

# The Impact of Microfinance on Economic Development: The Case of Tunisia

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Received: January 30, 2020

Accepted: March 2, 2020

Online Published: March 10, 2020

doi:10.5539/ijef.v12n4p43

URL: <https://doi.org/10.5539/ijef.v12n4p43>

## Abstract

This paper aims to study the impact of microfinance on economic development. We used data from the MIX Market (Microfinance Information Exchange), collected from “Enda Tamweel” microfinance institution over the period 1995-2017. The VAR estimation shows that microfinance has a negative and significant impact on the ratio of poverty per capita and the GINI index. Granger's causality test confirms that microfinance contributes more effectively to economic development through its social performance. On the other hand, financial performance gives priority to activities that contribute to the sustainable development of the microfinance institution.

**Keywords:** microfinance, economic development, poverty, social performance, financial performance

## 1. Introduction

Microfinance is considered as one of the most important financial inclusion mechanisms for every excluded person from formal financial system. It provides access to any excluded persons to several financial services. Microfinance is growing rapidly in the world and has had success in countries such as India, Bangladesh, Pakistan, Latin America, Africa and the Middle East. This new approach of finance contributes to improve economic activity in a country and promotes the economic and social integration of the marginalized population (including women, youth and rural populations) through a range of quality financial services and the promotion of entrepreneurship, thereby contributing to economic development.

In Tunisia, the concept of microcredit is not new. Since the Independence, several experiments and development programs have been installed in different sectors but the emergence of real specialized microfinance institutions only took place in 1995 with the creation of “Enda inter-Arab” and the instauration of the microcredit system through development associations and the creation of the Tunisian Solidarity Bank in 1997.

The aim of this paper is to analyze the effect of microfinance on economic growth. In this condition, the paper will be organized as follows:

Section two provides a review of the literature of the relationship between microfinance and economic growth. Section three exposes methodology and model. Section four presents main results and discussions and finally, section five concludes.

## 2. Literature Review

### 2.1 Microfinance Definition

According to the World Bank, microfinance is the provision of financial services to people in a precarious economic situation and aims at the development of a productive activity. In other words, microfinance helps the poor get out of their difficult situation with a release of surpluses to carry out productive activities.

Hardy et al. (2003) consider that microfinance is not limited to microfinance institutions (MFIs) that provide financial services to low-income clients, but must include anyone excluded by traditional financial services. They maintain that microfinance does not only fight against poverty but also seeks economic development through the financial inclusion of all excluded people.

For Ledgerwood (1999), microfinance produced by these financial services institutions, such as savings, loans and financial insurance for low-income clients, even clients who have worked in the independent sector as the

Agriculture. Krauss and Walter (2009) consider microfinance as an essential and effective tool for defending against poverty, but it has very high intermediation margins compared to traditional banking.

### *2.2 The Relationship between Microfinance and Macroeconomic Indicators*

The theoretical reasoning for microfinance is based on a general link between finance and growth, in which microfinance is seen as a component of the financial system. Microfinance institutions (MFIs) are financial and social intermediaries that serve both formal and informal financial systems. In recent years, we have noticed a proliferation of empirical studies aimed at analyzing the causal link between microfinance and macroeconomic indicators. Indeed, the effects of microfinance on economic and financial development are very rich. This new concept in finance contributes to the redistribution of capital, the encouragement of investments, stimulates consumption, entrepreneurship and productivity. As a result, it contributes to sustainable economic development. We distinguish several authors, who are interested in the analysis of the link between macroeconomic indicators and microfinance activities or microfinance performance.

According to Doğ (2017), the impact of microfinance on economic growth is understood through direct and indirect channels. Moreover, Maksudova (2010) argues that the direct impact of microfinance is based on the reduction of poverty, the improvement of well-being, thus causing an effect on the added value of production through the activities of small teleprompters. As a result, microfinance is seen as a direct way that contributes to economic growth, through the production created by small entrepreneurs, the improvement of human development indicators (health, nutrition, education) and the reduction of poverty.

However, regional effects such as age, size, loan method and operational costs influence social performance and effectiveness of MFIs. On the one hand, competition in the microfinance market has a negative effect on the scope and performance of MFIs. Lopatta and Tchikov (2017) use Granger's approach to verify the statistical causality between microfinance and economic development. They identify microfinance, and evaluate the specific contribution of these institutions through the performance of MFIs in economic development. On the other hand, Imai et al. (2012), Maksudova (2010) have tested causality effect based on macroeconomic aggregations of loan and capital portfolios, but they did not find any distinction between the social and financial performance of MFIs.

While microfinance finds mechanisms to serve those excluded from the formal financial system (the poor person, the person who does not have a guarantee). In fact, microfinance accepts social relations as a loan guarantee when the members of the group mutually guarantee each other. This practice reinforces the repayment desire.

New institutions have integrated and developed the microfinance market which leads to increase loan amounts and improve living conditions of poor clients. The ultimate goal of MFIs is to wait for adjustments between their social, financial and economic goals. They focused on economic development and cost reduction and profitability.

Lopatta and Tchikov (2017) outline two thoughts about microfinance, the first thought examines the business case for self-sufficiency of MFIs and looks at microfinance from the perspective of individual MFIs. According to Cull and al. 2007 the analyzes based on the individual sustainability of MFIs do not take into account the long-term objectives of the concept of microfinance such as poverty reduction, financial systems and economic development and even the related effects of its economic efficiency. The second thought concerns macroeconomic analyzes, the studies establish theoretical models of development and economic growth according to microfinance consideration.

Ahlin (2011), Imai et al. (2012) conclude that the performance of MFIs is dependent on economic development. Current research generally indicates the causal presence between microfinance and economic development, but it has not clearly verified the main nature of this relationship.

## **3. Data and Model**

### *3.1 Data*

In this study, we use data from the MIX Market (Microfinance Information Exchange), which is a global platform gathering information on microfinance institutions. Its objective is to promote the exchange of information within the microfinance sector. In addition, most of the data is related to “Enda Tamweel's annual reports while macroeconomic variables come from the World Bank's WDI (World Development Indicators).

We use data collected from “Enda Tamweel” microfinance institution over the period 1995-2017, The choice of this institution is motivated by the fact that it is the oldest institution in the field of microfinance and a leader in the field of microfinance in Tunisia. “Enda Tameel” approved by the Ministry of Finance on 31 December 2015.

Created by the non-governmental organization “Enda Inter-Arabe”, which introduced micro-credit in Tunisia in 1995. Our study follows the approach of Lopatta and Tchikov (2017) which examines the impact of microfinance on economic development.

### 3.2 Model

Generally, several indicators related to economic development, social performance and financial performance apprehend the concept of microfinance. Hartarska (2005), Cull et al. (2007), Hartarska and Nadolnyak (2007) quantified the social significance, by the indicators of the social performance, which are the number of active borrowers (NAB) (breadth), the intensity of the transactions (depth) for example the number of poor women (women are particularly affected by financial exclusion and poverty) and young microcredit beneficiaries. According to Schreiner (2002) women are seen as having more difficulty obtaining loans.

According to Rosenberg (2009) financial performance is measured by portfolio at risk (PAR), asset return (ROA), operational self-sufficiency (OSS) and operating expenses (OPX). In addition, previous empirical research such as Maksudova (2010), Nwakanma et al. (2014) used cumulative microcredit volumes or gross loan portfolios to quantify microfinance in the evaluation of economic development Kerstin Lopatta and Tchiko (2017). They used several indicators such as the per capita poverty rate (PHC), the income inequality coefficient (GINI), GDP growth (GDPG), GNP per capita (GNP), gross capital formation (GCF), the participation rate at work (LPR) as well as the literacy rate.

Based on the literature review and data availability, we identified microfinance variables and economic development as follows: We used two variables to assess social performance and three variables to measure financial performance. We consider the following:

NAC: The number of active customers:

PFB: The percentage of female borrowers: number of women borrowers of the institution compared to the total of their active borrowers.

ROA: Return on Assets: Measurement of the MFI's capital to use its assets to generate a return (Operating result) / average amount of assets.

PAR: The Portfolio at risk: Measures the Quality of the Portfolio,

OSS: Operational Self-Sufficiency: Operational Self-Sufficiency Ratio measures the MFI's ability to cover operating expenses with operating revenues, Financial Products / (Financial charges Allowances for bad debts + Expenses for exploitation)

OPX: Operating Load Ratio measures the effectiveness of an institution: Operating expenses / Average gross credit outstanding. The lower the ratio, the better the efficiency of the institution.

Then, we used four economic development variables:

PHC: The per capita poverty ratio at \$ 1.90 per day is the percentage of the population living on less than \$ 1.90 per day at 2011 international prices.

GINI: The GINI index indicates to what extent the distribution of income (or in some cases, consumption expenditure) between individuals or households in an economy deviates from perfect equality.

GCDP: GDP growth (annual %), annual percentage rate of GDP growth at market prices based on constant local currency. Aggregate data are based on 2010 constant US dollars

LIT (Literacy rate): The adult literacy rate is the percentage of people aged 15 and over who can read and write with understanding a short, simple statement about their daily lives.

On this basis, we have studied the impact of microfinance on the development of Tunisia and to do this, we have estimated the vector autoregressive (Var) which analyzes long-term dynamic links. Then we will carry out Granger causality tests as a multivariate diagnostic approach to the time series. Our model can be written as follows:

$$Y_t = \delta 0 + \alpha 1 y_{t-1} + \gamma 1 z_{t-1} + \alpha 2 y_{t-2} + \gamma 2 z_{t-2} + \dots \quad (1)$$

$$Z_t = \eta 0 + \beta 1 y_{t-1} + \rho 1 z_{t-1} + \beta 2 y_{t-2} + \rho 2 z_{t-2} + \dots \quad (2)$$

Where  $y_t$  and  $z_t$  are two series generated from their own past values and  $\alpha$ ,  $\beta$ ,  $\gamma$ ,  $\delta$ ,  $\eta$ , and  $\rho$  are coefficients of the two linear regressions.

Y includes all variables of economic development and z includes all performance variables of microfinance.

Then, we performed the Granger causality tests (Hassan et al., 2011), Nwakanma et al. (2014), Qin and Ndiege (2013) to determine whether past values of on variable are useful for predicting another.

Based on the VAR models, we teste whether after checking the past y and past z can predict  $y_t$ .

So Z Granger causes Y when

$$E(y_t / I_{t-1}) \neq E(y_t / J_{t-1}) \quad (3)$$

Where  $I_{t-1}$  includes the past values of Y and Z, while  $J_{t-1}$  includes only the past values of Y in other words, if equation (3) holds, the past values of Z are used only to predict Y It takes into account the past values of Y (Wooldridge, 2013).

We used an economic model to appreciate the causal relationship in the sense of Winning between microfinance and economic development:

$$DE_t = \delta_0 + \alpha_1 PHC_{t-1} + \alpha_2 GINI_{t-2} + \alpha_3 GCDP_{t-3} + \alpha_4 LIT_{t-4} + \gamma_1 PFB_{t-1} + \gamma_2 NCA_{t-2} + \gamma_3 PAR_{t-3} + \gamma_4 ROA_{t-4} + \gamma_5 OSS_{t-5} + \gamma_6 OPX_{t-6} \quad (4)$$

With  $\alpha$ ,  $\gamma$  and  $\delta$  are linear regression coefficients.

#### 4. Results

##### 4.1 Descriptive Statistiques

Table 1. Descriptive statistiques

	OSS	GDPG	OPX	EC	NCA	GINI	PAR	PFB	ROA	RESID	LIT	PH
Mean	1.204	3.586	0.228	113094	144115.	36.964	0.006	0.750	0.050	1.19E-	77.372	3.294
Median	1.120	3.510	0.180	44000	123000.	37.700	0.006	0.730	0.040	0	77.560	3.100
Maximum	1.470	6.700	0.378	481400	330000.	40.800	0.011	0.919	0.140	0.001	81.800	5.300
Minimum	0.870	1.100	0.150	807	4739.00	30.900	0.003	0.630	-0.050	-0.002	74.290	2.00
Std. Dev.	0.205	1.651	0.088	148302	121842.	3.464	0.002	0.094	0.059	0.001	2.864	1.414
Skewness	-0.222	0.137	0.835	1.28845	0.25823	-0.606	0.818	0.440	-0.183	-0.658	0.138	0.571
Kurtosis	1.820	2.328	2.079	3.47432	1.52967	2.374	2.907	1.963	2.092	2.850	1.437	1.666
Jarque- Bera	1.126	0.373	2.578	4.86302	1.72025	1.319	1.905	1.310	0.678	1.245	1.784	2.185
Probability	0.569	0.829	0.275	0.08790	0.42310	0.516	0.385	0.519	0.712	0.536	0.409	0.335

From the table above, we note that the portfolio at risk (PAR) that measures the portfolio quality of the institution “Enda Tamweel” is not very important because it represents on average (6,31%). As well as, the amount of this variable varies between (0.003) and (0.011), since the financial guarantees are not always sufficient.

The average operational self-sufficiency is 1.204, indicating that, on average, MFIs' financial revenues are sufficient to cover their operating expenses.

The percentage of female borrowers ranges from 63% to 91% with a dispersion around the average of 0.750

The average operating expense is 22%, its value ranges from a low of 37% to a high of (18%). The lower the ratio, the better the efficiency of the institution (expenses are influenced by the payroll).

The institution “Enda Tamweel” has historically recorded a good financial performance with a maximum asset of 14% and an average of 5% over the period 2000 to 2017 this shows that the institution “Enda Tamweel” is profitable, the Tunisian revolution is falling significantly the profitability of MFIs.

##### 4.2 VAR Estimation

What we are interested in in this estimation of the VAR model is to express economic development indicators according to the other variables of the model (performance indicators of microfinance).

The observation of our VAR estimation result shows that all the model variables other than (GPBG) GDP growth depend on the other variables retained in our model since the coefficients are significant at the 5% threshold, which shows that some variables of the microfinance system have a significant effect on economic development in Tunisia.

Table 2. VAR model estimation

	PHC	GINI	GDPG	LIT
PHC(-1)	2.461269 (4.42210) [ 0.55658]	30.20661 (21.5687) [ 1.40048]	-35.79406 (23.7786) [-1.50531]	16.69814 (10.9323) [ 1.52741]
PHC(-2)	-4.831382 (2.65731) [-1.81815]	22.86694 (12.9610) [ 1.76429]	21.62556 (14.2889) [ 1.51345]	-16.91457 (6.56942) [-2.57474]
GINI(-1)	-1.356905 (3.03569) [-0.44698]	-18.78902 (14.8065) [-1.26897]	24.76351 (16.3235) [ 1.51704]	-11.20649 (7.50484) [-1.49323]
GINI(-2)	2.505287 (1.82191) [ 1.37509]	-14.12851 (8.88633) [-1.58991]	-16.55110 (9.79682) [-1.68944]	11.35156 (4.50414) [ 2.52025]
GDPG(-1)	-0.002671 (0.08117) [-0.03291]	-0.413323 (0.39593) [-1.04394]	-0.615047 (0.43649) [-1.40906]	0.119305 (0.20068) [ 0.59450]
GDPG(-2)	0.007385 (0.06069) [ 0.12169]	-0.550006 (0.29600) [-1.85812]	-0.449281 (0.32633) [-1.37677]	0.065885 (0.15003) [ 0.43914]
LIT(-1)	0.532254 (0.18924) [ 2.81261]	0.032449 (0.92301) [ 0.03516]	0.521081 (1.01758) [ 0.51208]	-0.762743 (0.46784) [-1.63036]
LIT(-2)	-0.372795 (0.24955) [-1.49389]	-0.319438 (1.21716) [-0.26245]	-1.187994 (1.34187) [-0.88533]	0.526796 (0.61693) [ 0.85390]
C	-18.32533 (67.8691) [-0.27001]	1169.064 (331.030) [ 3.53160]	-121.9782 (364.947) [-0.33424]	45.33437 (167.786) [ 0.27019]
PFB	-16.44494 (7.86855) [-2.08996]	-175.7736 (38.3787) [-4.57998]	-34.37916 (42.3109) [-0.81254]	15.59451 (19.4527) [ 0.80166]
OPX	24.14497 (5.72480) [ 4.21761]	111.3972 (27.9226) [ 3.98951]	-19.29718 (30.7835) [-0.62687]	16.07876 (14.1529) [ 1.13608]
OSS	-15.15807 (9.46996) [-1.60065]	77.89123 (46.1895) [ 1.68634]	-38.34898 (50.9220) [-0.75309]	16.80937 (23.4117) [ 0.71799]
ROA	55.55658 (24.6310) [ 2.25555]	-236.7918 (120.137) [-1.97101]	109.5045 (132.446) [ 0.82678]	-31.05649 (60.8930) [-0.51002]
PAR	-122.9739 (137.356) [-0.89529]	114.6281 (669.950) [ 0.17110]	-652.5518 (738.592) [-0.88351]	574.0415 (339.572) [ 1.69049]
NCA	-2.03E-05 (8.7E-06) [-2.32647]	-6.88E-05 (4.3E-05) [-1.61593]	-5.58E-05 (4.7E-05) [-1.18808]	4.90E-05 (2.2E-05) [ 2.27008]
R-squared	0.997199	0.994764	0.972225	0.996456
Adj. R-squared	0.957982	0.921463	0.583368	0.946845
Sum sq. resids	0.066941	1.592513	1.935565	0.409131
S.E. equation	0.258730	1.261948	1.391246	0.639633
F-statistic	25.42804	13.57096	2.500213	20.08525
Log likelihood	21.10922	-4.244811	-5.805500	6.627459
Akaike AIC	-0.763653	2.405601	2.600688	1.046568
Schwarz SC	-0.039351	3.129903	3.324989	1.770870
Mean dependent	2.962500	38.45625	3.160625	77.87813
S.D. dependent	1.262207	4.503031	2.155398	2.774335

Standard errors in ( ) &amp; t-statistics in [ ]

The result indicates that the poverty per capita (PHC) ratio is negatively related to the percentage of female borrowers (PFB) and the number of active clients (NCA), but it depends positively on the return on assets (ROA) that measures the profitability of the loan. institution and operating expenses (OPX) that measures the effectiveness of the institution.

The ratio of poverty per capita (PHC) depends negatively on social performance and positively on the financial performance of the microfinance institution.

Also result shows that the GINI index negatively depends on the percentage of female borrowers (PFB) and positively depends on the operating cost ratio (OPX).

Result shows that the literacy rate (LIT) depends only on number of active client (NCA), There is a positive impact of (NCA), a 1% increase in active client number (NCA) leads to a 4.90% increase of (LIT).

We note that the percentage of female borrowers (PFB) has a negative impact on the ratio of poverty per capita (PHC) and on the GINI index (GINI). Therefore, the Active customer number (NCA) has a negative effect on the per capita poverty ratio (PHC) and tends to say that there is a positive rate effect (LIT).

On the other hand, we find that the operating expenses (OPX) have a positive impact on the poverty ratio per capita (PHC) and on the GINI index (GINI). While Return on Assets (ROR) Positively Affects the Per Capita Poverty Ratio (CHP)

Our result shows that per capita poverty ratio (PHC) is the most determining element of economic development since it depends a lot on the microfinance indicator PFB, NCC, OPX, ROA, compared to other indicators and indicators. GINI arrives at the second order, it depends on PFB, OPX,

The results show that the institution “Enda Tamweel” through these social performances as measured by the percentage of female borrowers (PFB) and number of active clients (NCA) have contributed to reduce poverty and inequality and increases the Education while financial performance measure by the profitability of assets (MMR) and operating expenses (OPX) contributed to increased poverty.

Microfinance in Tunisia is much more effective in contributing to economic development through its social performance and not in its financial performance. In other words, economic development is improved through poverty reduction and inequality and promoting education through social mobility.

#### 4.3 Granger Causality Test

Table 3. Granger causality test

Null Hypothesis:	Obs	F-Statistic	Prob.
PHC does not Granger Cause ROA	16	2.37498	0.1389
ROA does not Granger Cause PHC		2.30601	0.1458
PFB does not Granger Cause ROA	16	7.45293	0.0090
ROA does not Granger Cause PFB		5.87822	0.0183
PAR does not Granger Cause ROA	16	0.34049	0.7187
ROA does not Granger Cause PAR		1.61227	0.2432
OSS does not Granger Cause ROA	16	1.63597	0.2388
ROA does not Granger Cause OSS		0.74682	0.4964
OPX does not Granger Cause ROA	16	2.84476	0.1010
ROA does not Granger Cause OPX		3.33683	0.0737
LIT does not Granger Cause ROA	16	2.09359	0.1696
ROA does not Granger Cause LIT		1.21288	0.3342
GINI does not Granger Cause ROA	16	2.21055	0.1560
ROA does not Granger Cause GINI		0.31676	0.7349
GDPG does not Granger Cause ROA	16	1.26678	0.3198
ROA does not Granger Cause GDPG		2.31298	0.1450
PFB does not Granger Cause PHC	16	3.21780	0.0794
PHC does not Granger Cause PFB		3.71630	0.0585
PAR does not Granger Cause PHC	16	0.58938	0.5713
PHC does not Granger Cause PAR		2.88790	0.0982
OSS does not Granger Cause PHC	16	1.95251	0.1881
PHC does not Granger Cause OSS		1.63680	0.2386

OPX does not Granger Cause PHC	16	9.16585	0.0045
PHC does not Granger Cause OPX		0.95206	0.4156
LIT does not Granger Cause PHC	16	0.04265	0.9584
PHC does not Granger Cause LIT		7.90556	0.0074
GINI does not Granger Cause PHC	16	0.03425	0.9664
PHC does not Granger Cause GINI		0.27740	0.7629
GDPG does not Granger Cause PHC	16	0.37606	0.6951
PHC does not Granger Cause GDPG		0.77475	0.4844
PAR does not Granger Cause PFB	16	0.17421	0.8424
PFB does not Granger Cause PAR		2.24607	0.1521
OSS does not Granger Cause PFB	16	6.08521	0.0166
PFB does not Granger Cause OSS		7.18747	0.0101
OPX does not Granger Cause PFB	16	5.04493	0.0279
PFB does not Granger Cause OBX		1.60581	0.2444
LIT does not Granger Cause PFB	16	2.96911	0.0931
PFB does not Granger Cause LIT		3.65690	0.0606
GINI does not Granger Cause PFB	16	3.78146	0.0562
PFB does not Granger Cause GINI		0.96101	0.4124
GDPG does not Granger Cause PFB	16	0.46462	0.6402
PFB does not Granger Cause GDPG		4.16552	0.0450
OSS does not Granger Cause PAR	16	1.81095	0.2090
PAR does not Granger Cause OSS		0.79967	0.4740
OPX does not Granger Cause PAR	16	1.30003	0.3113
PAR does not Granger Cause OBX		0.14770	0.8644
LIT does not Granger Cause PAR	16	1.93539	0.1905
PAR does not Granger Cause LIT		0.74084	0.4991
GINI does not Granger Cause PAR	16	3.22863	0.0788
PAR does not Granger Cause GINI		0.05600	0.9458
GDPG does not Granger Cause PAR	16	1.17579	0.3445
PAR does not Granger Cause GDPG		0.41386	0.6710
OPX does not Granger Cause OSS	16	1.91837	0.1929
OSS does not Granger Cause OPX		2.67813	0.1128
LIT does not Granger Cause OSS	16	1.85096	0.2028
OSS does not Granger Cause LIT		1.40656	0.2858
GINI does not Granger Cause OSS	16	1.57679	0.2500
OSS does not Granger Cause GINI		0.48745	0.6269
GDPG does not Granger Cause OSS	16	1.72939	0.2223
OSS does not Granger Cause GDPG		3.49775	0.0667
LIT does not Granger Cause OPX	16	0.33017	0.7257
OPX does not Granger Cause LIT		5.46853	0.0224
GINI does not Granger Cause OPX	16	0.69635	0.5191
OPX does not Granger Cause GINI		0.45311	0.6470
GDPG does not Granger Cause OPX	16	2.07455	0.1720
OPX does not Granger Cause GDPG		0.81070	0.4694
GINI does not Granger Cause LIT	16	7.15495	0.0102
LIT does not Granger Cause GINI		1.63502	0.2390
GDPG does not Granger Cause LIT	16	0.18341	0.8349
LIT does not Granger Cause GDPG		2.80342	0.1038
GDPG does not Granger Cause GINI	16	0.62749	0.5520
GINI does not Granger Cause GDPG		0.94876	0.4168

For our study, we are interested by studying the variables that cause the economic development measured by PHC, GINI, GCDP, LIT.

Our analyzes indicate that social performance of the microfinance institution “Enda Tamweel” in terms of percentage of female borrowers (PFB) is in a unidirectional causal relationship with economic development as measured by the poverty ratio. (PHC) and GDP growth (GDOG) and secondly that the financial performance of

the microfinance institution “Enda Tamweel” in terms of operating cost (OPX) has a one-way causal relationship with the Economic Development as Measured by Per Capita Poverty Ratio (PHC) and Literacy Rate (LIT)

Granger significant tests provide a unidirectional causal relationship of the effectiveness of the microfinance institution “Enda Tamweel” measured by their operating costs (OPX) to per capita poverty ratios (PHC).

- The study of the relationship between the ratio of poverty per capita and the number of women borrowers shows that there is no causal relationship between the ratio of poverty per capita and the number of female borrowers in the sense of GRANGER because their probability values of accepting the null hypothesis are much greater than 0.05 (0.0794 and 0.0585). Moreover, there is no causal relationship between the per capita poverty ratio and the portfolio at risk in the sense of GRANGER because their probability values of accepting the null hypothesis are much greater than 0.05 (0.5713). 0.0982).

- Relation between the poverty ratio per capita and the profitability of assets:

There is no causal relationship between the ratio of poverty per capita and profitability of assets in the sense of GRANGER because their probability values of accepting the null hypothesis are much greater than 0.05 (0.1389 and 0.1458).

- Relationship between per capita poverty ratio and operational self-sufficiency:

There is no causal relationship between the ratio of per capita poverty and operational self-sufficiency in the sense of GRANGER because their probability values for accepting the null hypothesis are much greater than 0.05 (0.1881 and 0.2386).

- Relationship between the per capita poverty ratio and the operating cost:

It can be seen that it is the operating burden that causes, within the meaning of GRANGER, the evolution of the poverty ratio per capita ( $0.0045 < 0.05$ ) and not the other way around ( $0.0794 > 0.05$ ). This result confirms the studies of Kerstin Lopatta and Tchikov (2017) who find a unidirectional causality between the return on assets (ROA) and the operating cost (OPX) of MFIs and the ratio of poverty per capita (PHC).

- Relationship between Literacy Rate and Percentage of Female Borrowers:

There is no causal relationship between literacy rate and the percentage of female borrowers in the GRANGER sense as their probability values for accepting the null hypothesis are well above 0.05 (0.0931 and 0.0606).

- Relationship between literacy rate and risk portfolio:

There is no causal relationship between literacy rate and portfolio at risk in the sense of GRANGER because their probability values of accepting the null hypothesis are well above 0.05 (0.1905 and 0.4991).

- Relationship between literacy rate and operational self-sufficiency:

There is no causal relationship between literacy rate and operational self-reliance in the sense of GRANGER as their probability values for accepting the null hypothesis are well above 0.05 (0.2028 and 0.2858).

- Relationship between literacy rate and operating charge:

It can be seen that it is the operating burden that causes, within the meaning of GRANGER, the variation in the literacy rate ( $0.0224 < 0.05$ ) and not the other way around ( $0.7257 > 0.05$ ). In addition, it is the opposite of the results of Lopatta and Tchikov (2017) find a single significant result, a unidirectional causality of the literacy rate (LIT) towards the average loan balances.

- Relationship between Literacy Rate and Asset Profitability:

There is no causal relationship between literacy rate and asset profitability in the sense of GRANGER because their probability values of accepting the null hypothesis are well above 0.05 (0.1696 and 0.3342).

- Relationship between literacy rate and operational self-sufficiency:

There is no causal relationship between literacy rate and operational self-reliance in the sense of GRANGER as their probability values for accepting the null hypothesis are well above 0.05 (0.2028 and 0.2858).

- Relationship between literacy rate and operating charge:

It can be seen that it is the operating burden that causes, within the meaning of GRANGER, the variation in the literacy rate ( $0.0224 < 0.05$ ) and not the other way around ( $0.7257 > 0.05$ ). In addition, it is the opposite of the results of Lopatta and Tchikov (2017) find a single significant result, a unidirectional causality of the literacy rate (LIT) towards the average loan balances.

- Relationship between Literacy Rate and Asset Profitability:



There is no causal relationship between literacy rate and asset profitability in the sense of GRANGER because their probability values of accepting the null hypothesis are well above 0.05 (0.1696 and 0.3342).

- Relationship between GINI index and percentage of female borrowers

There is no causal relationship between literacy rate and the percentage of female borrowers in the GRANGER sense as their probability values for accepting the null hypothesis are well above 0.05 (0.0562 and 0.4124).

- Relationship between GINI index and operational self-sufficiency:

There is no causal relationship between literacy rate and operational self-sufficiency in the sense of GRANGER as their probability values for accepting the null hypothesis are well above 0.05 (0.2500 and 0.6269).

There is no causal relationship between literacy rate and operational self-sufficiency in the sense of GRANGER as their probability values for accepting the null hypothesis are well above 0.05 (0.2500 and 0.6269).

- Relationship between GINI index and risk portfolio:

There is no causal relationship between literacy rate and the portfolio at risk in the sense of GRANGER as their probability values of accepting the null hypothesis are well above 0.05 (0.0788 and 0.9458)

- Relationship between GINI index and asset profitability:

There is no causal relationship between the GINI index and the asset return in the GRANGER sense since their probability values for accepting the null hypothesis are well above 0.05 (0.1560 and 0.7349).

- Relationship between GDP growth and asset profitability:

There is no causal relationship between GDP growth and asset profitability in the sense of GRANGER as their probability values of accepting the null hypothesis are well above 0.05 (0.3198 and 0.145):

- Relationship between GINI index and operating expenses:

There is no causal relationship between literacy rate and operating costs in the sense of GRANGER because their probability values of accepting the null hypothesis are much greater than 0.05 (0.5191 and 0.4670).

- Relationship between GDP growth and percentage of female borrowers:

There is a one-way relationship, it is the percentage of female borrowers that causes GDP growth ( $0.0450 < 0.05$ ) to grow in the sense of GDP growth, but GDP growth does not cause in the sense of GROW the percentage female borrowers ( $0.6402 > 0.05$ ).

Our results confirm the result of Lopatta and Tchikov (2017) find that the relationship between the percentage of female borrowers in MFIs and GDP growth (GDPG) is only a one-way Granger causality, causality ranging from GDPG to PFB.

- Relationship between GDP growth and the risk portfolio:

There is no causal relationship between GDP growth and the portfolio at risk in the sense of GRANGER because their probability values of accepting the null hypothesis are well above 0.05 (0.3445 and 0.6710).

- Relationship between GDP growth and operating expenses:

There is no causal relationship between GDP growth and operating costs in the sense of GRANGER because their probability values of accepting the null hypothesis are well above 0.05 (0.01720 and 0.4694).

In fact, Granger tests do not provide any evidence of causality between the number of active borrowers and the economic development indicators. Our results confirm the result of Lopatta and Tchikov (2017) and confirms the analysis from Lopatta and Tchikov (2016) who state that microfinance should not be quantitative but qualitative in terms of the number of women beneficiaries of microcredit and the loan amount. After this analysis we conclude that the social performance and financial performance of the institution “Enda Tamweel” verify their causal interaction with the economic development Tunisia otherwise our financial performance measure by operating expenses (efficiency) is contributed to increases the poverty. In addition, our results show that microfinance has an impact on economic development through social performance where the percentage of women borrowers (PFB) causes GDP growth.

Overall, our results show that microfinance contributes sustainably to economic development and the Granger causality test does not lead to any two-way causality results between variables like the other studies. This causality approach confirms that microfinance is more efficient in contributing to economic development through its social performance. While financial performance gives priority to activities that, contribute to the sustainable development of the microfinance institution “Enda Tamweel”. Therefore, for a better to promote

economic development and poverty reduction and inequality ... the MFI must focus on its social performance, which confirms the advocates of the social approach, financial sustainability creates a barrier to innovation and reduction of poverty (Roy, 2005).

## 5. Conclusion

This work aims to study the impact of microfinance on economic development and to verify their causal interaction with economic development. To achieve this objective, we first made an empirical review that allowed us to identify the indicators. Microfinance performance and economic development indicators that may apply to empirical evidence.

Our results show that microfinance through its social performance also has a negative and significant impact on the ratio of poverty per capita and the GINI index, however we find a positive impact of the financial performance share as the costs of exploitation and asset returns accordingly, it can be said that microfinance has an impact on economic development.

Granger's causality test results demonstrate new evidence on the causal role of microfinance in the economic development process. On the one hand, unidirectional causality between "Enda Taweel's social performance, such as the percentage of female borrowers, and economic development as GDP growth shows that microfinance helps contribute to economic development. On the other hand, the Granger causality test reveals the existence of a unidirectional causality of the ratio of operating costs to the ratio of poverty per capita and rates of literacy. Therefore, the financial performance of the MFIs, like the expenses exploitation, are linked in an ambiguous way with economic development, poverty reduction and the efficiency of the education system. Microfinance institutions contribute to economic development and help reduce poverty and improve the efficiency of the education system

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