *small* companies and in almost 90% of large companies with more than 100 employees. The positive relation between firm size and women participation holds if we exclude companies with less than 5 employees. As shown in Figure 3, the share of women participation exceeds 50% in only 4.38% of firms employing 5 to 20 workers, 6.16% of firms employing between 20 and 100 workers, and 10.9% of firms with more than 100 workers.

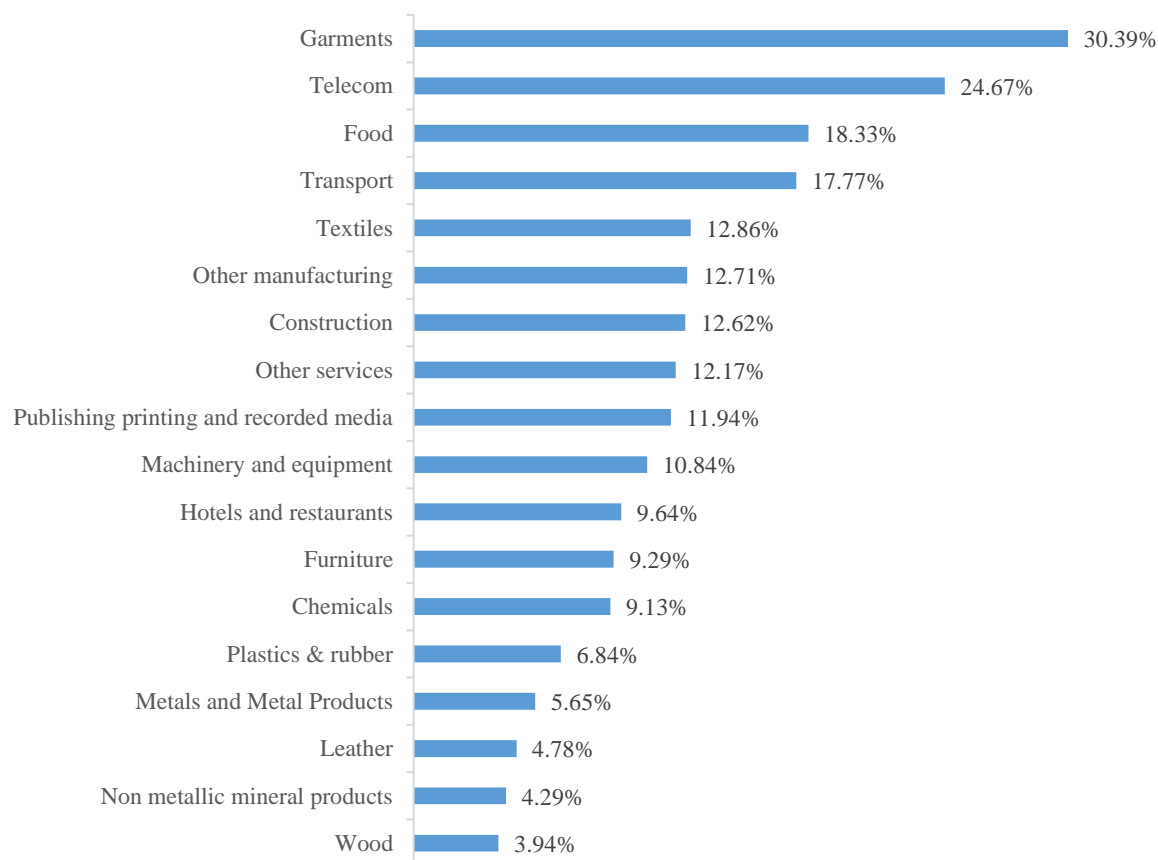
Figure 3: Women participation rate in exporting firms, by firm size



Source: Authors' Calculations from the World Bank Enterprise Surveys for 2013.

At the sectoral level, women in the region are most likely to work in exporting firms of sectors like garments, telecom and food, although their participation rate doesn't exceed 30% for garments, 25% for telecom and 18% for food. Those are sectors in which the MENA region has a comparative advantage. Women are least represented in the workforce of exporting firms active in the wood, non-metallic products, metals and leather (Figure 4).

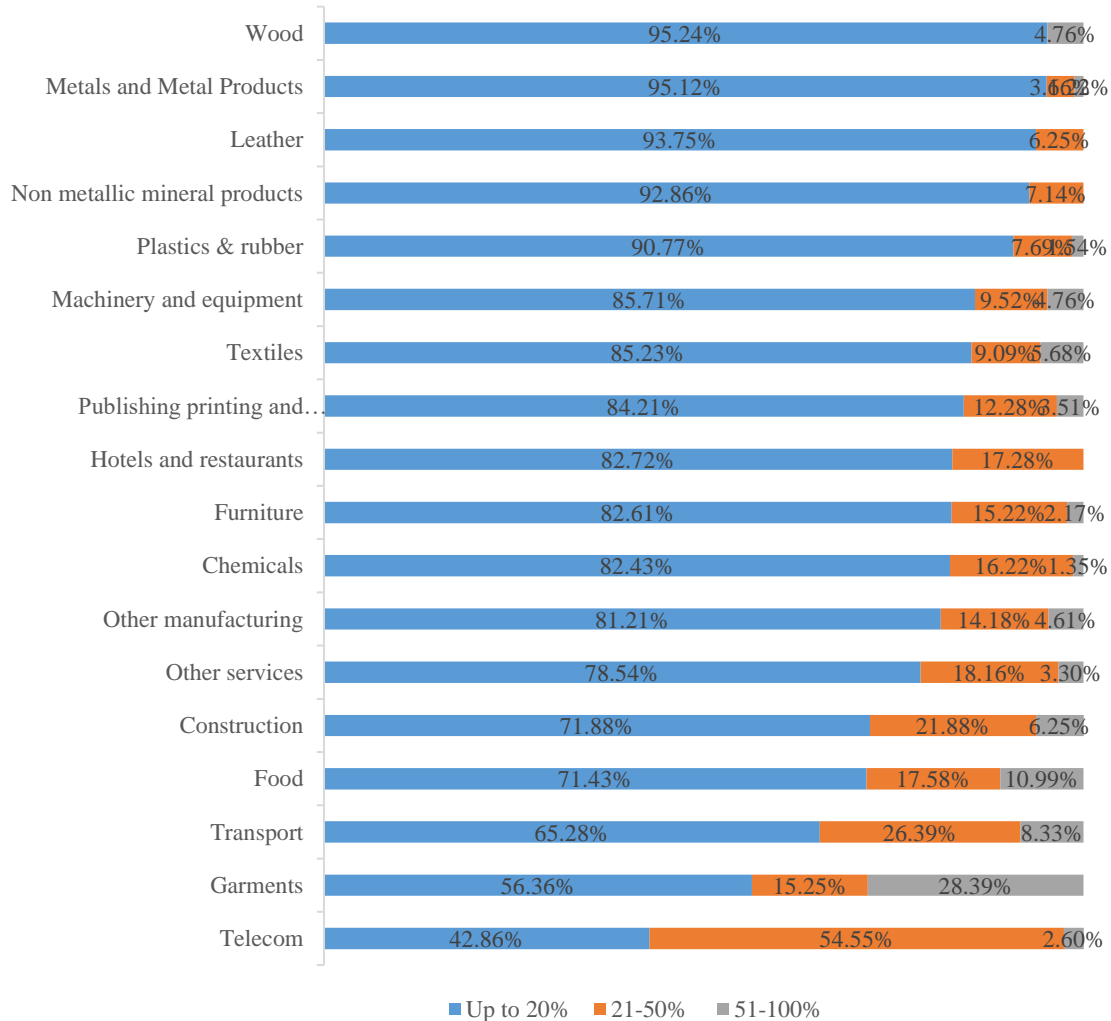
Figure 4: Average women participation rate in exporting firms, by sector



Source: Authors' Calculations from the World Bank Enterprise Surveys for 2013.

In all sectors, men outnumber women in the workforce of the majority of exporting firms. Figure 5 shows that most firms have a very low representation of women in the workforce (below 20%). In particular, over 90% of exporting firms active in wood, metals, leather, non-metallic products, and plastics, have less than 20% of female employees. On the other hand, in 28% of exporting firms active in garments and 11% of food exporting firms, women outnumber men in the workforce.

Figure 5: Women participation rate in exporting firms, by sector



Source: Authors' Calculations from the World Bank Enterprise Surveys for 2013.

In the MENA region, on average 21% of firms are owned and/or managed by women, which is a low percentage, although it is higher than West Africa (14%) and Asia (16%). Women's entrepreneurship is the highest in the Caribbean and Latin American countries (27%), followed by East Africa (24%) (ITC, 2015).

At the country level, our sample of 7 MENA countries shows that only Yemen, Jordan and West Bank and Gaza are below the region's average. Tunisia is an interesting case where 54.39% of the firms are managed or owned by women. The share of women's entrepreneurship is also relatively higher than the region's average for Lebanon (38.68%) and Morocco (36.36%).

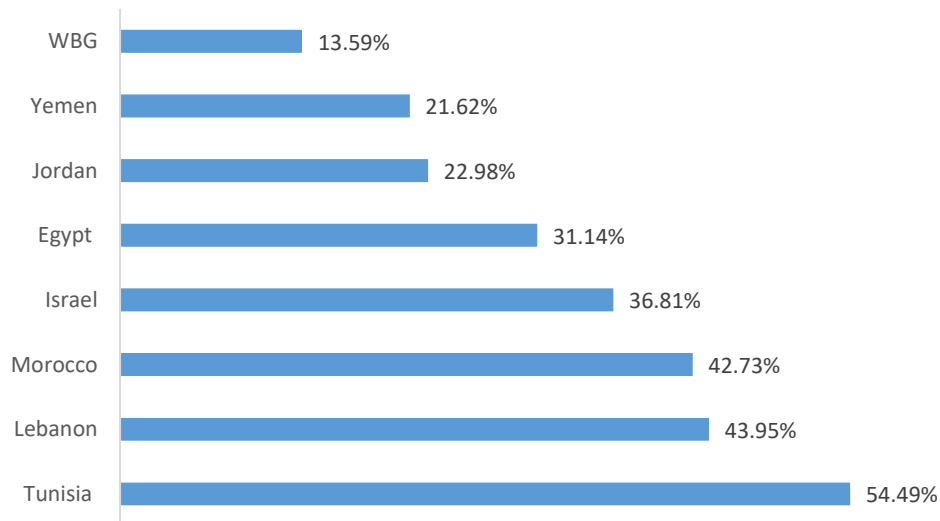
Table 2: Share of female-owned/managed firms, by country

	Women-Owned	Women-Managed	Women-Owned/Managed
Egypt	21.68%	5.49%	23.75%
Israel	28.57%	6.83%	30.23%
Jordan	16.58%	1.75%	16.58%
Lebanon	31.61%	4.63%	38.68%
Morocco	34.89%	5.16%	36.36%
Tunisia	54.04%	7.77%	54.39%
WBG	13.13%	2.30%	13.59%
Yemen	11.04%	0.67%	11.37%

Source: Authors' Calculations from the World Bank Enterprise Surveys for 2013.

The picture looks brighter for the majority of countries when we look at the share of women-owned/managed firms engaged in the export sector. In particular, the share of Yemen and Jordan is now increased to 22% and 23% respectively. Also, the share of women entrepreneurship increases to 43% and 44% for Morocco and Lebanon when we account for exporting firms (Figure 6).

Figure 6: Share of female-owned/managed exporting firms, by country

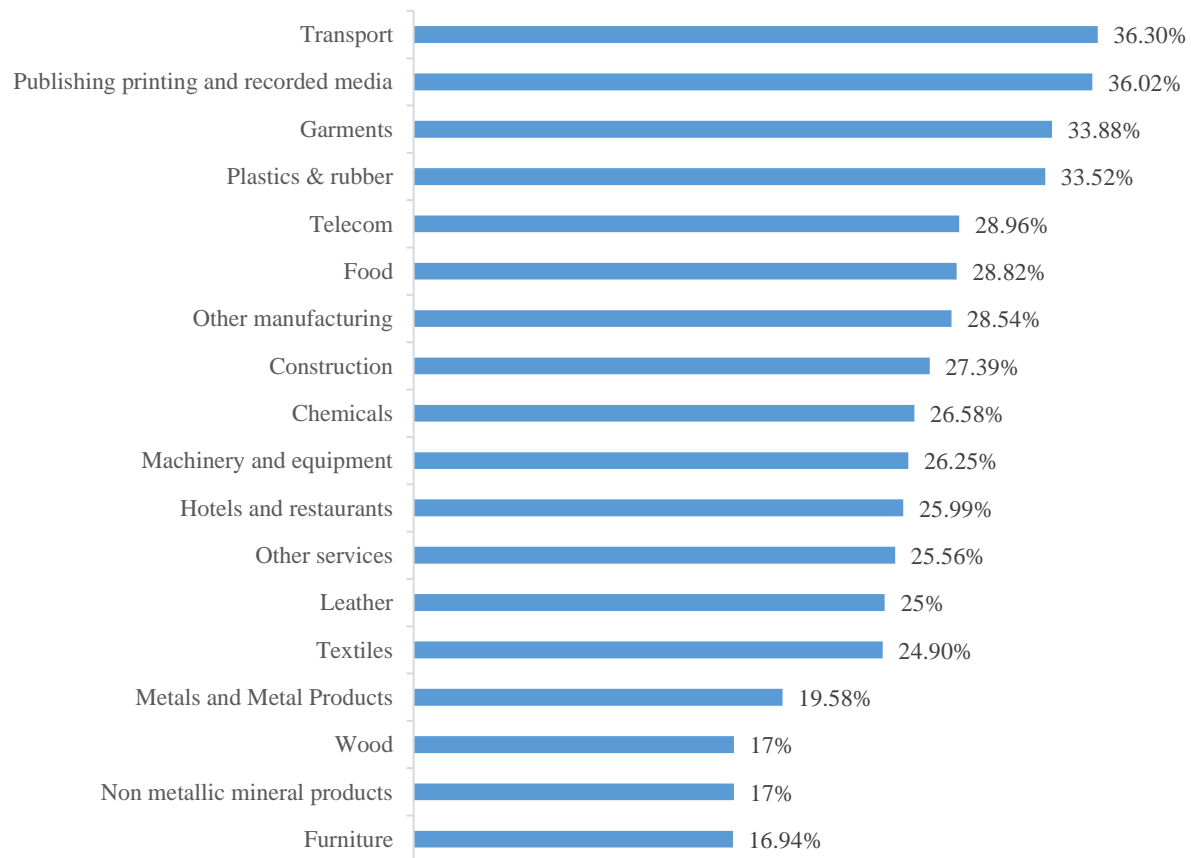


Source: Authors' Calculations from the World Bank Enterprise Surveys for 2013.

Women entrepreneurship is the highest in export sectors like transport, publishing and printing, garments, plastic and rubber, exceeding the region average of 31.21%. Female entrepreneurship is the least represented in sectors like, furniture, non-metallic products, wood and metals. These findings echo, up to a certain point, the results for average female labor participation by sector displayed in Figure 4, for which women are most likely to work in exporting firms of sectors like garments, telecom and food, and are least represented in the workforce of exporting firms active in the wood, non-metallic products, metals and leather. A noteworthy exception is the plastic and rubber sector, where female employment is low (6.84%)

and women entrepreneurship is relatively high (33.52%). Another noteworthy exception is publishing and printing that appears on the top of list in women entrepreneurship but has a share of female labor participation of 12% which is below the region's average. In addition, it is worth mentioning that, in all sectors, the percentage of women-owned/managed exporting firms outweighs the percentage of female participation in the workforce.

Figure 7: Share of female-owned/managed exporting firms, by sector



Source: Authors' Calculations from the World Bank Enterprise Surveys for 2013.

Our sample shows that women entrepreneurship or management is the most represented in small exporting companies with less than 5 employees (39.29%) and large companies with more than 100 employees (37.48%) (Figure 3). The same pattern was observed in female participation in the workforce of exporting firms, as previously discussed in this section.

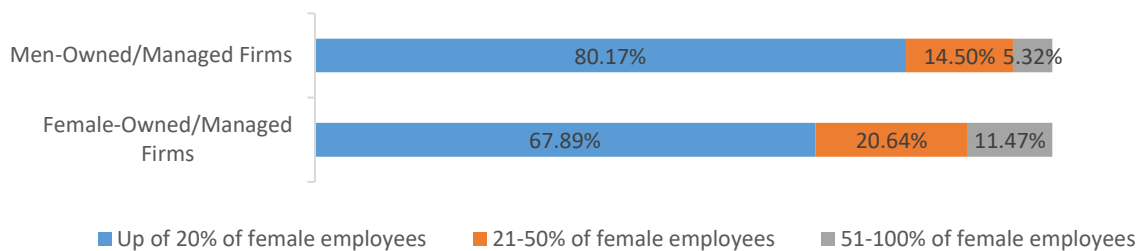
Figure 8: Women-owned/managed exporting firms, by firm size



Source: Authors' Calculations from the World Bank Enterprise Surveys for 2013.

Last but not least, our sample supports the stylized fact that women-owned and managed companies employ more women (ITC, 2015). Indeed, Figure 9 shows that in the MENA region, the percentage of women-owned/managed companies with a share of female workers exceeding 50% is double the percentage of male-owned/managed companies (11.47% and 5.32% respectively). In addition, fewer women-owned/managed companies have a share of female workers below 20% than men-owned/managed companies, although the percentage of firms employing less than 20% females exceeds 50% for both categories.

Figure 9: Female labor participation in women-owned/managed exporting firms



Source: Authors' Calculations from the World Bank Enterprise Surveys for 2013.

To summarize, seven key findings emerge from our analysis of firm-level data for selected MENA countries:

- 1- Women are weakly represented in the export sector.
- 2- Women representation's is the largest in small (less than 5 employees) and large companies (more than 100 employees).
- 3- Women are most likely to work in exporting firms of sectors like garments, telecom and food.
- 4- One in three exporting firm is led by women.
- 5- Women entrepreneurship is the highest in export sectors like transport, publishing and printing, garments, plastic and rubber.
- 6- Women mainly lead in micro (less than 5 employees) and large companies (more than 100 employees).
- 7- Women tend to employ more women.

3. Methodology and Data

3.1. Methodology

The methodology used in this paper draws on the seminal work of Melitz (2003) - and its extensions - that accounts for the heterogeneity of firms' characteristics in explaining the export behavior of firms, to reflect producer-level facts highlighted in the new literature and not accommodated in trade models: first, in any industry, only few firms export, and exporters sell most of their output domestically. Second, exporters are bigger and more productive than non-exporters, and pay higher wages. Third, trade liberalization increases the average productivity level in an industry. (Aitken et al., 1997; Bernard et al., 1995; Bernard and Jensen, 1997, 1999 and 2004; Roberts and Tybout, 1997). Melitz' model with a fixed export cost shows that trade forces the least-productive firms to leave the domestic market, while high-productivity firms enter the export market. This mechanism contributes to a reallocation of market shares from low-productivity firms to high-productivity firms leading to an increase in the average productivity of this economy. Melitz's model and its extensions (Chaney, 2008; Helpman et al., 2008) show that exports respond to a decrease in trade barriers not only in terms of size (an increase in the intensive margin), but also in terms of variety (the set of exporters increases, an increase in the extensive margin).

Inspired from the above New-New Trade literature, our basic specifications of the determinants of trade margins in the MENA region is as follows:

$$Prob(X)_{ijk} = \alpha_1 X_{ijk} + \alpha_2 Ln(labprod)_{ijk} + \alpha_3 (Fem)_{ijk} + dsize + dst + dct + dloc + \varepsilon_{ijk} \quad (1)$$

$$Ln(X)_{ijk} = \lambda_1 X_{ijk} + \lambda_2 Ln(labprod)_{ijk} + \lambda_3 (Fem)_{ijk} + dsize + dst + dct + dloc + \varepsilon_{ijk} \quad (2)$$

Where $Prob(X)_{ijk}$ measures the extensive margin (the probability of becoming an exporter) and $Ln(X)_{ijk}$ measures the intensive margin (firm's export volume) of firm i in country j in sector k .

X is a vector of plant-characteristics that are believed to impact exports, such as firm age, foreign ownership and government ownership, and whether the firm has earned a foreign certification.

Firm age is also found to be positively linked to exporting (Roberts and Tybout, 1997; Aitken et al., 1997), in that the longer a firm has been in business, the more likely it is to look to export markets in order to grow. Firm age ($LnAge$) is calculated by taking the logarithmic of the difference between the date of the establishment of the firm and the date of availability of the data for our sample (2013). Yet, we can also expect a negative effect of age on exports since younger firms are generally more innovative and hence are more likely to export.

Foreign ownership is expected to positively affect the decision to export (Aitken et al., 1997; Bernard and Jensen, 2004) as foreign-owned firms usually export goods either back to headquarters or to other plants. Foreign ownership is logarithm of the share of capital owned by foreign parties $Ln(For.)$.

Furthermore, we believe it is reasonable to expect that firms that are mostly owned by the government are less export-oriented than their counterparts, and that firms acquiring foreign

certifications are more likely to meet international standards and hence compete on international markets. Therefore, we add the variable $\ln(Gov.)$ that is the logarithm of the share of the firm's capital owned by the government; and a dummy variable ($Certif.$) taking the value of 1 if the firm has acquired a foreign certification, and 0 otherwise. We strongly believe that having a foreign certification can help firms export since they are more likely to meet international standards and hence more likely to compete.

$\ln(labprod)_{ijk}$ represent the logarithm of labor productivity of firm i in country j in sector k . it is calculated by taking the logarithm of the ratio of the number of workers to sales volume (that have been deflated and converted into constant USD), and helps account for the above-mentioned producer-level fact, that exporters are more productive than their counterparts. We capture firm size by dummy variables that differentiate between micro firms (less than 5 employees), small firms (between 5 and 19 employees), medium firms (between 20 and 99 employees) and large firms (more than 100 employees), as defined in the World Bank Enterprise Surveys. Firm size is regarded to be positively related to the propensity to export (Roberts and Tybout, 1997; Aitken et al., 1997; Bernard and Jensen, 2004): larger firms can benefit from their size by engaging in economies of scale in production, have a greater ability to expand resources and absorb risks than smaller firms, and hence are more adaptable to export. Moreover, location, sectoral and country dummies ($dloc$, dst and dct respectively) are added to control for location, sector and country unobservable characteristics that can affect firm performance.

The explanatory variables (Fem) of our interest are different dimensions of gender, such as $\ln(Fem. Work)_{ijk}$ that is the logarithm of the number of female full-time workers in firm i in country j in sector k ; $Female Boss_{ijk}$ that is a dummy variable taking the value 1 if the firm is owned or managed by a female, and 0 otherwise; $Female Manager_{ijk}$ that is a dummy variable taking the value 1 if the firm is managed by a female, and 0 otherwise; $Female Owner_{ijk}$ that is a dummy variable taking the value 1 if the firm is owned by a female, and 0 otherwise. It is worth mentioning that $Female Owner_{ijk}$ captures the effect of women empowerment more than $Female Manager_{ijk}$, as the manager is an employee in the firm that take orders from the owner, while the owner is an entrepreneur that takes financial risk for his/her company.

Equation (2) may suffer from a selection bias given the fact that export volumes are only observed for exporting firms (around one-third of our dataset), i.e., firms that already compete on international markets. To control for this problem, we run a Heckman two-stage selection model. First, we examine the determinants of becoming an exporter, controlling for the determinants that affect the decision to export (Equation (1)). Then, we investigate the determinants of expanding export volumes for exporting firms (Equation (2)). It is noteworthy that $labprod_{ijk}$ is excluded from Equation (2), i.e. the second stage of the Heckman selection model, to account for the fact that labor productivity is a fixed export entry cost. According to Aboushady and Zaki (2019), total factor productivity represents a fixed entry cost to export markets, having a positive and significant effect on the probability of Egyptian firms to export, without affecting the firm's export volume.

In order to account for the gender stylized facts discussed in section 2, we extend our analysis in three directions. First, we run the regressions for small and medium enterprises (SME)³ (less than 100 employees) and large (more than 100 employees) firms separately to see whether the effect of women entrepreneurship and female participation on exports differs between small and large firms. Indeed, as discussed in Section 2, the share of women entrepreneurship and labor participation is highest for large firms (more than 100 employees) and minor firms (less than 5 employees). Second, we run the regressions at the sectoral level to differentiate between the effect of women entrepreneurship and participation between sectors. Third, to account for a stylized fact that women entrepreneurs face more financial and regulatory barriers than men, we control for access to finance through different variables: *Self-Finance_{ijk}* that is the share of capital financed by own earnings, and its interaction term with *Female Boss_{ijk}*; *Finance_{ijk}* that is the share of capital financed by private financial institutions, and its interaction term with *Femaleboss_{ijk}*; *CreditLine_{ijk}* that is a dummy variable taking the value 1 if the firm has a credit line, and 0 otherwise, and its interaction term with *Femaleboss_{ijk}*. Regulatory barriers are controlled for through the number of days to import and its interaction with *Femaleboss_{ijk}*, and through a dummy variable *Website_{ijk}* taking the value 1 if the firm has a website, and 0 otherwise, and its interaction term with *Femaleboss_{ijk}*.

3.2. The Data

Firms data come from the World Bank Enterprise Surveys that offers an expansive array of economic data on 131,000 private firms in 139 countries. Formal (registered) companies with 5 or more employees are targeted for interview. Firms with 100% government/state ownership are not eligible to participate in an Enterprise Survey. The surveys cover a broad range of business environment topics including access to finance, corruption, infrastructure, crime, competition, and performance measures. The Enterprise Surveys Unit uses two instruments: the Manufacturing Questionnaire and the Services Questionnaire. The standard survey topics include firm characteristics, gender participation, access to finance, annual sales, costs of inputs/labor, workforce composition, bribery, licensing, infrastructure, trade, crime, competition, capacity utilization, land and permits, taxation, informality, business-government relations, innovation and technology, and performance measures. The manufacturing and services sectors are the primary business sectors of interest. This corresponds to firms classified with ISIC codes 15-37, 45, 50-52, 55, 60-64, and 72 (ISIC Rev.3.1). Services firms include construction, retail, wholesale, hotels, restaurants, transport, storage, communications, and IT.

Enterprise Surveys are available for 9 MENA countries: Djibouti, Egypt, Israel, Jordan, Lebanon, Morocco, Tunisia, West Bank and Gaza, Yemen for the year 2013⁴. Therefore, our sample contains 6327 manufacturing and services firms located in eight MENA countries,

³ The 3 categories of firm size (less than 5 employees, between 5 and 20, between 20 and 100) are aggregated in one category “small and medium enterprises”, otherwise the number of observations drops significantly.

⁴ Although there are several waves of data for the World Bank Enterprise Surveys, we run the analysis for 2013 that it is the only year for which the data are harmonized for MENA countries.

Djibouti being dropped due to the small number of observations. Manufacturing and services sectors have been aggregated in 18 sectors to increase the number of observations per sector.

Figure 10 shows the percentage of exporters and non-exporters by sector in our sample. Only 33.47% of the firms are exporters, and the majority of the sectors are below average in terms of the share of exporting firms, with “construction”, “metals and metal products”, “hotels and restaurants” and “telecom” being at the bottom of the distribution with a share of 13.91%, 21%, 21.75% and 23.85% respectively. “Transport”, “garments” and “machinery and equipment” show the highest share of exporting firms (50.68%, 55.84% and 71.25% respectively).

Figure 10: Share of Exporters and Non-exporters by sector

Source: Authors’ Calculations from the World Bank Enterprise Surveys for 2013.

Table 3 provide the summary statistics for our variables. The average firm exports 30.56% of its total sales volume ($e^{3.42}$), has an average age of 19 years ($e^{2.93}$), employs an average of 3 female workers ($e^{1.14}$). The government and foreign parties own 1% ($e^{0.04}$) and 1.42% ($e^{0.35}$) of the average firm’s capital, and 21% of firms have earned a foreign certification. More importantly, the summary statistics of the gender variables show that the average firm hires 3 female workers and 27% of firms are owned or managed by a female. Only 5% of firms are managed by a female while 26% are owned by a female.

Table 3: Sample Summary Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Pb(X)	6,319	0.33	0.47	0	1.00
Ln(X)	1,603	3.42	1.13	0	4.61
Ln(labprod)	4,907	10.00	1.74	0.50	17.63
LnAge	6,244	2.93	1.21	0	7.61
Ln(Gov.)	6,151	0.04	0.38	0	4.61
Ln(For.)	6,158	0.35	1.17	0	4.62
Certif.	6,319	0.21	0.41	0	1.00
<i>Ln(Fem. Work)</i>	6,327	1.14	1.39	0	8.70
Female Boss	6,327	0.27	0.44	0	1.00
Female Manager	6,327	0.05	0.21	0	1.00
Female Owner	6,327	0.26	0.44	0	1.00

Note: Constructed by the authors.

4. Results

Table 4 displays the determinants of the extensive margin (i.e. the probability of exports) and the intensive margin of trade (i.e. export intensity of the firm). While foreign ownership exerts a positive and significant effect on exports as expected in the literature, firms' age and government ownership are not significant. Foreign certification has a positive significant impact on the extensive margin only, suggesting that firms that acquire a foreign certification have a comparative export advantage over firms that are locally owned. More importantly, labor productivity has a significant positive impact on the probability of exports without having a significant impact on export volume, suggesting that labor productivity play the role of a fixed export cost. This finding is in line with the result of Aboushady and Zaki (2019), that total factor productivity represents a fixed entry cost to export markets, having a positive and significant effect on the probability of Egyptian firms to export, without affecting the firm's export volume,

Table 4: Determinants of Trade Margins

	P(Exp)	Ln(Exp)
Ln(Lab Prod.)	0.0697*** (0.0166)	0.0363 (0.0287)
Ln(Age)	0.0389 (0.0237)	-0.0374 (0.0349)
Ln(Gov.)	-0.0770 (0.0572)	0.0121 (0.0701)
Ln(For.)	0.100*** (0.0181)	0.0881*** (0.0178)
Certif.	0.618*** (0.0564)	0.0776 (0.0705)
Size dum.	YES	YES
Loc dum.	YES	YES
Sector dum.	YES	YES
Country dum.	YES	YES
Observations	4,508	1,333
R-squared	0.245	0.917

Standard errors in parentheses

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

Since labor productivity exerts a significant positive impact on the probability of exports, and not on export volume, and given that Equation (2) may suffer from a selection bias because export volumes are only observed for exporting firms, we run a Heckman two-stage selection model with $Ln(labprod)_{ijk}$ being the selection variable. We also investigate the effect of the gender variables on trade margins. The Heckman selection model give support to the previous results: labor productivity and the presence of a foreign certification exert a positive and significant impact on the extensive margin only, while foreign ownership has a positive and significant on both the intensive and extensive margins. The presence of a foreign certification exerts a positive and significant effect on the probability of export, and not on the export volume

of the exporting firm, and therefore can be considered as a mean to overcome fixed export entry cost. Surprisingly, the coefficient of the age variable is negative and significant in the intensive margin equation, without being significant in the extensive margin. This result could be explained by the fact that younger firms tend to be more innovative than older firms, and therefore are able to expand their export volumes more than their counterparts.

Female workers have a positive and significant impact on both trade margins, highlighting the role of females in increasing the probability of the firm to enter the export market and expanding its sales on international markets. By contrast, the effect of female ownership or management represented by the variable *Female Boss_{ijk}* is not significant. This result gives support to the common evidence that women face different impediments to trade and expand their sales on international markets, such as limited access to key inputs (land, finance, market information), and legal and regulatory barriers (ITC, 2015). The interaction variable between female workers and female ownership/management is not significant in both equations, suggesting that the effect of female labor participation on the intensive and extensive margin doesn't differ between female-owned/managed firms and male-owned/managed firms.

Table 5: Women and Trade Margins

	Ln(Exp)	P(Exp)	Ln(Exp)	P(Exp)	Ln(Exp)	P(Exp)
Ln(Lab Prod.)		0.0735*** (0.0168)		0.0701*** (0.0168)		0.0724*** (0.0168)
Ln(Age)	-0.0848*** (0.0307)	0.0373 (0.0239)	-0.0844*** (0.0309)	0.0360 (0.0237)	-0.0845*** (0.0308)	0.0363 (0.0239)
Ln(Gov.)	-0.0278 (0.0694)	-0.0951 (0.0586)	-0.00778 (0.0695)	-0.0743 (0.0571)	-0.0280 (0.0695)	-0.0948 (0.0586)
Ln(For.)	0.0839*** (0.0197)	0.0942*** (0.0183)	0.0902*** (0.0201)	0.101*** (0.0181)	0.0835*** (0.0198)	0.0947*** (0.0183)
Certif.	0.0853 (0.0817)	0.592*** (0.0568)	0.0989 (0.0838)	0.612*** (0.0565)	0.0845 (0.0819)	0.589*** (0.0570)
Ln(Fem. Work)	0.0869*** (0.0247)	0.149*** (0.0209)			0.0824*** (0.0281)	0.158*** (0.0240)
Female Boss			-0.00398 (0.0612)	0.0743 (0.0504)	-0.0512 (0.101)	0.0940 (0.0760)
Ln(Fem Wor)*Boss					0.0138 (0.0362)	-0.0301 (0.0339)
Constant	3.253*** (0.472)	-2.186*** (0.294)	3.221*** (0.478)	-2.165*** (0.293)	3.270*** (0.475)	-2.192*** (0.294)
Size dum.	YES	YES	YES	YES	YES	YES
Loc dum.	YES	YES	YES	YES	YES	YES
Sector dum.	YES	YES	YES	YES	YES	YES
Country dum.	YES	YES	YES	YES	YES	YES
Observations	4,506	4,506	4,506	4,506	4,506	4,506

Standard errors in parentheses
 *** p<0.01, ** p<0.05, * p<0.1

To investigate one of the discussed stylized facts that firm size matters for women participation, we run the regressions for two categories of firm size: small and medium

enterprises (SME)⁵, with less than 100 employees, and large firms with more than 100 employees. The variables on firms' characteristics have the expected sign, as previously discussed. Female workers have a positive and significant effect on the extensive and intensive margins for both categories of firms. However, it is noteworthy that the positive coefficient of female workers is greater for SME than for large firms, suggesting that female labor participation matters more for small firms than for large firms, which gives support to one of our stylized facts discussed in Section 2, that female labor participation is the largest for micro firms (less than 5 employees).

Table 6: Female Workers and Trade Margins, by firm size

	SME		Large	
	Ln(Exp)	P(Exp)	Ln(Exp)	P(Exp)
Ln(Lab Prod.)		0.0769*** (0.0195)		0.108*** (0.0343)
Ln(Age)	-0.0479 (0.0457)	0.0313 (0.0284)	-0.0882** (0.0413)	0.122** (0.0480)
Ln(Gov.)	0.0183 (0.155)	0.00712 (0.121)	-0.0451 (0.0765)	-0.143* (0.0746)
Ln(For.)	0.123*** (0.0322)	0.112*** (0.0240)	0.0357 (0.0249)	0.0819*** (0.0310)
Certif.	0.238** (0.113)	0.523*** (0.0721)	0.0412 (0.124)	0.787*** (0.100)
Ln(Fem. Work)	0.119** (0.0465)	0.205*** (0.0296)	0.0768** (0.0306)	0.203*** (0.0311)
Constant	3.134*** (0.363)	-1.747*** (0.255)	3.333*** (0.418)	-2.439*** (0.462)
Loc dum.	YES	YES	YES	YES
Sector dum.	YES	YES	YES	YES
Country dum.	YES	YES	YES	YES
Observations	3,485	3,485	1,021	1,021

Standard errors in parentheses

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

Tables 7 to 9 investigate whether the effect of female entrepreneurship/management on trade margins differs according to firm size. In Table 7, the gender variable is Female Boss that doesn't differentiate between female management and ownership positions. The coefficient of the variable is positive and significant in the extensive margin regression of large firms. This result highlights the widespread evidence that women in small firms face different types of financial and regulatory barriers that impede their participation in international markets.

In Tables 8 and 9, we differentiate between female ownership and management. In Table 8, the coefficient of Female Manager is not significant for both firm size categories. However,

⁵ Due to the low number of observations, we group all firm sizes below 100 employees in one category "Small and Medium Enterprises".

Table 9 shows that Female Owner exerts a positive and significant effect only on the extensive margin for large firms. Therefore, the positive effect of Female Boss in Table 7 is driven by the effect of female ownership, and not female management, highlighting the importance of female empowerment in international trade.

Table 7: Female Boss and Trade Margins, by firm size

	SME		Large	
	Ln(Exp)	P(Exp)	Ln(Exp)	P(Exp)
Ln(Lab Prod.)		0.0815*** (0.0194)		0.0858** (0.0339)
Ln(Age)	-0.0437 (0.0458)	0.0344 (0.0282)	-0.0819** (0.0408)	0.106** (0.0463)
Ln(Gov.)	0.0501 (0.156)	0.0451 (0.119)	-0.0315 (0.0762)	-0.112 (0.0711)
Ln(For.)	0.130*** (0.0328)	0.119*** (0.0238)	0.0468* (0.0249)	0.100*** (0.0303)
Certif.	0.273** (0.119)	0.590*** (0.0712)	0.0999 (0.117)	0.814*** (0.0985)
Female Boss	0.0995 (0.0837)	0.0518 (0.0594)	-0.111 (0.0888)	0.198** (0.0991)
Constant	3.195*** (0.360)	-1.668*** (0.253)	3.409*** (0.361)	-1.866*** (0.445)
Loc dum.	YES	YES	YES	YES
Sector dum.	YES	YES	YES	YES
Country dum.	YES	YES	YES	YES
Observations	3,485	3,485	1,021	1,021

Standard errors in parentheses
 *** p<0.01, ** p<0.05, * p<0.1

Table 8: Female Manager and Trade Margins, by firm size

	SME		Large	
	Ln(Exp)	P(Exp)	Ln(Exp)	P(Exp)
Ln(Lab Prod.)		0.0819*** (0.0194)		0.0893*** (0.0339)
Ln(Age)	-0.0407 (0.0457)	0.0354 (0.0281)	-0.0865** (0.0409)	0.110** (0.0462)
Ln(Gov.)	0.0443 (0.155)	0.0430 (0.119)	-0.0239 (0.0762)	-0.114 (0.0714)
Ln(For.)	0.128*** (0.0327)	0.118*** (0.0238)	0.0475* (0.0250)	0.0972*** (0.0303)
Certif.	0.286** (0.120)	0.592*** (0.0712)	0.0744 (0.119)	0.833*** (0.0979)
Female Manager.	0.214 (0.176)	-0.103 (0.119)	0.0174 (0.234)	-0.148 (0.261)
Constant	3.184*** (0.359)	-1.653*** (0.253)	3.391*** (0.363)	-1.849*** (0.445)
Loc dum.	YES	YES	YES	YES
Sector dum.	YES	YES	YES	YES
Country dum.	YES	YES	YES	YES
Observations	3,485	3,485	1,021	1,021

Standard errors in parentheses

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

Table 9: Female Manager and Trade Margins, by firm size

	SME		Large	
	Ln(Exp)	P(Exp)	Ln(Exp)	P(Exp)
Ln(Lab Prod.)		0.0814*** (0.0194)		0.0865** (0.0339)
Ln(Age)	-0.0427 (0.0458)	0.0345 (0.0282)	-0.0813** (0.0408)	0.105** (0.0463)
Ln(Gov.)	0.0456 (0.156)	0.0450 (0.119)	-0.0338 (0.0762)	-0.110 (0.0712)
Ln(For.)	0.129*** (0.0328)	0.119*** (0.0239)	0.0472* (0.0249)	0.1000*** (0.0303)
Certif.	0.272** (0.120)	0.589*** (0.0712)	0.105 (0.116)	0.812*** (0.0985)
Female Owner	0.0646 (0.0846)	0.0548 (0.0604)	-0.121 (0.0891)	0.219** (0.100)
Constant	3.214*** (0.360)	-1.665*** (0.253)	3.397*** (0.359)	-1.863*** (0.445)
Loc dum.	YES	YES	YES	YES
Sector dum.	YES	YES	YES	YES
Country dum.	YES	YES	YES	YES
Observations	3,485	3,485	1,021	1,021

Standard errors in parentheses

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

Then, to account for the stylized fact that women tend to work in different export sectors than men, we run the regressions at the sectoral level (Table 10). The coefficient of Female workers is positive and significant in food, garments, other services, textiles, publishing, non-metallic products, metals, chemicals, plastic and rubber. Those sectors are in general traditional and low-value added sectors, in which the MENA region has a comparative advantage. Therefore, job creation for women occurs in traditional export sectors and unfortunately, there is no room for job creation in non-traditional sectors.

Table 10a: Female Workers and Trade Margins, by sector

	Chemicals		Food		Garments	
	Ln(Exp)	P(Exp)	Ln(Exp)	P(Exp)	Ln(Exp)	P(Exp)
Ln(Lab Prod.)		0.192** (0.0942)		0.0266 (0.0484)		0.0796 (0.0713)
Ln(Age)	-0.371* (0.197)	0.114 (0.131)	0.0517 (0.0937)	-0.0170 (0.0712)	-0.145** (0.0688)	-0.0886 (0.0897)
Ln(Gov.)	0.169 (0.273)	2.436 (1.392e+09)	0.487 (0.371)	-0.427* (0.245)	0.176 (0.371)	2.700 (244,587)
Ln(For.)	0.0960 (0.0776)	0.107 (0.0851)	0.0239 (0.0524)	0.0643 (0.0497)	0.0847*** (0.0301)	0.224*** (0.0608)
Certif.	0.536 (0.382)	1.194*** (0.266)	-0.128 (0.200)	0.610*** (0.137)	0.119 (0.147)	1.514*** (0.281)
Ln(Fem. Work)	0.0405 (0.0894)	0.290*** (0.111)	0.142* (0.0809)	0.341*** (0.0459)	0.0811** (0.0325)	0.225*** (0.0540)
Constant	3.415*** (0.799)	-3.486*** (1.003)	2.641*** (0.660)	-1.662*** (0.503)	3.949*** (0.302)	-1.757** (0.730)
Country dum.	YES	YES	YES	YES	YES	YES
Observations	148	148	562	562	344	344

Standard errors in parentheses

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

Table 10b: Female Workers and Trade Margins, by sector

	Non-met		Other Ser.		Plastic and Rub.	
	Ln(Exp)	P(Exp)	Ln(Exp)	P(Exp)	Ln(Exp)	P(Exp)
Ln(Lab Prod.)		-0.0272 (0.199)		0.105*** (0.0330)		0.114 (0.121)
Ln(Age)	-0.168 (0.354)	0.889 (0.674)	-0.00714 (0.0968)	0.0742 (0.0532)	0.357*** (0.0798)	0.0865 (0.0902)
Ln(Gov.)	-0.373** (0.169)	2.519 (402,795)		-3.866 (52,184)		
Ln(For.)	-0.518*** (0.197)	0.123 (0.236)	0.110 (0.0889)	0.0797* (0.0483)	-0.0112 (0.128)	-0.0655 (0.142)
Certif.	0.230 (0.531)	1.106** (0.540)	0.230 (0.276)	0.319** (0.141)	0.793** (0.387)	1.077*** (0.350)
Ln(Fem. Work)	0.112 (0.119)	0.273* (0.164)	0.209** (0.0877)	0.117*** (0.0413)	0.238** (0.109)	0.168 (0.124)
Constant	3.374** (1.603)	-4.241 (3.365)	1.862** (0.843)	-2.810*** (0.380)	0.746 (0.772)	-2.525** (1.116)
Country dum.	YES	YES	YES	YES	YES	YES
Observations	55	55	961	961	107	107

Standard errors in parentheses

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

Table 10c: Female Workers and Trade Margins, by sector

	Publish		Tex.		Wood		Metals	
	Ln(Exp)	P(Exp)	Ln(Exp)	P(Exp)	Ln(Exp)	P(Exp)	Ln(Exp)	P(Exp)
Ln(Lab Prod.)		0.200* (0.109)		0.216** (0.102)		0.312* (0.179)		0.220*** (0.0827)
Ln(Age)	-0.0748 (0.255)	0.0787 (0.128)	0.0584 (0.133)	0.143 (0.129)	-0.224 (0.637)	-0.296 (0.385)	-0.327* (0.192)	-0.115 (0.144)
Ln(Gov.)			-0.0651 (0.148)	1.831 (17,459)				
Ln(For.)	0.297** (0.136)	0.122 (0.121)	0.101 (0.0905)	0.0436 (0.0824)			0.183 (0.116)	0.232** (0.102)
Certif.	0.132 (0.417)	0.775** (0.333)	0.666* (0.399)	1.134*** (0.251)	0.225 (0.798)	1.537** (0.772)	0.264 (0.439)	0.943*** (0.282)
Ln(Fem. Work)	0.144 (0.152)	0.230* (0.125)	0.0529 (0.0930)	0.235*** (0.0842)	0.507 (0.518)	0.642 (0.401)	0.203 (0.178)	0.395*** (0.110)
Constant	2.571** (1.124)	-3.455*** (1.148)	2.659*** (0.813)	-3.511*** (1.083)	3.168** (1.483)	-3.280 (2.042)	3.275*** (1.029)	-3.481*** (0.962)
Country dum.	YES	YES	YES	YES	YES	YES	YES	YES
Observations	133	133	194	194	64	64	310	310

Standard errors in parentheses

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

Table 11 looks at female labor participation in services. A dummy variable *Services* is created, taking the value 1 if the sector is a service sector, and 0 otherwise. This dummy variable is also interacted with *Female Workers*. The coefficients of both variables are negative and significant in the extensive margin equation. Indeed, being a service sector decreases the probability of exports relatively to manufacturing sectors, given the nature of non-tradable services. And the effect of female workers on the probability of export for the firm decrease for services sectors, relative to manufacturing sectors. A possible explanation of this finding is that women tend to work in non-tradable sectors like education for example.

Table 11: Female Workers and Trade Margins in Services

	Ln(Exp)	P(Exp)
Ln(Lab Prod.)		0.0585*** (0.0163)
Ln(Age)	-0.0935*** (0.0315)	0.0381 (0.0237)
Ln(Gov.)	-0.00796 (0.0703)	-0.104* (0.0571)
Ln(For.)	0.0992*** (0.0208)	0.108*** (0.0180)
Certif.	0.00894 (0.0839)	0.561*** (0.0556)
Ln(Fem. Work)	0.109*** (0.0285)	0.221*** (0.0223)
Services	-0.0860 (0.123)	-0.128* (0.0751)
Ln(Fem. Work)*Services	-0.0137 (0.0515)	-0.195*** (0.0353)
Constant	3.279*** (0.489)	-2.327*** (0.266)
Size dum.	YES	YES
Loc dum.	YES	YES
Country dum.	YES	YES
Observations	4,506	4,506

Standard errors in parentheses

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

Tables 12 and 13 investigate the different financial and regulatory barriers faced by women-owned/managed firms in the export sector. Table 12 tackles different dimensions of financial barriers such as *Self-Finance_{ijk}* that is the share of capital financed by own earnings, *Finance_{ijk}* that is the share of capital financed by private financial institutions, and *CreditLine_{ijk}* that is a dummy variable taking the value 1 if the firm has a credit line, and 0 otherwise. Each barrier is then interacted with *Femaleboss_{ijk}*. Three noteworthy results emerge: first, *Self-Finance_{ijk}* has a positive significant effect on the intensive margin, without affecting the extensive margin of trade, suggesting that self-finance contributes to expanding the export volume of the exporting firm, but doesn't overcome the fixed export cost for a firm to become an exporter. Second, credit lines and finance from private financial institutions have a significant

positive impact on the extensive margin, and therefore are considered as financial means that help overcome the fixed export entry cost. Third, and most importantly, the interaction variable between finance and Female Boss is only significant for one measure of financial barriers, that is, Credit Line. The coefficient of the interaction variable is negative and significant in the extensive margin equation, suggesting that the effect of credit line on the probability of exports decreases when the firm is owned or managed by women. Therefore, due to the difficult access to finance, women tend to self-finance their activities.

Table 13 looks at regulatory barriers such as the number of days to import and its interaction with female boss. The number of days to import is a proxy for complicated custom clearance procedures, where delays in receiving imported inputs will have a negative effect on both the probability of export and export volume. As expected, the number of days to import exerts a negative and significant effect on both the extensive and intensive margins of trade. The interaction variable with Female Boss has a positive and significant coefficient in the extensive margin equation only, suggesting that the effect of the number of days to import is larger for female boss than their male counterparts. Another barrier is reflected by whether the firm has website and its interaction term with female boss. The coefficient of the dummy variable Website is positive and significant in the extensive margin equation, suggesting that the presence of a website ease the international access to the firms' information and therefore increases the probability of the firm to export. However, the interaction variable with Female Boss is not significant, reflecting that the effect of having a website doesn't differ between men and women.

In sum, our results show that first, female workers have a positive a significant impact on both the probability of export and export volume, regardless the size of the firm, but their effect is relatively higher for SMEs than for large firms. Female labor participation matters in traditional sectors where the MENA region has a comparative advantage. Second, female management/ownership matters more for the probability of the large firm to export, which this effect being mainly driven by female ownership and not management. In other words, female entrepreneurs matter more in entering the export market than female managers, and therefore female empowerment makes a difference. Third, female-owned/managed firms face more financial constraints to export than their male counterparts, and therefore tend to rely on self-finance. In addition, the effect of a credit line on exports tends to decrease for a female-owned/managed firm, with respect to a men-owned/managed firm. The effect of other regulatory barriers on exports, such as the number of days to import, is more pronounced for female-owned/managed firm, with respect to a men-owned/managed firm.

Table 12: Women, Trade Margins and Finance

	Self-Finance		Finance from a priv. inst.		Credit Line	
	Ln(Exp)	P(Exp)	Ln(Exp)	P(Exp)	Ln(Exp)	P(Exp)
Ln(Lab Prod.)		0.0717*** (0.0170)		0.0661*** (0.0172)		0.0660*** (0.0172)
Ln(Age)	-0.0857*** (0.0310)	0.0442* (0.0241)	-0.0840*** (0.0312)	0.0472* (0.0242)	-0.0979*** (0.0330)	0.0272 (0.0253)
Ln(Gov.)	-0.0139 (0.0707)	-0.0826 (0.0576)	-0.00963 (0.0696)	-0.0733 (0.0574)	-0.00332 (0.0747)	-0.0900 (0.0621)
Ln(For.)	0.0912*** (0.0203)	0.102*** (0.0185)	0.0908*** (0.0207)	0.104*** (0.0186)	0.0930*** (0.0211)	0.106*** (0.0187)
Certif.	0.120 (0.0848)	0.619*** (0.0576)	0.111 (0.0851)	0.591*** (0.0581)	0.124 (0.0877)	0.610*** (0.0581)
Female Boss	0.180 (0.230)	0.0262 (0.188)	0.000105 (0.0765)	0.117* (0.0604)	-0.131 (0.0866)	0.162** (0.0665)
Variable	0.0835** (0.0381)	0.0361 (0.0284)	-0.0308 (0.0236)	0.0363* (0.0194)	-0.247*** (0.0833)	0.130** (0.0662)
Female Boss* Variable	-0.0424 (0.0554)	0.0144 (0.0449)	0.0104 (0.0346)	-0.0378 (0.0298)	0.277** (0.123)	-0.229** (0.101)
Constant	2.880*** (0.511)	-2.341*** (0.320)	3.285*** (0.487)	-2.126*** (0.298)	3.384*** (0.494)	-2.136*** (0.299)
Size dum.	YES	YES	YES	YES	YES	YES
Loc dum.	YES	YES	YES	YES	YES	YES
Sector dum.	YES	YES	YES	YES	YES	YES
Country dum.	YES	YES	YES	YES	YES	YES
Observations	4,416	4,416	4,304	4,304	4,395	4,395

Standard errors in parentheses

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

Table 13: Women, Trade Margins and Other Barriers

	Import days		Website	
	Ln(Exp)	P(Exp)	Ln(Exp)	P(Exp)
Ln(Lab Prod.)		-0.0369 (0.0376)		0.0610*** (0.0170)
Ln(Age)	-0.0801 (0.0505)	0.0404 (0.0586)	-0.0840*** (0.0310)	0.0458* (0.0241)
Ln(Gov.)	0.0739 (0.113)	0.0267 (0.141)	-0.00122 (0.0695)	-0.0548 (0.0573)
Ln(For.)	0.0869*** (0.0269)	0.138*** (0.0376)	0.0891*** (0.0205)	0.103*** (0.0182)
Certif.	0.0873 (0.114)	0.662*** (0.118)	0.0707 (0.0820)	0.528*** (0.0577)
Female Boss	-0.112 (0.237)	-0.407 (0.295)	-0.0160 (0.127)	-0.0321 (0.0890)
Variable	-0.132* (0.0741)	-0.210*** (0.0795)	0.0794 (0.0901)	0.410*** (0.0603)
Female Boss* Variable	0.0124 (0.1000)	0.223* (0.117)	0.00503 (0.142)	0.111 (0.106)
Constant	4.689*** (1.057)	-0.882 (0.895)	3.260*** (0.496)	-2.163*** (0.297)
Size dum.	YES	YES	YES	YES
Loc dum.	YES	YES	YES	YES
Sector dum.	YES	YES	YES	YES
Country dum.	YES	YES	YES	YES
Observations	936	936	4,499	4,499

Standard errors in parentheses

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

5. Conclusion and Policy Implications:

This paper investigates the contribution of female labor participation as well female ownership/management to the extensive margin (the probability of trade) and intensive margin (volume of trade) in the MENA region. This topic is timely and critical for the MENA region where female labor participation as well as female entrepreneurship are shy. Indeed, more than half of MENA exporting firms have a female participation rate lower than 20%, and only 21% of exporting firms are owned or managed by women (ITC, 2015). At the same time, afflicted by conflicts, political and economic instability, the region is looking for new sources of competitiveness to stimulate exports and economic growth. The latter must rely on human resources rather than on the natural resources relied on in the past. Women remain a huge, untapped reservoir of human potential for countries in the region (Nabli and Nedereh, 2004). A potential source of unexploited growth resides in the participation of the region's female workforce in international trade.

To our knowledge, this paper is the first attempt to tackle the issue of women's contribution to trade in general, and to trade margins in particular. Since women participate in trade as employees or entrepreneurs of exporting firms, we have recourse to firm level data and

get inspired from the seminal work of Melitz (2003) and its extensions. Melitz highlights the importance of firm heterogeneity in terms of productivity and a fixed cost of entering export markets in determining the number and the type of firms that become exporters as well as the gains from trade. Extensions of the Melitz's (2003) model explicitly account for the decision to export - the extensive margin of trade (Chaney, 2008; Helpman et al., 2008; Melitz and Ottaviano, 2008). We use the World Bank's Enterprise Surveys Database that gathers information on private firms operating in 18 manufacturing and services sectors for 8 MENA countries (Egypt, Israel, Jordan, Lebanon, Morocco, Tunisia, West Bank and Gaza, Yemen) in 2013.

Our results show that first, female workers have a positive a significant impact on both the probability of export and export volume, regardless the size of the firm, but their effect is relatively higher for small firms than large firms. Female labor participation matters in traditional sectors where the MENA region has a comparative advantage. Second, female management/ownership matters more for the probability of large firm to export, which this effect being mainly driven by female ownership and not management. In other firms, female entrepreneurs matter more than managers for entering the export market. Third, female-owned/managed firms face more financial constraints that hinder exports and therefore tend to rely on self-finance. In addition, the effect of a credit line on exports tends to decrease for a female-owned/managed firm, with respect to a men-owned/managed firm. The effect of other regulatory barriers on exports, such as the number of days to import, is more pronounced for female-owned/managed firm, with respect to a men-owned/managed firm.

The policy implications of our results are important for the MENA region from a development perspective. First, female labor participation contributes to firms' export and this effect is larger for SMEs. Second, female entrepreneurship matters more than female management for the probability of large firm to become an exporter. Third, female owners/managers face more financial and regulatory barriers than their male counterparts to enter international markets. Therefore, policies in the MENA region must favor SMEs with high female labor participation and contribute to decreasing the impediments to trade faced by women entrepreneurs. This will ensure that trade policies contribute effectively to growth and development, and also supports the achievement of gender equality goals.

References

1. Aboushady, N., and Zaki, C. (2019), "Investment climate and Trade Margins in Egypt: Which Factors Do Matter?", *Economics Bulletin*, **39(4)**: 2275-2301.
2. Aitken, B., Hanson, G.H. and Harrison, A. E. (1997), "Spillovers, foreign investment, and export behavior", *Journal of International Economics*, **43(1-2)**: 103-132.
3. Asian Development Bank (2019). Leveraging Trade for women's Economic Empowerment in the Pacific.
4. Berik, G., Y. Rodgers, Y. van der Meulen, and J. E. Zveglic. (2018), "International Trade and Wage Discrimination: Evidence from East Asia", *Review of Development Economics* **8(2)**:237-254.
5. Bernard, A. B., Jensen, J. B. and Lawrence R. Z. (1995), "Exporters, Jobs, and Wages in U.S. Manufacturing: 1976-1987", *Brookings Papers on Economic Activity. Microeconomics*, 67-119.
6. Bernard, A. B. and Jensen, J. B., (1997), "Exporters, skill upgrading, and the wage gap", *Journal of International Economics*, **42(1)**: 3-31.
7. Bernard, A. B. and Jensen, J. B., (1999), "Exceptional exporter performance: cause, effect, or both?", *Journal of International Economics*, **47(1)**: 1-25.
8. Bernard, A. B. and Jensen, J. B., (2004), "Why Some Firms Export", *Review of Economics and Statistics*, **86(2)**: 561-569.
9. Black, S. E., and E. Brainerd. (2004), "Importing Equality? The Impact of Globalization on Gender Discrimination", *Industrial and Labor Relations Review*, **57(4)**.
10. Boler, E. A., B. Javorcik, and K. H. Ulltveit-Moe. (2015), "Globalization: A Women's Best Friend? Exporters and the Gender Wage Gap", *CEPR Discussion Paper No. 10475*, London: Centre for Economic Policy Research.
11. Chaney, T. (2008), "Distorted gravity: the intensive and extensive margins of international trade", *American Economic Review*, **98(4)**:1707-1721.
12. Contessi, S., de Nicola, F and Li, L. (2013), "International Trade, Female Labor, and Entrepreneurship in MENA Countries", Federal Reserve Bank of St. Louis, Working Paper Series.
13. Ederington, J., J. Minier, and K. R. Troske. (2009), "Where the Girls Are: Trade and Labor Market Segregation in Colombia", University of Kentucky, April.
14. Helpman, E., Melitz, M. and Rubinstein, Y. (2008), "Estimating trade flows: trading partners and trading volumes", *Quarterly Journal of Economics*, **123(2)**: 441-487.
15. International Trade Center (2015), *Unlocking Markets for Women to Trade*, Geneva, Switzerland.
16. Juhn, C., G. Ujhelyi, and C. Villegas-Sanchez. (2014), "Men, Women, and Machines: How Trade Impacts Gender Inequality", *Journal of Development Economics*, **106**, 179-193.
17. Karam, F. and Zaki, C. (2018), "Why Don't MENA Countries Trade More? The Curse of Deficient Institutions", *The Quarterly Review of Economics and Finance*, forthcoming.

18. Karam, F. and Zaki, C. (2015), "Trade volume and economic growth in the MENA region: Goods or services?", *Economic Modelling*, **45**: 22–37.
19. Klein M. W., C. Moser, and D. M. Urban. (2013), "Exporting, Skills and Wage Inequality", *Labour Economics*, **25**: 76–85.
20. Melitz, M. (2003), "The Impact of Trade on Intra-Industry Reallocations and Aggregate Industry Productivity", *Econometrica*, **71(6)**: 1695-1725.
21. Melitz, M. and Ottaviano, G. (2008), "Market size, trade and productivity", *Review of Economic Studies*, **75**:295–316.
22. Nabli, M. and Nadereh, C. (2004), "Gender and development in the Middle East and North Africa: women in the public sphere", MENA Development Report, the World Bank, Washington D.C.
23. Roberts, M. J. and Tybout, J. R. (1997), "An empirical model of sunk costs and the decision to export", *American Economic Review*, **87(4)**:545–564.
24. Sen, A. (1999), *Development as Freedom*, Albert A. Knopf, New York.
25. United Nations (2004). *Trade and Gender: Opportunities and Challenges for Developing Countries*.