Iranian Economic Review, 2024, 28(1), 129-149
DOI: 10.22059/IER.2024.333250.1007309

RESEARCH PAPER

Female Financial Inclusion and Sustainable Development in MENA Countries

Oueslati Karim[a], Mgadmi Nidhal[b], Moussa Wajdi[c,*], Regaïeg Rym[c]

a. IPAG Business School, Paris, France
b. Department of Quantitative Methods, Faculty of Economics and Management of Mahdia, University of Monastir, Tunisia
c. Higher Institute of Management of Tunis, SEPAL Lab., Tunis, Tunisia
* Corresponding author, E-mail: wajdi.moussa@isg.rnu.tn

Article History: Received: 14 November 2021, Revised: 15 March 2022, Accepted: 09 April 2022
Publisher: University of Tehran Press.

Abstract

This paper tries to examine the effect of Microfinance on sustainable development in a group of Middle East and North African countries (MENA). Can we consider Microcredits are performing instruments for sustainable development in MENA countries? To answer this question, we chose a period from 1990 to 2018, and a sample of 10 MENA countries was selected. In the empirical analysis, we examined the linear fit of this long-term relationship within an error correction (ECM) model. We found that micro-financial institutions will correct 67% of sustainable development imbalance as the speed of adjustment brings this imbalance back to a stable state in the long term. Subsequently, we adopted the GMM method to determine the dynamics of sustainable development. Our results showed that women's participation in economic life in the MENA region does not have a significant impact on sustainable development. The research paper advises ending the gender disparity in employment, which will enhance women's likelihood of gaining access to formal financial services. It also advises boosting women's financial education which will lead to strengthening their financial capacities. This advice will help to reach sustainable development at the country's level.

Keywords: ECM Model, Female, MENA Countries, Microfinance, Sustainable Development.
JEL Classification: O16, O57, C38, C33.

1. Introduction

According to the United Nations Report (1987), sustainable development consists of meeting the needs of current populations without being to the detriment of future generations. In the UNDP Human Development Report, we note "Men, women, and children should be at the center of attention, so that development is woven around people, not people, about development for present and future generations".

It proposes sustainable development to address the threats to the environment, a world in which poverty, inequality, selfishness, the pillage of nature and the deviations of scientific progress can be eliminated from our societies. On the one hand, sustainable development represents a new opportunity for the quality of economic growth and how its benefits are distributed to all strata of society, not just a process of economic expansion, which does not prevent the increase in income disparities between individuals and groups, whether between the North and the South or within the developing countries themselves. Sustainable development allows risk assessment, awareness- raising and guidance of political action at local, regional, and international levels. Poverty eradication or at least poverty reduction is a big challenge. Women entrepreneurs are key contributors to private enterprise development, job creation and economic growth worldwide. As underlined by the World Economic Forum's Global Gender Gap Report, there is a strong correlation between gender equality and a country's prosperity and economic competitiveness (Haussman et al., 2010). It is thus important to mainstream women in broader enterprise support policies and programs such as women's enterprise centers, coaching and mentoring programs, and financing initiatives (OECD, 2019).

Women entrepreneurs in the MENA region already have great leadership potential. One in three startups in MENA countries is headed by women. However, the funding they receive is 23% less than that received by men. In addition, women make up only 21% of the MENA region's labor force, significantly lower than in all other regions with a similar level of economic development (World Bank, 2019). Some studies show that there are many opportunities offered and created by women entrepreneurs and leaders in the MENA region (OECD, 2019). However, women in the MENA region who are highly educated stay at home and their labor force participation rate is one of the lowest in the world. For example, up to 75% of men and at least 50% of women in Egypt, Lebanon, Gaza, and Morocco believe that the most important role a woman plays is to stay home (UN Women, 2020). Women in the MENA region suffer from a lack of access to microcredit and support for long-term finance when setting up businesses. They also suffer from the lack of a more family regulatory framework in the MENA region (World Bank, 2018). In addition, women are under pressure to work in a field dominated by men. In most MENA countries, 48% of women do not own mobile phones, which is 8% less than men. This gap varies from one country to another in the MENA region: it is almost zero in Egypt but it reaches around 21% in Jordan. Women in the MENA region face the same constraints when it comes to ownership and productive use of mobile phone devices. The cost, quality, and coverage of the network were considered as the barriers that prevent women from using new technologies. For example, in Egypt, 12% of women do not use the internet because they say internet services are inappropriate for them. In addition, more

than 8% of women do not choose these services because they fear disapproval from friends or family. Microcredit programs intended for women could represent an opportunity for MENA countries to respond to these structural difficulties faced by women in the region. Several MENA governments have taken significant initiatives to launch programs to mainstream a long-term gender perspective. This is important for fostering the economic empowerment of women and for making the region's economies thrive in the short and long term. According to the World Bank, achieving income equalization for women and men in the MENA region could represent a regional gain of $ 3.1 trillion (World Bank, 2018). It is in this context that we try to study the impact of the economic inclusion of women through micro-credit programs on sustainable development (SD) in the MENA region. In our work, we have adopted the following plan: section two explains the literature review. Section 3 describes the data and outlines the empirical methodology. Section fourth presents the empirical results. Section 5 provides a conclusion.

2. Literature Review

A scan of the literature, we find that most researchers (Milne and Gray, 2013; Kuliga et al., 2019; Mensah and Enu-Kwesi, 2018) were interested in the concept of sustainable development to designate the improvement and preservation of a healthy economy, the ecosystem, and human development. According to Milne and Gray (2013), we can define sustainability as an efficient and equitable distribution of wealth between generations while operating social and economic activities within the boundaries of a limited ecosystem. In contrast, Ben-Eli (2015) considers sustainability as a balanced and dynamic mechanism in the system of interaction between populations and the capacity of their environment for people to develop to express their full capabilities without adversely affecting the resilience of the environment on which it depends. With this premise, sustainability continues to focus on human activities and its ability to meet human needs and desires without exhausting or exhausting the productive resources available to it. Therefore, it raises ideas about how people should live their economic and social lives based on the environmental resources available for human development. Sustainable development is becoming essential in development strategies. If we take it literally, SD could simply translate into development that could continue indefinitely or over a specified period (Lele, 1991). From a structural point of view, the concept of SD could be broken down into two terms “sustainable” and “development”. We can also use these two words united to form the concept of sustainable development, i.e., "sustainable" and "development", were defined differently, the sustainable development (SD) was seen from different angles, resulting in a large number of definitions of the concept. Although there are many definitions for sustainable development, the most common definition of this

concept is the one proposed by Schaefer and Crane (2005). They state that sustainable development should encompass the concepts of equity, empowerment, accessibility, participation, and the stability of institutional qualities. The concept shows that people are the center of interest because development interests them.

Social point sustainability is considered a system of social organization that helps reduce poverty (Littig and Grießler, 2005). However, according to another point of view "social sustainability" is related to the link between social conditions such as poverty and reduced environmental qualities (Farazmand, 2016). In this regard, the theory of sustainability from a social point of view assumes that poverty alleviation should not lead to unjustified environmental destruction or economic crises. The crucial objective of social sustainability is to limit the poverty of populations (Scopelliti et al., 2018). In Saith's (2006) view, at the social level, sustainability requires promoting human development and cultural identities of societies to help achieve a meaningful life, relying on appropriate health care, gender equality education, and stability around the world. Littig and Grießler (2005) consider that social sustainability is difficult to achieve because the social dimension seems complicated. The dynamics in the social system could not be easily estimated in comparison with environmental and economic systems where flows and cycles can be easily observed (Saner et al., 2019). Everest-Phillips (2014) shows that social sustainability is not limited to meeting the needs of the current population. It tends to create favorable conditions that allow everyone to be able to meet their needs. Any measure that hinders this capacity is a barrier and should be overcome in a way that enables people to move toward social sustainability. Understanding the dynamics and emergence of societies is considered a prerequisite for social sustainability (Lv, 2018). According to Gray (2013), social sustainability also touches on many areas such as gender inequalities, regional disparities, public participation, and the rule of law, which are in favor of peace and social stability.

Microfinance is now recognized as an effective and financially sustainable tool for reducing poverty, especially in developing countries but also for the poor in the developed world. The Microcredit Summit campaign just announced that 30.6 million poor families worldwide now have access to small loans and that the number covered has increased by 40 percent over the past year. This means that there is now an opportunity to significantly reduce poverty around the world. Microfinance is not a panacea for eradicating poverty in the world, as not all poor families can benefit from it. Those who do not have a member who can participate in income-generating activities cannot help them out of poverty through a loan. Many other poor families do not have the entrepreneurial capacity and/or self-discipline required to make good use of microcredit. However, experience from around the world now shows that large numbers of poor women being provided

with microfinance services are using the opportunity to reduce their poverty and that of their families. Microfinance demonstrates a new way of development intervention, a method that displaces governments as central actors and transforms them into market mechanisms for service delivery. However, most observers today see microfinance as a useful financial service rather than a transformative social and economic intervention (Mosman, 2015). Others reacted to high expectations, dismissing microfinance as a failed failure, a neoliberal invention that attracted donors but failed to deliver the services that helped truly poor communities.

Financial inclusion has become an essential tool for reducing poverty and boosting prosperity (Sakyi-Nyarko and Ahmad, 2022). Financial inclusion is simply the large access for individuals and enterprises to basic financial services (remittances transfers, payments, savings, credit, and insurance) that meet their requirements at a reasonable price (Demirguc-Kunt et al., 2020; Vol et al., 2020). Focusing on studying Female financial inclusion, Mndolwa and Alhassan (2020) find that gender disparities in financial inclusion are described by lower levels of education, income, and over-dependence of women on men. Their findings support gender mainstreaming in other sectors to enhance employment and education for women to end the gender gap in financial access. According to the study of Mndolwa and Alhassan (2020), we can underline that Female financial inclusion is an important issue for the country's sustainable development. Cabeza-Garcıa et al. (2019) investigated the impacts of women's financial inclusion on general economic development. Their empirical results showed that women's larger financial inclusion has a positive effect on economic development. However, Adegbite and Machethe (2020) examined how the financial inclusion gender gap in Nigeria has evolved, as well as its causes and impact on sustainable development. The results of their study revealed that the financial inclusion gender gap have a negative impact on agricultural productivity, income inequality, food insecurity, and poverty, a situation that limits sustainable development.

Sakyi-Nyarko and Ahmad (2022) find that financial inclusion significantly improves household financial resilience. Their results from gender and locality disaggregated analyses suggest that the effect of financial inclusion on household resilience does not significantly vary by gender or locality. A few studies have focused on examining female financial inclusion and its impact on sustainable development. Their results were as clear as we wish. The question we are trying to study is does the microfinance addressed to women in MENA countries is capable of contributing to sustainable development.

2. Empirical Validation

To study the impact of the participation of women in the MENA region on sustainable development, we used an annual database, which is extracted from the

World Bank and the International Monetary Fund. Our sample consists mainly of ten countries in the MENA region during a study period from 1990 to 2018. Our study covers ten MENA countries: Jordan, Iraq, Lebanon, Egypt, Morocco, Sudan, Palestine, Tunisia, Syria, and Yemen. We approximated the endogenous variable (sustainable development) by the net adjustment of sustainable development which is withdrawn from the World Bank. We will use several explanatory variables which are:

- Active Female Borrowers (AFB): represented by the proportion of women who have benefited from microfinance services.
- Labor Force Female (LFF): this indicator is approximated by the proportion of the female active population to the overall active population.
- Ratio of female to male labor force participation (RFMLFP): determined by the ratio of working women divided by working men multiplied by 100.
- Gender Parity Index (GPI),
- GINI Index (GINI): this indicator tells us about income inequality.
- Inflation: we used the GDP deflator calculated by the ratio of nominal to real GDP.

2.1 Descriptive Statistics

We analyze the quality of precision, linear fit to the mean, symmetry, kurtosis, and normality of explanatory and endogenous variables by indicators of position, dispersion, and shape. The table below presents the descriptive statistics that correspond to these variables.

Table 1. Descriptive Statistics

	LGS	LAFB	LLFF	LRFMLFP	LGPI	LGINI	LINF
Mean	0.7233	0.7849	0.7047	0.8635	0.5712	0.5735	0.5546
Median	0.7828	0.3790	0.8866	0.6984	0.4741	0.5652	0.5452
Maximum	0.9830	0.9485	0.9392	0.9440	0.1091	0.6296	0.6196
Minimum	0.3022	0.0172	0.0392	0.2228	0.2003	0.5085	0.5285
Standard deviation	0.2389	1.5023	0.3643	0.3465	0.3460	0.0450	0.0436
Skewness	-0.1739	0.3457	-0.7075	-0.0238	-0.5075	0.1274	-0.1792
Kurtosis	1.5315	1.5566	1.9895	1.6688	1.9123	2.0606	1.9867
Jarque-Bera	27.5188	30.9516	36.5331	21.4398	26.7447	1.4465	13.9589
Significance	0.0000	0.0000	0.0000	0.0000	0.0000	0.0032	0.0009
Observations	290	290	290	290	290	290	290
Cross sections	10	10	10	10	10	10	10

Source: Research finding.

We performed a logarithmic transformation of all endogenous and exogenous variables. We can see from this table that the standard deviations are very low for all these variables.So we can assume that there is a good quality of linear fit for

each variable with respect to the mean.The means are positive for these variables except for the gender parity index (GPI).The skewnesses tend towards zero, these mean that these variables have symmetrical information. On the other hand, the statistics for Kurtosis are less than three and the flattening is different from the abscissa axis. Jarque-Bera statistics are significant at the 1% risk threshold since these statistics are greater than the critical chi-square value at two degrees of freedom. Hence, these variables do not follow the Normal law.

2.2 Correlation Relations

We study the dependence between the explanatory variables and the endogenous variable of sustainable development. Our study period spans 29 years (from 1990 to 2018). Our sample is made up of the ten MENA countries. We will present the matrix of the coefficients of the total correlations to detect the existence or the absence of the Multicoloneality problem.

Table 2. Matrix of Total Correlation Coefficients

	LGS	**LAFB**	**LLFF**	**LRFMLFP**	**LGP**	**LGINII**	**LINF**
LGS	1.0000	0.4757	0.6488	0.5501	0.3860	0.5856	0.5194
LAFB	0.4757	1.0000	**0.9418**	**0.8319**	**0.7675**	0.6594	0.6861
LLFF	0.6488	**0.9418**	1.0000	**0.8467**	0.6961	0.6751	0.6878
LRFMLFP	0.5501	**0.8319**	**0.8467**	1.0000	0.6815	0.6097	0.7106
LGP	0.3860	**0.7675**	0.6961	0.6815	1.0000	0.4924	0.4884
LGINI	0.5856	0.6594	0.6751	0.6097	0.4924	1.0000	**0.8545**
LINF	0.5194	0.6861	0.6878	-0.7106	0.4884	**0.8545**	1.0000

Source: Research finding.

We observe a negative and negligible correlation between sustainable development and the number of women who have contracted microloans from microfinance institutions. On the other hand, sustainable development has positive effects on the other remaining explanatory variables. This number of women who have taken out microcredits from microfinance institutions has negative impacts on the following two variables: the female workforce and the ratio between the women &men in the labor force. The female labor force is positively correlated with the ratio between the rate of female participation in the labor force and the rate of male participation in the labor force. On the other hand, the ratio of active women to the total active population has a negative impact on the women contracting microcredits. This ratio is also, negatively correlated with the gender parity index (GPI) and the income inequality index (GINI). From this table of total correlation coefficients, we note a problem of multicoloneality between the majority of microcredit and macroeconomic variables. This problem can lead us back to a problem of non-stationarity of Panel data. For this, we will test for the presence of a homogeneous or heterogeneous non-stationarity problem on Panel data. The table below

corresponds to the homogeneous unit roots tests of Levin and Lin (2002) and the heterogeneous unit roots tests of Im et al. (2003).

Table 3. Unit Root Test on Panel Data

	Lags	Models	In level		In first difference	
			Levin et Lin	PS	Levin et Lin	IPS
LGS	2	3	-1.3083	0.6005	-2.7091	-2.6556
LAFB	1	3	-0.0654	0.2354	-3.0662	-2.4556
LLFF	1	2	3.0112	1.3096	-2.1470	-3.3932
LRFMLFP	1	2	-0.5826	0.6027	-2.3855	-2.7227
LGPI	1	3	0.0864	0.0408	-3.2789	-4.8794
LGINI	1	2	0.2891	0.2270	-3.8975	-4.7013
LINF	1	2	0.4818	0.2561	-2.7049	-4.5838

Source: Research finding.

M2 is a model with individual effects and without a trend and M3 represents a model with individual effects and with a trend. The homogeneous test of non-stationary of Levin and Lin (2002) showed that all variables contain unit roots since the T-Statistics are greater than the critical value of the centered normal distribution reduced to 5%. This critical value is equal to -1.64 at the risk of 5%. After a single difference, these explanatory variables, and the endogenous variable (sustainable development) become stationary. Hence, these micro-credit and macroeconomic variables and the endogenous variable are integrated in order one. The optimal number of lags for the explanatory variables is equal to one but for the endogenous variable is equal to 2. The statistics of heterogeneous unit roots tests on data from Panel; Im et al. (2003), in level are greater than the tabulated value of the reduced centered normal distribution. After a single difference, these statistics become less than this tabulated value. Therefore, these variables are stationary in the first difference. Hence, the homogeneous and heterogeneous non-stationary tests validate the existence of unit roots for the various microcredit variables, macroeconomic ones, and endogenous variables. These variables are integrated of the same order, that is to say of order 1 which brings us back to using the theory of Co-integration on Panel data to study the linear adjustment of sustainable development with respect to its core value. The table below presents the Co-integration tests within and Between by Peter-Pedroni (2004).

Table 4. The Tests of Peter Pedroni (2004)

	Tests Within				Tests Between		
	Rho-stat	**v-stat**	**pp-stat**	**Adf-stat**	**Rho-stat**	**pp-stat**	**Adf-sta**
$\hat{\varepsilon}_{it}$	-6.3616	3.6165	-6.7928	-0.8872	-8.8909	-10.2116	-6.5074

Source: Research finding.

The Within Rho-stat, pp-stat and v-stat statistics are lower than the tabulated value of the reduced centered normal distribution and according to these three statistics, we can accept the Co-integration relation because the residuals are stationary in level. On the other hand, the Adf statistic of within is greater than the critical value of the reduced centered normal distribution, which leads us to reject the Co-integration relation. The three statistics Rho-stat, pp-stat, and Adf-stat are below the critical value at the risk threshold of 5% of the reduced centered normal distribution, which allows us to accept the Co-integration relationship. We accept the Co-integration relationship, which links the endogenous variable (sustainable development) according to the explanatory variables. We will use the fully-modified technique to estimate the intra-country relations of Co-integration. We illustrate the results of the estimation by the fully-modified method in the following Table 5.

Table 5. Relationship of Intra-Country Co-Integration of MENA

	Coefficients	**T-Statistics**
$\mathbf{LAFB_{it}}$	0.04	0.91
$\mathbf{LLFF_{it}}$	0.69	6.25
$\mathbf{LRFMLFP_{it}}$	0.09	1.59
$\mathbf{LGPI_{it}}$	0.29	2.75
$\mathbf{LGINI_{it}}$	-1.10	-2.27
$\mathbf{LINF_{it}}$	0.34	0.70

Source: Research finding.

From this table, we can notice that the degree of elasticity of the sustainable development indicator (SD) concerning the workforce of women who have contracted microloans from microfinance institutions is very low and not significant. Hence, this microcredit variable has no effect on economic growth and poverty reduction. The ratio of the female labor force participation rate divided by the male labor force participation rate has a negligible and insignificant influence on sustainable development. Also, the endogenous variable of sustainable development is insensitive to girls' education. However, the level of primary and secondary education is significant. The variable of income inequalities (GINI) shows a significant and negative impact on the endogenous variable of sustainable development (SD). We also find that the inflation rate has no impact on the sustainable development variable (SD) because the latter is considered a long-term variable that could be influenced by purely real and non-monetary indicators. We will study the linear fit of this long-term relationship in an error correction model (ECM). This model (ECM) presents a deterministic equilibrium where all the explanatory and endogenous variables are stationary in the first differences. This same model also shows a long-term equilibrium where all these same variables are

stationary through the linear combination in the case where the residuals are stationary in level. Linear adjustment could be made relative to equilibrium when the coefficient of the lagged long-term variable has a negative and statistically significant sign. We opt for the estimation of this model (ECM) by adopting the fully modified procedure. The table below presents the results of the estimation of the ECM model using the Fully-Modified technique.

Table 6. Estimation of the ECM Model

	Coefficients	**Significance**
Constant	0.8519	0.0000
ΔLGS_{it}	0.0493	0.3997
$\Delta LAFB_{it}$	0.0600	0.0657
$\Delta LLFF_{it}$	1.5467	0.000
$\Delta LRFMLFP_{it}$	-0.0870	0.1805
$\Delta LGPI_{it}$	-0.2216	0.2295
$\Delta LGINI_{it}$	-1.4377	0.00001
$\Delta LINF_{it}$	-0.2782	0.3934
$Residu_{it-1}$	**-0.6678**	**0.0000**

Source: Research finding.

The results of the estimation of the ECM model through the Fully-Modified procedure allow us to see that the signs of the coefficients are expected and statistically significant. We can also retain that the short-term equilibrium is ensured by stationary variables in the first differences. This short-term equilibrium relationship has coefficients with expected signs which are statistically significant. Regarding the long-term equilibrium relationship, the adjustment is made by a coefficient of residuals shifted by a single period with a negative sign and statistically significant. This shows that almost 67% of the imbalance observed in sustainable development will be corrected by micro-loans granted to women in the MENA region. This could be explained by the speed of the adjustment which could bring this imbalance back to a partially stable state over the long period. We will study the linear dynamics of sustainable development as a function of the explanatory variables of microcredits and macroeconomics. The dynamic model takes the following linear form:

$$Log(GS_{it}) = \alpha_i + \rho Log(GS_{it-1}) + \alpha_i Log(AFB_{it}) + \beta_i Log(LFF_{it}) + \delta_i Log(RFMLFP_{it}) + \theta_i Log(GPI_{it}) + \gamma_i Log(GINI_{it}) + \phi_i Log(INF_{it}) + e_t + \varepsilon_{it} \quad (1)$$

In this model, α_i and e_t are coefficients that show specific and temporal impacts. The existence of a lagged dependent variable prevents us from using standard econometric techniques. Indeed, the use of classical techniques such as the OLS and Within methods leads to estimation results that are biased and not convergent. This is due to the strong correlation between the delayed sustainable development variable and the individual effect α_i. To overcome this difficulty, we use the method of generalized moments in Dynamic Panel. These techniques allow us to control and rectify specific individual and temporal effects and to compensate for the endogeneity biases of the variables. Arellano and Bond (1991) showed that when the number of countries is small (which is true in our case), the asymptotic standard deviations for the two-step estimator are biased downward. In contrast, the one-step estimator is asymptotically inefficient concerning the two-step one even when the error terms are homoscedastic. Arellano and Bond (1991) showed that their two-step estimators could lead to biased results in the case of a small sample size. These researchers therefore recommended adopting a one-step estimator. The table below shows the results of these two types of estimates with robust standard deviations for the duplicate and single-step estimations.

Table 7. Dynamic Estimation of Sustainable Development Using the GMM Method

Single step Arellano-Bond		**Two-step Arellano-Bond**	
Variables	**Coefficients**	**Variables**	**Coefficients**
LGS_{it-1}	0.4811*	LGS_{it-1}	0.4082**
$LAFB_{it}$	**-0.0735 *****	$LAFB_{it}$	0.1632
$LLFF_{it}$	0.0487	$LLFF_{it}$	0.4105
$LRFMLFP_{it}$	0.0828	$LRFMLFP_{it}$	0.1270
$LGPI_{it}$	0.2275 **	$LGPI_{it}$	-0.3587
$LGINI_{it}$	-0.1461	$LGINI_{it}$	-3.4585***
$LINF_{it}$	-0.3929	$LINF_{it}$	-1.1412***
Over-identification test			
Sargan	$\chi^2(170) = 210.7$ (0.00)	Sargan	$\chi^2(170) = 6.2$ (1.000)
Test for absence of autocorrelation of errors the equation in difference			
m2	-1.4491 (0.1473)	m2	-0.4643 (0.6424)
LB = Q	$\chi^2(7) = 278.86$ (0,000)	LB = Q	$\chi^2(2) = 85.06$ (0.000)

Source: Research finding.

Note: (*) Corresponds to the significance at the 1% threshold, (**) present the significance of 5% and (***) designate the significance of 10%. LB stands for LJUNG-BOX level error autocorrelation statistic. The values in parentheses correspond to the probability of not accepting the null hypothesis, even in the case where it is true.

From Table 7, we see that in this dynamic model, the lagged variable of sustainable development takes on a positive and significant sign. This lagged variable has a remarkable influence according to the single-step rather than the two-step Arellano and Bond (1991) technique. The coefficients of the exogenous variables are statistically significant and they have discounted signs. This dynamic model is only identified by the one-step Arellano and Bond (1991) technique since Sargan's statistic is significant. So, the instruments are over-identified. On the other hand, Sargan's statistic is not significant in the case of this technique. So we can retain that these econometric instruments are under-identified for this two-step estimation technique. The LJUNG-BOX test and m2 statistic validate the absence of autocorrelation problems for the one and two-step Arellano and Bond estimation procedure.

3. Interpretation of the Results

Although women in the MENA region have been involved in business initiatives and start-ups, their role and potential have not paradoxically been empirically verified in our work. This negative impact of the role of women's activities on sustainable development in the MENA region could be explained in large part by several factors such as the school enrollment rate and the amplification of women's domestic work. The MENA region has made significant progress in reducing the

gap between women and men in primary and secondary education (3% and 5%) in favor of men and higher (1%) in favor of women, respectively (UNESCO, 2019). However, women's academic performance is likely to be impacted. Dropping out of school disproportionately affects girls, who can be monopolized by additional burdens related to domestic work (Care, 2020). The MENA region has been ranked as the second largest in the world around unpaid domestic work that weighs on women (UN Women, 2020). According to recent surveys, most men in the MENA region consider that the primary role of women is to take care of the household, up to 87% and 72% of men in Egypt and Morocco respectively (UN Women, 2020). The 2019 Social and Gender Institutions Index (SIGI) showed that 67% of the MENA population considers that women's work is done to the detriment of their children (OECD, 2019). The increase in unpaid domestic work falls on women and threatens to further assign women to their productive roles in the region (UN Women, 2020).

Another factor that may explain this negative impact of microcredit intended for women on sustainable development in the MENA region is the existence of a digital divide that affects women in the region. Women in the MENA region face disproportionate difficulties in accessing technology. This is due to their lower level of digital inclusion particularly in rural and isolated areas in the MENA region (UNICEF, 2020). According to the International Telecommunications Union (ITU, 2019), the Internet penetration rate for women in the MENA region is 44.2%, compared to 58.5% for men. A UN study in Jordan showed that 35% of households that are headed by women do not have Internet access compared to 56% of households that are headed by men (UNHCR, UNICEF, WFP, 2020). In this context, this digital divide could prevent women in the region from fully benefiting from these technologies (Vegas, 2020). Enabling women to acquire the skills and tools necessary for their activity constitutes a real opportunity for the development of women's businesses mobilizing technologies in the MENA region. Globally, the lower status of women in the labor market, sectoral and occupational segregation may also justify the low participation of women in the labor force in the MENA region. Part-time employment is more common for women in all MENA countries (ILO, 2020). Women in the MENA region also benefit from less job security and are more vulnerable to deteriorating working conditions (World Bank, 2019). This leads to real concerns, which are amplified by discriminatory social norms in the MENA region (UN Women, 2020). Social protection systems remain weak in the MENA region (UN ESCWA, 2019). Poverty is more frequent among women as they have less access to retirement pensions (27%, compared to 47% of men) (ILO, 2017; World Bank, 2013). Most MENA countries do not have an effective health insurance system (OECD, forthcoming). Almost 62% of women in the region are in informal, undeclared employment without social protection

(ILO, 2018). About 27% of women in the MENA region work in agriculture. In Tunisia, 70% of the agricultural workforce is women. As agricultural producers, women in rural areas often face very heavy and unpaid workloads (OECD, forthcoming). In the largest refugee camp in Jordan a woman, but only 5-10% of women work (Ritchie, 2017; Care, 2020), heads one in five households. The results of the survey carried out by UN Women show that 52% of Libyan women have seen their jobs questioned (UN Women, 2020). This makes high spending and social charges an important factor of vulnerability and poverty that undermines sustainable development in the MENA region.

Companies in the MENA region that are led by women are particularly vulnerable (Global Entrepreneurship Monitor, 2019; IMF, 2019). Women's financial inclusion rates are lower; only 38% of MENA women have a bank account, compared to 57% of men (World Bank, 2017). In some MENA countries, it has been found that even when women take out loans, these are often used by their husbands (UN Women, 2020). This weakness in access to financial services largely justifies the negative impact of microloans in MENA countries. Violence against women in the MENA region may partly explain the negative impact of micro-lending programs. Women living in rural areas, refugees, domestic workers, and those in conflict-affected areas are more likely to be exposed to violence due to their complicated financial situation (Care, 2020). Violence against women in the MENA region also has a heavy economic cost (OECD, 2019). In Egypt, the costs of violence against women have been estimated at least EUR 127 million per year (CAPMAS, NCW, and UNFPA, 2016). About 35% of women in the MENA region have been victims of violence (UN Women, 2020). A study by UN Women indicates that there is a strong belief in some countries in the region that women should endure spousal violence to maintain family cohesion (UN Women, 2020). Respectively 34% and 29% of women in the MENA region between 15 and 50 years old justified the use of domestic violence (OECD, 2019).

4. Conclusion

This paper has tried to examine the impact Female financial inclusion in the MENA countries in economic life, and specifically, the effect of microcredits intended for women on the sustainable development (SD) of this region. Our sample is made up of the 10 countries of the MENA region: Egypt, Iraq, Tunisia, Jordan, Lebanon, Palestine, Sudan, Morocco, Syria and Yemen. The study period spans 29 years from 1990 to 2018. The endogenous variable (sustained sustainable development) corresponds to the net adjustment of sustainable development (SG) which is adopted by the World Bank. The exogenous variables are active borrowers (AFB), female active population (LFF), the ratio of the participation rate of women to men, the Gender Parity Index (GPI), the GINI index (GINI), and the GDP deflator to

identify the change in the general price level. In the first step of the empirical analysis, we investigated the linear fit of this long-term relationship in an error correction model (ECM). We have found that 67% of the imbalance in sustainable development will be corrected by the impact of microcredits intended for women because the speed of adjustment brings us back to this imbalance. In the second step of the analysis, we used the GMM method to estimate the dynamics of sustainable development. Our results lead us to conclude that the ratio (rate of female participation in the labor force/rate of male participation in the labor force) has a negligible and non-significant influence on sustainable development. Overall, our empirical results have shown that women's participation in economic life in the MENA region does not have a significant impact on sustainable development. Our results are contrary to those found in the study of Mndolwa and Alhassan (2020).

Due to the existence of structural barriers linked to the persistence of gender stereotypes and unequal economic opportunities in the MENA region, women's activities, jobs and income are more vulnerable. These risks are much greater for some informal workers who lack sufficient social protection and job and income security. This is the case with unpaid domestic workers, small traders, and agricultural workers, among whom women are over-represented in the MENA region. These constraints are amplified by social norms that limit women's empowerment and their position in the economic and social life of the MENA region (OECD, 2020). It is estimated that the participation of women in the formal labor market in the MENA region is 20%, which is already the lowest in the world (ILO, 2019). The MENA region has the highest youth unemployment rate (aged 15 to 24) in the world, at 42.8% for young women (World Bank, 2019). Although in our empirical work, we have paradoxically found that microcredits intended for women in the MENA region do not lead to a positive impact on sustainable development, this does not prevent the importance of these microloans in the economic recovery in the region. Governments should adopt the necessary support mechanisms to support these initiatives enabling women to become fully involved in economic recovery. Reflections on the impact of gender equality and women's empowerment through micro-credit should also include a long-term perspective on how to move closer to the Sustainable Development Goals.

Technologies can help reach groups, excluded from funding, through the introduction of digital wallets and mobile money transfer apps. They also facilitate technical support and training for entrepreneurs and provide opportunities for SMEs, particularly those led by women. The digital gender divide must be considered to ensure that technologies are suitable for vulnerable individuals. There is a need to improve the access of women and girls to technology in the MENA region by specifically targeting training for women to strengthen their

skills in digital technologies. These countries should provide consultancy services and digital platform development to support women-led businesses. Particular attention should be paid to educational programs that target women entrepreneurs under the Financial Inclusion Initiative. It will also be important to ensure that reforms to support economic recovery are based on careful gender analysis. An equitable presence of women in decision-making and leadership is critical to spur economic, sustainable, and inclusive recovery. The research paper advises ending the gender disparity in employment, which will enhance women's likelihood of gaining access to formal financial services. It also advises boosting women's financial education which will lead to strengthening their financial capacities. This advice will help to reach sustainable development at the country's level.

References

Adegbite, O. O., & Machethe, C. L. (2020). Bridging the Financial Inclusion Gender Gap in Smallholder Agriculture in Nigeria: An Untapped Potential for Sustainable Development. *World Development, 127*, 1-36.

Arellano, M., & Bond, S. (1991). Some Tests of Specification for Panel Data: Monte Carlo Evidence and an Application to Employment Equations. *The Review of Economic Studies, 58*(2), 277–297.

Ben-Eli, M. (2015). Sustainability: Definition and Five Core Principles a New Framework. *A Sustainability Laboratory Publication*, Retrieved from http://www.sustainabilitylabs.org/assets/img/SL5CorePrinciples.pdf

Cabeza-Garcia, L., Del Brio, E. B., & Oscanoa-Victorio, M. L. (2019). Female Financial Inclusion and Its Impacts on Inclusive Economic Development. *Women Studies International Forum, 77*, 1-8.

CAPMAS, NCW & UNFPA. (2015). The Egypt Economic Cost of Gender-Based Violence Survey. *ECGBVS*, Retrieved from https://egypt.unfpa.org/sites/default/files/pub-pdf/Costs%20of%20the%20impact%20of%20Gender%20Based%20Violence%20%28GBV%29%20WEB.pdf

Care. (2020). Gender Implications of Covid-19 Outbreaks in Development and Humanitarian Settings. Retrieved from https://insights.careinternational.org.uk/media/k2/attachments/CARE_Gender-implications-of-COVID-19_Full-Report_March-2020.pdf

Care. (2020). Rapid Needs Assessment Impact of COVID-19 on Vulnerable Populations in Jordan. Retrieved from https://reliefweb.int/report/jordan/rapid-needs-assessment-impact-covid-19-vulnerable-populations-jordan-urban-areas

Demirguc-Kunt, A., Klapper, L., Singer, D., Ansar, S., & Hess, J. (2020). The Global Findex Database 2017: Measuring Financial Inclusion and the Fintech Revolution. *World Bank Economic Review, 34*(1), 1-20.

Everest-Phillips, M. (2014). Small, So Simple? Complexity in Small Island Developing States. Singapore: UNDP Global Centre for Public Service Excellence. Retrieved from https://www.undp.org/sites/g/files/zskgke326/files/publications/GPCSE_Complexity%20in%20Small%20Island.pdf

Farazmand, A. (2018). *Global Encyclopedia of Public Administration, Public Policy, and Governance*. New York: Springer International Publishing.

Global Entrepreneurship Monitor. (2019). 2018/2019 Women's Entrepreneurship Report. Retrieved from https://www.gemconsortium.org/report/gem-20182019-womens-entrepreneurship-report

Haussman, R., Tyson, L., & Sahidi, S., (2010). Global Gender Gap Report. *World Economic Forum, Geneva. Working Paper*, Retrieved from https://www.weforum.org/reports/global-gender-gap-report-2010

ILO. (2020). Incidence of Part-time Employment by Sex. Retrieved from https://www.ilo.org/shinyapps/bulkexplorer54/?lang=en&segment=indicator&id=EMP_PTER_SEX_RT_A

---------- (2019). ILO Modelled Estimates, Population, and Labor Force. Retrieved from https://ilostat.ilo.org/resources/concepts-and-definitions/ilo-modelled-estimates/

---------- (2018). *Women and Men in the Informal Economy: A Statistical Picture* (3rd Ed.). Retrieved from https://www.ilo.org/wcmsp5/groups/public/dgreports/dcomm/documents/publication/wcms_626831.pdf

---------- (2017). World Social Protection Report 2017-19: Universal Protection to Achieve the Sustainable Development Goals. Retrieved from https://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/---publ/documents/publication/wcms_604882.pdf

IMF. (2019). Enhancing the Role of SMEs in the Arab World -Some Key Considerations. Retrieved from https://www.imf.org/~/media/Files/Publications/PP/2019/PPEA2019040.ashx

ITU. (2019). Measuring Digital Development. Retrieved from https://www.itu.int/en/ITU-D/Statistics/Documents/facts/FactsFigures2019.pdf

Kuliga, S. F., Nelligan, B., Dalton, R. C., Marchette, S., Shelton, A. L., Carlson, L., & Hölscher, C. (2019). Exploring Individual Differences and Building Complexity in Wayfinding: The Case of the Seattle Central Library. *Environment and Behavior, 51*(5), 622–665.

Lélé, S. M. (1991). Sustainable Development: A Critical Review. *World Development, 19*(6), 607–662.

Levin , A., Lin, C., & Chu, C. J. (2002). Unit Root Tests in Panel Data: Asymptotic and Finite-Sample Properties. *Journal of Econometrics, 108*(1), 1-24.

Littig, B., & Griessler, E. (2005). Social Sustainability: A Catchword between Political Pragmatism and Social Theory. *International Journal of Sustainable Development, 8*, 65-79.

Im, K. S., Pesaran, M. H., & Shin, Y. (2003). Testing for Unit Roots in Heterogeneous Panels. *Journal of Econometrics, 115*, 53-74.

Mensah, J., & Enu-Kwesi, F. (2019). Implication of Environmental Sanitation Management in the Catchment Area of Benya Lagoon in Ghana. *Journal of Integrative Environmental Sciences, 16*(1), 23-43.

Milne, M. J., & Gray, R. (2013). W(h)ither Ecology? The Triple Bottom Line, the Global Reporting Initiative, and Corporate Sustainability Reporting. *Journal of Business Ethics, 118*(1), 13–29.

Mndolwa, F. D., & Alhassan, A. L. (2020). Gender Disparities in Financial Inclusion: Insights from Tanzania. *African Development Review, 32*(4), 1-15.

Mossman, M. (2015). Moving Beyond Microcredit. The New Yorker. Retrieved from https://www.newyorker.com/business/currency/moving-beyond-microcredit

OECD. (2019). SIGI 2019 Global Report: Transforming Challenges into Opportunities. Retrieved from https://doi.org/10.1787/bc56d212-en

---------- (2020). Women at the Core of the Fight against COVID-19 Crisis. Retrieved from https://read.oecd-ilibrary.org/view/?ref=127_127000-awfnqj80me&title=Women-at-the-core-of-the-fight-against-COVID-19-crisis

Ritchie, H. A. (2017). Towards Inclusion and Integration? Syrian Refugee Women's Fragile New Livelihoods in Jordan. *Working Paper*, Retrieved from https://securelivelihoods.org/wp-content/uploads/Towards-inclusion-and-integration_Syrian-refugee-womens-fragile-new-livelihoods-in-Jordan.pdf

Saith, A. (2006). From Universal Values to Millennium Development Goals: Lost in Translation. *Development and Change*, *37*(6), 1167-1199.

Sakyi-Nyarko, C., Ahmad A. H., & Green C. J. (2022). The Gender-Differential Effect of Financial Inclusion on Household Financial Resilience. *The Journal of Development Studies*, *58*(4), 692-712.

Saner, R., Yiu, L., & Nguyen, M. (2020). Monitoring the SDGs: Digital and Social Technologies to Ensure Citizen Participation, Inclusiveness and Transparency. *Development Policy Review*, *38*, 483–500.

Schaefer, A., & Crane, A. (2005). Addressing Sustainability and Consumption. *Journal of Macromarketing*, *25*(1), 76–92.

Scopelliti, M., Molinario, E., Bonaiuto, F., Bonnes, M., Cicero, L., De Dominicis, F., Fornara, F., Admiraal, J., Beringer, A., Dedeurwaerdere, T., de Groot, W., Hiedanpää, J., Knights, P., Knippenberg, L., Horvat, K. P., Popa, F., Porras-Gomez, C., Smrekar, A., Soethe, N., Vivero-Pol, J. L., van den Born, R., & Bonaiuto, M. (2018). What Makes You a 'Hero' for Nature? Socio-psychological Profiling of Leaders Committed to Nature and Biodiversity Protection across Seven EU Countries. *Journal of Environmental Planning and Management*, *61*(5-6), 970-993.

UN Women. (2020a). Covid-19: Gendered Impacts of the Pandemic in Palestine and Implications for Policy and Programming. Retrieved from https://www2.unwomen.org/

---------- (2020b). Gender-Sensitive Prevention, Response and Management of COVID-19 Outbreak in Libya. Retrieved from https://www2.unwomen.org/

---------- (2020c). Impact of COVID-19 on Women-Led Micro, Small and Medium Enterprises in Palestine. Retrieved from https://www2.unwomen.org/

UNESCO. (2019). UIS. Stat. Retrieved from http://data.uis.unesco.org/

UNESCWA. (2019). Social Protection Reform in Arab Countries. Retrieved from https://www.unescwa.org/sites/www.unescwa.org/files/escwa-covid-19-economic-cost-arab-region-en.pdf

UNHCR, UNICEF, WFP. (2020). Multi-Sectoral Rapid Needs Assessment: COVID-19–Jordan. Retrieved from https://reliefweb.int/sites/reliefweb.int/files/resources/Multi-Sector%20Rapid%20Needs%20Assessment%20Findings%20-%20UNHCR%20WFP%20UNICEF%20May%202020.pdf

UNICEF. (2020). Middle East and North Africa Region COVID-19. Retrieved from https://www.unicef.org/mena/media/8061/file/MENA%20SitRep_COVID%2019%20-%201_31%20March%202020.pdf%20.pdf

United Nations Report. (1987). Report of the World Commission on Environment and Development: Our Common Future. Retrieved from https://digitallibrary.un.org/record/139811

Vegas, E. (2020). School Closures, Government Responses, and Learning Inequality around the World during COVID-19. Washington DC: The Brookings Institution. Retrieved from https://www.brookings.edu/research/school-closures-government-responses-and-learning-inequality-around-the-world-during-covid-19/

Vo, D. H., Nguyen, N. T., & Thi-Hong Van, L. (2020). Financial Inclusion and Stability in the Asian Region Using Bank-Level Data. *Borsa Istanbul Review*, *21*(1), 36-43.

World Bank. (2019a). Vulnerable Employment, Female (% of Female Employment). Retrieved from https://data.worldbank.org/indicator/sl.emp.vuln.fe.zs

---------- (2019b). World Development Indicators. Retrieved from https://databank.worldbank.org/data/source/world-development-indicators

---------- (2018). The Cost of Gender Inequality: Unrealized Potential: The High Cost of Gender Inequality in Earnings. Retrieved from https://www.worldbank.org/

Cite this article: Karim, O., Nidhal, M., Wajdi, M., & Rym, R. (2024). Female Financial Inclusion and Sustainable Development in MENA Countries. *Iranian Economic Review*, *28*(1), 129-149.