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6th Interdisciplinary International Conference

UNICART
INTERNATIONAL CONFERENCE
ACADEMIC RESEARCH & TOURISM

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P. Iaquinta, T. Romita

Food, Tourism and Environment

Proceedings Book, Volume I

2-4 June 2022,
Caldora Hall of Calabria University (Italy) *Opening of the Web Conference*
Headquarter of IARC (Albania) Live and Web Conference

ETQA sbl

2022

International Academic
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UNICART

INTERNATIONAL CONFERENCE
ACADEMIC RESEARCH & TOURISM

Food, Tourism and Environment

2 - 4 June 2022

Calabria University, Caldora Hall (Italy)
(Opening of the Conference and Live Sessions)

IARC Headquarter, Tirana (Albania)
(Web Conference Remote Sessions)

Proceedings Book,
Volume I

published by: **International Academic Research Center Str.**

Cekani I., d'Ovidio F. D., Favia F, Iaquinta P., Romita T., eds. (2022). *6th UNICART International Conference "Food, Tourism and Environment" - Proceedings Book, volume I*. Calabria University (Italy)/ IARC Tirana (Albania), 2 – 4 June. IARC-ETQA Publishers, Tirana-Bruxelles.

ISBN 978-2-931089-25-5

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Final editing: Francesco D. d'Ovidio & Stefano d'Ovidio

International Academic Research Center - USC
6th UNICART
INTERDISCIPLINARY INTERNATIONAL CONFERENCE
2-4 June 2022, Rende (CS, Italy) / Tirana (Albania)
Universitas Sancti Cyrilli
ISBN: 978-2-931089-25-5 PROCEEDINGS BOOK, Volume I

Microcredit Sector Efficiency: Albanian Case

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Abstract: Albanian microfinance sector, in particular microcredit, has experienced a modest development in recent years, although having the objective (moreover shared at EU level) of the fight against social and financial exclusion, the self-employment promotion and small businesses support. Microcredit represents a lifeline or starting point for small entrepreneurs or startups to the credit access, not possible otherwise. Thus, it provides a start-up or survival opportunity for people and businesses that in different circumstances would not have vital space. An instrument widely used in Western Countries, therefore, to be replicated mainly in developing countries such as Albania, in order 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 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 marked finance and social inefficiencies. This study clearly points out the greater attention of microcredit institutions towards financial objectives (and less to social ones).[1]

Keywords: *Microcredit, Financial efficiency, Social efficiency, Economic development, Albanian microfinance.*

JEL classification: *G10, G21, G32, O21*

1. Introduction

In this research, efficiency is proposed as an MFI performance assessment criterion due to its ability to cover various aspects of microfinance applied to profit and not for profit MFIs (Balkenhol, 2007).

Performance in the production theory refers to an optimal combination of inputs to achieve maximum outputs, thereby reducing wastes (Sealey & Lindley 1977; Bisceglia & Regina 2020). Regarding the MFIs efficiency, we refer to the manner in which MFIs allocate (allocative efficiency) and utilize their inputs (productive efficiency) to produce outputs in terms of their loan portfolio and poverty outreach (Bassem 2008). Efficiency refers to the use of an input to generate output; previously defined as the output-to-input ratio, such as cost per unit or production per hour of labour (Cooper, Seiford & Tone, 2000). Literature (Diamond Jr, Medewitz 1990; Sexton 1996) has shown that a traditional method (ratio analysis) is not relevant in measuring

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[1] This study is conducted within the Visiting Professor activity framework at the Department of Economics and Finance of the University of Bari Aldo Moro (DR 1277 of 05.04.2022).

the overall performance of MFIs. Ratios are based on a single input and single output and measure the performance on a single indicator, which does not serve the purpose of measuring the efficiency of MFIs.

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 relatively to assess the success of MFIs in terms of social and financial aspects. This study uses the Data Envelopment Analysis Model (hereinafter the 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 that investigate both the financial- and social efficiency of the MFIs in Albania using a non-parametric method like DEA. There are studies that use the traditional method in evaluating financial efficiency: Muharremi et al. (2018) conducted a study using parametrics model to evaluate the MFIs impact on standard of living of borrowers in the region of Vlora and Fier. Kola (2017), Kola & 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 in order to support or reject hypothesis. Delija (2017) conducted a study using traditional method to evaluate financial performance of MFIs in Albania. One study using DEA in evaluating MFI's financial efficiency was conducted by Curri (2015); however, not including the evaluation of the social dimension.

The paper has five parts. The first part is this introduction; part two focuses on synthesizing the microfinance market 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. Microfinance in Albania

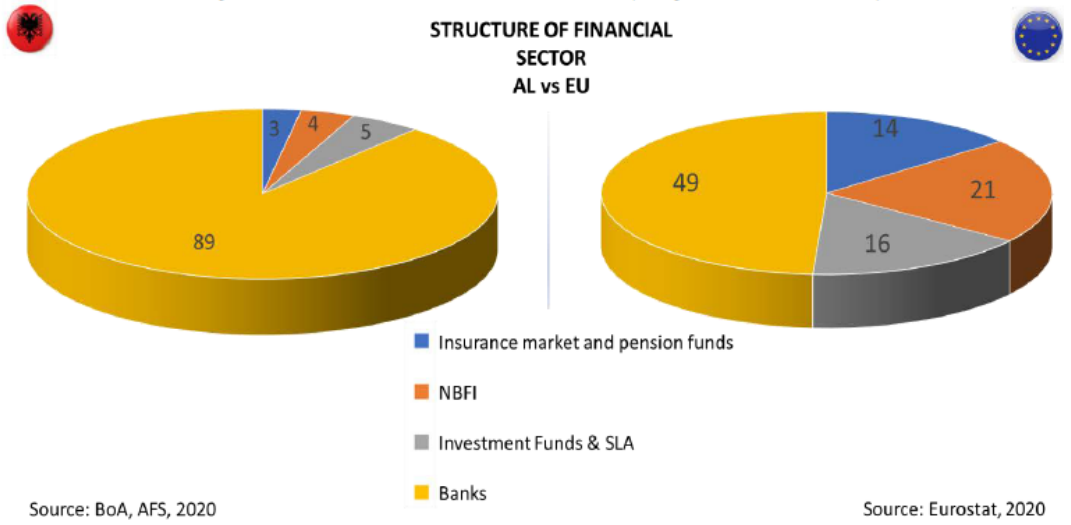
Microfinance institutions (MFIs) entered Albania in the early and mid-1990s with ease - some as NGOs and some as quasi - governmental agencies all free of state supervision. This chaotic situation caused the infamous "pyramid saving schemes" collapse of 1997 when up to 50% of the population lost their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

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

At present, 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) 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. NBFIs and SLAs are required to obtain a license from Bank of Albania (BoA), and they must follow the strict rules of the BoA supervisory board, including the respective regulations (BoA, 2020).

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 total assets of the financial sector and its share has grown since 2017, when its sector share was 3%. The financial market structure in Albania is dominated by banks. 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).

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



3. Material and methods

3.1 Evaluation of Efficiency According to the DEA Model

The performance evaluation has become a fundamental basis for decision-making on all management level relating to strategic issues within an institution. The evaluation of finance services has been addressed by a number of authors worldwide. Multi-criteria methods are widely used for the evaluation as tools that are able to assess the efficiency of inputs and show the opportunities for the improvement of inefficient units, but also to identify exemplary units. One of the tools able to determine the rate of technical efficiency of production units is the DEA Model.

Table 1. *Input Oriented Model.*

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

$\boldsymbol{x_{ij}}$ is the inputs vector of DMUi; $\mathbf{y_{rj}}$ is the output vector of DMUr; $\boldsymbol{\lambda_j}$ is the associated weighting of outputs and inputs of firm j; $\boldsymbol{\theta}^{*}$ 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 forms 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 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 similar return to scale (Widiarto and Emrouznejad 2015). In the basic DEA model, there are two approaches that can be used, the input-oriented approach, which maximizes proportional input reduction 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 show an exponential growth in its use in academic research over the last forty years (Emrouznejad and Yang, 2017). Nevertheless, MFI efficiency is rarely assessed and analyzed, and when it is, the focus is usually on the financial aspect.

Gutierrez-Nieto, Serrano-Cinca, and Molinero (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. By using a self-organizing diagram, Louis, Seret, and Baesens (2013) attempted to find out 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, Vigano, and Meoli (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, Hermes, and Hudon (2016) analysed the trade-off between 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 socially one. 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, Said, and Adair (2020) compared Islamic MFIs social and financial performance with traditional MFIs by using DEA and found no trade-off. Fall, Akim, and Wassongma (2018) performed a meta-analysis on MFI efficiency using DEA and SFA. The study found that the mean technical efficiency score had improved over time in the microfinance industry.

3.2 Inputs and Outputs

There is no clear guideline on how to choose among a variety of indicators. However, in order 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 (Je, Lee 2010). Given that the number of MFIs in Albania with complete and verifiable data is only 12 (8 NBFIs; 4 SLAs) two inputs indicators and three output indicators were chosen to fulfil the objective of the article. Secondly, after conducting a review of the available literature we decided to use inputs and outputs summarized in table 2.

Table 2. *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
Output financial	Y2 – Gross Loan Portfolio	The outstanding principal balance of MFI's loans
	Y3 – Financial Revenue	Revenue from loan portfolio

Source: of Autors

Inputs and outputs are evaluated for the period 2019 – 2020. The two - year period was 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 during the period 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 3. *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
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

Source: of Autors

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 the Table 4:

Table 4. *MFIs efficiency models.*

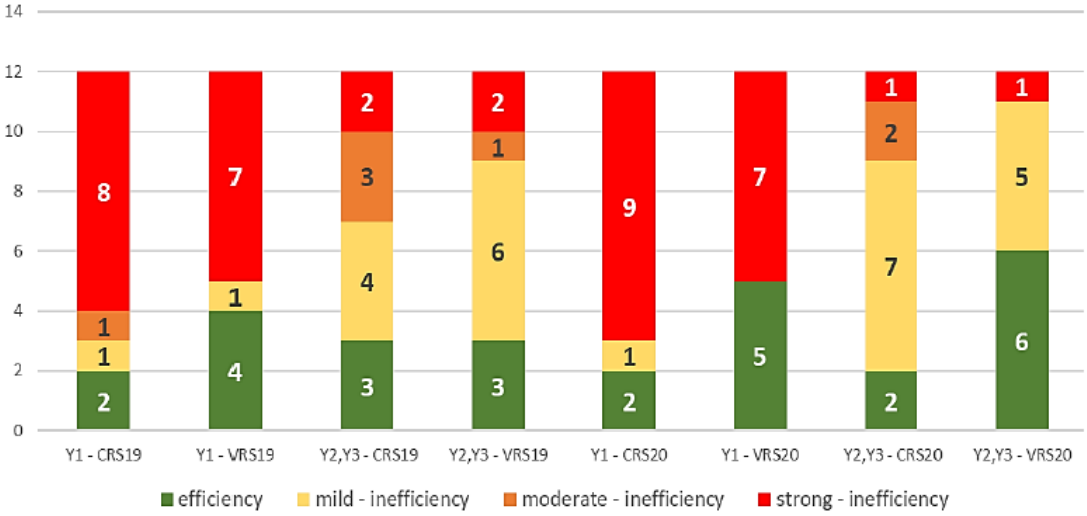
Models	Mean	Mean (%)	St. Deviation
Y2, Y3 - CRS (19)	0,74	74	0,25
Y2, Y3 - VRS (19)	0,74	74	0,25
Y1 – CRS (19)	0,33	33	0,39
Y1 – CRS (19)	0,52	52	0,41
Y2, Y3 - CRS (20)	0,76	76	0,24
Y2, Y3 - VRS (20)	0,86	86	0,24
Y1 – CRS (20)	0,34	34	0,41
Y1 – CRS (20)	0,55	55	0,41

Notes: Y1 – CRS (19)-social efficiency CRS model, year 2019; Y1-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 – CRS (20)-social efficiency CRS model, year 2020; Y1-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: own calculations

These results led us to the conclusion 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 put more attention on reaching a larger number of clients.

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

Figure 2. *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 the financial and social efficiency the Spearman's Rho Rank Order correlation coefficients are calculated (Efendic, Hadziahmetovic 2017). According to this results, the social and financial efficiency do not have a significant positive correlation, suggesting there is no relationship between these two dimensions of efficiency.

Table 5. *Spearman's Rho correlation of the social and financial efficiency scores for all models*

Year 2019	Y2, Y3 - CRS	Y2, Y3 - VRS	Y1 - CRS	Y1 – VRS
Y2, Y3 - CRS	1	0,98***	0,49	0,4
Y2, Y3 - VRS	0,98***	1	0,46	0,44
Y1 - CRS	0,49	0,46	1	0,43
Y1 - VRS	0,4	0,44	0,43	1
Year 2020	Y2, Y3 - CRS	Y2, Y3 - VRS	Y1 - CRS	Y1 - VRS
Y2, Y3 - CRS	1	0,48	0,32	0,39
Y2, Y3 - VRS	0,48	1	0,22	0,25
Y1 - CRS	0,32	0,22	1	0,46
Y1 - VRS	0,39	0,25	0,46	1

***correlation is significant at the 0.005 level (2-tailed)
**correlation significant at the 0.01 level (2-tailed)
Source: own calculations

Finally, in our research we expect that during pandemic period efficiency levels decrease. But, as indicated in Table 4, the efficiency level in all models isn't deteriorating due to 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 the poor people.

In any case, to consider the causes and effects of a crisis (pandemic, social or other) it is necessary to have 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).

5. Conclusion

This study is one of the first attempts at analyzing technical efficiencies of MFIs by using DEA methodology. The study illustrates technical efficiencies of MFIs in Albania indicating that a large majority of Albanian MFIs run inefficiently. These results are not surprising and are further support of the conventional beliefs that the Albanian Microfinance system is not efficient, particularly on social dimension. The correlation between social efficiency and financial efficiency is positive but statistically not significant, suggesting there is no relationship 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 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 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 devote more attention to the examination of 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 (social and financial point of view).

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 in which multiple inputs are used for producing multiple outputs. By analyzing output inefficiencies and excess inputs, managers can attempt to make MFIs rational and efficient.

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We do not want to add more, but we continue the research with the hope that the next 7th UNICART will see better times.

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