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Abstract

A literature review and stylised facts address financial inclusion regarding businesses and female entrepreneurs. Factors detrimental to financial inclusion come both from the demand side of customers, such as absence of funding need versus self-selection, and from the supply side of financial institutions, such as deficient financial infrastructure and discrimination in loan applicants.

An inventory of Tunisian data sources, with respect to coverage and gender, tackles the supply side of financial institutions as well as the demand side from both enterprises and households. A sequential model (decision tree) includes descriptive statistics prior to and during the COVID-19 shock.

Regressions (probit marginal effects) estimate financial inclusion from the demand side, using two distinct samples of similar size, the 2020 World Bank Enterprise Survey (WBES) and the Economic Research Forum (ERF) COVID-19 Monitor in 2021. Outcomes are that female entrepreneurs are prone to self-selection before but not during the pandemic, whereas discrimination does not seem to occur during the pandemic.

Our main conclusion is that financial inclusion does not preclude gender self-selection, which remains an obstacle to business growth of female entrepreneurs. Hence, policies should raise awareness, enhance funding from financial institutions and the government, extend the guarantee scheme for borrowers, regulate crowdfunding and promote positive discrimination towards female entrepreneurs, where the microfinance industry is a key vector for supporting financial inclusion in a sustainable way.

Keywords: discrimination, entrepreneurs, financial inclusion, gender, loans. Probit regressions, self-selection, small businesses; Tunisia

JEL Classification: D1, D8, D22, G2, G4

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Financial Inclusion and Hurdles to Funding Tunisian Female Entrepreneurs

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Introduction

Financial inclusion is a major factor in socioeconomic development through the alleviation of poverty and inequality together with rising sustainable economic growth (Chehade et al 2015; Ayadi et al., 2021). It targets vulnerable economic groups such as small businesses and female entrepreneurs, with a focus on account holding and loan granting.

Financial inclusion is both a potential and real endowment. First, with respect to use, whenever the account holder, such as a female entrepreneur, does not apply for a loan despite the need for it, and for various reasons, there is endogenous gender self-selection. Second, as regards access, a female entrepreneur holding a bank account can be denied a loan application and face credit rationing because sufficient collateral is lacking. Hence, potential endowment does not transform into real access. In addition, if a female entrepreneur is denied access to a loan application, although she has the same characteristics as a male counterpart whose loan application is granted, this is exogenous gender discrimination.

As for the pre-COVID-19 period, small businesses applying for a loan in Tunisia did face credit rationing, and collateral requested by the banks was lacking (Adair & Fhima 2014). As of 2015, financial issues were the second main reason for exiting the business, affecting almost a quarter of all businesses. On a 1-9 scale (from insufficient to sufficient) entrepreneurial finance in Tunisia ranked a low 4.2 (Kelley et al., 2016). Access to finance was the major obstacle for seven out of 10 businesses in a sample of 201 Tunisian female entrepreneurs (OIT/ILO, 2016).

Chehade et al. (2015) estimated that over half all enterprises remained unserved or underserved by the official financial sector. Among Tunisian borrowers, as of 2017 (Global Findex Survey, 2017; Ayadi et al., 2021), almost half (45%) borrowed in the previous year, yet only one out of five (8.5%) from a financial institution, suggesting that money was borrowed from informal finance (family and friends, 32%) and trade credit (11.2%).

Delechat et al. (2018), using a worldwide sample from the Findex database and a single index for financial inclusion, find that legal discrimination against women and gender norms explains part of the cross-country variation in access to finance for women. Evidence of gender bias in financial inclusion could help explain the relationship between gender inequality and macroeconomic outcomes.

Inequality does not necessarily mean discrimination. Hence, microdata is requested to highlight the financial behaviour of small businesses and female entrepreneurs.

The COVID-19 pandemic of 2020 stands as a test of the financial behaviour of these two categories of businesses, with respect to government support programmes in Tunisia. Krafft et al. (2021) provide an overview of such support programmes. Over half of firms reported not having applied for or not having received any government assistance, although less than a tenth declared no government support was needed. Business loans were the most common categories of support received and needed. Reduced and delayed taxes were the next most needed support, and wage subsidies were commonly received and mentioned as needed. Notably, there is no distinction between received and needed support.

The research issue is twofold and develops prior and during the COVID-19 pandemic. First, the gender issue: are female entre-

preneurs prone to self-selection? Do they face discrimination when they apply for a loan and/or financial support? Second, the size issue: are micro and small businesses prone to self-selection? Do they face discrimination when they apply for a loan and/or financial support?

The paper is structured as follows:

Section 1 tackles the literature review and stylised facts regarding financial inclusion, especially of female entrepreneurs. Various causes may explain financial exclusion regarding use on the borrowers' demand side (insufficient income, absence of funding need versus self-selection and substitutes to bank loans) and with respect to access on the supply side of financial institutions (poor financial infrastructure, credit rationing, and discrimination in loan applicants).

Section 2 provides an inventory of data sources for the demand-side addressing businesses from the World Bank Enterprise Survey (WBES, 2020) as well as entrepreneurs from the Economic Research Forum (ERF) COVID-19 Monitor households survey (OAMDI, 2021). A sequential model (decision tree) includes descriptive statistics prior and during the COVID-19 disruption in Tunisia.

Section 3 is devoted to the analytics of financial inclusion, namely two investigations based on regressions (probit marginal effects), which apply to two distinct samples: the Tunisian WBES sample of 587 businesses collected in 2019 and the Tunisian ERF-COVID-19 sample of 491 entrepreneurs, a subset of the household survey in 2020. The research issues are the following: whether small businesses and female entrepreneurs are confronting self-selection and/or discrimination from lenders before and during the COVID-19 pandemic.

Section 4 addresses conclusions and policy recommendations. The focus is on harmonised data collection and funding enhancement from financial institutions, such as extending guarantee schemes for borrowers, regulating crowdfunding and promoting positive discrimination towards female entrepreneurs. In this respect, Tunisian microfinance institutions (MFIs) are a key vector for financial inclusion, fostering female entrepreneurship in a sustainable way. However, it is no panacea, because small loans can only fund working capital. Hence, the banking system and credit guarantee scheme should enhance their loan amounts to finance fixed assets investment.

Literature review

Financial inclusion: a potential endowment facing self-selection and/or discrimination

A literature review and stylised facts from indicators address financial inclusion regarding (small) businesses and female entrepreneurs. On the demand side, financial inclusion (account holding) remains only a potential endowment, if the holder does not use it to get credit, due to the absence of funding need or self-selection, despite the need for a loan. On the supply side of financial institutions, factors transforming financial inclusion (account holding) into real financial exclusion (loan application denial) come from deficient financial infrastructure and discrimination in loan applicants.

Villaseca et al. (2021) observe that funding requests from female entrepreneurs on business angels (*Angel List* platform) amount only to one out of six requests (16%). There is also lower female access to venture capital. These two observations do not necessarily imply

gender discrimination. Gafni et al. (2021) point out a larger participation of female entrepreneurs to the *Kickstarter* crowdfunding platform (35%) and no evidence of discrimination.

At the macroeconomic level, financial inclusion (i.e., financial intermediation) has a positive correlation with growth, rising employment, poverty alleviation and a reduction in inequality. At the microeconomic level, financial inclusion (access to financial services) has a positive effect on employment and on household consumption, and stimulates the local economy. This is a major issue in Tunisia, where the unemployment rate is high, especially among youth, and the number of informal businesses is large (World Bank, 2015). Among formal enterprises registered with the National Enterprise Registry (RNE) in 2013, it was estimated that over one third (37%) did report their sales. Hence, most businesses may be informal, especially micro and small businesses. Over half the enterprises (58%), mostly micro and small businesses, expressed the need for financing fixed assets or/and working capital, whereas only one out of seven (15%) accessed bank loans.

Self-selection from the demand side

According to the Global Entrepreneurship Monitor (GEM, 2017), women have a lower propensity for borrowing than their male counterparts have and rely more on informal sources such as family and friends. The pecking order theory (Myers, 1984) would suggest that female entrepreneurs opt first for their own financing rather than borrow. Watson (2012) states that female entrepreneurs are more prone to risk aversion than men, driving self-selection, a controversial hypothesis that may depend on job position datasets and countries, although such a hypothesis proves plausible among Middle East and North Africa (MENA) countries.

Studies addressing funding of female entrepreneurship in MENA countries prove rather scarce. GEM provides a household survey on Entrepreneurial Attitudes and Perceptions. We checked GEM reports up to 2021. Unfortunately, no data is available because Tunisia has not been surveyed since 2012 (GEM, 2013). Deng et al. (2021) found no paper addressing female entrepreneurship in the MENA region among the top 20 countries over 1975-2018. Aljuwaiber (2021) selected a data set of articles on entrepreneurship in MENA countries over 2009-2019, among which five papers are devoted to female entrepreneurship in Tunisia, whereas only one tackles the funding issue (Soltane & Imen, 2013).

In addition, Morsy et al (2019) analyse North Africa (Egypt, Mauritania, Morocco and Tunisia), using a sample of 6,097 registered firms with at least five employees from several WBES. They find no evidence of gender discrimination but highlight self-selection, combining low perceived creditworthiness and female risk aversion.

Lastly, Berguiga & Adair (2021) draw a pooled sample of 3,896 businesses in Egypt, Morocco and Tunisia from the 2013 WBES, including microenterprises, and make a distinction between managers and owners that Morsy et al. (2019) overlooked. Main results show there is neither self-selection nor discrimination for female owners, whereas self-selection affects female managers.

Discrimination from the 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 unknown creditworthiness.

Evidence proves controversial. On the one hand, some sources show no discrimination affecting female business owners/managers in developing countries. Bardasi et al. (2011) analyse a sample of more than 20,000 firms from 61 developing countries, based on WBES from 2005 to 2007, wherein the MENA region is not included. They address the following categories: a) businesses that do not need a loan, b) that need a loan but do not apply for it, c) that 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.

Hewa-Wellalage et al. (2022) use a cross-section sample of 8,921 businesses from WBES and World Bank COVID-19 follow-up surveys in 19 mostly developing countries, wherein Tunisia is not included. They find no evidence of negative discrimination. In contrast, micro firms and female entrepreneurs are slightly favoured over larger firms and their male counterparts, suggesting that financial institutions prefer less risky female borrowers and foster positive discrimination.

On the other hand, some sources show that discrimination occurs for female business owners/managers. Carco et al. (2017) depict a non-representative sample of 583 female entrepreneurs collected in six MENA countries including Tunisia. On average, female entrepreneurs, mostly university graduates, enjoy 10 years of experience and are aged 40. Their family-based businesses mostly operate in the services, trade and craft industries. The share of non-registered businesses amounts to 10% in Tunisia. Access to funding for female entrepreneurs versus male entrepreneurs amounts to a 25.70% gap in Tunisia. Berguiga & Adair (2022) use a pooled sample of 6,253 enterprises from the 2019 WBES in six MENA countries, including Tunisia. They address loan demand and loan supply with respect to self-selection versus discrimination of both owners and managers according to gender. There is no self-selection for female owners and managers but discrimination occurs for female owners.

Data sources and model design

It is worth mentioning that the updated Tunisian RNE has not been completed since 2018. In addition, the Tunisian classification of businesses does not always comply with standards coined by the International Labour Organization (ILO) and the UN System of National Accounts as follows: *Micro* (1-9 employees), *Small* (10-49 employees), *Medium-size* (50-249 employees) and *Large* (over 250 employees). However, thresholds used by the Tunisian National Statistical Office (INS, 2021) as of 2020 do match with broad categories, according to which almost nine out of 10 enterprises have no employee, whereas *Micro* account for 86.6% of the subtotal of enterprises, and *Small, Medium-size* together with *Large* businesses account for the rest. Regarding the distribution by industry, manufacturing has a share of 11.4%, while that of trade and services is 87.8%.

Data sources: two main microdata series

Five data sources address business funding behaviour in Tunisia from both the demand side and the supply side in the recent pre-COVID-19 period and during

the pandemic. However, only the first and the last microdata series documenting the demand side prove relevant, although not always representative.

First, the WBES 2020 conducted in 2019 provides a sample of 587 businesses, among which over one third are female entrepreneurs. WBES is biased by predominant manufacturing industry and the absence of unregistered businesses, which account for the majority of enterprises (Berguiga & Adair, 2019), alongside *Micro* and *Small* categories (Ayadi et al., 2017). Hence, WBES figures displaying access to (97% own a bank account) and use of financial services (almost half have a bank loan) by small and medium-size enterprises (SMEs) in Tunisia are obviously non-representative (WBES, 2020).

Second, the Business Pulse Survey (IFC & INS, 2021) checked the effectiveness of government support cushioning the impact of the COVID-19 pandemic in 2020. It covers a large sample of 2,500 formal and informal businesses, whereby sectoral distribution is plausible: trade and services are prominent (72.4%), while manufacturing accounts for 27.6%. The distribution of categories complies with critical knowledge: over four out of five businesses are microenterprises (81.0%), whereas small and medium-size (14.2%) and large (4.8%) enterprises amount to a minor share. Unfortunately, microdata proved unavailable and aggregates are inappropriate for investigating financial behaviour from borrowers.

Third, financial inclusion macro indicators. The Financial Access Survey (FAS) collected by the International Monetary Fund (IMF) records aggregates, which provide little help for investigating financial behaviour from lenders. Most key data shows a rising trend from 2014 to 2020, whether on the supply side (the number of branches of banks, MFIs and loan accounts) or on the demand side (borrowers from banks and MFIs). However, the number of SME borrowers and their share in outstanding loans from banks decline (Table A1 in the Appendix). Turning to financial inclusion from the Global Findex survey (Table A2 in the Appendix), the trend in key data differs according to gender. From 2017 to 2021, the trend is declining for males (account disposal, borrowing from a financial institution), whereas it is rising for females and the gender gap is narrowing. However, irrespective of gender, borrowing informal loans (from family and friends) and idle accounts are rising patterns that prove consistent with FAS key data.

Fourth, three waves conducted by the ERF in 2021 (OAMDI, 2021a) upon a stratified sample of enterprises unfortunately lacked variables (e.g., gender ownership), which precluded tackling gender differentials.

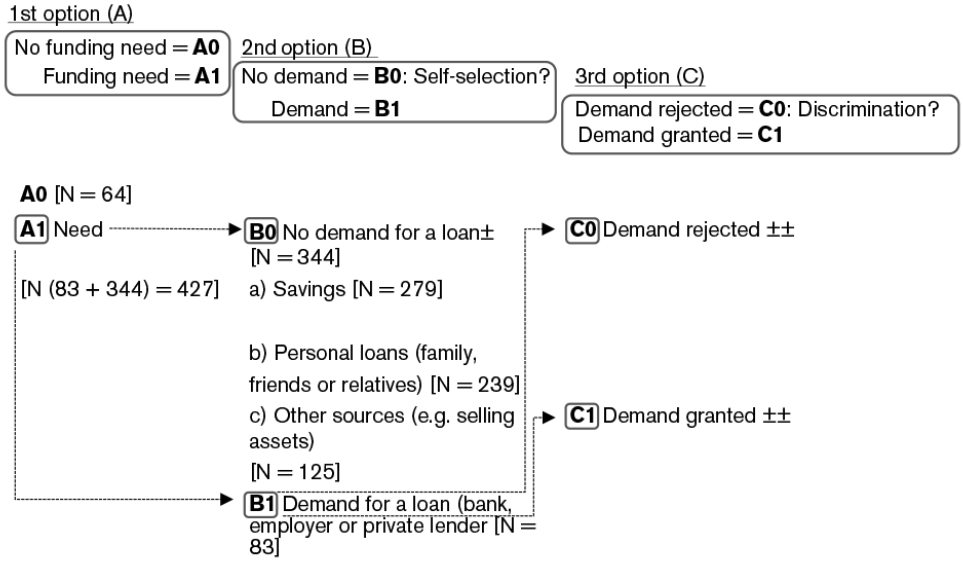
Lastly, four waves surveyed by the ERF in 2021 (OAMDI, 2021b) on a stratified sample of households encapsulated a subsample of 491 non-farming business owners whose financial behaviour before and during the COVID-19 pandemic, including the impact of government support, was assessed. Female entrepreneurs own one out of five businesses.

Admittedly, the two samples are quite different. The WBES sample includes a far smaller share of microenterprises (20.10%) than in the ERF (94.09%). The WBES sample is larger than the ERF and includes more women (36.12%) than the ERF sample (20.37%). Almost all firms (98.28%) are financially included in the WBES sample, whereas financial inclusion benefits two out of three companies (67.21%) in the ERF sample.

Sequential model design: a three-step decision tree

We design a sequential choice model best represented with a decision tree, which includes three binary options: (A) no funding need vs. funding need prior to (B) no funding application (self-selection) vs. funding application and (C) funding denied (potential discrimination) vs. funding granted (See Figure 1, Figure 2 and Box 1 hereafter). It is notable that the final choice in the last option does not belong to the companies on the demand side, but to the banks or government support programmes on the supply side.

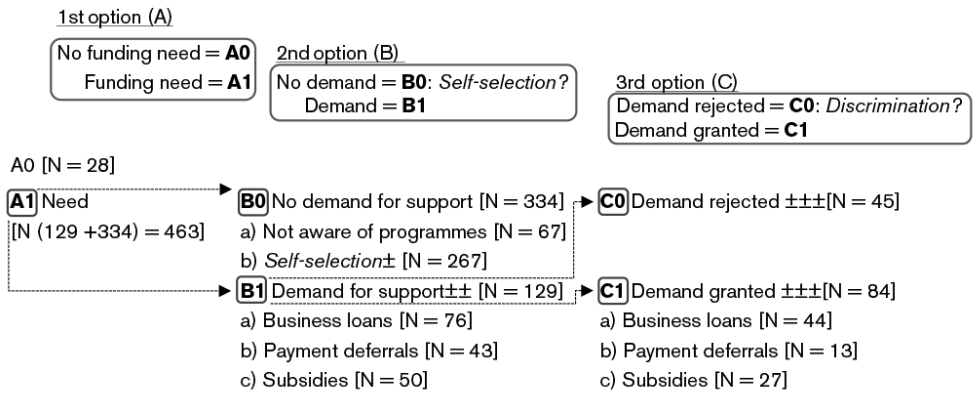
Figure 1. Decision tree: the sequential model for funding prior to the pandemic (ERF sample)



Note: Sample (N= 491) ± Preferences for alternate funding sources suggest self-selection towards borrowing. Several funding sources can combine. ±± Not available.

Source: Authors' calculations based on OAMDI (2021b) for Tunisia.

Figure 2. Decision tree: the sequential model for funding/support during the pandemic (ERF sample)



Notes: Sample (N= 491) ± Requires internet/smart phone (have none) + Don't think will get support + Need to pay bribe to get support + Others. ±± Several supports can combine. ±±± Not available. We compile C0 and C1 from cross sorting with the answers to the question regarding the best policy required to support business activity, whether a), b) or c). If the answer is positive, we assume that the application was accepted (C1), otherwise rejected (C0).

Source: Authors' calculations based on OAMDI (2021b) for Tunisia.

Probit regressions (marginal effects) apply to both samples including microdata (WBES and ERF) and address the self-selection and discrimination research issues before and during the COVID-19 pandemic.

Box. Box. Probit models (marginal effects)

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

$$\text{Self} - \text{selection}_{ik} = \begin{cases} 0 \text{ if funding/support was needed and not applied for in 2019/2020 and 2021} \\ 1 \text{ if funding/support was needed and applied for in 2019/2020 and 2021} \end{cases}$$

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

$$\text{Discrimination}_{ik} = \begin{cases} 0 \text{ if funding/support was applied for and was denied} * \text{ in 2019/2020 and 2021} \\ 1 \text{ if funding/support was applied for and was granted in 2019/2020 and 2021} \end{cases}$$

* Discrimination is conditional on the comparison between female and male entrepreneurs.

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

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

Wherein explanatory variables are the following: X_j = characteristics of the business; W_j = characteristics of the owner or manager; Z_j = characteristics of the funding; V_i = activity of the business, and ε_j is the error term.

Source: Compiled by the authors.

Outcomes from econometric analysis upon the WBES and the ERF samples

Self-selection vis-à-vis banking loans affects female entrepreneurs prior to the pandemic

We estimate the probability of self-selection (probit marginal effects) affecting entrepreneurs prior to the pandemic upon a subset of businesses that did not apply for a bank loan belonging to two samples: the first accounts for 587 businesses (WBES, 2020) and the second consists of 491 enterprises surveyed in any of the four waves of the ERF COVID-19 Monitor (OAMDI, 2021b).

The WBES consists mainly (60.89%) of medium and large enterprises (See Table A3 in the Appendix).

Table 1 reports the results of the estimation of self-selection according to the characteristics of enterprises, their owner and the financing of their activity. Female entrepreneurship is measured by the ownership of the company (*Gender ownership*) and its management (*Gender of the manager*). These two indicators were first used as separate explanatory variables (Model 1 and 2) and then simultaneously (Model 3).

Table 1. Estimating self-selection prior to the pandemic: the WBES sample

Variables	(1) Gender ownership±	(2) Gender manager±	(3) Gender ownership + Gender manager±	(4) Gender ownership±
Personal loan	0.1551*	0.1491*	0.1530*	0.1513*
(ref.: *No personal loan*)	(1.8245)	(1.7867)	(1.8298)	(1.7856)
Size: *Micro*	0.0209	0.0357	0.0169	0.0198
(ref. *Medium* and *Large*)	(0.2941)	(0.5156)	(0.2398)	(0.2800)
Size: *Small*	0.0432	0.0361	0.0258	0.0499
(ref.: *Medium* and *Large*)	(0.7000)	(0.6001)	(0.4197)	(0.8053)
Industry: *Manufacturing*	-0.0528	-0.0666	-0.0589	-0.0795
(ref.: *Retail* and *services*)	(-0.9428)	(-1.2070)	(-1.0562)	(-1.4505)
Age: *Mature*	-0.0569	-0.0422	-0.0416	
(ref.: *Start-up + Young*)	(-0.5981)	(-0.4480)	(-0.4449)	
Ownership: *Sole proprietorship*	-0.0862	-0.0956*	-0.1127*	
(ref.: *Shareholding*)	(-1.4874)	(-1.7263)	(-1.9258)	
Ownership: *Partnership*	-0.2274***	-0.2459***	-0.2478***	
(ref.: *Shareholding*)	(-2.7262)	(-3.0267)	(-2.9993)	
Financial inclusion	-0.3056	-0.3250	-0.2809	-0.3310
(ref.: *Excluded*)	(-1.3783)	(-1.5205)	(-1.2700)	(-1.4850)
Gender ownership: *Female*	0.0080		-0.0405	0.0126
(ref.: *Male*)	(0.1457)		(-0.6965)	(0.2336)
Gender of manager: *Female*		0.2178**	0.2348**	
(ref.: *Male*)		(2.4795)	(2.5375)	
Sales turnover	-0.0004	-0.0007	-0.0022	0.0017
	(-0.0305)	(-0.0514)	(-0.1578)	(0.1164)
Observations	355	366	355	359
Log likelihood	-232.839	-236.348	-229.455	-239.66
LR statistic	17.04	24.64	23.46	9.26
McFadden R2	0.0394	0.0556	0.0534	0.0214
Predicted cases	60%	60.66%	59.15%	57.10%

Note: Robust z-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1., ± N= 420. No demand out of 587 firms.

In Model 4, we use the same explanatory variables that are also available in the ERF sample.

Source: Compiled by the authors based on WBES (2020)

Personal loan (Model 1, 2 and 3) and *Gender of the manager* (Model 2 and 3) are significant and positive, whereas *Sole proprietorship* (Model 2 and 3) and *Partnership* (Model 1, 2 and 3) are significant and negative.

Being a female manager increases the likelihood of self-selection compared to male managers. However, there is no significant relationship between female owners and self-selection.

Financial inclusion is negative but not significant: holding a bank account has no impact on the likelihood of self-selection vis-à-vis loan application.

Turning to the ERF sample in Table 2, female entrepreneurship is measured only by *Gender ownership* exerting a positive and significant influence upon self-selection (Model 2), alongside operating in the *Manufacturing industry* (Model 1 and 2). Female owners of manufacturing firms are prone to be self-selected.

Table 2. Estimating self-selection prior the pandemic: the ERF sample

Models **Variables**	**(1) Self-selection ±**	**(2) Self-selection ±**
Personal loan (ref.: *No personal loan*)	-0.0705(-1.0043)	-0.0730(-1.0821)
Size: Micro (ref.: *Medium and Large*)	0.3140(1.3443)	0.2642(1.1743)
Size: Small (ref.: *Medium and Large*)	0.3814(1.3864)	0.3078(1.1641)
Industry: *Manufacturing* (ref.: *Retail and services*)	0.1288**(1.9798)	0.1422**(2.2096)
Financial inclusion (ref.: *Excluded*)	-0.0332(-0.4738)	-0.0583(-0.8617)
Gender ownership: *Female* (ref.: *Male*)	0.1290(1.4437)	0.1473*(1.6521)
Sales turnover	0.0020(0.2104)	-0.0022(-0.2319)
Education level: *Primary school* (ref.: T*ertiary*)		-0.2150**(-2.1907)
Education level: *Secondary school* (ref.: *Tertiary*)		-0.1089(-1.0947)
Location of residence: *Rural* (ref.: *Urban*)		-0.0274(-0.3776)
Observations	156	156
Log likelihood	-75.298	-72.430
LR statistic	8.56	15.23
McFadden R2	0.0488	0.085
Predicted cases	80.13%	80.13%

Notes: Robust z-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1. ±N= 344. No demand out of 491 firms.

In Model 1, we use the same explanatory variables that are also available in the WBES sample. In Model 2, we add to Model 1 other variables only available in the ERF sample.

Source: Compiled by the authors based on ERF (OAMDI, 2021b).

A significant and negative *Primary level of education* of the owner (Model 2) runs opposite to self-selection, meaning that these businesses are prone to apply for a loan, compared with a higher *Education level,* suggesting that better educated owners may be aware of the strong requirements of a loan application such as collateral.

Size is positive but not significant and plays no role in explaining self-selection behaviour. *Financial inclusion* is negative and not significant (Model 1 and 2).

Comparing the WBES and the ERF samples before the COVID-19 pandemic shows that the determinants of self-selection behaviour are different according to samples. In the WBES sample (Model 4 in Table 1), the availability of *Personal loans* drives the self-selection decision, while in the ERF sample (Model 1 in Table 2) it depends on *Manufacturing industry.*

Regardless of *Size*, women running small, medium and large businesses (WBES) and women owning microenterprises are prone to self-selection.

Yet, *financial inclusion* exerts no effect on the probability of self-selection behaviour.

One in four (25%) WBES companies applied for a loan, while almost one in six (16.9%) ERF companies did so. Conversely, one in six (15.9%) WBES companies use personal loans, whereas almost half ERF companies (48.67%) did so. See Table A3 in the Appendix.

Self-selection of female entrepreneurs vis-à-vis support during the pandemic

As the WBES sample was collected in 2019-2020, it does not cover government support programmes implemented during the pandemic. Therefore, we only use the ERF database to estimate the probability (probit marginal effects) of businesses to self-select vis-à-vis government support programmes. In addition, we use a larger sample of data stacked in four waves.

Table 3. Estimating self-selection during the pandemic: The ERF sample

Models	**(1a) Self-selection**	**(2a) Self-selection**	**(1b) Self-selection**	**(2b) Self-selection**
Variables	±	±	± ±	± ±
Size: *Micro*	0.2999	0.2724	0.2999	0.2724
(ref.: *Medium and Large*)	(1.0900)	(0.9312)	(1.0900)	(0.9312)
Size: *Small*	0.2368	0.2159	0.2368	0.2159
(ref.: *Medium and Large*)	(0.8245)	(0.7115)	(0.8245)	(0.7115)
Industry: *Manufacturing*	0.0091	-0.0029	0.0091	-0.0029
(ref.: *Retail and services*)	(0.2255)	(-0.0706)	(0.2255)	(-0.0706)
Financial inclusion	0.0703*	0.0680*	0.0703*	0.0680*
(ref.: *Excluded*)	(1.8489)	(1.7889)	(1.8489)	(1.7889)
Gender ownership: *Female*	0.0018	0.0180	0.0018	0.0180
(ref.: *Male*)	(0.0379)	(0.3738)	(0.0379)	(0.3738)
Education level: *Primary*		-0.1631***		-0.1631***
school (ref.: *Tertiary*)		(-2.7082)		(-2.7082)
Education level: *Secondary*		*-0.0682*		*-0.0682*
school (ref.: *Tertiary*)		(-1.1414)		(-1.1414)
Location of residence: *Rural*		0.0456		0.0456
(ref.: *Urban*)		(0.9709)		(0.9709)

Business model adjustment		0.0082		0.0082
(ref.: *No adjustment*)		(0.2059)		(0.2059)
Revenue change: *Decrease*		-0.1752**		-0.1752**
(ref.: *Constant*)		(-2.5527)		(-2.5527)
Revenue change: *Increase*		-0.2086**		-0.2086**
(ref.: *Constant*)		(-2.1276)		(-2.1276)
Current status: *Temporarily*		-0.0028		-0.0028
Closed (ref.: *Open*)		(-0.0583)		(-0.0583)
Current status: *Permanently*		-0.0100		-0.0100
Closed (ref.: *Open*)		(-0.0963)		(-0.0963)
Observations	633	623	633	623
Log likelihood	-395.979	-382.022	-395.979	-382.022
LR statistic	5.09	21.28	5.09	21.28
McFadden R2	0.0066	0.0285	0.0066	0.0285
Predicted cases	67.77%	67.42%	67.77%	67.42%

Notes: Robust z-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1. ± N= 334. No demand out of 491 firms. ±±N= 640 No demand out of 1,168 observations. In Model 1a, we use the same explanatory variables that are also available in the WBES sample. In Model 2a, we add to Model 1a other variables only available in the ERF sample. Models 1b and 2b are the same as Model 1a and Model 2a that are estimated on stacked data in four waves.

Source: Compiled by the authors based on ERF (OAMDI, 2021b).

In Table 3, estimation results from Model 1 show that the factors influencing self-selection towards government support programmes are different from those affecting loan demand in the pre-COVID-19 period (see Model 1 in Table 2), using the same explanatory variables except *Personal loan*. In particular, *Financial inclusion* explains why businesses do not apply for government support programmes during COVID-19.

According to Models 1 and 2, *Primary school education level* and *Revenue change (Decrease, increase)* are significant and negative, while *Financial inclusion* is positive and significant. *Gender ownership* is not significant: being a female or male owner has no impact on the likelihood of self-selection during COVID-19, unlike the pre-COVID-19 period (see Table 2).

Consistent with the result before COVID-19, business owners with a primary education level apply not only for credit from financial institutions but also for assistance from government programmes (loans, repayments and tax rescheduling, wage subsidies, grants, etc.).

A change in income, whether declining or rising since 2019, reduces the likelihood of self-selection, relative to businesses with constant revenues.

It is notable that revenue especially declines for female entrepreneurs. Female businesses are more often closed permanently, whereas male businesses are more often open or temporarily closed. Women adjusted their business model more than men (see Table A3 in the Appendix). We do not know if this is due

to the industries wherein they operate or because their businesses are more financially fragile.

No discrimination regarding government support programmes during the pandemic

Discrimination is designed to capture the determinants of the likelihood of rejection (probit marginal effects) according to gender with respect to government support programmes during the pandemic. Notably, estimating the probability of credit rejection by financial institutions prior to the pandemic proved impossible because the subsample size of credit applicants is too small in the WBES (140 businesses) and the ERF (83 businesses) samples (see Table A3 in the Appendix).

In Table 4, we use stacked data from ERF businesses across the four waves (1,168 observations).

According to Model 2, only Secondary education level and Business model adjustment are significant. No relationship shows that female-owned businesses have a higher probability of rejection than their male counterparts. There is no discrimination against female owners in Tunisia. This result is consistent with results regarding the absence of discrimination on the credit market in North Africa (Morsy et al., 2019; Berguiga & Adair, 2021) and the MENA countries including Tunisia (Berguiga & Adair, 2022b).

Table 4. Estimating discrimination during the pandemic: the ERF sample

Models **Variables**	**(1) Discrimination** **±**	**(2) Discrimination** **±**
Size: *Micro*	-0.0608	-0.0793
(ref.: *Medium and Large*)	(-0.1708)	(-0.2497)
Size: *Small*	-0.1462	-0.1350
(ref.: *Medium and Large*)	(-0.3811)	(-0.3914)
Industry: *Manufacturing*	0.0907	0.1022
(ref.: *Retail and service*s)	(1.2308)	(1.3673)
Financial inclusion	0.0630	0.0784
(ref.: *Excluded*)	(0.9105)	(1.1451)
Gender ownership: *Female*	0.0825	0.0985
(ref.: *Male*)	(0.9303)	(1.1271)
Education level: *Primary school*		0.0964
(ref.: *Tertiary*)		(0.7856)
Education level: *Secondary school*		0.2048*
(ref.: *Tertiary*)		(1.6871)
Location of residence: *Rural*		-0.1011
(ref.: *Urban*)		(-1.1426)
Business model adjustment		-0.1498**
(ref.: *No adjustment*)		(-2.1666)

Revenue change: *Decrease*		0.0924
(ref.: *Constant*)		(0.5494)
Revenue change: *Increase*		0.1079
(ref.: *Constant*)		(0.5452)
Current status: *Temporarily closed*		-0.0618
(ref.: *Open*)		(-0.7257)
Current status: *Permanently closed*		-0.0183
(ref.: *Open*)		(-0.0948)
Observations	205	203
Log likelihood	-136.065	-129.647
LR statistic	2.92	12.57
McFadden R2	0.0108	0.0476
Predicted cases	60%	66.01%

Notes: Robust z-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1. ± N= 216 demand out of 1,168 observations. In Model 1, we use the same explanatory variables that are also available in the WBES sample. In Model 2, we add to model 1 other variables only available in the ERF sample.

Source: Compiled by the authors based on ERF (OAMDI, 2021b).

Being a business owner with a secondary education level increases the probability of credit rejection compared with his academic counterpart, suggesting the latter would be considered a better manager.

There is no significant relationship between the likelihood of rejection and financial inclusion; the decision to assist businesses with government programmes is not conditional to bank account holding. However, according to Ayadi et al. (2021), rejection rates for government programme applicants decline when they adjust their business model and when they use financial technology (*fintech*): use of the smartphone for marketing and placing orders, the internet, online social media, specialised applications or digital platforms, etc. Companies are encouraged to digitalise to ensure ongoing business activity and receive support.

Conclusions and policy recommendations

Conclusions: self-selection not discrimination, female financial inclusion to progress

Our findings are consistent with previous results from MENA countries, including Tunisia, long before the COVID-19 disruption (Morsy et al., 2019; Berguiga & Adair, 2021). Self-selection occurs but there is no evidence of gender discrimination.

Prior to the COVID-19 era, women entrepreneurs were prone to self-selection vis-à-vis loan application, regardless of enterprise *Size*. Being a female manager (according to WBES) or a female owner (according to ERF) increases the likelihood of self-selection compared to their male counterparts.

Financial inclusion does not preclude self-selection, which is an impediment to empowerment and business development of female entrepreneurs.

During the pandemic, unlike in the pre-COVID-19 period, gender ownership is not significant: being a female or male owner exerts no impact on the likelihood of gender self-selection. *Financial inclusion* explains why businesses do not apply for government support programmes.

During COVID-19, there is no discrimination against female owners who applied for government support. No relationship shows that female-owned businesses have a higher probability of rejection than their male counterparts.

This does not imply that microentrepreneurs, including females, do access the loan or benefit the support they should expect. Hence, policies must bring in conditions that are conducive and foster stakeholders, including MFIs, to overcome gender self-selection.

Notably, outcomes from estimating Tunisian microdata depend on small series and may be country-specific. They do not necessarily match outcomes from a set of other MENA countries (Egypt, Jordan and Morocco) we tackle in a work in progress (Berguiga & Adair, 2022a).

Policy implications: data collection, fostering fintech, and funding from mfis

Robust data collection on female entrepreneurship is a prerequisite. Empirical work dedicated to financial inclusion differentials is rather scarce in Tunisia.

G20 GPFI (2020) points out that financial inclusion strategies and policies fail to consider women's perspectives and needs, and this is due in the first place to a lack of gender-disaggregated data necessary to inform policy. According to the SME Finance Forum (2020), little if any data is available at country level on financing for female entrepreneurs, young entrepreneurs or other key actors targeted for promoting financial inclusion. Harmonised robust data collection is therefore an important issue.

Policy implications are twofold: spreading the use of financial technologies (fintech) and promoting the role of MFIs.

In the wake of COVID-19, the Central Bank of Tunisia has adapted access to and use of banking services, implementing mechanisms to foster remote transactions and payments, providing new opportunities for the use of *fintech*, including mobile phones and the internet (Ayadi et al., 2021). Although spreading means of payment is one of the levers for alleviating inequalities and the digital divide, it will not be enough to close the gender gap and boost lagging micro and small businesses that need funding from financial institutions.

In this respect Sustainable Development Goal (SDG) 5 – "achieve gender equality and empower all women and girls" – requires financial services that are affordable, accessible, easy to use and tailored to meet women's needs. Service offerings may not comply with the aforementioned conditions and needs despite a wide range of e-banking services available: free issuance of bankcards, digital payment of social assistance, removing fees on ATM withdrawals and electronic payments, and so on. Such services require the enhancement of financial, business and digital literacy by leveraging technology. In addition, there was no substantial increase in females holding accounts, including *fintech* mobile banking, between 2017 and 2021 (see Table A2 in the Appendix).

MFIs are major stakeholders providing loans to female entrepreneurs and microbusinesses. There was a rising number of borrowers from MFIs, alongside that of loan accounts with MFIs and branches over

2017-2020 (see Table A1 and Table A4 in the Appendix). Ayadi et al. (2021) report 423,834 customers, below half the figure (one million) of financially excluded poor people.

Barguelli & Bettayeb (2020), focusing on the main Tunisian MFI, Enda Tamweel, over the period 1995-2017, conclude that its social performance (depth of outreach) contributes to economic development, whereas its financial performance drives its sustainable growth. However, the share of female borrowers is declining, which suggests a potential mission drift from less poverty alleviation (of females) towards more financial performance (of non-poor). *Enda Tamweel* serves 370,000 micro-entrepreneurs, almost 65% of which are women and its market share amounts to 72% of outstanding loans as of 2021. This is often the only source of finance available to microentrepreneurs, and loans range from US$200 to $6,500, with an average overall loan size of US$565 (TND1,569 in 2021), funding short-term working capital (Fitch Ratings 2021) but not fixed assets. Hence, MFIs are no panacea, especially if larger loan amounts are requested. This is why banks and guarantees should play a larger role in financing fixed asset investment for small businesses.

In addition, crowdfunding is a rising source that includes loans and donations, wherein MFIs act as brokers for loans and deserve investigation. The Lebanese Zoomaal is one of the leading crowdfunding platforms that operate in the MENA region (Adair, 2022). French platforms operating in Tunisia, such as Afrikwity (loans) and CoFundy (donations), are worth mentioning.

References

ADAIR, P. Ed. (2022). *Assessing the Job Creation Potential of Social Economy in the MENA Region.* Euromesco Policy Study n° 26, IEMed European Institute of the Mediterranean, Barcelona, Spain. Retrieved from ww.iemed.org/publication/assessing-the-job-creation-potential-of-the-social-economy-in-the-mena-region/

ADAIR, P. & FHIMA, F. (2014). Small and Medium-sized Enterprises' Credit Rationing on the Tunisian Bank Credit Market. *Journal of Economics and Development Studies,* 2 (1), 81–97.

ALJUWAIBER, A. (2021). Entrepreneurship research in the Middle East and North Africa: trends, challenges, and sustainability issues. *Journal of Entrepreneurship in Emerging Economies,* 13 (3), 380-426.

ALLEN, F., DEMIRGUC-KUNT, A., KLAPPER, L., & MARTINEZ PERIA, M. S. (2016). The foundations of financial inclusion: Understanding ownership and use of formal accounts. *Journal of Financial Intermediation,* 27, 1-30.

AYADI, R., SESSA, E., EL SAID, H., AHMED, R.H, ALSHYAB, N., SANDRI, S., & AL SHEIKH, F. (2017). Micro, Small and Medium Sized Enterprises Development in Egypt, Jordan, Morocco and Tunisia - Structure, Obstacles and Policies. *EMNES Studies* 003, Barcelona.

BARDASI, E., SABARWAL, S., & TERRELL, K. (2011). How do Female Entrepreneurs Perform? Evidence from Three Developing Regions. *Small Business Economics,* 37 (4), 417-441.

BARGUELLI, A., & BETTAYEB, L. (2020). The Impact of Microfinance on Economic Development: The Case of Tunisia. *International Journal of Economics and Finance,* 12 (4), 1-43.

BECKER, G. S. (1957). *The economics of discrimination.* Second ed., 1971, University of Chicago Press.

BENOUDA, O., BEN KHELIFA, S., HMAIED, D., & MAKNI, R. (2021). Chapter 6, Financial Inclusion in Tunisia. In Ayadi R., Challita S. & Shaban M. (Eds), *Financial Inclusion in the Southern and Eastern Mediterranean Countries A survey of Egypt, Jordan, Lebanon, Morocco and Tunisia* (pp. 93-113). EMEA-EMNES Studies.

BERGUIGA, I. & ADAIR, P. (2022a). Financial Inclusion and Barriers to Funding Female Entrepreneurs in MENA Countries Prior and During the COVID-19 Pandemic. Conference paper presented at EMANES Annual Conference 2022, December 15-16, Barcelona, *Pillars for Inclusive, Sustainable and Resilient Growth and Innovative Socio-Economic Models.*

BERGUIGA, I. & ADAIR, P. (2022b). Are There Barriers to Funding Female Entrepreneurs in MENA Countries? *Czech Journal of Economics and Finance,* 72 (3), 200-221.

BERGUIGA, I. & ADAIR, P. (2021). Funding Female Entrepreneurs in North Africa: Self-Selection vs. Discrimination. MSMEs, the Informal Sector and the Microfinance Industry. *International Journal of Gender and Entrepreneurship,* 13(4), 394-419.

BERGUIGA, I. & ADAIR, P. (2019). Funding MSMEs in North Africa and Microfinance: The Issue of Demand and Supply Mismatch. *ERF Working Papers* 1350, Economic Research Forum, (ERF) Cairo, Egypt.

CARCO, M., FAYOLLE, A., & AMARA, N. (2017). *Empowerment for Inclusive and Sustainable Industrial Development in the Middle East and MENA region. A Study on Women Entrepreneurship Development in Egypt, Jordan, Lebanon, Morocco, Palestine and Tunisia*. United Nations Industrial Development Organization (UNIDO).

CHEHADE, N., NEGRE, A., & MCCONAGHY, P. (2015). *Financial Inclusion in Tunisia Low-Income Households and Micro-Enterprises Snapshot.* The World Bank

DELECHAT, C., NEWIAK, M., XU, R., YANG, F., & ASLAN, G. (2018). What is Driving Women's Financial Inclusion across Countries? *IMF Working Paper WP/18/38.* International Monetary Fund.

DEMIRGUC-KUNT, A., KLAPPER, L., SINGER, D., ANSAR, S., & HESS, J. (2018). *The Global Findex Database 2017: Measuring Financial Inclusion and the Fintech Revolution.* The World Bank.

DENG, W., LIANG, Q., LI, J., & WANG, W. (2021). Science mapping: a bibliometric analysis of female entrepreneurship studies. *Gender in Management* 36 (1), 61-86.

ENDA TAMWEEL (2022). *Rapport annuel 2021.* Tunis, Tunisie. Retrieved from Http://www.endatamweel.tn

FAS. Financial Access Survey Country Data Survey: Tunisia. International Monetary Fund.

FITCH RATINGS (2021). Fitch Ratings has upgraded Enda Tamweel S.A.'s (Enda), October 21, London.

GAFNI, H., MAROM, D., ROBB, A., & SADE, O. (2021). Gender Dynamics in Crowdfunding (*Kickstarter*): Evidence on Entrepreneurs, Backers, and Taste-Based Discrimination. *Review of Finance,* 25 (2), 235–274.

G20 GPFI (2020). *Advancing Women's Digital Financial Inclusion.* Report prepared for the G20 Global Partnership for Financial Inclusion by the Better than Cash Alliance, Women's World Banking, and the World Bank Group.

GEM (2017). *Global Entrepreneurship Monitor report.* Babson College.

GEM (2013). *Global Entrepreneurship Monitor report 2012.* Babson College.

HEWA-WELLALAGE, N., BOUBAKER, S., HUNJRA, A. I., & VERHOEVEN, P.

(2022). The Gender Gap in Access to Finance: Evidence from the COVID-19 Pandemic. *Finance Research Letters,* 46: A, SSRN, Retrieved from http://dx.doi.org/10.2139/ssrn.4158800.

IFC & INS (2021). *Business Pulse Survey Tunisia. Impact of the COVID-19 crisis on the private sector in Tunisia.* International Finance Corporation and Institut National de la Statistique, Tunisia.

INS (2021). *Statistiques issues du Répertoire National des Entreprises.* Institut National de la Statistique, Tunisie. [Statistics from the National Business Register. National Institute of Statistics, Tunisia].

KELLEY D., SINGER S. & HERRINGTON M. (2016). *Global Report 2015/2016.* Global Entrepreneurship Monitor - GEM. Babson College.

KRAFFT, R., ASSAD, R., & MAROUANI, M. (2021). The Impact of COVID-19 on Middle Eastern and North African Labor Markets: A Focus on Micro, Small and Medium Enterprises. *ERF Policy Brief* 60, October, Economic Research Forum, (ERF), Cairo, Egypt.

MORSY, H., EL-SHAL, A., & WOLDEMICHAEL, A. (2019). Women Self-Selection out of the Credit Market in Africa. *African Development Bank Working Paper Series N°317,* Abidjan, Côte d'Ivoire.

MYERS S C. (1984). The Capital Structure Puzzle. *Journal of Finance* 39(3), 574-592.

OAMDI (2021a). *COVID-19 MENA Monitor Enterprise Survey* (CMMENT), Tunisia-Waves 1-3. Retrieved from www.erfdataportal.com/index.php/catalog. Version 2.0 of the licensed data files. Open Access Micro Data Initiative, Economic Research Forum (ERF), Cairo, Egypt.

OAMDI (2021b). *COVID-19 MENA Monitor Household Survey* (CMMHH), Tunisia Waves 1-4. Retrieved from www.erfdataportal.com/index.php/catalog. Version 2.0 of the licensed data files. Open Access Micro Data Initiative, Economic Research Forum (ERF), Cairo, Egypt

OIT/ILO (2016). Évaluation nationale du développement de l'entrepreneuriat féminin: Tunisie. [National Assessment of the Development of Female Entrepreneurship in Tunisia]. Organisation internationale du Travail, International Labour Office, Geneva.

PHELPS, E. S. (1972). The Statistical Theory of Racism and Sexism. *American Economic Review,* 62(4), 659-661.

SME FINANCE FORUM (2020). G-20: Data enhancement and Coordination in SME. Finance Report, the World Bank.

SOLTANE, M., & IMEN, E. (2013). Effect of microfinance factors and opportunity on women entrepreneurs' performance in Tunisia. *International Journal of Social Science and Entrepreneurship* 1 (2), 114-132

VILLASECA, D., NAVÍO-MARCO, J., & GIMENO, R. (2021). Money for female entrepreneurs does not grow on trees: start-ups' financing implications in times of COVID-19. *Journal of Entrepreneurship in Emerging Economies,* 13(4), 698-720.

WATSON, J. (2012). Networking: Gender Differences and the Association with Firm Performance. *International Small Business Journal,* 30(5), 536–558.

WORLD BANK (2021). *Global Findex database.* The World Bank.

WBES (2020). *Enterprise Survey.* Tunisia. The World Bank. WBES. Data Catalog, selected countries. Retrieved from http://www.worldbank.org

WORLD BANK (2015). *Snapshot Financial Inclusion in Tunisia Low-Income Households and Micro-Enterprises.* The World Bank, September.

Appendix

Table A1. Financial Access Survey (FAS) key data: Tunisia

Years	2014	2017	2020	Trend
Number of borrowers from all microfinance institutions per 1,000 adults		40.27	49.98	+
Number of borrowers from commercial banks per 1,000 adults	213.57	234.18	245.98	+
Number of SME borrowers from commercial banks (% of corporation borrowers)	12.37	17.82	17.36	-
Number of all microfinance institution branches per 100,000 adults	1.02	1.51	2.13	+
Number of commercial bank branches per 100,000 adults	19.24	21.70	22.32	+
Number of loan accounts with all microfinance institutions per 1,000 adults	30.19	43.23	51.85	+
Outstanding deposits with commercial banks (% of GDP)	58.46	61.50	68.79	+
Outstanding loans from commercial banks to household sector (% of GDP)	20.57	22.27	21.29	-
Outstanding SME loans from commercial banks (% of GDP)	21.61	21.86	19.68	-

Source: IMF https://data.imf.org/regular.aspx?key=61063966

Table A2. Financial inclusion key data: Tunisia

Years	2014	2017	2021	Trend
Account in any financial institution or mobile money service (population aged 15+)	27.43	36.91	36.85	-
Account in any financial institution or mobile money service, female (aged 15+)	20.7	28.36	28.75	+
Account in any financial institution or mobile money service, male (aged 15+)	34.25	45.73	45.14	-
Borrowed from a formal financial institution (population aged 15+)	12	11.73	9.89	-
Borrowed from a formal financial institution, female (aged 15+)	8.71	7.45	9.22	+
Borrowed from a formal financial institution, male (aged 15+)	15.34	16.16	10.57	-
Borrowed from family or friends (population aged 15+)	16.12	31.74	41.04	+
Borrowed from family or friends, female (% aged 15+)	14.41	26.09	38.61	+
Borrowed from family or friends, male (% aged 15+)	17.86	37.58	43.53	+
Borrowed to start, operate, or expand a business (population aged 15+)	4.6	6.21	..	
Borrowed to start, operate, or expand a (farm or) business, female (aged 15+)	3.3	3.06	..	

Borrowed to start, operate, or expand a (farm or) business, male (aged 15+)	5.92	9.46	..	
Experience or continue to experience severe financial hardship as a result of the disruption caused by COVID-19: very worried, female (aged 15+)	..	..	32.67	
Experience or continue to experience severe financial hardship as a result of the disruption caused by COVID-19: very worried, male (% age 15+)			35.62	
Has an inactive account, female (aged 15+)	3.48	2.06	3.92	-
Has an inactive account, male (aged 15+)	4.55	1.65	3.54	+
Made or received a digital payment (population aged 15+)	17.4	29.41	27.69	-
Made or received a digital payment, female (aged 15+)	13.54	21.31	21.04	-
Made or received a digital payment, male (% age 15+)	21.32	37.78	34.5	-

Source: Global Findex Database (2021), Tunisia. Year series in percentage.

Table A3. Descriptive statistics according to gender: WBES and ERF samples

		Gender ownership (WBES)±					Gender ownership (ERF)±±				
		Female	%	Male	%	Total	Female	%	Male	%	Total
Industry	Manufacturing	132	38.37	212	61.63	344	27	17.76	125	82.24	152
	Retail & services	80	32.92	163	67.08	243	72	22.78	244	77.22	316
	Total	212	36.12	375	63.88	587	99	21.15	369	78.85	468
Size	Micro	32	27.12	86	72.88	118	96	20.78	366	79.22	462
	Small	85	35.42	155	64.58	240	2	8.00	23	92.00	25
	Medium-sized	37	35.92	66	64.08	103	0	0.00	2	100.00	2
	Large	58	46.03	68	53.97	126	2	100.00	0	0.00	2
	Total	212	36.12	375	63.88	587	100	20.37	391	79.63	491
Financial	Excluded	3	30.00	7	70.00	10	36	22.36	125	77.64	161
inclusion	Included	208	36.30	365	63.70	573	65	19.70	265	80.30	330
	Total	211	36.19	372	63.81	583	101	20.57	390	79.43	491
Loan demand (prior COVID-19)											
	No Demand	146	34.76	274	65.24	420	62	18.02	282	81.97	344
	Demand	59	42.14	81	57.86	140	21	25.30	62	74.97	83
	Total	205	36.61	355	63.39	560	83	19.43	344	80.56	427
Loan application* (prior COVID-19)											
	Rejected	7	43.75	9	56.25	16					
	Granted	51	41.46	72	58.54	123					
	Total	58	41.72	81	58.27	139					
Personal	No personal loan	160	36.45	279	63.55	439	49	19.44	203	80.56	252
loan	Personal loan	36	43.37	47	56.63	83	51	21.34	188	78.66	239
	Total	196	37.55	326	62.45	522	100	20.37	391	79.63	491
Self-selection (prior COVID-19)											
	No	59	42.14	81	57.86	140	21	25.30	62	74.69	83
	Yes	82	35.65	148	64.35	230**	62	18.02	282	81.97	344
	Total	141	38.11	229	61.89	370	83	19.43	344	80.56	427
Revenue	Decrease						82	19.95	329	80.05	411
change***	Increase						7	24.14	22	75.86	29
	Constant						10	20.00	40	80.00	50
	Total						99	20.20	391	79.80	490
Current	Temporarily closed						27	25.47	79	74.53	106
status***	Permanently closed						10	38.46	16	61.54	26
	Open						62	17.82	286	82.18	348
	Total						99	20.63	381	79.38	480
Business model adjustment***											
	No						30	18.29	134	81.71	164
	Yes						69	21.17	257	78.83	326
	Total						99	20.20	391	79.80	490
Total		212	36.12	375	63.88	587	100	20.37	391	79.63	491

Note: ± N= 587. ±± N = 491.* The outcome of loan application before COVID-19 is available only for the WBES sample and N/A =1. ** For WBES, N/A = 190 missing observations. Among 420 companies not applying for a loan, information is available only for 230 self-selecting companies. *** Data is available only for the ERF sample and during the pandemic.

Source: WBES (2020) and ERF (OAMDI, 2021b).

Table A4. Characteristics of the Tunisian Enda Tamweel MFI

Year	NAB±	Average loan balance	Rural borrowers (%)	Female borrowers (%) ±±	Outstanding loans: number of customers (%) MSMEs	Micro	SMEs	Lending rate ±±±	PAR>30 (%) ±±±±	Risk coverage
2017	312,973	TND 2,091	40.90	201,404 (64.35)	266,646	266,646 (100.00)	0	26.16	0.77	176.28
2018	346,104	TND 2,339	45.16	215,099 (62.14)	290,078	290,078 (100.00)	0	26.42	0.97	53.17
2021	426,000	TND 3,184	44.00	243,000 (57.04)	344,390 (interim)	344,390 (100.00)	0	27.7	2.93	176

Note: ±Number of active borrowers. ±± 44% are rural and 29% are farming borrowers. ±±± proxied by Yield on (nominal) gross portfolio. ±±±± Portfolio At Risk>30 days.

Source: Micro Exchange Market (MIX 2019), and *Enda Tamweel* (2022).

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