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Are There Barriers to Funding Female Entrepreneurs in MENA Countries?

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Abstract

Do female entrepreneurs in MENA countries face obstacles in funding their business, either endogenous (self-selection) or exogenous (discrimination)? Literature review provides controversial evidence thereof and, so far, very few papers tackled this funding issue for female entrepreneurs in MENA countries. A pooled sample of 6,253 Micro, Small and Medium sized Enterprises from the 2019 World Bank Enterprise Survey (WBES) including three North African countries (Egypt, Morocco and Tunisia) and three Middle East countries (Jordan, Lebanon and Palestine) documents the financial behaviour of both owners and managers according to gender. Two logistic regression models (marginal effects) address loan demand and loan supply with respect to self-selection vs. discrimination. No self-selection occurs for female owners and managers but there is discrimination for female owners. An estimation of these models on a subsample of Micro, Small and Medium enterprises (MSMEs) provide a robustness test. Sampling biases in the WBES together with the characteristics of female clients of microfinance institutions suggest that micro-entrepreneurs would have faced bank discrimination and self-selection. Hence, public authorities should support pooling loan guarantees in favour of female entrepreneurs, i.e. a positive discrimination.

1. Introduction

The case of Middle East and North Africa (MENA) region is especially interesting, because the pervasive patriarchal pattern hinders the ability of women to own and manage their own businesses (IMAGES, 2017). Noteworthy is that gender gap for access to finance in 2017 is 18 per cent in North Africa, standing as the highest gap worldwide (Demirguc-Kunt et al, 2018). The lack of access to funding from formal financial institutions is one of the major problems confronting women entrepreneurs in MENA countries (AFEM, 2015; ILO, 2016; OIT, 2016). We tackle the finance issue for female entrepreneurs in six MENA countries, a set of resource-poor/labour abundant economies (Gatti et al, 2014), namely three North African countries (Egypt, Morocco and Tunisia) and three Middle East countries (Jordan, Lebanon and Palestine).

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We use a pooled sample from the 2019 World Bank Enterprise Survey (WBES), which includes a subsample of 828 female-owned businesses (13.05%) among 6,253 businesses owned/managed by males and females in 2019. In addition, a subsample of 332 female-managed businesses (5.42%) overlaps to some extent the former female subsample There is little empirical investigation on the topic of female entrepreneurship and, to our best knowledge, almost no paper so far has addressed this funding issue as of these six MENA countries from this WBES data source. Hence, our paper provides some new insights.

Section 1 reviews the literature devoted to discrimination and self-selection; there is little evidence regarding female entrepreneurs and outcomes from the loan funding gender issue proves controversial. Section 2 points out the advantages and setbacks of the 2019 WBES data source as for the six MENA countries, including selection biases with respect to the underweight of micro and small sized businesses and the overweight of the manufacturing industry. It presents descriptive statistics upon the finance issue according to gender ownership and gender management. Section 3 displays logistic models and estimations as regards loan demand and loan supply, according to which there is no self-selection as for female owners, whereas female managers face discrimination. Section 4 includes the microfinance industry, which provides small amount loans to female microenterprises in the six MENA countries. In so doing, microfinance fills the gap for working capital but not for fixed assets.

2. Literature Review

The literature review on female entrepreneurs in the MENA region is quite sparse (Bastian et al, 2018) and only a few qualitative studies (Hattab, 2012; Weeks, 2009) are devoted to comparative analyses.

2.1 Self-Selection on the Borrower's Demand-Side

Female entrepreneurs are supposedly more prone to risk aversion than men are (Watson, 2012), an inhibition resulting from fear of failure (Poggesi et al., 2016). However, the female risk aversion hypothesis proves controversial.

There is scant literature besides game experiments on young students (Borghans et al, 2009) and professional traders (Charness & Gneezy, 2012) pointing out strong or mild female risk aversion, which depends on context. Real-life situations remain little investigated, with the exception of Parrotta & Smith (2013) who find a negative association between female CEO and risk attitudes upon a panel sample of Danish medium sized companies.

Among MENA countries, only the North Africa sub-region is analysed by Morsy et al. (2019) upon a sample of 6,097 registered firms employing at least five employees from several distorted WBES datasets (Egypt, Mauritania, Morocco and Tunisia). A multinomial logistic regression rules out self-selection in response to discriminatory lending, and finds no evidence of gender discrimination. However, an instrumented probit model highlights self-selection, combining low perceived creditworthiness and female risk aversion.

Berguiga & Adair (2021) draw a pooled sample of 3,896 businesses in Egypt, Morocco and Tunisia from the 2013 World Bank Enterprise Survey (WBES), pointing out sample biases and including microenterprises that Morsy et al (2019)

overlooked. Four out of five managers are owners, whereas a relevant distinction between these two sub-categories applies to the remaining share of non-owners managers, a distinction that Morsy et al (2019) do not documented. Main results of two multinomial logistic regressions investigate loan demand and loan granting, with respect to self-selection vs. discrimination. Results show there is neither self-selection nor discrimination for female owners, whereas self-selection affects female managers.

2.2 Discrimination from the Lender's Supply Side

Two theories address discrimination. According to Becker (1957), taste-based discrimination is due to a prejudice towards one group of applicants based on gender and other personal characteristics. Phelps (1972) grounds statistical discrimination upon information asymmetry. Applying these theories to the credit market, lenders reject some loan applicants based on some observed characteristics such as gender, which are supposed to predict their creditworthiness.

Evidence proves controversial. Hereafter, we contend that there is no gender discrimination if banks require women to have a bank account and provide a collateral exactly as they require these lending conditions from men. Discrimination occurs if female entrepreneurs with the same characteristics as their male counterparts are denied a loan when they apply for it.

On the one hand, no discrimination affects female business owners/managers as for developing countries. Such is the outcome from an experiment upon micro-enterprises female owners in Sri Lanka (De Mel et al, 2009). According to Bellucci et al (2010), female owners/entrepreneurs experience tight access to credit in Italy, but do not pay higher interest rates.

Bardasi et al (2011) analyse a sample of more than 20,000 firms from 61 developing countries (Central and Eastern Europe, Latin America and sub-Saharan Africa), based on World Bank surveys from 2005 to 2007. The sample is corrected for endogeneity bias, but not for other selection biases affecting these surveys (Berguiga & Adair, 2019). A multinomial logit model addresses the following situations: a) businesses do not need a loan, b) need a loan but do not apply for it, c) need a loan and apply for it; in the latter case, either the loan application is approved, or it is dismissed. There is no gender discrimination in access to formal funding.

Female entrepreneurs are slightly less likely to be credit constrained as for SMEs in India (Wellalage & Locke, 2017). Firm data from 16 sub-Saharan Africa countries show that female manufacturing entrepreneurs enjoy favoritism (positive discrimination) as for micro and small firms, compared with their male counterparts, whereas the advantage is reversed for medium-sized firms (Hansen & Rand, 2014).

Hewa-Wellalage et al (2022) challenge the assumption of "gender-based discrimination" on the credit market, using a cross-section sample of 8,921 businesses (19 mostly developing countries), among which one out of three is female owned and one out of six is female-managed. Applying an Heckprobit and marginal effects as well as propensity score matching and Blinder-Oaxaca decomposition robustness tests to two datasets (WBES and the COVID-19 follow up surveys), there is no evidence of discrimination. In contrast, micro firms and female entrepreneurs are slightly favoured over larger firms and their male counterparts, suggesting that financial providers hedge risk and prefer more cautious (female) borrowers.

On the other hand, discrimination occurs for female business owners/managers. There is discrimination in a small sample of Canadian firms (Riding & Swift, 1990), as in the US Surveys of Small Business Finances that was investigated over a period of sixteen years (Cole & Mehran, 2009). Women-owned firms in the US pay higher interest rates than male counterparts do and are more likely to put up collateral (Coleman, 2000). Muravyev et al (2009) contend that discrimination on the credit market takes place across both Western and Eastern European firms, wherein female entrepreneurs face higher interest rate or higher requested collateral compared to their male counterparts.

Presbitero et al (2014) use a Fairlie nonlinear decomposition model to test for the presence of a gender gap in access to finance in three Caribbean countries. The outcomes are that female entrepreneurs are less likely than other comparable entrepreneurs to be discouraged borrowers, but they are more likely to be credit rationed.

As for MENA countries from an institutional perspective, the question arises as to whether legislation prohibits gender discrimination in access to credit (Hyland, et al, 2020). There is no prohibition in six MENA countries, except for Morocco (World Bank, 2021).

Gender stereotypes are pervasive in a 2016 survey upon nearly 10,000 people aged 18-59 from Egypt, Lebanon, Morocco and Palestine. Most men believe that women are not fit to manage, should not work outside their home, and that educating boys it more important than educating girls (Images, 2017).

Amara et al (2018) applying logistic regression and propensity score matching upon a cross-section sample of 9,382 individuals, find that female entrepreneurs experience significant gender discrimination in Tunisia.

A non-representative sample of 583 female entrepreneurs was collected by women associations in six MENA countries: Egypt, Jordan, Lebanon, Morocco, Palestine and Tunisia (Carco et al, 2017). Female entrepreneurs, aged 40 on average, are mostly university graduates and enjoy 10 years of experience in their family-based businesses that operates in the services, trade and craft, rather than in the manufacturing industries. The share of non-registered businesses is over one third in Egypt, whereas it is only four to 10 per cent in Morocco and Tunisia. As for access to financing, the difficulty of being a female entrepreneur compared to being a male entrepreneur is lowest in Egypt (19.80%) and Tunisia (25.70%), *versus* highest in Morocco (49.50%) and Palestine (36.40%).

3. The WBES Data Source: Pitfalls, Advantages and Descriptive Statistics

3.1 The WBES Sample: Drawbacks and Advantages

The WBES data source encapsulates three drawbacks. One is the lack of representativeness, which is twofold. First, the share of medium and large businesses in the sample is overweighed, despite the fact that these categories account for less than 10 per cent of all MENA enterprises (Ayadi and Sessa, 2017). Second, despite its minor share in the distribution of industries, the manufacturing industry is overweighed.

Another drawback is the underestimation of the informal sector (ILO, 2013), mostly made of *Micro*-enterprises (less than 10 employees) that are not registered in

order to avoid taxes and/or social security contributions. A quarter of the enterprises employing over 20 workers remain informal (unregistered) during almost four years since their start (Gatti et al, 2014).

The last drawback lies in the various thresholds used to design the categories of enterprises, which do not comply with international standards from the International Labour Office and the UN System of National Accounts. *Micro*-enterprises include 1-4 employees, whereas the standard definition is 1-9 employees. Small businesses comprise 5-19 employees, although the standard definition is 10-49 employees. Medium-sized enterprises encapsulate 20-99 employees, whereas it should be over 50 employees.

Nevertheless, WBES has two main advantages. On the one hand, there is consistent coverage in all countries, including the manufacturing industry and the services (trade, transportation and construction sectors) and excluding agriculture, public utilities, government services, health care and financial services industries. On the other hand, the harmonised questionnaire collects a large amount of data through face-to-face interviews with firm managers and owners. The finance topics–are thoroughly investigated with 26 questions and overall information on loan application by businesses during the survey period is available.

3.2 Descriptive Statistics

There are discrepancies between male and female entrepreneurs regarding industry, ownership, the size of business, age and registration.

In Table 1, females both as owners and managers are less represented than males are, respectively below one out of seven (13.33 %) and slightly above one out of twenty (5.31 %). Female entrepreneurs are more concentrated in Tunisia. Noteworthy is that the overall category of female entrepreneurs deserves to be disentangled into the two subcategories of female owners and female managers we present hereafter. We also compare their profiles with those of their male counterparts.

Female-owned businesses are slightly more involved in the manufacturing industry, whereas female-managed enterprises are more involved in services; both male owners and managers are more involved in the manufacturing industry. Female-owned are operating in shareholding and partnership companies, almost four out of five cases, whereas three out of five female managers are operating in shareholding and partnership companies; the share for both male owners and managers is just slightly over a half. Nearly nine out of ten female owned-companies are mature, a slightly larger share than over eight out of ten for female-managed companies; similarly, the share is close to nine out of ten for both male-owned and managed companies. Almost two thirds of female-owned businesses are micro or small, and the share is up to three out of four female-managed businesses, which is also the share of both male-owned and managed business.

Female owners are slightly less registered (98.8%), whereas female managers are slightly more registered (99.4%) than their male counterparts are; figures in this respect should be considered as irrelevant. Registration is obviously overestimated, due to the underestimation of micro enterprises, whose workforce is most likely to be informal (i.e. lacking social protection). Table 2 reports the distribution of loan application by gender.

Table 1 Distribution of the Pooled Sample by Gender: Owners and Managers

		Gender of the owner			*Gender of the manager*		
		Female N (%)	***Male N (%)***	***Total N***	***Female N (%)***	***Male N (%)***	***Total N***
Country	Egypt	220 (7.19)	2 839 (92.8)	3,059	140 (4.56)	2,929	3,069
	Morocco	170 (15.76)	908 (84.23)	1,078	76 (7.05)	1,001	1,077
	Tunisia	212 (36.11)	375 (63.88)	587	58 (9.44)	556	614
	Lebanon	61 (11.46)	471 (88.53)	532	25 (4.69)	507	532
	Jordan	126 (21.35)	464 (78.64)	590	28 (4.66)	572	600
	Palestine	39 (10.74)	324 (89.25)	363	5 (1.38)	356	361
	Total	828 (13,33)	5,381 (86.66)	6,222	332 (5.3)	5,921	6,253
Gender owner / manager	Female	190 (23.05)	139	329	190 (22.90)	634	824
	Male	634 (10.83)	5,219	5,853	139 (25.94)	5,219	5,358
	Total	824	5,358	6,182	329	5,853	6,182
Ownership	Sole proprietorship	174 (6.27)	2,599	2,773	131 (4.71)	2,646	2,777
	Partnership.	338 (16.96)	1,654	1,992	120 (5.97)	1,889	2,009
	Shareholding	310 (22.03)	1,097	1,407	80 (5.6)	1,347	1,427
	Total	822	5,660	6,482	331 (5.32)	5,882	6,213
Experience of the manager	Beginner: <2 years	12	49	61	7	50	57
	Young: 2-7 years	70	523	593	43	551	594
	Mature: > 8 years	712	4,663	5,375	270	5,146	5,416
	Total	794	5,235	6,029	320	5,747	6,067
Industry	Manufacturing	447 (12.87)	3,024	3,472	158 (4.52)	3,337	3,495
	Retail & services	381 (13.91)	2,367	2,738	174 (6.3)	2,584	2,758
	Total	828	5,381	6,209	332 (5.4)	5,921	6,253
Size	Micro	168 (9,72)	1,559	1,727	95 (5.4)	1 641	1,736
	Small	367 (12,80)	2,499	2,866	153 (5.32)	2,718	2,871
	Medium-sized	116 (18,86)	499	615	37 (5.98)	581	618
	Large	174 (17,82)	802	976	45 (4.48)	958	1,003
	Total	825	5,359	6,184	330 (5.29)	5,898	6,228
Registration	Not registered	11 (26.82)	30 (73.31)	41	2 (4.76)	40 (9.52)	42
	Registered	811 (13,23)	5,316	6,127	327 (5.29)	5,850 (94.70)	6,177
	Total	822	5,376	6,127	329 (5.29)	5,890	6,219
Age	Young	95 (15,57)	652	747	54 (7.21)	694 (92.78)	748
	Mature	706 (15,27)	4,623	5,329	265 (4.93)	5,109 (95.06)	5,374
	Total	801 (15,03)	5,275	6,076	319 (0.53)	5 803	6,122
Total		828 (13,33)	5,381 (86,66)	6,209[a]	332 (5.3)	5,921 (94.69)	6,253

Notes: percentages read on the horizontal axis. [a] n.a. = 75, [b] n.a. = 31.
Source: Authors from WBES 2019.

Table 2 Loan Demand by Gender

Demand		*No loan demand*	*Loan demand to financial institutions**			*Total*
		N (%)	*Granted N (%)*	*Rejected N (%)*	*Total*	
Gender of the owner	Female	626 (83.02)	98 (76.56)**	30 (23.43)	128	754
	Male	4,655 (91.41)	340 (77.8)	97 (22.19)	437	5,092
	Total	5 281[a]	438	127	565[c]	5,846
Gender of the manager	Female	283 (88.71)	28 (77.77)	8 (22.22)	36	319
	Male	5,023 (90.30)	420 (77.92)	119 (22.07)	539	5,562
	Total	5.306[b]	448	127	575[d]	5,881

Notes: *banks and non-banking financial institutions, **% of loan demand, *a* n.a = 32, *b* n.a = 14 *c* n.a = 38, *d* n.a = 73.

Source: Authors from WBES.

Nine out of ten businesses do not apply for credit, while only one out of ten does. The proportion of female owners (16.97%) applying for a loan is twice as high as that of male owners (8.58%), but women enjoy a slightly lower acceptance rate (76.56%) than that of men (77.8%). Conversely, the share of loan applications granted to businesses run by females is almost identical to that of their male counterparts, suggesting that female managers are not discriminated against.

The absence of demand for credit from businesses owned or/and managed by women is explained either by the lack of need for credit, or by self-selection due to various costs and constraints, such as complexity of application procedures, unfavourable interest rates, excessive collateral requirement, concern that application will be rejected and other reasons.

Table 3 records that both female owners (50.55%) and managers (42.6%) are more prone to self-selection than their male counterparts are.

Table 3 Absence of Loan Demand and Self-Selection by Gender

	Gender of the owner			*Gender of the manager*		
	Female N (%)	*Male N (%)*	*Total N (%)*	*Female N (%)*	*Male N (%)*	*Total N (%)*
Need for a loan (self-selection)	319 (50.55)	1,862 (39.89)	2,181 (41.16)	118 (42.60)	2,072 (41.04)	2,190 (41.12)
No need for a loan	312 (49.44)	2,805 (60.10)	3,117 (58.83)	159 (57.4)	2,976 (58.95)	3,135 (58.87)
Total	631 (100.00)	4,667 (100.00)	5,298 (100.00)	277 (100.00)	5,048 (100.00)	5,325 (100.00)
Personal loan	113 (15.18)	347 (6.90)	460 (7.97)	46 (14.42)	418 (7.81)	5,349 (92.01)
No personal loan	631 (84.81)	4,685 (93.10)	5,316 (92.03)	273 (85.57)	5,072 (94.82)	464 (7.99)
Total	744 (100.00)	5,032 (100.00)	5,776 (100.00)	319 (100.00)	5,34 9 (100.00)	5,813 (100.00)

Notes: Percentages read on the vertical axis.

Source: Authors from WBES.

Female owners are more self-selecting than male owners, especially in North Africa, which is not in line with the result of Morsy et al. (2019) as for North Africa. Female managers are more self-selecting than their male counterparts, both in the overall sample and in North Africa. This result is consistent with that of Berguiga and Adair (2021) as for North Africa.

Very few businesses have used personal loans to finance their activities and this use proves higher for female owned and managed businesses than for their male counterparts. Table 4 records the characteristics of successful application (loan granted) according to gender.

Table 4 Characteristics of Successful Loan Application by Gender of the Owner/Manager

		Financial inclusion			*Requested collat.*			*Number of collateral*				*Loan duration*			
		Yes	***No***	***Total***	***Yes***	***No***	***Total***	***None***	***One***	***Two+***	***Total***	***Very ST***	***ST***	***MLT***	***Total***
Gender of the owner	*Female*	97	1	98	69	6	75	2	15	46	61	23	14	12	49
	Male	318	21	339	212	23	235		53	148	201	23	70	84	177
	Total	415	22	437	281	29	310	2	63	194	264	46	14	12	49
Gender of the manager	*Female*	28	-	28	15	3	18	1	4	7	12	3	5	3	11
	Male	397	22	419	272	26	298	1	64	190	255	43	79	95	217
	Total	425	22	447	287	29	316	2	68	197	267	46	84	98	228

Notes: ST= short term; MLT= mid-long term.

Source: Authors' calculations from WBES.

Almost all businesses owned or managed by women enjoy financial inclusion (bank account), which is not the case for their male counterparts, whilst female owners seem to face less favourable financing conditions than their male counterparts do benefit. Three out of four female owners must pledge two assets and repay their credit within a (very) short period of time, whereas three out of four male owners must pledge two assets, but less than three out of five do repay their credit within a (very) short period of time. Conversely, there is mixed evidence regarding female managers: on the one hand, they enjoy better funding conditions than their male counterparts do with respect to collateral, less than three out of five female managers did get credit with at least two guarantees compared to three out of four male-managers. On the other hand, three out of four female managers face (very) short loan repayment duration, compared with less than three out of five male managers. This suggest that both female owned and managed businesses are more prone to finance working capital than fixed assets, but it does not necessarily imply that discrimination occurs. In contrast with 2013 WBES, interest rates that could shed some light prove unfortunately unavailable in 2019 WBES.

4. Logistic Regressions: Results and Robustness

4.1 Model Design

We split the full sample into two sub. The first subset addressing the demand side includes 5,320 businesses that did not apply for a loan in 2018 (Middle East) or 2019 (North Africa), whereas the second subset comprising 648 businesses that did

apply for a loan tackles the supply side. We design two models, which we estimate with logistic regressions (See Box 1).

Box 1 Models

Both demand and supply models apply to the pooled sample including every business i located in country k = [1 (Egypt), 2 (Jordan), 3 (Lebanon), 4 (Morocco), 5 (Palestine) and 6 (Tunisia)].

The model for loan demand is binary and self-selection comes from the absence of application (=0) as follows:

$$\boldsymbol{Self-selection}_{ik} = \begin{cases} \mathbf{0}\ \boldsymbol{if\ credit\ was\ \ needed\ and\ not\ applied\ for\ in}\ \mathbf{2019/2020} \\ \\ \mathbf{1}\ if\ credit\ was\ needed\ and\ \ applied\ for\ in\ 2019/2020 \end{cases}$$

The model for funding supply is binary and discrimination comes from the denial of application (=0) as follows:

$$\boldsymbol{Discrimination}_{ik} = \begin{cases} \mathbf{0}\ \boldsymbol{if\ credit\ was\ applied\ for\ and\ was\ denied} * \boldsymbol{\ in}\ \mathbf{2019/2020} \\ \\ 1\ if\ credit\ was\ applied\ for\ and\ was\ granted\ in\ 2019/2020 \end{cases}$$

Discrimination is conditional to the comparison between female and male entrepreneurs.

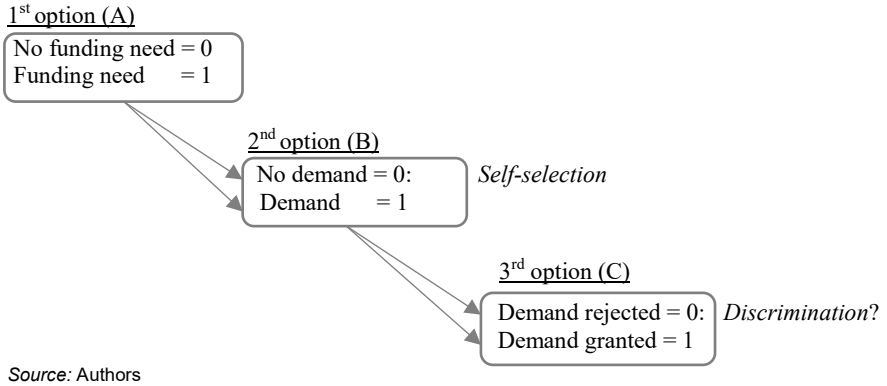
Both models are estimated according to the general equation for the explained variable Y:

$$E(Y = 1/X_{ikj}) = P_{ikj} = \sum_j \alpha_j X_{ikj} + \sum_j \beta_j V_{ikj} + \sum_j б_j W_{ikj} + \sum_j \varphi_j Z_{ikj} + \gamma_j S_{jk} + \varepsilon_j$$

Wherein explanatory variables are the following: X_j= characteristics of the companies; V_j = characteristics of the managers; W_j = financing need; Z_j= characteristics of the loan;S_{jk} = macroeconomic indicators (control variables), and $\varepsilon_j$is the error term.

Figure 1 Decision Tree: The Sequential Model

Sample



Source: Authors

4.2 Self-Selection

In the self-selection model based on the subsample of businesses that did not apply for a loan, the explained variable is the dummy: *No need for a loan and no demand vs. Need for a loan and no demand*. The gap is attributed to self-selection. Explanatory variables are *access to personal loans, business characteristics, managers´ characteristics* and the *macroeconomic environment*. Gender variables relating to business ownership (*Gender* of *owner*) and management (*Gender* of *manager*) were first used as explanatory variables in models 1 and 2, then simultaneously in model 3 and in models 4 and 5. Hence, designing sub-samples of women and men enables to highlight the determinants of the probability of self-selection according to gender. Eventually, these different models ae estimated on a sub-sample of Micro, Small and Medium sized enterprises (MSMEs) in order to check the robustness of the results.

Table 5 displays the self-selection model. According to models 1, 2 and 3, *Personal loan*, *Size* (*Micro, Small and Medium*), *Manager experience*, *Domestic credit* and *Trade* are significant and positive, while *Ownership* and other macroeconomic indicators (*Inflation, GDP per capita* and *Regulatory Quality*) are significant and negative.

Gender ownership and *Gender management* are insignificant: there is no relationship between gender (owners and managers) and self-selection; and women are no more prone to self-selection men are.

However, there are differences in the determinants self-selection according to the gender of owners and managers (models 4 and 5). Male owners and managers have the same determinants (except *Ownership -Shareholding-* and *manager experience*) that the full sample (models 1, 2 and 3), while the probability of self-selection of female owners and managers declines whenever their companies operate in the manufacturing industry, adopt the shareholding structure and are financially included.

The macroeconomic environment, in particular the *Regulatory quality* and *Trade* openness, has an impact on the self-selection behaviour of men and women.

Self-selection increases with trade openness but drops when the government implements sound regulations that enhance private sector development.

Size (*Micro Small and Medium*) has a positive impact upon self-selection only for male owners and managers, whereas there is no evidence of self-selection affecting female owners and managers in the six MENA countries.

In the self-selection models as for MSME, gender variables remain insignificant, and there is still no self-selection for female owners or managers.

In contrast with the literature mentioned below, this intriguing observation suggests that female entrepreneurs are less subject to factors (risks aversion, fear of failure or else) driving self-selection than their male counterparts are. Although it may be due to sample selection bias, explanation falls a little short.

This result contradicts that of Morsy et al. (2019) and Berguiga & Adair (2021) stating that female managers are more prone to self-selection than their male counterparts are over a different period (2012-2013). *Age, Ownership* (*Shareholding*) and *Manager experience* for males gain significance, whereas *Industry, Ownership (Shareholding), Financial inclusion,* and *Regulatory quality* lose significance for female managers. Conversely, the *personal loan* variable becomes significant for female managers.

4.3 Discrimination

Another logistic regression was estimated on a subsample of 648 firms that applied for a loan in 2019 and 2020 in order to capture discrimination. The explained variable is binary: loan request granted vs. loan request rejected. The gender gap in unmet demand is attributed to discrimination. Noteworthy is that the size of the sample of females vs. males is quite small. *Gender of the owner* and *gender of the manager* are used as explanatory variables, respectively in model 1 and model 2, and simultaneously in model 3. These models are estimated on a subsample of MSMEs to check their robustness.

According to Table 6, *Gender ownership* is significant (model 1 and model 3), being a female owner increases the likelihood of credit rejection (over 8%) compared with their male counterparts. Conversely, female-managed companies do not experience a higher probability of rejection than their male counterparts do.

There is no evidence of discrimination on the credit market against female managers in the six MENA countries. This outcome is consistent with that of Morsy et al (2019) and Berguiga & Adair (2021), who find no statistical evidence of discrimination against female managers on the credit market in North Africa.

Banking variables, requested *Collateral* and *Financial inclusion* prove also non- significant.

In the discrimination models applied to MSMEs, *Gender of ownership* remains significant and female managers face no discrimination from financial institutions. Hence, the robustness check MSMEs vs. full sample is relevant.

Table 5 Estimation of the Self-Selection Model: Marginal Effects

Variables	*(1) Full sample*	*(2) Full sample*	*(3) Full sample*	*(4) Gender ownership Full sample*		*(5) Gender manager Full sample*		*(1) MSME sample*	*(2) MSME sample*	*(3) MSME sample*	*(4) Gender ownership MSME sample*		*(5) Gender manager MSME sample*	
				Female	*Male*	*Female*	*Male*				*Female*	*Male*	*Female*	*Male*
Personal loan	0.1642***	0.1672***	0.1636***	0.0738	0.1934***	0.0738	0.1934***	0.1695***	0.1721***	0.1689***	0.0734	0.2010***	0.2221*	0.1687***
(ref.: *no personal loan*)	(4.7237)	(4.8393)	(4.7070)	(1.1061)	(4.7170)	(1.1061)	(4.7170)	(4.8522)	(4.9602)	(4.8355)	(1.1040)	(4.8694)	(1.8868)	(4.6106)
Size:*Micro*	0.1756***	0.1774***	0.1766***	0.0697	0.2027***	0.0697	0.2027***	0.1262***	0.1300***	0.1272***	0.0741	0.1378***	0.1793	0.1278***
(ref.: *Large*)	(5.0088)	(5.0812)	(5.0355)	(0.8133)	(5.2407)	(0.8133)	(5.2407)	(4.1429)	(4.2924)	(4.1721)	(1.0090)	(4.1154)	(1.4213)	(4.0986)
Size: *Small*	0.1472***	0.1470***	0.1470***	0.0455	0.1713***	0.0455	0.1713***	0.0992***	0.1009***	0.0990***	0.0497	0.1082***	0.1299	0.1016***
(ref.: *Large*)	(4.7638)	(4.7743)	(4.7579)	(0.6207)	(4.9723)	(0.6207)	(4.9723)	(3.8388)	(3.9268)	(3.8308)	(0.8255)	(3.7678)	(1.2298)	(3.8294)
Size: *Medium*	0.1124***	0.1070***	0.1124***	-0.0095	0.1483***	-0.0095	0.1483***							
(ref.: *Large*)	(2.7628)	(2.6511)	(2.7619)	(-0.1097)	(3.2279)	(-0.1097)	(3.2279)							
Industry: *Manufactur.*	-0.0716***	-0.0708***	-0.0713***	-0.1010*	-0.0643***	-0.1010*	-0.0643***	-0.0732***	-0.0723***	-0.0729***	-0.1006*	-0.0658***	0.0776	-0.0814***
(ref.: *Retail & services*)	(-3.4027)	(-3.3666)	(-3.3853)	(-1.9105)	(-2.8143)	(-1.9105)	(-2.8143)	(-3.4757)	(-3.4321)	(-3.4583)	(-1.9109)	(-2.8673)	(0.7760)	(-3.7840)
Age: *Mature*	0.0611	0.0605	0.0622	0.0840	0.0567	0.0840	0.0567	0.0598	0.0595	0.0610	0.0841	0.0552	-0.0949	0.0798*
(ref.: *Start-up + young*)	(1.6104)	(1.5947)	(1.6394)	(1.0091)	(1.3136)	(1.0091)	(1.3136)	(1.5684)	(1.5595)	(1.5979)	(1.0114)	(1.2733)	(-0.8300)	(1.9492)
Ownership: *Sharehold.*	-0.0444*	-0.0408	-0.0436*	-0.1205*	-0.0280	-0.1205*	-0.0280	-0.0462*	-0.0428*	-0.0454*	-0.1206*	-0.0314	0.0061	-0.0464*
(ref.: *Sole proprietorship*)	(-1.7399)	(-1.6182)	(-1.7062)	(-1.6989)	(-1.0193)	(-1.6989)	(-1.0193)	(-1.8078)	(-1.6926)	(-1.7738)	(-1.7010)	(-1.1399)	(0.0605)	(-1.7759)
Ownership: *Sharehold.*	-0.0688**	-0.0630**	-0.0679**	-0.1004	-0.0648**	-0.1004	-0.0648**	-0.0736***	-0.0676**	-0.0726**	-0.0999	-0.0705**	0.0587	-0.0733**
(ref.: *Sole proprietorship*)	(-2.4383)	(-2.2688)	(-2.3981)	(-1.4412)	(-2.0691)	(-1.4412)	(-2.0691)	(-2.6085)	(-2.4384)	(-2.5649)	(-1.4322)	(-2.2528)	(0.5002)	(-2.5644)
Financial inclusion	-0.0225	-0.0217	-0.0213	-0.1444*	-0.0141	-0.1444*	-0.0141	-0.0238	-0.0226	-0.0226	-0.1445*	-0.0161	0.0168	-0.0244
(ref.: *Excluded*)	(-0.8769)	(-0.8429)	(-0.8292)	(-1.9184)	(-0.5117)	(-1.9184)	(-0.5117)	(-0.9248)	(-0.8775)	(-0.8767)	(-1.9198)	(-0.5838)	(0.1599)	(-0.9184)
Gender ownership: *Female*	0.0342		0.0290					0.0352		0.0300				
(ref.: *Male*)	(1.2092)		(0.9556)					(1.2491)		(0.9891)				
Gender management: *Female*		0.0397	0.0251						0.0411	0.0257				
(ref.: *Male*)		(0.9179)	(0.5392)						(0.9538)	(0.5556)				
Manager experience: *Young*	0.0718**	0.0713**	0.0707**	0.1067	0.0584	0.1067	0.0584	0.0719**	0.0714**	0.0709**	0.1071	0.0601	-0.0486	0.0876**
(ref.: *Mature*)	(2.1465)	(2.1232)	(2.1096)	(1.3733)	(1.5563)	(1.3733)	(1.5563)	(2.1512)	(2.1295)	(2.1150)	(1.3816)	(1.6059)	(-0.4681)	(2.4876)
Sales Turnover	-0.0028	-0.0028	-0.0028	-0.0065	-0.0025	0.0069	-0.0041	-0.0027	-0.0027	-0.0027	-0.0065	-0.0023	0.0049	-0.0041
	(-0.5844)	(-0.5733)	(-0.5828)	(-0.5111)	(-0.4711)	(0.3128)	(-0.8201)	(-0.5702)	(-0.5678)	(-0.5686)	(-0.5115)	(-0.4452)	(0.2226)	(-0.8357)
Inflation	-0.0382*	-0.0380*	-0.0384*	-0.1018	-0.0290	0.0200	-0.0372*	-0.0364*	-0.0363*	-0.0365*	-0.1018	-0.0262	0.0198	-0.0352*
	(-1.8559)	(-1.8473)	(-1.8578)	(-1.4115)	(-1.3762)	(0.4071)	(-1.7897)	(-1.7811)	(-1.7740)	(-1.7830)	(-1.4110)	(-1.2532)	(0.3966)	(-1.7055)
GDP per capita	-0.0000*	-0.0000*	-0.0000*	0.0000	-0.0000***	-0.0000	-0.0000*	-0.0000*	-0.0000*	-0.0000*	0.0000	-0.0000**	-0.0000	-0.0000*
	(-1.7681)	(-1.7343)	(-1.7442)	(0.9579)	(-2.5953)	(-0.5381)	(-1.8837)	(-1.7441)	(-1.7053)	(-1.7196)	(0.9554)	(-2.5751)	(-0.7608)	(-1.8689)
Regulatory quality	-0.0169***	-0.0169***	-0.0168***	-0.0199*	-0.0172***	-0.0030	-0.0171***	-0.0167***	-0.0166***	-0.0166***	-0.0199*	-0.0168***	-0.0036	-0.0168***
	(-5.7021)	(-5.6754)	(-5.6610)	(-1.8372)	(-5.6158)	(-0.3193)	(-5.7119)	(-5.6256)	(-5.6008)	(-5.5840)	(-1.8380)	(-5.5041)	(-0.3749)	(-5.6326)
Domestic credit	-0.0012	-0.0012	-0.0012	-0.0064	-0.0003	0.0044	-0.0010	-0.0010	-0.0011	-0.0011	-0.0065	-0.0001	0.0049	-0.0008
	(-0.6051)	(-0.6234)	(-0.6130)	(-1.0155)	(-0.1566)	(0.7009)	(-0.5030)	(-0.5433)	(-0.5648)	(-0.5514)	(-1.0169)	(-0.0711)	(0.7562)	(-0.4243)
Trade	0.0101***	0.0102***	0.0101***	0.0178***	0.0090***	0.0108**	0.0097***	0.0101***	0.0102***	0.0100***	0.0178***	0.0089***	0.0103*	0.0096***
	(4.9765)	(5.0340)	(4.9640)	(2.6396)	(4.2235)	(2.0613)	(4.6933)	(4.9676)	(5.0298)	(4.9547)	(2.6378)	(4.2089)	(1.9412)	(4.6783)
Observations	2,092	2,102	2,090	356	1,736	124	1,978	2,092	2,102	2,090	356	1,736	124	1,978
Log Likelihood	-1288.908	-1295.749	-1288.058	-220.74	-1058.655	-72.091	-1215.77	-1292.649	-1299.192	-1291.796	-220.730	-1063.787	-72.84	-1220.267
LR statistic	222.74	222.09	222.4	36.99	190.34	26.8	206.78	214.34	214.18	213.88	36.49	178.44	24.26	196.55
Mc Fadden R2	0.0925	0.0920	0.0924	0.1035	0.0962	0.1598	0.0914	0.0899	0.0896	0.0898	0.1034	0.0918	0.1552	0.0881
Predicted cases	65.77	65.84	65.84	64.98	66.88	69.35	66.08	66.68	66.46	66.84	65.45	66.82	67.74	67.04

Note: Robust z-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1.
Source: Authors

Table 6 Estimation of the Discrimination Model: Marginal Effects

Variables	*(1)* *Gender ownership*	*(2)* *Gender manager*	*(3)* *Gender ownership + Gender manager*	*(1)* *Gender ownership*	*(2)* *Gender manager*	*(3)* *Gender ownership + Gender manager*
	Full sample			*MSMEs*		
Collateral: Requested	0.0304	0.0304	0.0304	0.0289	0.0273	0.0288
(ref.: non requested)	(0.4108)	(0.3875)	(0.4103)	(0.3947)	(0.3706)	(0.3917)
Gender Ownership: Female	0.0971***		0.0978***	0.0942***		0.0971***
(ref.: Male)	(2.9271)		(2.9609)	(2.8285)		(2.8537)
Gender Manager: Female		0.0580	-0.0019		0.0529	-0.0073
(ref.: Male)		(1.2478)	(-0.0549)		(1.1910)	(-0.1970)
Financial inclusion	-0.0826	-0.0805	-0.0826	-0.0846	-0.0855	-0.0844
(ref.: Excluded)	(-1.0946)	(-1.0875)	(-1.0966)	(-1.0681)	(-1.1409)	(-1.0723)
Loan purpose: Working	0.0403	0.0269	0.0404	0.0418	0.0261	0.0422
capital or fixed assets	(0.8231)	(0.5767)	(0.8254)	(0.8589)	(0.5690)	(0.8697)
***Size**: Micro*	0.0842	0.0633	0.0842	0.0475	0.0272	0.0480
(ref.: Large)	(1.5007)	(1.0585)	(1.5061)	(0.9621)	(0.6004)	(0.9714)
***Size**: Small*	0.0577	0.0539	0.0572	0.0215	0.0163	0.0205
(ref.: Large)	(1.2439)	(1.0550)	(1.3110)	(0.6324)	(0.4619)	(0.6134)
***Size**: Medium*	0.0564	0.0566	0.0562			
(ref.: Large)	(1.1127)	(1.1109)	(1.1390)			
***Industry**: Manufacturing*	0.0625	0.0338	0.0626	0.0589	0.0300	0.0597
(ref.: Retail & services)	(1.3893)	(0.7388)	(1.3856)	(1.4246)	(0.6775)	(1.4412)
***Age**: Mature*	-0.0811	-0.0512	-0.0816	-0.0800	-0.0531	-0.0817
(ref.: Start-up + young)	(-1.4647)	(-0.9073)	(-1.4705)	(-1.4087)	(-0.9153)	(-1.4349)
***Ownership**: Shareholding.*	0.0319	0.0357	0.0318	0.0372	0.0411	0.0365
(ref.: Sole proprietor)	(0.9056)	(0.9703)	(0.8910)	(1.0352)	(1.0938)	(0.9717)
***Ownership**: Partnership*	-0.0726	-0.0341	-0.0731	-0.0709	-0.0377	-0.0728
(ref.: Sole proprietor)	(-1.4182)	(-0.7499)	(-1.4325)	(-1.4398)	(-0.8715)	(-1.4773)
Sales Turnover	-0.0105	-0.0070	-0.0106	-0.0104	-0.0072	-0.0107
	(-1.3460)	(-1.0090)	(-1.3097)	(-1.3031)	(-1.0652)	(-1.2863)
***Manager experience**: Young +Beginner*	-0.0339	-0.0372	-0.0341	-0.0329	-0.0361	-0.0334
(ref : Mature)	(-0.5029)	(-0.5229)	(-0.5037)	(-0.4884)	(-0.5142)	(-0.4960)
Inflation	0.0949	0.1179	0.0947	0.0621	0.0939	0.0621
	(0.5065)	(0.6413)	(0.5069)	(0.7011)	(0.5726)	(0.7076)
GDP per capita	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000
	(-0.2713)	(-0.3654)	(-0.2714)	(-0.1480)	(-0.2584)	(-0.1543)
Regulatory Quality	0.0161	0.0210	0.0161	0.0113	0.0171	0.0111
	(0.5657)	(0.7413)	(0.5665)	(0.8642)	(0.6804)	(0.8722)
Domestic credit	0.0092	0.0113	0.0092	0.0056	0.0087	0.0056
	(0.4483)	(0.5636)	(0.4486)	(0.5570)	(0.4847)	(0.5625)
Trade	-0.0089	-0.0100	-0.0089	-0.0061	-0.0078	-0.0061
	(-0.5656)	(-0.6479)	(-0.5658)	(-0.7810)	(-0.5704)	(-0.7856)
Observations	240	244	240	240	244	240
Log Likelihood	-37.9161	-410.24	-37.9156	-38.468	-41.58	-38.4566
LR statistic	67.02	58.05	68.41	71.90	58.98	72.79
Mc Fadden R2	0.2895	0.2347	0.2895	02792	0.2243	0.2794
Predicted cases	95.42	94.26	0.2895	95.00	94.26	95.00

Notes: Robust z-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Source: Authors.

5. Enlarging the Picture: the Informal Sector and Funding from the Microfinance Industry

Aforementioned results from WBES suggesting the absence of discrimination and some self- selection for female managers prove inconsistent with several more qualitative surveys, though based upon smaller samples. Over a quarter of the businesses among 400 female entrepreneurs in Morocco (AFEM, 2015) faced difficult access to finance. Less than one out of six among 200 female micro-entrepreneurs in Egypt (ILO, 2016) applied for a loan but less than half was granted, female business owners claiming that lending conditions were too restrictive and interest rates too high. Access to finance was the major obstacle as for seven out of ten businesses in a sample of 201 female entrepreneurs in Tunisia (OIT, 2016).

Banks loans do bear an interest rate and require a collateral and the share of loans increases with the size of businesses (Rocha et al, 2011), whereas loans from Microfinance Institutions (MFIs) charge an interest rate but do not usually require a collateral and fund especially micro-enterprises.

Microenterprises prove underrepresented in the WBES and this is a serious bias for several reasons. First, because these businesses are the most widespread and more prone to be informal, the self-employed and micro-enterprises account for more than 50 per cent of employment in the manufacturing industry, and informal employment accounts for more than 60 per cent of overall employment (ILO, 2019). Second, they are facing the most difficult access to finance (Kushnir et al, 2010) and they include a significant share of female entrepreneurs (ILO, 2018). The WBES overlooks the role of microfinance that is included in Non-Banking Financial Institutions, a puzzling result in as much as the *raison d'être* of the microfinance industry is to provide funding to Micro and Small enterprises, most of which are informal, being not registered with a national government authority and without bookkeeping (ILO, 2013). For instance, almost one out of six informal micro-enterprises in Morocco enjoyed a microcredit, whereas one out of 20 was granted a bank loan (HCP, 2016).

Hence, funding from the microfinance industry displays a better picture than that of WBES.

Table 7 reports the key figures of the microfinance industry, namely 20 MENA MicroFinance Institutions (henceforth MFIs) with the most complete client data that we selected from the MIX database. Among active borrowers (NAB), three out of five are females and over nine out of ten are MSMEs. In the first place, MFIs grant micro-credit to *Micro*-enterprises, a share above eight out of ten, whereas SMEs is only one out of ten. Over two out of five businesses are granted loans according to the joint liability mechanism, suggesting they lack collateral. Average loan balance per borrower in MENA is weak, with the exception of Palestine standing above average. In contrast, the average lending rate is high, within a range of 25-36 percent, although borrowers payback. In this respect, MSMEs can afford funding working capital rather than fixed assets.

Table 7 MFIs in the Selected MENA Countries (2017)

Country	*MFIs*	*NAB * (1,000)*	*Average loan balance / GNI per capita***	*Rural borrowers (%)*	*Female borrowers (%)*	*Solidarity groups (% of loans)*	*Number of loans outstanding*			*Lending rate (%)*	*PAR>30 ****	*Risk coverage (%)*
							MSMEs	*Micro*	*SMEs*			
Egypt	5	911,7	0.0469	515,5 (56.54)	*67*	399,571 *(43.82)*	907,276 *(99.5)*	813,843	93,433	34.6	0.6	408.1
Jordan	4	246,6	0.1403	106,3 (43.10)	*88*	151.347 (61.37)	201,300 *(81.63)*	200,544	0,755	32.5	1.6	210.6
Lebanon	1	72,8	0.1003	32,0 (43.95)	57	15.594 (21.42)	72,802 *(100)*	72,468	0,334	30.3	6.7	398.8
Morocco	5	519,1	0.1817	227,0 (43.72)	46	98.831 (19.03)	386,288 (74.41)	386,288	0	26.2	6.1	61.9
Palestine	4	73,3	0.9228	34,7 (47.33)	33	0	31,084 (42.40)	29,756	1,328	14.3	5.1	78.0
Tunisia	1	329,5	0.1414	128 (38.88)	61	0	266,646 *(80.92)*	266,646	0	26.2	0.8	176.3
Total	20	1,823.5		1,043.5 (57.22)	1,063.294 (58.31)	665.343 (36.48)	1,865.402 (80.55)	1,769.545 (94.86)	97,178			

Notes: * Number of Active Borrowers. ** A close proxy to GDP per capita. *** Portfolio At Risk >30 days. Figures in italics are above average.

Source: MIX (2017), WGI (2017).

Agier & Szafarz (2013) do not detect discrimination in female access to credit from a Brazilian MFI. However, they observe that largest female projects face the highest penalty, thereby confirming that microcredit is not the best vehicle for funding capital investment. These results are consistent with observations from MENA MFIs, as well as from micro-enterprises in Morocco (HCP, 2016). We assume that female active borrowers from MENA MFIs were either self-selecting and/or discriminated by formal finance vs. they simply prefer microfinance. Such assumptions are worth a test that goes beyond the scope of this paper.

6. Discussion and Conclusions

The working hypothesis is that there is a gender gap between loan demand from businesses and loan supply from financial institutions in the six selected MENA countries. On the demand side, such a gap could be driven by endogenous self-selection behaviour of female entrepreneurs due to risk aversion from the borrower. On the supply side, discrimination of financial institutions against female entrepreneurs would be grounded upon risk aversion from the lender.

A logistic regression model (marginal effects) was estimated on a subsample of 5,320 businesses that did not apply for a loan and did test self-selection behaviour with respect to gender. The results show that the factors driving entrepreneurs to self-selection are the *Size* of businesses (*Micro, Small and Medium*), *Industry, Manager experience, Ownership,* as well as the use of *Personal loans* and the macroeconomic environment. It turns out that female owners and managers are no more prone to self-selection than their male counterparts are.

A logistic regression model (marginal effects) was estimated on a subsample of 648 businesses that applied for a loan in 2018 or 2019, addressing discrimination from financial institutions.

According to the results, there is discrimination against female owners but not female managers. However, bank lending variables such as requested *Collateral* and *Financial inclusion* are non-significant.

Estimating these two logistic regression models on a subsample of MSMEs in the six MENA countries corroborates the robustness of the results.

Self-selection behaviour on the demand side does not come from discrimination on the supply side. This result confirms that of Morsy et al (2019) and Berguiga and Adair (2021), who find that neither self-selection nor discrimination affects female owners compared with their male counterparts, whereas female managers do self-select themselves in North Africa as of 2013.

Our results suggest that behaviour may have changed over time compared to the findings of Berguiga & Adair (2021).

There is also credit market segmentation as suggested by the obvious mismatch between demand from MSMEs addressing NBFIs (including microfinance), which proves quite small in the WBES sample, and the large loan supply provided by MFIs to *Micro*-enterprises according to the MIX. One may think that the micro finance industry, which is pro-female borrower-oriented helps overcome both self-selection and discrimination.

Admittedly, there are shortcomings in our study, which leave room enough for extended research. In so far we used a cross-section analysis; we could not discern a

trend that would require panel data. In this respect, investigating recent surveys (WBES, 2020 and 2021; OAMDI Covid-19 Monitor) in the MENA region would enlarge the overall sample and measure the evolution of the gender gap over time. Adjustment of the supply and demand for funding calls for a better sampling including both Microenterprises and microfinance institutions. On the demand side, self-selection from MSMEs that refrain from applying for bank credit calls for an in-depth analysis of the role of the microfinance industry. At last, the issue of informality should be addressed, in as much as many Micro and Small enterprises are informal business entities without registration or/and social protection.

Our findings have important policy implications for closing the gender gap in accessing finance. One way to increase women's demand for financial services is to introduce financial products to meet their needs (e.g., loan guarantees scheme, social protection basic coverage). Governments can help develop these new products by strengthening the microfinance industry with a favourable regulatory and institutional framework.

APPENDIX

Table A1 Dictionary of Variables

Name		*Type*	*Definition*	*Units*	*Source*
Gender	Gender ownership	Discrete	Female = 1 Male = 2	Binary (1, 2)	WBES Calculated
	Gender Top manager	Discrete	Male = 1 Female = 2	Binary (1, 2)	WBES
Other characteristics of the firm	Industry	Discrete	Manufacturing = 1 Retail and services = 2	Binary (1, 2)	WBES Calculated
	Size	Discrete	Full-time permanent staff Micro: 1-9 employees = 1 Small:10-49employees= 2 Medium: 50-99 employees = 3 Large: 100 + employees = 4	Ordinal (1, 2, 3 and 4)	WBES Calculated
	Age	Discrete	Number of years Start-up + young <8 years = 1 Mature >=8 years = 2	Binary (1, 2)	WBES Calculated
	Ownership	Discrete	Sole proprietorship = 1 Partnership = 2 Shareholding = 3	Ordinal (1, 2, and 3)	WBES Calculated
	Financial inclusion	Discrete	*Excluded* (no bank account) = *0* *Included* (bank account) = *1*	Dummy (0,1)	WBES
	Sales Turnover	Continuous	Ln(Sales turnover) as of 2019	Currency unit	WBES Calculated
Characteristics of the manager	Manager experience	Discrete	Beginner:<2 years = 1 Young: 2-7 years = 2 mature: >= 8 years = 3	Ordinal (1, 2, and 3)	WBES Calculated
Financing need of the firm	Personal loans	Discrete	No personal loans =0 Personal loans used to finance business activities =1	Dummy (0, 1)	WBES
	Loan purpose	Discrete	Working capital or fixed assets = 1 Working capital + fixed assets = 2	Binary (1,2)	WBES Calculated
	Collateral	Discrete	No collateral requested = 0 Collateral requested = 1	Dummy (0, 1)	WBES
	Loan duration	Continuous	Duration of the loan in months Very short term:< 6 months = 1 Short term:6 -24 months = 2 Mid-long term: >24 months= 3	Ordinal (1, 2, 3)	WBES Calculated
Macroeconomic indicators	Inflation	Continuous	Rate of inflation	Percentage	WDI
	GDP per capita	Continuous	GDP per capita	$ billion	WDI
	Trade	Continuous	Trade (Exports+Imports)	Percentage	WDI
	Domestic credit	Continuous	Domestic credit	Percentage	WDI
	Regulatory Quality	Continuous	Regulatory Quality (Rank)	Percentage	WGI

Source: Authors from World Bank Enterprises Surveys (WBES, 2013), World Development Indicators (WDI) and World Governance Indicators (WGI).

Table A2 Macro Indicators in MENA Countries (% as of 2020)

Country	*GDP per capita†*	*Inflation*	*Trade††*	*Domestic credit††*	*Regulatory Quality*
Egypt	12261,181	9.469	43.24	27.1	25.48
Jordan	9,469	0.761	85.69	83.1	60.10
Lebanon †††	15166,979	3.005	62.98	106.6	28.84
Morocco	7856,245	0.303	87.22	96.3	96.3
Tunisia†††	11096,298	5.634	102.66	81.7	81.7
West Bank & Gaza	6481,149	1.580	68.99	52.3	52.3

Notes: † Percentage of GDP; †† Percentage of GDP; ††† 2017.

Source: World Bank, https://data.worldbank.org/indicator.

Table A3 Cross-Sorting Gender Ownership/Management

	Gender ownership		
Gender management	***Female***	***Male***	***Total***
Female	190	139	329
Male	634	5,219	5,853
Total	824	5,358	6,182

Source: Authors.

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