



Gender Gap and Firm Performance in Developing Countries

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Inmaculada Martínez-Zarzoso*,**

*Department of Economics, University of Göttingen, Germany

**IEI, Universitat Jaume I in Castellón, Spain



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GÖTTINGEN



Outline

- Gender gaps in the developing world
- MENA countries outlook
- Women entrepreneurs and firm performance:
An empirical application
- Conclusions
- Further research

Gender gaps in the developing world

- **From 1960 to 2000s:**
- In OECD countries progress on reducing gender inequality was widespread
- In developing countries: gender gaps were also starting to fall, most visibly **in education**, promoted by international conventions such as CEDAW, the MDGs, donor community
- BUT gender gaps continued to be sizable

Gender gaps in the developing world

- Actual developments:
- **We cannot be sure at all that steady progress towards gender equality will continue**
- There was often less equality than had appeared, and we experience real backlash
- The Taliban, Islamic State, Boko Haram: their supporters across the world fight even the most basic global consensus on gender equality: Girls education! **Klasen (2019)**

Gender gaps in the developing world

- More insights:
- New work on occupational and sectoral segregation has shown that it persists
- Progress in reducing gender gaps in the labor market: slow and heterogeneous across different regions
- With the exception of Latin America, **gender gaps in employment have stalled or even increased across the developing world.**

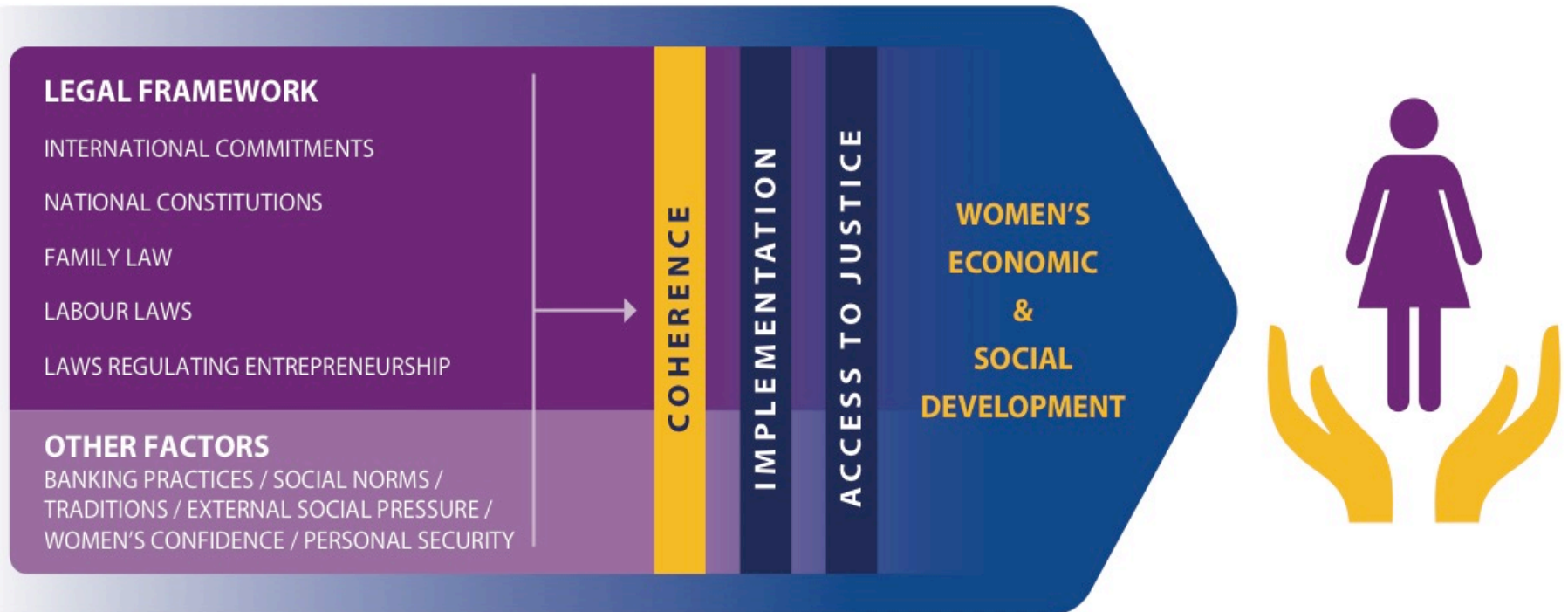
Gender gaps in the developing world

- Globalization has had an influence on women's economic opportunities:
- Countries investing in export-oriented manufacturing, such as China, Indonesia, Vietnam, or Bangladesh, did create many employment opportunities for women,
- But: trade liberalization often led to employment losses in manufacturing, with men often losing more jobs than women
- The care burden has remained as unequal as before and there has been little progress in combating domestic violence, although the topic was receiving increasing attention.

Mena Countries: Bright spots?

Substantial narrowing of the Gender Gap in Education
Changes in the legal framework:

KEY FACTORS IMPACTING WOMEN'S AGENCY



Source: OECD (2017) Women Economic empowerment in selected MENA countries

New constitutions: Jordan and Morocco (2011), Egypt and Tunisia (2014), Algeria (2016) all refer to the principle of equality and prohibit discrimination, but family law is not yet in line

International Commitments

STATUS OF RATIFICATION AND RESERVATIONS TO CEDAW

	Algeria	Egypt	Jordan	Libya	Morocco	Tunisia
Ratification	1996	1981	1992	1989	1993	1985
Optional Protocol	1996	1981	1992	2004	2016	2008
Reservations to Art. 2 (application of the convention / general declaration)	Yes ¹	Yes ²	No	Yes ³	Yes ⁴	Yes ⁵
Reservations to Art. 9 (rights to nationality)	Yes (removed in 2008)	Yes (removed in 2008)	Yes (article 9 para. 2)	No	Yes (removed in 2011)	Yes (removed in 2014)
Reservations to Art. 15 (women's equality with men and legal capacity)	Yes (para. 4 on freedom of movement)	No	Yes (removed in 2009)	No	Yes (para. 4 on freedom of movement)	Yes (removed in 2014)
Reservations to Art. 16 (marriage, family relations)	Yes	Yes	Yes, para 1(c)(d)(g) ⁶	Yes, para 1(c) and (d) ⁷	Yes (removed in 2011)	Yes (removed in 2014)

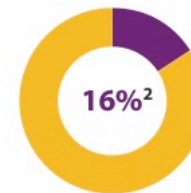
Source: Author's own research based on CEDAW.
Information on all footnotes is available in the on-line publication

Stylized Facts I

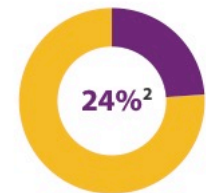
PERCENTAGE OF WOMEN JUDGES



Egypt



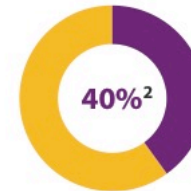
Jordan



Morocco



Tunisia



Libya



OECD
average

Source:

¹ Report by Egyptian government, "Egyptian women vision 2030: Women national empowerment strategy" (available in Arabic)

² Country reports, Women's Economic Empowerment in Selected MENA Countries: The Impact of Legal Frameworks in Algeria, Egypt, Jordan, Libya, Morocco and Tunisia

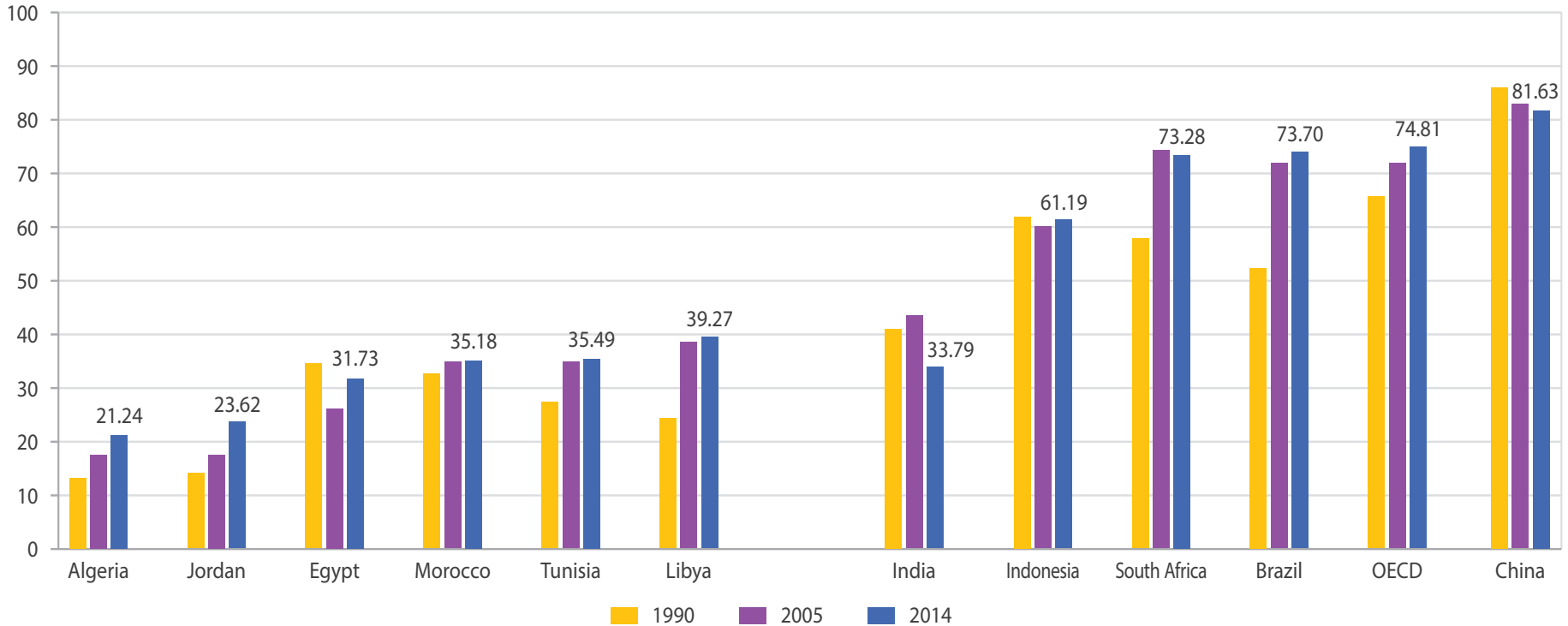
³ OECD (2017), Government at a Glance 2017, OECD Publishing, Paris.

http://dx.doi.org/10.1787/gov_glance-2017-en

Women presence in justice is low in MENA

Stylized Facts II

FEMALE-TO-MALE LABOUR FORCE PARTICIPATION RATIOS
1990-2005-2014 (%)

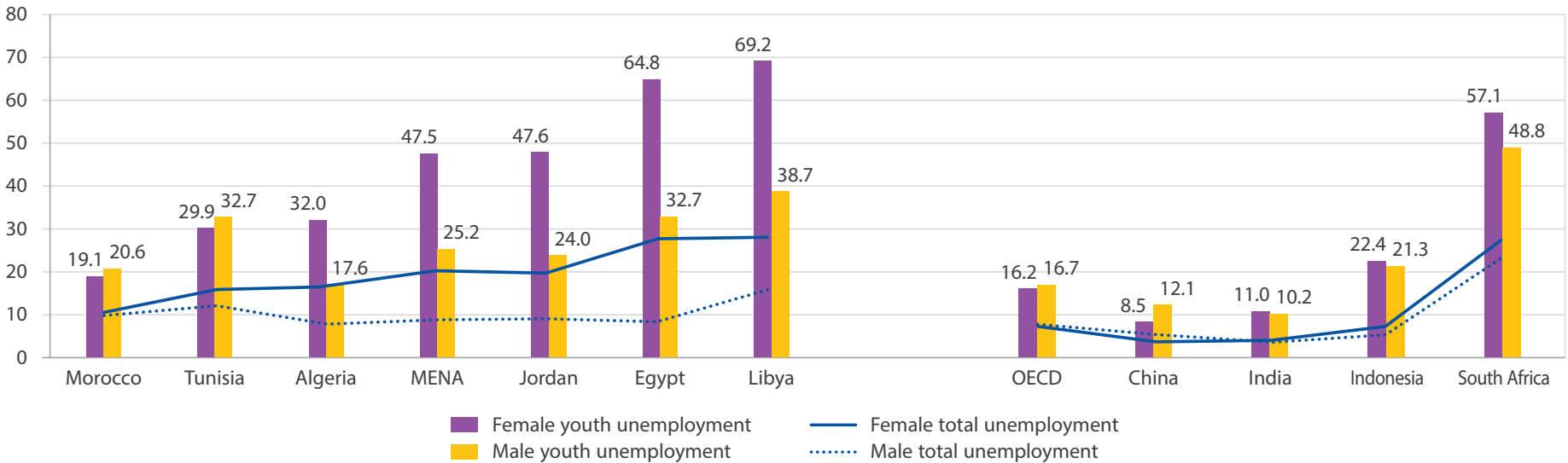


Source: Labour force participation ratio is the proportion of the population aged 15 and older that is economically active: all people who supply labour for the production of goods and services during a specified period. Female-to-male labour force participation measures how many women are active in the labour force for every 100 men.

In MENA Women LFP is the lowest in the world

Stylized Facts III

YOUTH UNEMPLOYMENT AND TOTAL UNEMPLOYMENT RATES BY GENDER (15-24), 2014

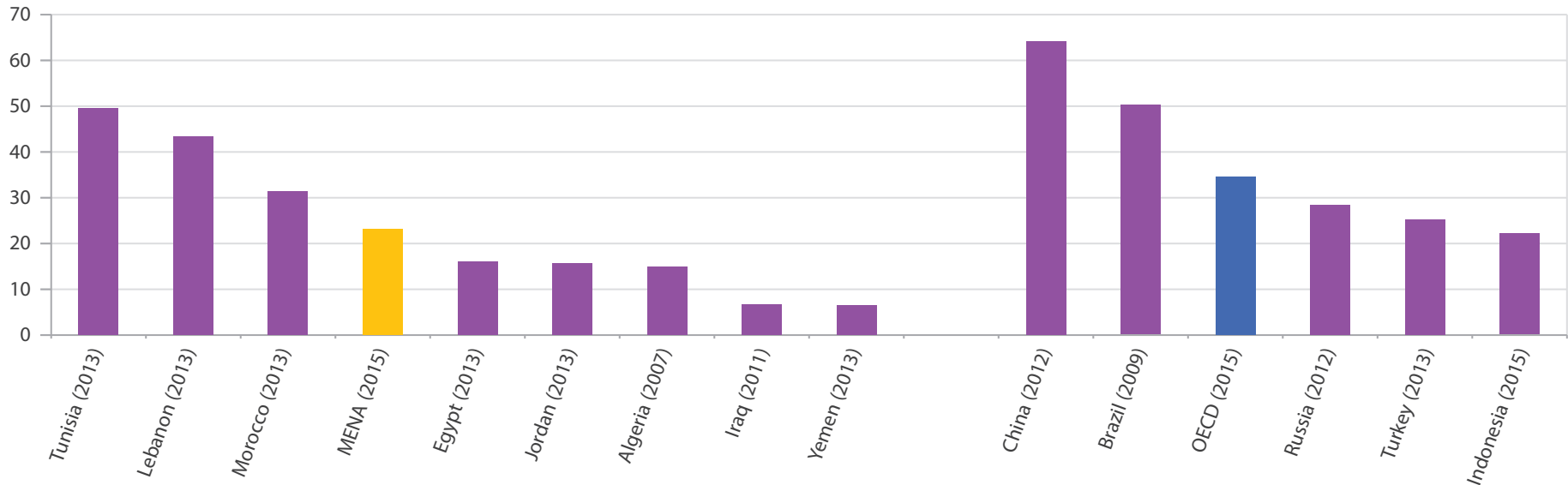


Source: World Bank (2016), World Bank Development Indicators database, <http://databank.worldbank.org/data/reports.aspx?source=world-development-indicators>.

Women's unemployment is the highest in the world in MENA

Stylized Facts IV

FIRMS WITH FEMALE PARTICIPATION IN OWNERSHIP (% OF FIRMS)
2015 (or latest available data)



Source: World Bank (2016), World Bank Development Indicators database, <http://databank.worldbank.org/data/reports.aspx?source=world-development-indicators>.

Note: Firms with female participation in ownership' refers to the percentage of firms with a woman among the principal owners. Data for Libya is not available.

Fewer firms with females in ownership in MENA

Motivation I

- *Growing interest in the gender gap issue*
- *Firm performance gap: Do firms gain from women participation in management positions?*
- *The debate on academic and policy levels have not reached a consensus*
- *This paper attempts to clarify a misconception → the idea that **female managed firms perform worse than male managed firms***

Motivation II

- While most previous papers focus on whether or not there is a female owner (Bardasi et al, 2011; Allison et al, 2015), we argue that the focus should be on the **top manager being a female**
- The decision maker is the manager and hence the responsible for the performance of the firm

Advance of the Results

- It is crucial to distinguish between female management and female ownership
- When the firms are managed by females and there is not female owners, they show a higher average labour productivity and TFP
- But, if females are among the owners and a female is the top manager, then their productivity is in general lower than for other firms

Related Theories

- **What explains the gender gap in firm performance?**
 - **Constrained driven gap view:** females face more constraints than males in the businesses environment of developing countries: Access to credit, legal treatment, other gender barriers
 - **Preference-driven gap:** females might show a preference for activities in services and trade and tend to operate at lower scale → Individual choice, gender segregation

Main Hypothesis

- After controlling for firm size, obstacles and country and sectoral fixed effects:
- **H1:** Differences in productivity by gender should not differ between male and female managers
- **H2:** The results may differ by region of the world due to the persistency of social norms and cultural factors

Literature Review I

- **Sabarwal and Terrell (2008)**: the lower profits of female owned firms (FOFs) can be explained by differences in operation scale
- **Bardasi et al, (2011)**: individual choices would be responsible for the lower rates of female participation and female success
- **Aterido et al (2011)**: female-owned firms on Africa are at least as productive as male-owned firms
- **Allison et al (2015)**: for LA, FOFs *exhibit significantly higher labour productivity* than MOFs, while FOFs and MOFs experience similar sales growth
- **Hallward-Driemeier (2013)** for Sub-Saharan Africa and **Gui-Diby et al. (2017)** for Asia unconditional differences in productivity between male and female entrepreneurs disappear once the analysis controls for size and sector

Literature Review II

- **Islam et al (2018)** found that Female's managed firms have lower productivity than male's ones,
- But, their sample is smaller to ours and they do not use country-time FE. We find no difference when we do not include women owners
- The results reveal a sizable unconditional gap, with labor productivity being approximately 11 percent lower among female- than male-managed firms.
- **Campos and Gassier (2017)** conceptual framework on how gender-specific constraints – including contextual factors (legal discrimination, social norms, etc.), endowments (skills, capital and assets, etc.) and preferences (risk, time, etc.) affect strategic choices (capital and labor inputs, etc.) of male and female entrepreneurs and ultimately outcomes.

Data and Variables

- Newest multi-country version of the WBES released in October 2016
- Questionnaires are based on similar sampling techniques, provide fairly comparable firm-level data
- Six developing regions, namely South Saharan African (SSA), East Asia and Pacific (EAP), Eastern Europe and Central Asia (ECA), Latin America and Caribbean (LAC), Middle East and North Africa (MENA) and South Asian Region (SAR)

Cat	Acronym	Definition	Question	Question num
Gender	Fem	Dummy variable indicating female presence amongst the owners	Amongst the owners of the firm, are there any females?	b4
	Tfem	Dummy variable that takes the value of 1 if the top manager is a female	Is the top manager female?	b7a
	Femmore	Dummy variable that takes the value if 1 if fem_cat>2 (at least 50% are female owners)	Are the owner of the firm: 1:all men, 2:mayority men, 3:mayority women,4:all women,5:equally divided	b4a_cat and own elaboration
	femopc	Percentage of the firm owned by females. This variable is not used in the empirical analysis.	What percentage of the firm is owned by females?	b4a
Total Factor productivity (TFP)	Capital	Net book value of machinery vehicles, and equipment in last fiscal year	Net book value of machinery vehicles, and equipment in last fiscal year	na6 and authors elaboration
	Materials	Total purchases of raw material and intermediate goods (deflated by the production price index (PPI) for manufactures).	Cost of raw materials and intermediate goods used in prod. in last fiscal year	n6a and authors elaboration
	Wages	total labor cost (incl. wages, salaries, bonuses, etc) in last fiscal year (deflated by the production price index (PPI) for manufactures).	Total cost of labor, including wages, salaries and bonuses	n2a authors elaboration
Ownership	Foreign	Dummy variable that takes the value of 1 if the firm is partly owned by a foreigner	Percentage of the firm owned by a foreign owner	b2b and own elaboration
	Owner concentration	Percentage of the firm owned by the main owner	what percentage of this firm does the largest owner(s) own?	b3
	Experience	Number of years of experience of the manager	How many years of experience working in this sector does the Top Manager have?	b7
International Trade	Exporter	Dummy variable that takes value 1 if firm exports in year t	What percent of your establishment's sales were exported directly in current year	Authors elaboration from variables d3b and d3c (direct and indirect export shares)

Stylized Facts I

Share of female entrepreneurs by region and in MENA countries

<u>Region</u>	<u>Owners Female Presence</u>	<u>Top Manager Female</u>	<u>Owners 50% Females</u>	<u>Country</u>	<u>Owners Female Presence</u>	<u>Top Manager Female</u>	<u>Owners 50% Females</u>
SSA	0.29	0.14	0.16	Djibouti 2013	0.06	0.14	0.10
EAP	0.50	0.27	0.24	Egypt 2013	0.08	0.05	0.05
ECA	0.36	0.17	0.17	Iraq 2011	0.07	0.01	-
LAC	0.37	0.16	0.24	Jordan 2013	0.03	0.02	0.03
MENA	0.10	0.04	0.05	Lebanon 2013	0.17	0.05	0.07
SAR	0.16	0.08	0.06	Morocco 2013	0.13	0.05	0.05
HI: OECD	0.36	0.17	0.20	Tunisia 2013	0.37	0.08	0.07
HI: NOCDE	0.36	0.21	0.26	Yemen 2013	0.03	0.01	0.01
Total	0.32	0.16	0.14	Total	0.10	0.04	0.05

Note: Female Presence=1 if at least a female is among the owners, zero otherwise,
 Top Manager Female=1 if the top manager is a female, zero otherwise,
 Owners 50% Females=1 if at least 50% of the owners are females. Source: World Bank Group (2016).

South Saharan African (SSA), East Asia and Pacific (EAP), Eastern Europe and Central Asia (ECA), Latin America and Caribbean (LAC), Middle East and North Africa (MENA) and South Asian Region (SAR)

Stylized Facts II

Female participation by region and firm size

Size Category	Female Top Manager	Owners Female Presence	Gender Diversity	Female Employment
Developing countries				Av. N
small(<20)	17.84%	29.83%	17.08%	3
medium(20-99)	13.26%	32.09%	11.70%	12
large(>100)	12.76%	35.74%	8.47%	137
Overall mean	15.21%	31.71%	13.79%	23
Developed countries				Av. N
small(<20)	24.81%	38.60%	27.37%	4
medium(20-99)	16.46%	33.65%	17.14%	17
large(>100)	11.09%	34.77%	10.08%	217
Overall mean	19.23%	36.11%	21.98%	38
MENA countries				Av. N.
small(<20)	4.46%	6.29%	6.15%	1
medium(20-99)	4.64%	11.74%	4.45%	6
large(>100)	4.02%	20.04%	4.20%	74
Overall mean	4.45%	10.13%	5.22%	10

Methodology

Regression analysis:

- The baseline model investigates gender gaps in performance estimating the model:

$$\text{Perform}_{ickt} = \alpha_0 + \beta_1 \text{FemaleOwner}_{ickt} + \beta_2 \text{FemaleTop}_{ickt} + \beta_3 \text{OFemOwn} * \text{FemTop} + \beta_4 \text{Obstacles}_{ickt} + \beta_5 \text{Firm Size}_{ickt} + \beta_6 \text{FirmAge}_{ickt} + \beta_7 \text{Exporter}_{ickt} + \beta_8 \text{Foreign}_{ickt} + \gamma_k + \delta_{ct} + \varepsilon_{ickt}$$

where: i denotes firm, c country, k sector and t time.

The dependent variable, *Firm Performance* is measured using labour productivity in logs= sales/total number of permanent workers. Also VA per employee and TFP

Obstacles is a vector that includes access to electricity, lack of skills, taxes, corruption, and access to finance.

We include country-year dummies and industry dummies

Main Results

Dep. Var.:	Lab Pro	Lab Pro	Lab Pro	VA	TFP
Ind. VARIABLES					
Female Presence in Ownership	-0.060*** (0.016)	-0.054*** (0.017)	0.010 (0.018)	-0.015 (0.023)	0.015 (0.021)
Female Top Manager		-0.032 (0.021)	0.223*** (0.038)	0.197*** (0.059)	0.120*** (0.044)
Female Owner*Top Manager			-0.381*** (0.045)	-0.362*** (0.066)	-0.176*** (0.052)
Ln number of workers	0.051*** (0.009)	0.051*** (0.009)	0.047*** (0.009)	0.061*** (0.011)	0.455*** (0.015)
Crime	-0.007 (0.007)	-0.008 (0.007)	-0.007 (0.007)	0.004 (0.009)	0.002 (0.007)
Informal competition	-0.019*** (0.006)	-0.019*** (0.006)	-0.019*** (0.006)	-0.013* (0.008)	-0.010* (0.006)
Corruption	0.023*** (0.006)	0.023*** (0.006)	0.023*** (0.006)	0.014** (0.007)	0.008 (0.005)
Access to finance	-0.063*** (0.006)	-0.063*** (0.007)	-0.063*** (0.007)	-0.067*** (0.008)	-0.041*** (0.007)
Ln age	0.065*** (0.011)	0.066*** (0.011)	0.065*** (0.011)	0.076*** (0.014)	0.025*** (0.009)
Ownership concentration	-0.413*** (0.029)	-0.402*** (0.030)	-0.388*** (0.029)	-0.309*** (0.036)	-0.127*** (0.027)
Experience of the manager	0.002** (0.001)	0.001** (0.001)	0.002** (0.001)	-0.001 (0.001)	-0.001 (0.001)
Exporter	0.242*** (0.022)	0.243*** (0.022)	0.241*** (0.022)	0.308*** (0.027)	0.134*** (0.018)
Foreign owned	0.483*** (0.036)	0.479*** (0.036)	0.476*** (0.036)	0.414*** (0.046)	0.205*** (0.033)
Observations	53,826	52,804	52,804	30,180	19,947
Adjusted R-squared	0.766	0.765	0.765	0.776	0.932

Robust standard errors in parentheses cluster by survey weights. *** p<0.01, ** p<0.05, * p<0.1. Country, sector and year dummies are added in all models

Results by Region

Dep. Var: Labour Prod.	(1)	(2)	(3)	(4)	(5)	(6)
Ind. VARIABLES	SSAfrica	EAsiaPacific	EasternCAsia	LatinAmerica	MENA	SouthAsianR
Female Presence in Ownwership	0.099* (0.053)	-0.092* (0.050)	-0.082** (0.035)	0.020 (0.027)	0.226*** (0.077)	0.088** (0.043)
Female Top Manager	0.252** (0.105)	0.345*** (0.097)	-0.023 (0.081)	0.092 (0.068)	-0.048 (0.177)	0.364*** (0.067)
Female Owner*Top Manager	-0.524*** (0.126)	-0.385*** (0.114)	-0.125 (0.091)	-0.341*** (0.078)	0.027 (0.277)	-0.485*** (0.094)
Ln number of workers	0.014 (0.024)	0.028 (0.029)	0.008 (0.013)	0.126*** (0.012)	0.001 (0.025)	0.029 (0.019)
Crime	-0.052*** (0.019)	0.013 (0.021)	-0.003 (0.012)	0.015 (0.010)	0.014 (0.019)	-0.013 (0.026)
Informal competition	-0.053*** (0.017)	0.006 (0.016)	-0.006 (0.010)	-0.051*** (0.009)	0.029* (0.017)	-0.013 (0.014)
Corruption	0.014 (0.017)	0.038** (0.016)	0.022** (0.011)	0.012 (0.010)	-0.013 (0.018)	0.023* (0.013)
Access to finance	-0.039** (0.019)	-0.104*** (0.017)	-0.018* (0.010)	-0.065*** (0.011)	-0.108*** (0.020)	-0.065*** (0.017)
Ln age	0.184*** (0.036)	0.187*** (0.031)	-0.029 (0.022)	0.077*** (0.019)	0.001 (0.030)	0.014 (0.022)
Ownership concentration	-0.492*** (0.114)	-0.518*** (0.083)	-0.132** (0.055)	-0.110** (0.045)	-0.435*** (0.088)	-0.584*** (0.069)
Experience of the manager	0.006* (0.003)	-0.001 (0.002)	-0.001 (0.001)	-0.001 (0.001)	0.003 (0.002)	0.003* (0.002)
Exporter	0.026 (0.062)	0.306*** (0.067)	0.274*** (0.040)	0.258*** (0.034)	0.231*** (0.067)	0.314*** (0.053)
Foreign owned	0.721*** (0.084)	0.306*** (0.086)	0.421*** (0.080)	0.462*** (0.059)	0.175 (0.112)	0.274 (0.197)
Observations	8,580	8,574	10,765	8,506	4,154	12,225
Adjusted R-squared	0.643	0.799	0.773	0.850	0.805	0.136

Results in MENA

Dep. Var: Labour Prod.	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Ind. VARIABLES	Tunisia	Egypt	Jordan	Morocco	Lebanon	Yemen	Djibouti
Female Presence in Ownership	0.181 (0.114)	0.190 (0.144)	0.485** (0.213)	0.880*** (0.293)	0.476 (0.293)	0.508 (1.088)	-1.895** (0.773)
Female Top Manager	0.837*** (0.246)	-0.044 (0.210)	-2.461*** (0.358)	0.760 (0.915)	-0.854** (0.348)	-0.008 (0.433)	-1.751*** (0.464)
Female Presence*Top Manager	-0.348 (0.365)	0.633* (0.364)			0.755* (0.443)		4.201** (1.236)
Ln number of workers	0.003 (0.052)	0.056 (0.052)	0.024 (0.070)	-0.130 (0.091)	0.031 (0.061)	0.240* (0.127)	-0.698*** (0.052)
Crime	-0.073 (0.059)	0.026 (0.032)	-0.085 (0.077)	-0.132 (0.105)	0.028 (0.060)	0.119 (0.099)	-0.063 (0.037)
Informal competition	-0.020 (0.045)	-0.020 (0.030)	-0.003 (0.065)	-0.017 (0.086)	0.042 (0.055)	-0.005 (0.095)	0.118 (0.069)
Corruption	0.056 (0.049)	-0.022 (0.031)	0.010 (0.051)	-0.171 (0.117)	0.011 (0.056)	-0.191 (0.168)	-0.126 (0.097)
Access to finance	-0.127*** (0.037)	-0.112*** (0.031)	-0.057 (0.041)	0.219** (0.093)	-0.026 (0.061)	0.090 (0.098)	0.115 (0.086)
Ln age	0.038 (0.100)	-0.145*** (0.047)	0.161** (0.078)	0.121 (0.164)	0.012 (0.077)	-0.200 (0.179)	0.132 (0.108)
Ownership concentration	0.024 (0.185)	-0.318** (0.127)	-0.477** (0.219)	0.413 (0.507)	-0.489* (0.283)	-2.032*** (0.702)	-1.509*** (0.189)
Experience of the manager	0.005 (0.006)	0.001 (0.004)	-0.012* (0.007)	0.001 (0.013)	-0.001 (0.006)	0.009 (0.020)	0.008 (0.015)
Exporter	0.034 (0.137)	0.387*** (0.109)	0.299** (0.132)	0.332 (0.308)	0.186 (0.141)	0.133 (0.428)	-0.095 (0.377)
Foreign owned	-0.143 (0.228)	0.160 (0.188)	-0.050 (0.261)	0.578* (0.295)	-0.314 (0.659)	0.667 (0.756)	-0.364 (0.556)
Observations	396	1,385	346	203	278	187	155
Adjusted R-squared	0.321	0.085	0.096	0.102	0.097	0.169	0.341

Propensity Score Matching (PSM)

Match treated and untreated observations on the estimated probability of being treated (propensity score).

- Match on the basis of the **propensity score**

$$P(X) = \Pr (d=1|X)$$

- D indicates: Female Manager
- Instead of attempting to create a match for each participant with exactly the same value of X, we match on the probability of participation.

Propensity Score Matching (PSM)

- Estimates the likelihood to receive a treatment of all observations using a logit model and matches each treated observation (female manager, $tfem$) with several untreated observations
- Nearest neighbor with caliper (0.25 of sd of the PS), replacement and common support
- Model based ATT estimate (as above) for matched sample and cluster se

$\text{logit}(tfem_{ic})$

$$= \alpha_i + \beta_l \ln labour_{ic} + \beta_k \ln capital_{ic} + \beta_m \ln materials_{ic}$$

$$+ \sum_k \beta_{ck} \text{constrains}_{kic} + \sum_j \beta_x X_{jic}$$

Results Matched Sample

VARIABLES	(1) labp	(2) VA	(3) ITFP
tfem	0.231*** (0.086)	0.278** (0.114)	0.141*** (0.053)
fem	-0.017 (0.097)	-0.006 (0.132)	0.002 (0.059)
femtfem	-0.269** (0.123)	-0.317* (0.174)	-0.115 (0.078)
Observations	18,663	9,110	5,922
Adjusted R-squared	0.086	0.123	0.901

Clustered Robust standard errors in parentheses

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

Reduction Bias Check

Variable	Unmatched		Mean		bias		T-test	
	Matched	Treated	Control	%	% reduc	t	p,t	
lnl	Unmatched	3.1218	3.3955	-19.9		-18.2	0	
	Matched	3.1219	3.1506	-2.1	89.5	-1.5	0.135	
lage	Unmatched	2.5496	2.6206	-9		-8.14	0	
	Matched	2.5497	2.5489	0.1	98.8	0.07	0.941	
owncon1	Unmatched	0.79294	0.78527	2.9		2.65	0.008	
	Matched	0.79292	0.79612	-1.2	58.3	-0.85	0.394	
exporter	Unmatched	0.21611	0.23272	-4		-3.62	0	
	Matched	0.21603	0.22085	-1.2	71	-0.82	0.41	
foreign1	Unmatched	0.05989	0.07324	-5.8		-5.19	0	
	Matched	0.05989	0.06044	-0.2	95.9	-0.18	0.859	
crime	Unmatched	1.1266	1.1264	0		0.02	0.986	
	Matched	1.1264	1.0991	0.00001	17.18	1.52	0.129	
informal	Unmatched	1.4451	1.4667	-1.6		-1.46	0.144	
	Matched	1.445	1.4339	0.8	48.4	0.58	0.565	
corruption	Unmatched	1.5198	1.7605	-16.5		-15.17	0	
	Matched	1.5196	1.5139	0.4	97.6	0.28	0.779	
accesfinance	Unmatched	1.4306	1.5037	-5.5		-5.1	0	
	Matched	1.4308	1.4267	0.3	94.5	0.22	0.829	
lage	Unmatched	2.5496	2.6206	-9		-8.14	0	
	Matched	2.5497	2.5489	0.1	98.8	0.07	0.941	
owncon1	Unmatched	0.79294	0.78527	2.9		2.65	0.008	
	Matched	0.79292	0.79612	-1.2	58.3	-0.85	0.394	
exper	Unmatched	15.772	17.284	-14.4		-13.01	0	
	Matched	15.773	15.53	2.3	84	1.7	0.088	

Sectors

VARIABLES	(1) labp_manu	(2) va_manu	(3) TFP_manu	(4) labp_serv	(5) va_serv	(6) TFP_serv
tfem	0.330*** (0.115)	0.275** (0.121)	0.131** (0.053)	0.170 (0.127)	0.169 (0.339)	0.192 (0.239)
fem	0.080 (0.132)	-0.012 (0.138)	-0.001 (0.060)	-0.065 (0.135)	-0.022 (0.416)	0.210 (0.333)
femtfem	-0.509*** (0.171)	-0.326* (0.183)	-0.098 (0.080)	-0.085 (0.172)	0.057 (0.539)	-0.448 (0.404)
Observations	9,324	8,454	5,526	9,339	656	396
Adjusted R-squared	0.147	0.132	0.905	0.049	0.072	0.845

Robustness

- Adding the average years of education of the female workers as control, results hold
- Using gender diversity in ownership the results hold (coeff tfem=0.18**/0.22 before)
- Using the percent of females in the management team not enough observations
- Allowing for heterogeneous coefficients by size (next slide)

Heterogeneity by size

Results for matched sample:

VARIABLES	(1) labp_small	(2) labp_medium	(3) labp_large	(4) va_small	(5) va_medium	(6) va_large	(7) TFP_small	(8) TFP_medium	(9) TFP_large
tfem	0.227*** (0.059)	0.210*** (0.063)	0.106 (0.093)	0.199* (0.113)	0.204** (0.081)	0.019 (0.118)	0.218** (0.094)	0.101* (0.060)	-0.008 (0.095)
fem	0.130* (0.068)	0.050 (0.066)	0.142 (0.092)	0.114 (0.097)	-0.016 (0.094)	0.086 (0.124)	0.084 (0.075)	-0.031 (0.069)	0.095 (0.120)
femtfem	-0.496*** (0.085)	-0.429*** (0.089)	-0.263** (0.120)	-0.473*** (0.136)	-0.351*** (0.122)	-0.184 (0.162)	-0.314*** (0.117)	-0.171* (0.091)	-0.151 (0.150)
Observations	9,750	5,913	3,000	3,760	3,286	2,064	2,210	2,202	1,510
Adjusted R-squared	0.793	0.791	0.790	0.812	0.813	0.806	0.923	0.928	0.912

Conclusions

- We depart from the existent literature by using a more comprehensive dataset and the variable *top female manager* as main proxy to measure female participation in management
- We find that when the firms are managed by females and there is not female owners, they show a higher average labour productivity and TFP (small-medium manufacturing firms)
- These results are very heterogeneous among regions and among countries in the MENA region

Further Research

- To consider different legal forms of ownership to see whether the results are driven by single owners or limited liability etc, as suggested by *Diane Olson*.
- Preview: Test for joint significance of the coefficient of tfem and the tfem interaction with the type of ownership, when all the owners are males

Heterogeneity by legal status

what is this firm's current legal status?

Insales	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
-----+-----						
tfem + tfem_pub = 0; Publicly listed company						
	-0.01497	.1161	-0.13	0.897	-.2426	.2126

tfem + tfem_lim = 0; limited liability company						
-	.1306	.0485	2.69	0.007	.03542	.2258

tfem + tfem_sol = 0 sole proprietorship						
	.1134	.0539	2.10	0.036	.0076	.2197

tfem + tfem_part = 0 partnership						
	.2569	.07137	3.60	0.000	.1170	.3968

tfem + tfem_limpar = 0 limited partnership						
	.1069	.0539	1.98	0.047	.0012	.2126

tfem + o.tfem_other = 0 other types of legal property						
	.2591	.0936	2.77	0.006	.0754	.4428

Thanks for your attention

Questions & comments?

imartin@uni-goettingen.de