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PAPER

Microcredit Governance Efficiency: Albanian Job

Emiljan Karma* • **Klodian Muço**** • **Mauro Gianfranco Bisceglia*****

Abstract Albanian microfinance sector, in particular microcredit, has experienced modest development in recent years, although having the objective (moreover shared at the EU level) of the fight against social and financial exclusion, self-employment promotion, and small businesses support. Microcredit represents a lifeline or starting point for small entrepreneurs or start-ups to access credit, which is impossible otherwise. Thus, it provides a start-up or survival opportunity for people and businesses that would not have vital space in different circumstances. An instrument widely used in Western Countries, therefore, to be replicated mainly in developing countries such as Albania to allow more favorable conditions for credit access and consequently more economic and social growth. This paper aims to provide an assessment of the financial and social efficiency of the microfinance sector and, in particular, of Albanian microcredit. This evaluation is carried out using DEA (Data Envelopment Analysis) method through secondary data obtained from financial institutions operating in Albania. The analysis highlights the noticeable financial and social inefficiencies. This study clearly points out the greater attention of microcredit institutions toward financial objectives (and less to social ones).

Keywords: Microcredit, Financial efficiency, Social efficiency, Tobit Regression, Albanian microfinance.

JEL classification: G10, G21, G32, O21

1. Introduction

In the production theory, performance refers to an optimal combination of inputs to achieve maximum outputs, thereby reducing waste (Chase et al., 2012; Bisceglia &

Emiljan Karma*(✉), Klodian Muço**, Mauro Gianfranco Bisceglia***
* Research Centre on Developing Economies, Catholic University Our Lady of Good Counsel, Tirana, Albania
E-mail: e.karma@unizkm.al
** Research Centre on Developing Economies, Catholic University Our Lady of Good Counsel, Tirana, Albania
*** Department of Economy and Finance, Aldo Moro University, Bari, Italy.
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Regina, 2020). Regarding Microfinance institutions (MFIs) efficiency, we refer to the way MFIs allocate (allocative efficiency) and utilize their inputs (productive efficiency) to produce outputs in terms of their loan portfolio and poverty outreach (Bassem, 2008; Balkenhol, 2007).

Efficiency refers to using an input to generate output, previously defined as the output-to-input ratio, such as cost per unit or production per hour of labor (Cooper et al., 2000). Literature (Diamond & Medewitz, 1990; Sexton, 1996) has shown that ratio analysis is not relevant in measuring the overall performance of MFIs (ratios are based on a single input and single output).

Modern efficiency method can be extended to more inputs and outputs and can be used to measure the MFI performance. The study proposes relative effectiveness as a metric that can be used to assess the success of MFIs in terms of social and financial aspects. This study uses the Data Envelopment Analysis Model (DEA Model), a non-parametric linear programming approach, to measure efficiencies. It involves constructing a frontier from all best-performing MFIs and then measuring the relative efficiency of individual MFIs against the rest of the MFIs.

To our knowledge, this is the first study investigating the financial and social efficiency of the MFIs in Albania using a non-parametric method like DEA. Some studies use the traditional method in evaluating financial efficiency: Muharremi et al. (2018) conducted a study using the parametric model to evaluate the MFIs impact on borrowers' living standards in the Vlora region and Fier. Kola (2017) and Kola and Cerpja (2018) use various data collection techniques, such as surveys, interviews, quantitative measurements of financial data, and data processing methodologies, including paired t-tests and a comparison-based data analysis methodology using a control group to support or reject the hypothesis. Delija (2017) conducted a study using a traditional method to evaluate the financial performance of MFIs in Albania. One study using DEA to evaluate MFI's financial efficiency was conducted by Curri (2015); however, it did not include the evaluation of the social dimension.

The paper has five parts. The first part is this introduction; part two focuses on synthesizing the microfinance context and evolution in Albania; the third part deals with the evaluation of the MFIs efficiency according to the DEA Model; part four presents the results of the calculations and analyses; and the fifth part contains the study conclusion.

2. Context and evolution of microfinance in Albania

Microfinance institutions easily entered Albania in the early and mid-1990s - some as NGOs and some as quasi-governmental agencies, all free of state supervision. This chaotic situation caused the infamous "pyramid saving schemes" collapse of 1997 when up to 50% of the population lost their savings (Gannon 2005).

The first development of state regulation and supervision of microfinance activity occurred in 1998, stimulated by World Bank.

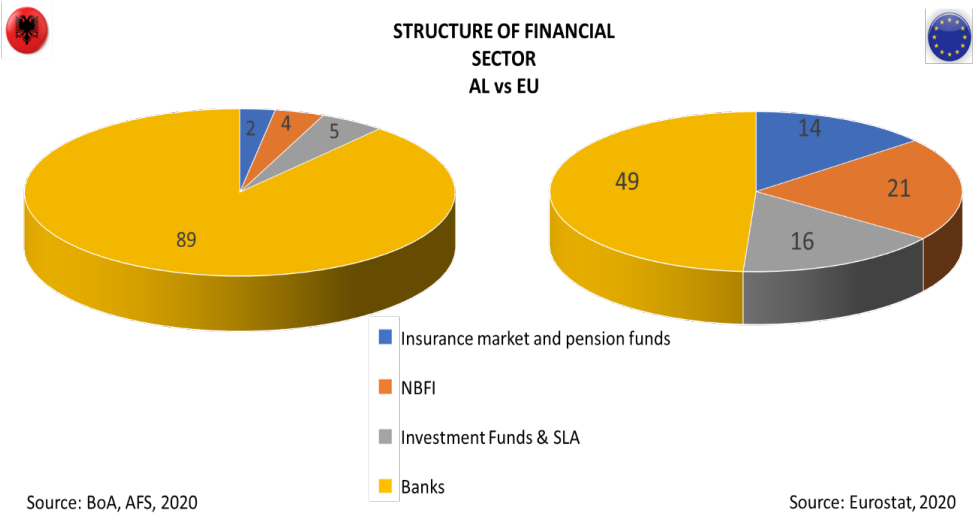

Figure 1. Structure of Financial Market in Albania and EU (% of total sector assets).

Currently, Albanian institutions authorized to provide microloans include *Non-Bank Financial Institutions* (NBFIs) that are further classified into two categories: i. institutions licensed to conduct lending operations and ii. institutions licensed to conduct microcredit operations (*Microcredit Financial Institutions* - MFIs) and *Savings and Loan associations* (SLAs) legal entities comprised of voluntary unions of natural or juridical persons who deposit their money into the company and whose funds are used by the company to issue loans to members. MFIs and SLAs are required to obtain a license from the Bank of Albania (BoA), and they must follow the strict rules of the BoA supervisory board, including the respective regulations (BoA, 2020).

Banks dominate the financial market structure in Albania. According to the latest report published by BoA, 15 NBFIs and 14 SLAs held a license to conduct loan operations. In 2020, the microfinance sector held more than 4% of the total assets of the financial sector, and its share had grown since 2017 when its sector share was 3%. Comparing the data of the Albanian market with the respective data of the EU (Pires 2019; Eurostat 2020), it can be said that microfinance in Albania has a modest development (see Figure 1).

The microfinance sector in Albania has grown slowly but continuously over the years, despite the modest weight in the financial market. The data published by the Bank of Albania indicate and confirm this trend (Figure 2). Thus, during the last decade, microfinance has grown by 80% (in terms of gross loan portfolio); according to data from the European Microfinance Network, active customers increased from 46 372 subjects (2015) to 161 593 subjects (2020); again according to the data offered by the Bank of Albania, the number of companies offering microcredit services (MFIS

and SLAs) increased from 22 in 2015 to 29 in 2020.

These data indicate a constant and sustainable development of the microfinance sector in Albania. Furthermore, with the process of the integration of Albania into the European Union and the country's economic developments, the structure of the financial market in Albania should more closely resemble the financial structure of the European Union: therefore, in the future, less banking weight and growth in the Non-Bank Institutions sector.

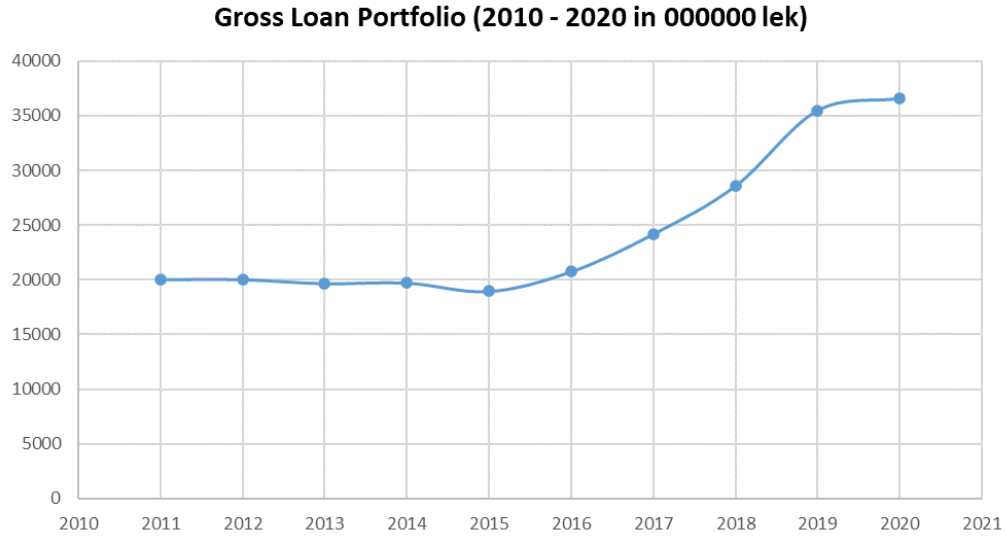

Figure 2. MFIs Gross Loan Portfolio Trend in Albania
Source: BoA, 2021

Table 1. Number of Active Borrowers and Number of NBFIs (2015 /2020)

Active borrowers			**NBFIs**		
2015	2020	diff (%)	2015	2020	diff (%)
46372	161593	248	22	29	32

Source: EMN, BoA 2021

In terms of the diffusion of microcredit in the population (ratio of active customers/ population x 100), at the European level, a greater diffusion can be noted in the Balkan population (such as Kosovo, Montenegro, Bosnia and Herzegovina, and Albania), which also in terms of national wealth constitutes one of the economically poorest areas of the European continent (Figure 3).

The countries with the least diffusion of microcredit are Germany, Ireland, and Switzerland, with 676, 665, and 70, respectively, active customers in 2019. In terms

of gross portfolio size (in absolute value), France, Spain and Bosnia and Herzegovina occupy the first places in 2019 with 420,000,000 euros, 887,000,000 euros and 228,000,000 euros, respectively; on the other hand, the countries with the lowest values of the gross portfolio at European level are Germany, Ireland and Switzerland with 2418890 euro, 6417000 euro and 671132 euro respectively (Figure 4).

As regards the size of the loan, it can be noted that in Eastern European countries, there is greater access to credit if we compare this figure with the GDP per capita: thus, in 2019, the average loan of a Hungarian citizen to the MFIs was 101% of GDP per capita, i.e., 12885 euros, when in Albania this indicator showed the value of 45%, i.e. 1771 euros (below the European average). The countries with the least access to credit with MFIs are Germany (8.7%), the United Kingdom (6.3%) and Switzerland (11%). Instead, the countries with the greatest access to credit are Hungary (101%), Poland (96%) and Bulgaria (55%).

Also, regarding the interest rates applied, there is a difference between Eastern Europe (with remarkably high-interest rates) and Western Europe (with lower interest rates). Albania is one of the countries with the highest interest rates in Europe, along with Serbia, Moldova, and Kosovo.

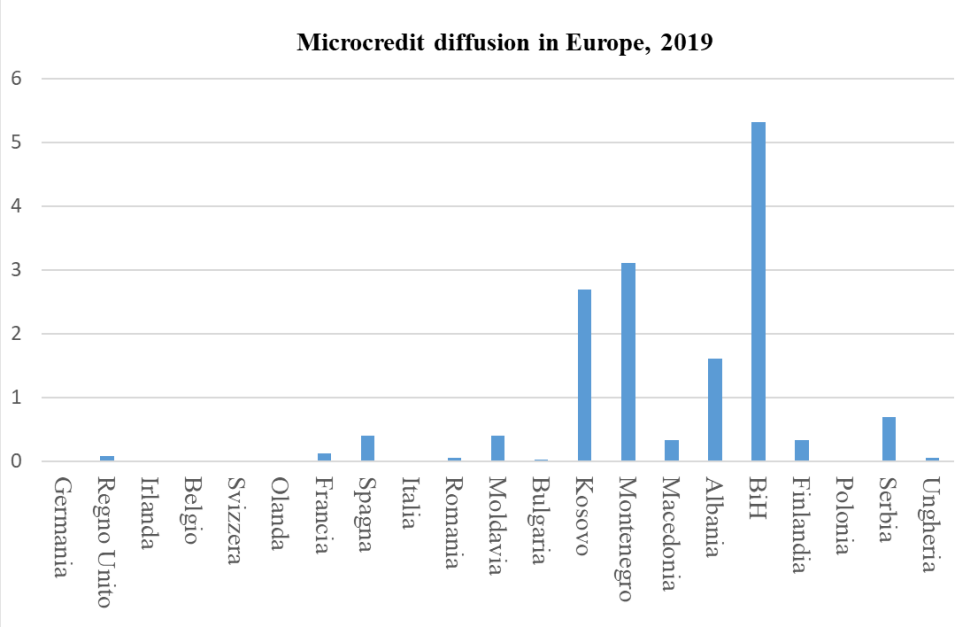

Figure 3. Diffusion of microcredit (active borrowers / population), 2019
Source: EMN, 2020

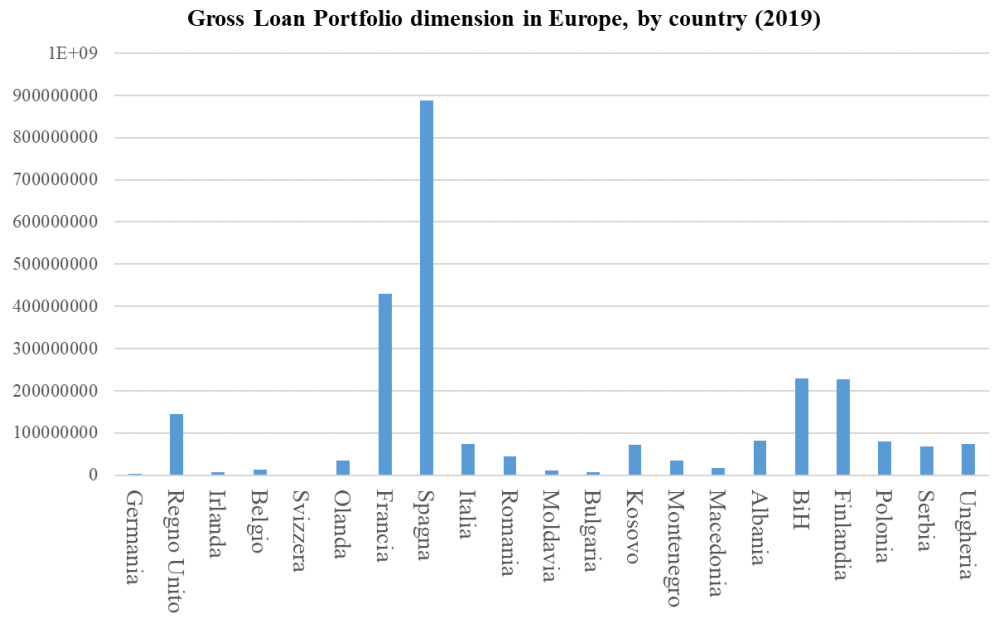

Figure 4. MFIs Gross Loan Portfolio in Europe, 2019
Source: EMN, 2020

3. Material and methods

3.1 Evaluation of Efficiency According to the DEA Model

Performance evaluation has become a fundamental basis for decision-making on all management levels relating to an institution's strategic issues. The evaluation of financial services has been addressed by a number of authors worldwide. Multi-criteria methods are widely used for evaluation as tools that can assess the efficiency of inputs, show the opportunities for the improvement of inefficient units, and identify exemplary units (Armone et al., 2012; Matousek et al., 2008). One of the tools able to determine the rate of technical efficiency of production units is the DEA Model.

Table 2. Input Oriented Model.

Constant Return to Scale	Variable Return to Scale
$\theta^* = Min\theta_k, \quad subject\ to$	$\theta^* = Min\theta_k, \quad subject\ to$
$\sum_{j=1}^{n} \lambda_j y_{rj} \le y_{rk} \quad r = 1,2,\ldots,s$	$\sum_{j=1}^{n} \lambda_j y_{rj} \le y_{rk} \quad r = 1,2,\ldots,s$
$\sum_{j=1}^{n} \lambda_j x_{ij} \ge \theta^* x_{ik} \quad i = 1,2,\ldots,m$	$\sum_{j=1}^{n} \lambda_j x_{ij} \ge \theta^* x_{ik} \quad i = 1,2,\ldots,m$
$\lambda_j \ge 0 \quad \forall j = 1,2,\ldots,n$	$\sum_{j=1}^{n} \lambda_j \ge 0 \quad \forall j = 1,2,\ldots,n$

x_{ij} is the inputs vector of DMUi; y_{rj} is the output vector of DMUr; λ_j the associated weighting of outputs and inputs of firm j; θ^* is the optimal solution.

Source: Charnes et al. (1978); Banker et al. (1984)

DEA Model is based on non-parametric linear programming efficiency analysis, which forms a linear production envelope or frontier on top of all the data (Emrouznejad et al., 2008). The decision-making units (DMU) that form the envelope and lie on the frontier are the best-practice units or benchmarks (Cooper et al. 2006), and accordingly, these DMUs have the DEA INDEX equal to"1". Otherwise, all other DMUs are considered inefficient, with DEA INDEX between "0" and "1" (Ramanathan, 2003). The two basic DEA models are the CCR model of Charnes et al. (1978) and the BBC model of Banker et al. (1984). CCR assesses technical efficiency under a Constant Return to scale (CRS) condition (Charnes et al., 1978). Considering that this is often not the case, Banker et al. (1984) introduced the Variable Return to Scale (VRS) condition so that an institution will be compared to a similarly sized institution that has a similar return to scale (Widiarto & Emrouznejad 2015). In the basic DEA model, two approaches can be used: the input-oriented approach, which maximizes proportional input reduction by holding outputs constant, and the output-oriented approach, which maximizes proportional output increase while keeping inputs constant (Charnes et al. 1978). Our analysis only uses the input-oriented approach with its CRS and VRS models.

DEA has shown exponential growth in its use in academic research over the last forty years (Emrouznejad & Yang, 2017), especially in the banking sector (Sufian, Habidullah, 2009).

Nevertheless, MFI efficiency is rarely assessed and analyzed, and when it is, the focus is usually on the financial aspect.

Gutierrez-Nieto et al. (2009) worked on the trade-off between the dual dimension of MFIs and found a low trade-off. Hermes, Lensink, and Meesters (2008) worked on the trade-off of outreach and technological efficiency and found a negative trade-off. Using a self-organizing diagram, Louis et al. (2013) attempted to find the trade-off between social productivity and commercial success of 650 MFIs and found a positive and meaningful relationship between social and financial performances. Similarly, Widiarto and Emrouznejad (2015) undertook a two-stage study to assess Islamic microfinance institutions' social and financial efficiency and compared them to conventional MFIs. The results confirmed that both types of MFIs had the same efficiency levels. Wijesiri et al. (2015) used a two-stage double-bootstrap approach to investigate the technical efficiency of MFIs in Sri Lanka. Results showed that none of the MFIs was equally successful in both social and financial. Lebovics et al. (2016) analyzed the trade-off between the social and financial efficiency of 28 Vietnamese MFIs and found no trade-off. MFIs are often financially more active and sometimes

concentrate on their social goals. Efendic and Hadziahmetovic (2017) studied the social and financial utility of MFIs in Bosnia and Herzegovina and found that MFIs are financially more efficient than social ones. They also examined the size-based performance of MFIs and found that small MFIs are economically and socially more effective than MFIs of big size. Berguiga et al. (2020) compared Islamic MFIs social and financial performance with traditional MFIs by using DEA and found no trade-off. Fall et al. (2018) performed a meta-analysis on MFI efficiency using DEA and SFA. The study found that the microfinance industry's mean technical efficiency score had improved over time.

3.2 Inputs and Outputs

There is no clear guideline on how to choose among a variety of indicators. However, to use DEA correctly, the number of DMUs must be high enough: the larger the number of variables used, the larger the number of DMUs (Ji & Lee 2010). Given that the number of MFIs in Albania with complete and verifiable data is only 12 (8 NBFIs; 4 SLAs), two inputs and three output indicators were chosen to fulfill the article's objective. Secondly, after reviewing the available literature, we decided to use the inputs and outputs summarized in table 2.

Table 3. Input and Output indicators.

	Indicators	**Description**
Input (financial and social)	X1 - N. of Employees	Individuals actively employed by an MFI
	X2 – Total Assets	Total of all asset accounts
Output social	Y1 – N. of active borrowers	Individuals with an outstanding loan balance
	Y4 – Average Loan Size	Average loan size disbursed by the organization during the reporting period
Output financial	Y2 – Gross Loan Portfolio	The outstanding principal balance of MFI's loans
	Y3 – Financial Revenue	Revenue from the loan portfolio

Source: of Authors

Inputs and outputs are evaluated for the period 2019 – 2020. The two years were chosen for two reasons. The first reason was the problem of missing data (over the years, some MFIs do not report data especially on the number of employees and active borrowers); the second was the need to cover the most current performance condition of MFIs during the pandemic situation (COVID-19), i.e., the year 2020.

For the purpose of the analysis, data were taken from the annual reports of BoA and National Business Center data. From the BoA, we have identified the active MFIs in Albania from 2019 - 2020. Instead, from the National Business Center, we have analyzed, for our purpose, the historical extracts of selected financial institutions (balance sheets, income statements, management activities, etc.). Table 3, below, characterizes the descriptive statistics of input and output indicators.

Table 4. Input and Output descriptive statistics.

Year	Indicators	Units	Min	Max	Mean	St. Dev
2019	X1	Number	8	579	149	167,3
	X2	EUR	598303	147419355	29090981	40566598
	Y1	Number	103	75000	18078	25116,3
	Y2	EUR	366384	106675997	21301853	30001268
	Y3	EUR	174036	20110869	5608355	6948529
	Y4	EUR	237	18689	3913	5117
2020	X1	Number	10	608	143	169,3
	X2	EUR	603167	149792027	29068828	41614830
	Y1	Number	126	60000	16611	21603,6
	Y2	EUR	369363	109874230	22364658	31080525
	Y3	EUR	175451	23425801	6260769	7757694
	Y4	EUR	237	19444	4174	5369

Source: Authors' calculation

4. Results

From data processing, using Stata 16 software, of the 12 MFIs included in the study, the financial level of efficiency is higher than social efficiency in all models and both years. On average, DEA scores for both financial and social efficiency are suboptimal. The results are summarized in Table 5.

Table 5. MFIs efficiency models.

Models	Mean	Mean (%)	St. Deviation
Y2, Y3 - CRS (19)	0,74	74	0,25
Y2, Y3 - VRS (19)	0,74	74	0,25
Y1, Y4 – CRS (19)	0,43	43	0,41
Y1, Y4 – VRS (19)	0,53	53	0,42
Y2, Y3 - CRS (20)	0,76	76	0,24
Y2, Y3 - VRS (20)	0,86	86	0,24
Y1, Y4 – CRS (20)	0,45	45	0,41
Y1, Y4 – VRS (20)	0,55	55	0,41

Notes: Y1,Y4 – CRS (19)-social efficiency CRS model, year 2019; Y1,Y4-VRS(19) – social efficiency VRS model, year 2019; Y2,Y3 – CRS (19) – financial efficiency, CRS model, year 2019; Y2,Y3-VRS (19) – financial efficiency, VRS model, year 2019 / Y1,Y4 – CRS (20)-social efficiency CRS model, year 2020; Y1,Y4-VRS(20) – social efficiency VRS model, year 2020; Y2,Y3 – CRS (20) – financial efficiency, CRS model, year 2020; Y2,Y3-VRS (20) – financial efficiency, VRS model, year 2020.

Source: Authors' calculation

These results led us to conclude that MFIs in Albania use too much labor and capital for the level of their outputs. The social efficiency results suggest that MFIs in Albania should focus more on reaching a more significant number of clients by distributing more loans.

The distribution of the results between the individual inefficiency levels (mild, moderate, strong) confirms that models Y1, Y4 – CRS19, CRS20 (social efficiency, CRS model, year 2019 and 2020) attain the worst results, while Y2 attains the best results, Y3 – VRS20 (financial efficiency, VRS model, the year 2020).

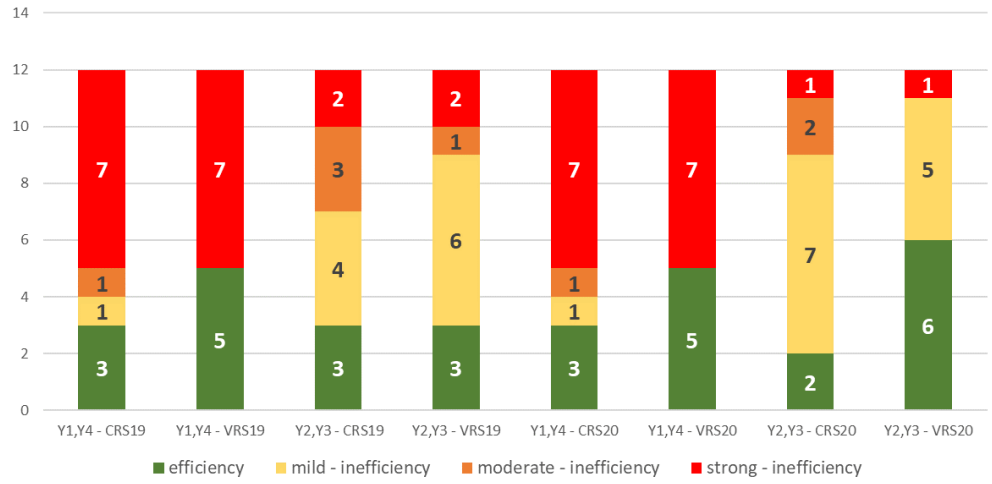

Figure 3. Distribution of MFIs by efficiency level

Note: full efficiency [1,00 score]; mild inefficiency]0,7 – 0,99 score]; moderate inefficiency [0,5 – 0,7 score [; strong inefficiency [0 – 0,5 score].

Source: own calculations

To explore the relationship between financial and social efficiency, Spearman's Rho Rank Order correlation coefficients are calculated (Efendic & Hadziahmetovic 2017). According to these results, social and financial efficiency do not have a significant positive correlation, suggesting no relationship exists between these two dimensions of efficiency.

Table 6.Spearman's Rho correlation of the social and financial efficiency scores for all models

Year 2019	**Y2, Y3 - CRS**	**Y2, Y3 - VRS**	**Y1, Y4 - CRS**	**Y1, Y4 – VRS**
Y2, Y3 - CRS	1	0,98***	0,58	0,4
Y2, Y3 - VRS	0,98***	1	0,61	0,42
Y1, Y4 - CRS	0,58	0,61	1	0,95***
Y1, Y4 - VRS	0,4	0,42	0,95***	1
Year 2020	**Y2, Y3 - CRS**	**Y2, Y3 - VRS**	**Y1, Y4 - CRS**	**Y1, Y4 - VRS**
Y2, Y3 - CRS	1	0,46	0,61	0,43
Y2, Y3 - VRS	0,46	1	0,43	0,29
Y1, Y4 - CRS	0,61	0,43	1	0,92***
Y1, Y4 - VRS	0,43	0,29	0,92***	1

***correlation is significant at the 0.005 level (2-tailed)

**correlation significant at the 0.01 level (2-tailed)

Source: own calculations

Considering the strong impact of negative shocks on the Albanian economy (Shalari et al. 2015), in our research, we expect that during the pandemic period, efficiency levels decrease. However, as indicated in Table 4, the efficiency level in all models is not deteriorating due to the pandemic situation from 2019 to 2020. This situation may occur due to the restrictive and conservative policies of the BoA towards microfinance institutions (having shock-resistant roots). In addition, given that the number of active borrowers is very low (considering the DEA analysis) indicates that credit access is not easy for poor people.

To consider the causes and effects of a crisis (pandemic, social or other), it is necessary to have a more long-term dataset. So, the next step in our research will focus on the inefficiency causes (financial and social) of MFIs and the ways in which MFIs in Albania support the crises stress (Bisceglia, 2018, 2020).

The selected Tobit model (Amore & Murtinu, 2021) for explaining the observed MFIs inefficiencies contains the following variables: MFI experience (AGE), Effective Interest Rate (EIR), Return on Assets (ROA), Debt/equity ratio (DER), Operating Self Sufficiency ratio (OSS), Cost per Borrower (CB), Borrowers per staff (BS) and number of MFI branches (NB). The Tobit model was performed for the four scenarios (y2, y3-crs; y2, y3-vrs; y1-crs; y1-vrs). Tables 6 and 7 present the Tobit regression model results, and financial and social efficiency, respectively.

Table 7. Determinants of Financial Efficiency (Tobit regression)

Variable	**Y2, Y3-CRS19**	**Y2, Y3-CRS20**	**Y2, Y3-VRS19**	**Y2, Y3-VRS20**
Intercept	1.595*	1.456***	1.556*	4.370***
AGE	-0.047**	-0.034***	0.047**	-0.08**
EIR	0.009	0.0061***	0.01	0.010*
ROA	0.090*	0.1057***	0.087*	0.210***
DER	0.075**	0.058***	0.076**	0.042*
OSS	-0.0061	-0.006**	- .006	-0.023***
CB	-5.03e-07	6.2e-07	-3.5e-07	-5.7e-07
BS	0.0002	0.0000	0.0000	0.0000
NB	-0.005**	-0.005***	-0.005**	-0.006**
PseudoR^2	2.5828	6.1411	2.4643	1.5407
LR-Chi square	25.61	34.57	24.16	21.02
Log Likelihood	7.8470	14.472	7.179	3.6881

, **, * indicate the coefficient is significant at 10, 5, and 1 percent levels, respectively*

Results from the regression analysis indicate that the coefficient for ROA has a positive coefficient in all efficiency models indicating that the higher the return on assets the higher the financial efficiency score (in Y2, Y3-CRS19, a 1% increase in ROA rate increases the financial efficiency score by 0,09 all other factors remaining constant. The score coefficient is statistically significant at the 10% level). The coefficient for the debt-equity ratio is positive and significant in all scenarios indicating that the higher DER the higher the financial efficiency. The coefficient for MFI experience (AGE) in three scenarios is negative and significative and in one scenario is positive and significative. The MFI experience is important but, in the case of the Albanian market, has a non-clear impact on financial efficiency. The effect and the significance of other indicators it is not clear.

Table 8. Determinants of Social Efficiency (Tobit regression)

Variable	Y1, Y4- CRS19	Y1, Y4- CRS20	Y1, Y4-VRS19	Y1, Y4–VRS20
Intercept	2.4055***	2.1196***	4.005***	3.9553***
AGE	-0.054***	-0.049***	-0.067***	-0.0675**
EIR	0.0049	0.004	-0.002	-0.0022
ROA	0.0270	0.0243	0.0714**	0.069**
DER	0.0278*	0.027*	0.009	0.008
OSS	-0.0144***	-0.0126***	-0.022***	-0.021***
CB	2.02e-06***	2.41e-06***	1.20e-06	1.67e-06
BS	0.0002***	0.0025***	0.0002***	0.0002**
NB	-0.0053***	-0.0052***	-0.008***	-0.0086***
PseudoR^2	2.5091	2.4153	1.8868	1.6095
LR-Chi square	49.78	47.76	39.93	35.69
Log Likelihood	14.971	13.992	9.3849	6.7581

, **, * indicate the coefficient is significant at 10, 5, and 1 percent levels, respectively*

Results from the regression analysis indicate that the coefficient for Borrowers per staff has a positive but minimal impact in all social efficiency models indicating that the higher the number of borrowers per staff the higher the social efficiency score (in Y1, Y4 – CRS19 model, 1% increase in BS increases the efficiency score by 0,0002 all other factors remaining constant. The score coefficient is statistically significant at the 1% level). The coefficient for the number of branches is negative and significant in all efficiency models. The coefficients of OSS and AGE are negative and significant

having a negative impact on social efficiency: the higher the self-sufficiency ratio, the lower the social efficiency score. The effect and the significance for other indicators it is not clear.

A topic to be explored concerns effective interest rate indicators. MFIs in Albania apply much higher interest rates than traditional bank ones, and despite this, the effect of the EIR is not significant in almost all models. High-interest rates are present for MFIs due to the lack of guarantees offered and requested from borrowers (therefore, fewer formal procedures): these facilities are offset by high-interest rates. Some borrowers accept the terms of MFIs as they cannot fulfill banking procedures (defaulting borrowers, collateral, documents, etc.). This means that the interest rate level does not necessarily affect access to credit and outreach mechanisms at MFIs. From a social point of view, this situation is quite worrying.

5. Conclusion

This study is one of the first attempts at analyzing the technical efficiencies of MFIs by using DEA methodology. The study illustrates the technical efficiencies of MFIs in Albania, indicating that a large majority of Albanian MFIs run inefficiently. These results are not surprising and further support the conventional beliefs that the Albanian Microfinance system is inefficient, particularly on the social dimension. The correlation between social efficiency and financial efficiency is positive but statistically not significant, suggesting no relationship exists between these two dimensions of efficiency.

Our research reveals that in the case of Albania, the pandemic crisis had no negative consequences regarding the efficiency level in both dimensions. This situation may occur due to the restrictive and conservative policies of the BoA towards microfinance institutions (having shock-resistant roots) and the credit access difficulties of poor people. In any case, to consider the causes and effects of a crisis (pandemic, social or other), it is necessary to have a more long-term dataset.

The results of this study indicate higher financial efficiency compared to social efficiency in the case of MFIs. As shown in Table 4, inputs are wasted and not utilized in financial and social services production. With this information, managers will be able to make choices in which path to take to increase efficiency. Since managers generally have more control over their inputs, they may focus on examining the total inefficiencies generated by excessive input usage. However, examinations of output inefficiencies can also provide strategic direction for the MFIs by indicating where to increase their efficiency (from social and financial points of view).

The study recommends that MFIs that are inefficient in both social and financial dimensions or efficient in any one dimension should work on the shortcomings, identifying the inefficiency causes and rebuild their strategy to improve both dimensions of efficiency simultaneously. This research shows that not all economic indicators run in the same direction to improve efficiency: e.g., ROA increase improves

financial efficiency but can decrease social efficiency; The effective interest rate is associated with distorting effects.

Furthermore, this research is trying to put this issue (particularly the social one) in front of the government and policymakers to consider the MFIs regulation (organizational form, outreach mechanisms, etc.)

Lastly, this study focuses on the importance of DEA methodology. We suggest that DEA is more informative than other efficiency measurement methods and can be successfully implemented in situations where multiple inputs are used to produce multiple outputs. Managers can attempt to make MFIs rational and efficient by analyzing output inefficiencies and excess inputs.

Limitations of the Study

Data on variables like the number of active borrowers, number of employees, and especially the number of active female borrowers are not available publicly for all MFIs and for an extended period. The findings would have been more enriched if this data had been available and used in the study. Another limitation of the current study is that due to data unavailability, the analysis was based on a small number of MFIs.

References

Amore M. D., Murtinu S. (2021).Tobit models in strategy research: Critical issues and applications. *Global Strategy Journal, 11*, 331-355. https://doi.org/10.1002/gsj.1363

Armone M., Pellegrini C.B., Messa A., Pellegrini L., Sironi E. (2012). Microfinance institutions in Africa, Asia, and Latin America: an empirical analysis of operational efficiency, institutional context and cost. *International Journal of Economic Policy in Emerging Economies*, *5*(3), 255-271.

Autoriteti i Mbikqyrjes Financiare (2020). *Raporti vjetor i Mbikqyrjes 2020*. AMF ed., www.amf.gov.al.

Autoriteti i Mbikqyrjes Financiare (2019). *Raporti vjetor i Mbikqyrjes 2019*. AMF ed., www.amf.gov.al.

Autoriteti i Mbikqyrjes Financiare (2018). *Raporti vjetori i Mbikqyrjes 2018*. AMF ed., www.amf.gov.al.

Autoriteti i Mbikqyrjes Financiare (2017). *Raporti vjetor i Mbikqyrjes 2017*. AMF ed., www.amf.gov.al.

Balkenhol, B. (2007). Efficiency and Sustainability in Microfinance. In B. Balkenhol (eds), *Microfinance and Public Policy. International Labour Organization (ILO) Century Series* (pp. 3-23). Palgrave Macmillan, London. https://doi.org/10.1057/9780230300026_1

Banka e Shqiperise (2020). *Raporti vjetor i Mbikqyrjes 2020*. Banka e Shqiperise ed. www.bankofalbania.org.

Banka e Shqiperise (2019). *Raporti vjetor i Mbikqyrjes 2019*. Banka e Shqiperise ed. www.bankofalbania.org

Banka e Shqiperise (2018). *Raporti vjetor i Mbikqyrjes 2018*. Banka e Shqiperise ed. www.bankofalbania.org

Banka e Shqiperise (2017). *Raporti vjetor i Mbikqyrjes 2017.* Banka e Shqiperise ed. www.bankofalbania.org

Banka e Shqiperise (2016). *Raporti vjetor i Mbikqyrjes 2016.* Banka e Shqiperise ed. www.bankofalbania.org.

Banker R. D., Charnes A., Cooper W.W. (1984).Some models for estimating technical and scale inefficiences in Data Envelopment Analysis. *Management Science, 30*(9), 1078-1092. ISSN: 0025-1909.

Baseem B. S. (2008). Efficiency of microfinance institutions in the Mediterranean: An application of DEA. *Transition Studies Review, 15*(2), September 2008, 343–354. ISSN 1614-4007.

Berguiga I., Said Y., Adair P. (2020). The social and financial performance of Microfinance institutions in the MENA region: Do Islamic institutions perform better. *Journal of International Development, 32*(7), 1075-110. ISSN 1099-1328.

Bisceglia, M. (2020).Systematic Risk Assessment in non-listed Banks. *Evolution Journal of life Sciences and Society, 1*(1), 54-64. ISSN 2708-678X.

Bisceglia, M. (2018). Il management di una Banca, nella dinamica dei tassi di interesse. In E. Toma (Ed.), *Economia, istituzioni, etica e territorio. Casi di studio ed esperienze a confronto* (pp. 342-352). Franco Angeli, Milano, ISBN 978-88-917-7938-0

Chase R. B., Jacobs R.F., Aquilan J. N. (Ed.). (2012). Operations Management nella produzione e nei servizi. McGraw-Hill Education.

Charnes A., Cooper W., Rhodes E. (1978).Measuring the efficiency of decision-making units. *European Journal of Operational Research*, *2*(6), 429-444. ISSN 0377 – 2217.

Cooper, W.W., Seiford, L.M., Zhu, J. (2011). Data Envelopment Analysis: History, Models, and Interpretations. In Cooper, W., Seiford, L., Zhu, J. (Eds.), *Handbook on Data Envelopment Analysis* (pp. 1-39). International Series in Operations Research & Management Science, vol 164. Springer, Boston, MA. https://doi.org/10.1007/978-1-4419-6151-8_1

Cooper W.W., Tone K., Seiford L.M. (2006). *Introduction to data envelopment analysis and its uses: with DEA-Solver software and references.* Springer New York, NY. https://doi.org/10.1007/0-387-29122-9

Curri V. (2015). The Efficiency of Microfinance Institutions in Albania (Publishedmaster's thesis). Epoka University, Tirana, Albania.

Delija A. (2017). The financial performance of MFIs in Albania. *Journal of Educational and Social Research*, *7*(2), 147-152. ISSN: 2239-978X

Diamond A. M., Medewitz J.N. (1990). Use of data envelopment analysis in an evaluation of the DEEP Program for economic education. *The Journal of Economic Education, 21*(3), 337-354. https://doi.org/10.1080/00220485.1990.10844680

Efendic V., Hadziahmetovic N. (2017). The social and financial efficiency of microfinance institutions: the case of Bosnia and Herzegovina. *Southeast European Journal of Economics and Business*; *12*(2), 85–101. ISSN: 1840118X.

Emrouznejad A., Yang G. (2017). A survey and analysis of the first 40 years of scholarly literature in DEA: 1987 – 201. *Socio-Economic Planning Sciences, 60*(4), 1 – 5.

ISSN: 0038-0121

Fall F., Akim A. M., Wassongma H. (2018). DEA and SFA research on the efficiency of microfinance institutions: A meta-analysis. *World Development*, *107*(C), 176–188. ISSN: 0305 – 750X.

Gannon M. (2005). Regulation and Supervision of Albania's Microfinance Industry. Essays *on regulation and supervision*, 12, IRIS Center.

Gutiérrez-Nieto B., Serrano-Cinca C., Molinero C.M. (2009). Social efficiency in Microfinance institutions. *Journal of the Operational Research Society, 60*(1), , 104-119. ISSN: 0160-5682.

Hermes N., Lensink R., Meesters A. (2008). Outreach and efficiency of microfinance institutions. *World Development, 36*(5), 938–948. ISSN: 0305 – 750X.

Hoxhaj R. (2010). Regulation and supervision of microfinance in Albania. *Business and Economic Horizons*, *2*(2), 75-81. ISSN: 1804-1205.

Ji Y-B., Lee C. (2010). Data envelopment analysis. *The Stata Journal; 10*(2), 267–280. ISSN: 1536867X

Kola F. (2017). *Measuring the Impact of Microcredit Programs in Albania* (1st Ed.). Cambridge Scholars Publishing, ISBN: 144382304X.

Kola F., Cerpja T., (2018). Microfinance and Economic Growth in Albania. *Fourth international scientific conference ERAZ 2018*, 125 – 136.

Lebovics M., Hermes N., Hudon M. (2016). Are financial and social efficiency mutually exclusive? A case study of Vietnamese microfinance institutions. *Annals of Public and cooperative Economics, 87*(1), 55–77. ISSN: 1467-8292

Louis P., Seret A., Baesens B. (2013). Financial efficiency and social impact of microfinance institutions using self-organizing maps. *World Development, 46*(6), 197–210. ISSN: 0305 – 750X.

Matousek R., Dasci S., Sergi B.S. (2008). The efficiency of the Turkish banking system during 2000 – 200. *International Journal of Economic Policy in Emerging Economies*, *1*(4), 341-355.

Muharremi O., Madani F., Pelari E. (2018). Evaluating the Impact of Microfinance at the Individual Level in Albania, particularly in the Region of Vlora and Fier. *Journal of Economics and Management Sciences, 1*(1), 143 – 155. ISSN: 2576-3008.

Pires F. (2019). Non-banks in the EU: ensuring a smooth transition to a Capital Markets Union. *SUERF Policy Note, 103*, 1 – 18.

Pytkowska J. (2020). *Microfinance in Europe: Survey Report 2020 edition,* European Microfinance Network ed., www.european-microfinance.org.

Qendra Kombetare e Biznesit, https://qkb.gov.al/kerko/kerko-ne-regjistrin-tregtar/kerko-per-subjekt/

Ramanathan R. (2003). *An introduction to data envelopment analysis: A tool for performance measurement.* SAGE, New Delhi. ISBN: 076199761X

Regina, F. & Bisceglia, M. (2020). A-KA Model: an Optimization of the Stock's Portofolio. *Zagreb International Review of Economics and Business*, *23*(2), 21-40. https://doi.org/10.2478/zireb-2020-0012

Sexton, T.R. (1986). The Methodology of Data Envelopment Analysis in Silkman, R.H. (ed.).

Measuring Efficiency: An Assessment of Data Envelopment Analysis. San Francisco: JosseyBass.

Sufian F., Habidullah M.S. (2009). Non-traditional activities and bank efficiency: empirical evidence from the Chinese banking sector during the post-reform period. *International Journal of Economic Policy in Emerging Economies, 2*(2), 107-132.

Shalari O., Laho E., Gumeni A. (2015). The asymmetry and fractional integration of the unemployment rate in Albania. *International Journal of Economic Policy in Emerging Economies*, *8*(3), 229-244.

Widiarto I., Emrouznejad A. (2015). Social and financial efficiency of Islamic microfinance institutions: A Data Envelopment Analysis application. *Socio-Economic Planning Sciences*; 50(C), 1-17. https://doi.org/10.1016/j.seps.2014.12.001

Wijesiri M., Viganò L., Meoli M. (2015). Efficiency of microfinance institutions in Sri Lanka: A two-stage double bootstrap DEA approach. *Economic Modelling, 47*(C), 74–83. https://doi.org/10.1016/j.econmod.2015.02.016