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Impact of COVID-19 Pandemic on the Microfinance Institutions Growth in the EU

Sara Ravan Ramzani[1*], Behrooz Gharleghi[2], Alison Watson[3], Phungmayo Horam[1]

[1]*GISMA Business School, 14469 Potsdam, Brandenburg, Berlin, Germany*
[2]*Arden University London, 10963, Berlin, Germany*
[3]*Arden University London, United Kingdom*

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*Corresponding Author
Sara Ravan Ramzani
E-mail: sara.ramzani@gisma.com

Co-Author(s):
Author 2: Behrooz Gharleghi
E-mail: gharleghi.bn@gmail.com

Author 3: Alison Watson
E-mail: awatson@arden.ac.uk

Author 4: Phungmayo Horam
E-mail: phoram@arden.ac.uk

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ABSTRACT

Background: This study examines the social and financial implications of EU Microfinance Institutions (MFIs) in response to the decline in economic activity caused by COVID-19.

Method: The Data Envelopment Analysis (DEA) technique is used to evaluate such impacts.

Results: The empirical results suggest that the pandemic affects MFI's financial efficiency adversely and increases MFI's social efficiency. MFI lending rates show the impact of COVID-19 on MFI efficiency, but the contribution of refinancing rates is negligible.

Conclusion: It is found that the pandemic reduces the economic efficiency of MFIs, while improving the social efficiency of MFIs.

Keywords: COVID-19, EU, financial efficiency, MFIs, social efficiency, **JEL** classifications: G21, G51

Introduction

In December 2019, a plague of coronavirus (also referred to as COVID-19) broke call and has since spread around the world (Idris, 2020; Jain, Mohanan, 2020). The health and economic implications were severe thanks to blockading measures to contain the spread of the coronavirus to the population and rising health care costs. The closure of virtually all businesses as a result of the blockade has had a big impact on individuals and institutions. Microfinance institutions (MFIs) were consequently impacted and are in crisis. Microfinance is gaining popularity as a technique to combat unemployment while promoting entrepreneurship and social inclusion. Funding and support from various institutions are aimed toward micro-enterprises and underprivileged people that don't have access to traditional sources of funding (Hartarska and Nadolnyak, 2007; Ahlin and colleagues, 2011). Each country has its own regulations and policies that determine how quickly MFIs can emerge from the

crisis. The return and long-term development of the microfinance sector to its pre-COVID state depend on the extent of the damage done to MFI and therefore the sort of economic activity it supports.

Low- and middle-income individuals and small businesses may get short-term loans from microfinance institutions (MFIs), which do not need collateral. MFIs play a critical role in relieving poverty in developing nations by providing financial services to hundreds of millions of low-income and vulnerable borrowers (Khan et. al, 2021; Chomen, 2021). Anecdotal data suggests that macroeconomic circumstances have a significant influence on the performance of financial institutions (MFIs). In this context, we look at the consequences of the COVID-induced economic downturn on MFI's social and financial performance in the EU. We quantify GDP and employment reduction.

MFIs were disproportionately hit by the economic shock that the pandemic imposed on Europe beginning in March 2020. In-person interactions were made difficult or impossible due to travel and other government limitations. Since MFIs could no longer disburse or collect loans, they were forced to adapt their internal processes in order to function properly under new circumstances.

Figure 1 depicts how the COVID-19 shock impacted nonfinancial enterprises' and families' liquidity and solvency, as well as the policy actions are taken to alleviate it and the financial system's influence. It also shows the policy actions that directly influence the financial sector, as well as the potential for negative feedback if the financial system gets strained. Cross-sectoral and cross-border transmission pathways can amplify these impacts. When enterprises and families' loss absorption capacity is exhausted, the graphic distinguishes between the direct impact on firms and households and the indirect impact on the financial sector.

The figure shows that there are three distinct sectors in the figure: nonfinancial private enterprises and households, financial firms and households (banks and nonfinancial intermediaries), and public.

Figure 2 illustrates the headline indicator, which corresponds to the total number of people who are at risk of poverty or who are extremely materially disadvantaged, or who are living in households with a very low level of labor force participation (i.e. a combination of the three sub-indicators). Although the gap between the EU15 and EU27 figures is minor, Eastern Europe has the highest rate of poverty or social exclusion. In the majority of the nations for which 2010 data is available, the situation worsened between 2009 and 2010. Lithuania and Spain experienced the most severe deterioration inside the EU. Significant improvements have been seen in Bulgaria, Romania and Estonia, but remain on the right side of the chart, as in most parts of Eastern Europe and the most affected countries of Western and Southern Europe (poverty and It shows a

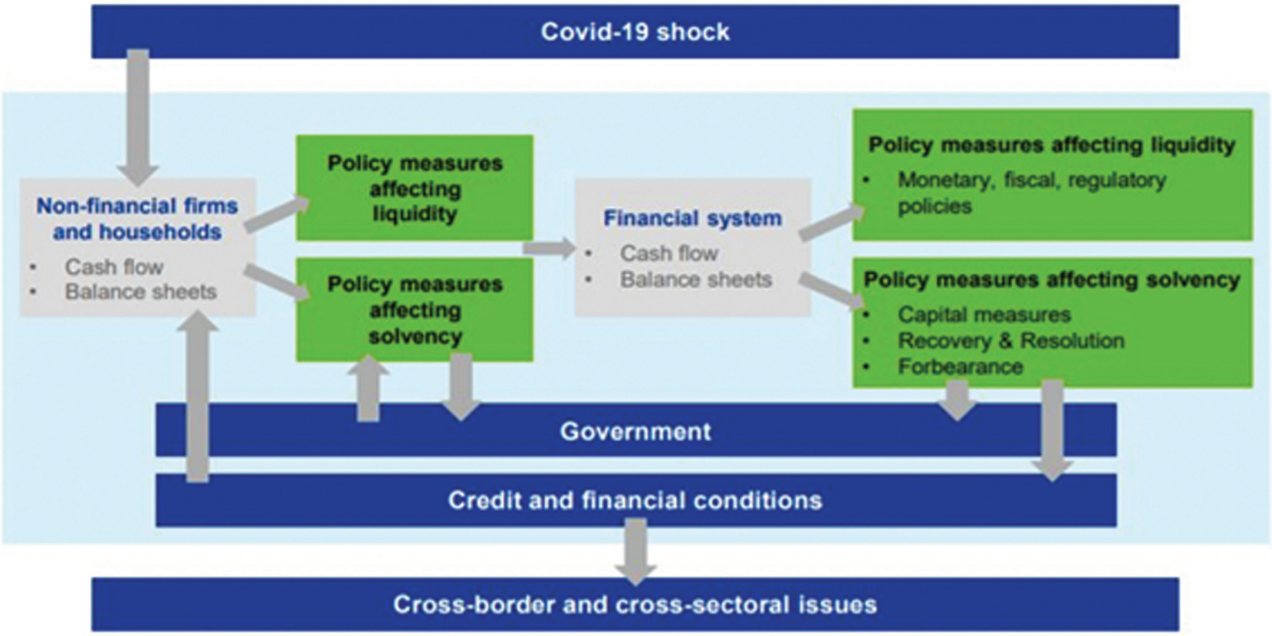

Figure 1. transmission mechanism of financial stability implications of fiscal measures.
Source: European Systemic Risk Board (ESRB)

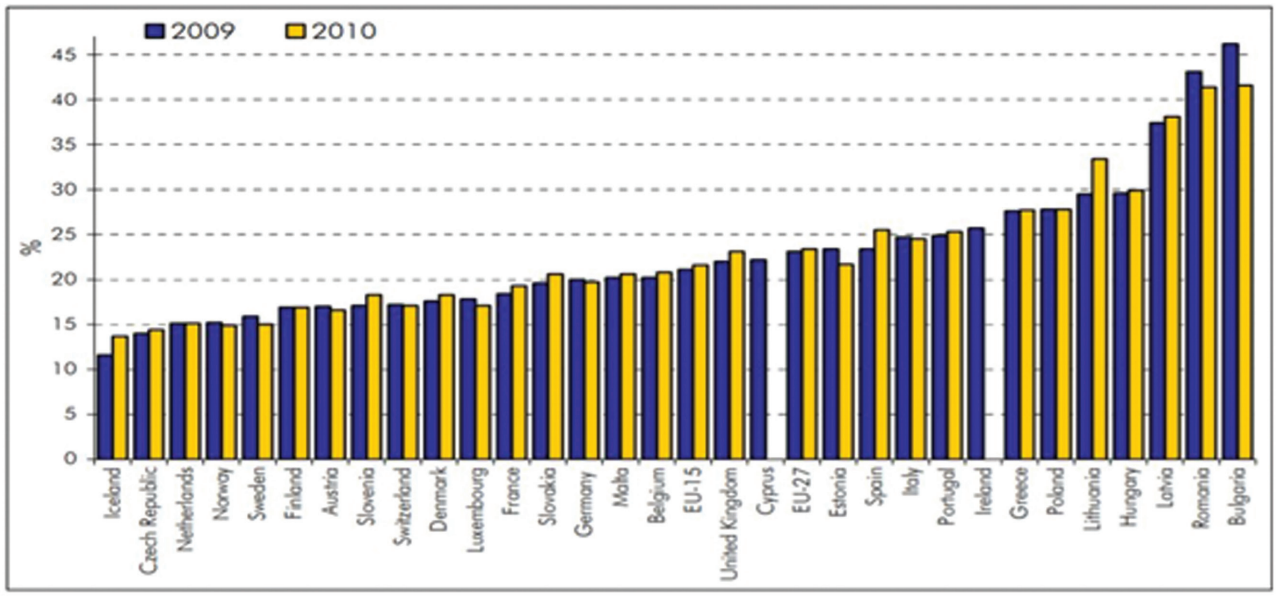

Figure 2. People at risk of poverty or social exclusion.
Source: data from Eurostat

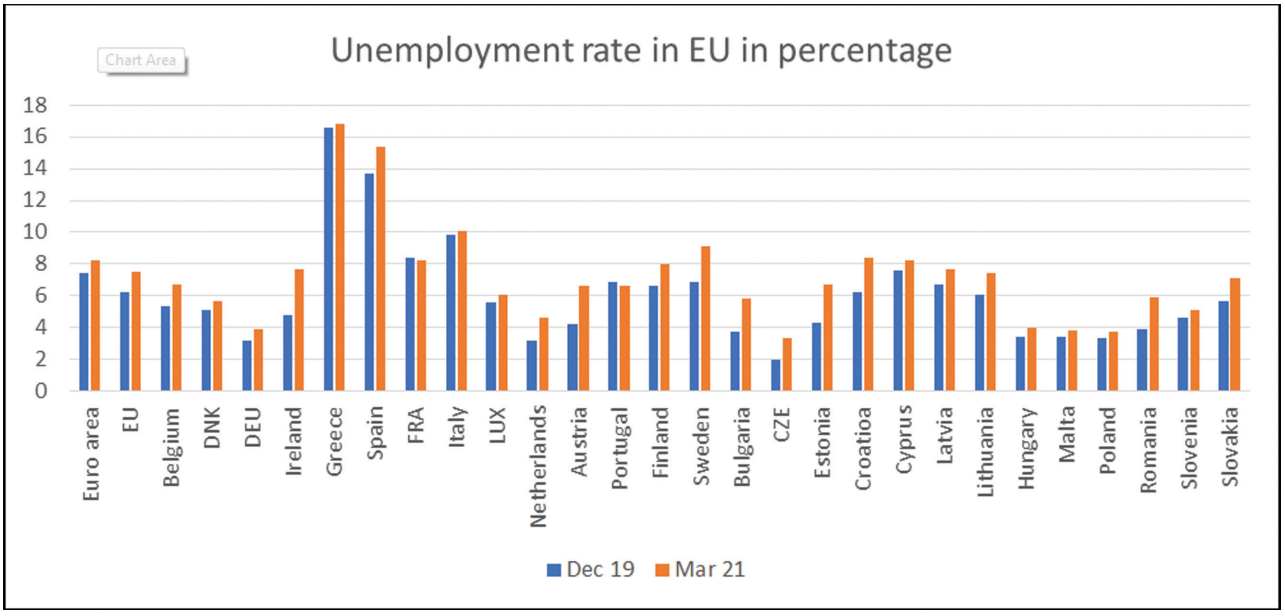

Figure 3. Unemployment rate (annual average) – Dec 2019 & Mar 2021.
Source: Eurostat Euroindicators 2021

high risk of social exclusion). Current sovereign debt crisis (Greece, Ireland, Portugal, Spain, Italy).

Unemployment is another indicator of social welfare which is depicted in Figure 3 and Figure 4. Based on Figure 3, almost all Eastern and western European countries are suffering from unemployment. One explanation for the large market for commercial microfinance in the region is the relatively poor performance of Eastern European EU member states in the social welfare index, coupled with the low penetration of banks (citation required). Due to the large share of the informal economy in general and the low use of social benefits, unemployment rates can be imbalanced in certain countries, and as a result, people are less likely to claim job less.

In this study we advocate the subsequent speculation primarily based totally on the conflicting motives supplied above. Therefore, our research is a great complement to the existing literature by examining the social and financial efficiency of MFIs during the recent Pandemic. The next section depicts a general overview of the recent

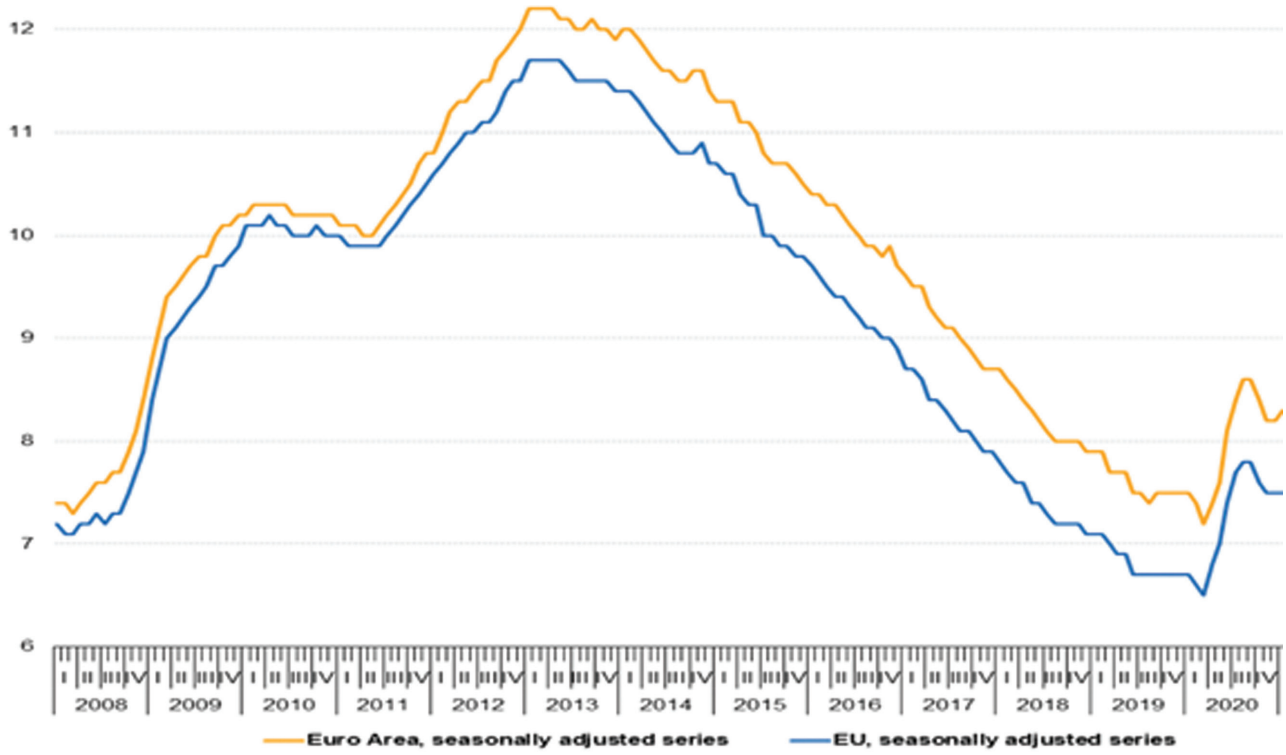

Figure 4. Unemployment rate (seasonally adjusted, %).
Source: based on the data from Eurostat

scholarly activities with regard to the impact of COVID-19 on MFIs.

Literature Review

MFIs financing changed into the primary precise financing scheme for the European microfinance commercial enterprise that was released throughout the entire EU. Progress microfinance created the institutional shape that allowed it to soak up several smaller microfinance pilot initiatives and evolve into the much-desired "one-forestall shop" for EU-supported financing tasks that were envisioned. Because of this, they will permit loans to enter default and endure losses that allow society to be aware of the social aim in instances of financial difficulty (Ahlin et al., 2011).

Because of the revolutionary commercial enterprise strategies like organization lending, microfinance establishments are much less susceptible to financial fluctuations and therefore extra cost-powerful than traditional banks (Schulte & Winkler, 2019; Zamore et al., 2019). During a recession, MFIs can be capable of supplying smaller loans to extra underserved micro-entrepreneurs. MFIs' attain will probably be elevated in different ways: with the aid of using growing the range of energetic debtors in addition to with the aid of using growing quantity they lend.

Widiarto and Emrouznejad (2015) argued that the goal of microfinance development is to combat poverty in the past decades. The main features of the MFIs are the outreach to the poor and their contributions to financial sustainability. Using DEA, they compared the Islamic MFIs against conventional MFIs and found that Islamic MFIs outperform conventional MFIs in social efficiency, while, conventional MFIs outperform Islamic MFIs in financial efficiency. In their study, the inputs of financial efficiency were assets, Operation expenses, portfolio risk, and employees, and the output was financial revenue. The inputs of social efficiency were the same as financial efficiency but the output was "Average loan balance per Borrower" and "Number of borrowers".

Chauhan (2021) examined the social and financial performance of NGO-MFIs in the Indian microfinance sector. Based on the Chauhan definition, social efficiency indicates the willingness to support poorer consumers and financial efficiency indicates how long financial services can be offered to financial organizations. Using DEA and Tobit regression and the data from Microfinance Information Exchange (2009 – 2015), the study found that NGO-MFIs are financially more efficient than

socially. Tobit regression results show that the crucial variable for social and financial efficiency is operational self-sufficiency.

Zheng and Zhang (2021) investigated the impact of COVID-19 on the financial and social efficiency of MFIs. They found that the Pandemic decreased the financial efficiency of MFIs but the social efficiency has increased. In addition, to find the root cause of such impact, the supply and demand of MFIs are examined, and the results show that lending rate mediates the association between COVID, and MFI efficiency and the mediating impact of funding rate is negligible.

Zaneta et al (2021) analyzed the financial performance of MFIs' outreach and portfolio quality before and after COVID-19 in South India. The results of the survey among 120 female respondents show that COVID has caused a decline in loan portfolio and clientele, and increased the portfolio risk due to clients overdue, a rise in outstanding loans, and a rise in number of delinquent clients. Similarly, Kizza and Samali (2022) investigated the association between MFIs risk management, and social and financial performance during COVID-19 in Uganda using a cross-sectional study of 53 respondents from six MFIs. A questionnaire has been developed and data have been collected during the late period of 2021. The empirical findings revealed a significant relationship between risk management and MFIs' financial performance and between the social mission and financial performance of MFIs.

Data and Methodology

In this study, we use a Data Envelopment Analysis (DEA) methodology to evaluate MFI's performance in terms of financial and social efficiency. DEA is a nonparametric linear programming approach that determines the amount of output generated given a collection of homogenous input levels and allows for repeated comparisons between them (Gutiérrez Nieto et al., 2007).

Data Envelopment Analysis (DEA) assesses how efficient each decision-making unit (DMU) is compared to the best practice, utilising a nonparametric linear programming approach. As a general principle, DEA assumes that if a DMU is capable of producing a certain level of output with a certain amount of inputs, a majority of units would also be capable of producing that level (Ling et. al, 2018).

In previous studies (e.g. Gutiérrez Nieto et al., 2009; Ling et al, 2018), DEA has been shown to be a suitable method for efficiency measurements as well as for assessing MFI performance. The benefit of utilizing DEA to assess MFI efficiency is that it may combine both social impact and financial viability outputs, as well as other inputs, into a unified framework without making any assumptions about data distribution (Basharat et al., 2015). The input and output data for the DEA framework are derived from the MIX Market information platform's worldwide database of MFIs. This database offers the finest cross-country statistics on MFI specific social and financial metrics that are publicly accessible. It has been frequently utilized in the microfinance literature (see, for example, Assefa et al., 2013; Ahlin et al., 2011).

According to Basharat et al. (2015), using AOP_IFO as a broad specification of key empirical estimates of financial efficiency, (A) assets, (O) operating expenses (P), and staff (I) inputs and gross loan portfolio (F) and financial income as output (O). Similarly, use AOP_IFB as a broad specification of social efficiency. The ACE input (refers to social specification: assets (a), operating expense (c), and personnel (e) are taken as inputs) is the same as the financial efficiency, and the output is the number of active female borrowers (F), which shows the benefit to the poorest (B).

To address the concerns that input, and output choices can affect outcomes, the robustness checks are applied to replace social and financial efficiency based on different input and output choices. The European Development Bank (EDB) has released information on the economic impact of COVID-19. To address concerns that our findings may be influenced by the COVID-19-induced economic downturn, the percentage decline in 2018 GDP and employment across all sectors is calculated. EDB predicts four scenarios based on tourism and travel bans impacted by COVID-19 situation – "best case," "moderate case," "worst case," and "hypothetical worst case," and analyses the impact of these scenarios are realized.

The projected impact of COVID-19 on GDP and employment depends on the duration of the travel ban and the extent of domestic demand loss in Europe. For example, in the "best case", travel bans in Europe are expected to be two months, with outbound tourism increasing by 50% within two months and countries adopting travel bans not receiving tourism revenue. As a result of the SARS outbreak, we anticipate a decline in visitors and profits from China, as well as tourism from outside Europe to East Asia and Southeast Asia outside China. As a result, ADB predicts that EU consumption in the "best case" scenario will decrease by 12% compared

to the scenario without breakouts. In contrast, the "worst case hypothesis" scenario involves a six-month travel ban, a shrinking domestic demand within the EU, and an economy with a three-month COVID-19 outbreak.

As a result, German outbound tourism is expected to decline by 61% during the travel restriction period, with incoming European tourists reducing by an additional 46 percent compared to the best-case scenario. Tourism from outside Europe to European nations is also expected to decline by four months over the best-case scenario. As a result of these effects, the EDB predicts a 12% loss in Europe`s consumption and investment, as well as a 4% drop in domestic consumption in selected nations. Throughout our study, pe effect 1, pe effect 2, pe effect 3, and pe effect 4 reflect the absolute values of the Gross domestic product impacts owing to the possible economic impact of the COVID-19 epidemic in the "ideal scenario," "mild scenario," "awful scenario," and "hypothetical horrible scenario" scenarios, represented as a percentage decline in total 2021 nominal GDP. The magnitudes of IM effects 1, 2, 3, and 4 represent the absolute values of the impacts on employment induced by the projected financial impact of the COVID-19 infection in the "best case," "moderate case," "worst case," and "hypothetical worst case" scenarios, calculated as a percentage decline in employment within all sectors in 2021. In addition, consider MFI-specific macroeconomic drivers that have been shown to impact MFI performance in previous studies. Our key empirical estimates are assets (a), operating expenses (c), staff (e) as inputs, total loan portfolio (l), and financial income (r), abbreviated by ace_lr as a broad specification of financial efficiency. This definition is based on the Basharat et al (2015) study. Another common specification of social efficiency, called "ace_wp", is the number of active borrowers ("w") and the measure of profit to the poorest ("p") as inputs and outputs, respectively. As our results will be influenced by the inputs and results we choose, we will carry out a robustness check of alternative indicators for social and financial efficiency.

Empirical Findings

Descriptive statistics

Descriptive data for the variables included in our study are presented in Table 1. In terms of aopifb and aopifo, the median and mean values, respectively, are 0.213 (0.096) and 0.710 (0.801) for financial and social efficiency. When it comes to the economic impact of COVID-19, the impact on nominal gross domestic product and employment grows as the intensity of travel restrictions increases from the "best case" to the "hypothetical worst case," from "best case" to "hypothetical worst case." Gdp-1, gdp-2, gdp-3, and gdp-4 have mean (median) values of -432 (-0.221), -0.519 (-0.371), -0.1460 (-0.820), and -2.128 (-1.722, respectively. IM effect 1, 2, 3, and 4 have mean (median) values of- 0.328 (-0.243), -0.422 (-0.366), -0.763 (-0.673), and -1.923 (-1.821), respectively.

The Pearson correlations between our variables are shown in Table 2. It demonstrates that the correlations between our dependent variables and other factors are often below 0.7. There are also no very strong correlations between variables that might raise concerns about multicollinearity issues. As a result, we can ensure that these variables are not threatened by multicollinearity.

Table 1. Summary statistics

	Mean	SD	P25	Median	P75	N
aop_ifo	0.312	0.328	0.021	0.096	0.398	72
aop_ifb	0.710	0.368	0.253	0.801	0.989	73
gdp_ 1	-0. 432	0.521	-0.412	-0. 221	0.052	73
gdp_2	-0.519	0.648	-0.826	-0.371	-0.074	73
gdp_3	-1.460	1.098	-1.980	-0.820	-0.193	73
gdp_4	- 2.128	1.110	-1.968	-1.722	-1.410	73
IM_effect_1	-0.328	0.248	-0.567	-0.243	-0.038	73
IM_effect_2	-0.422	0.378	-0.810	-0.366	-0.056	73
IM_effect_3	-0.763	0.643	-1. 761	-0.673	-0. 123	73
IM_effect_4	-1. 923	0. 711	-1.986	-1. 821	-1. 410	73

Note: aop_ifo is: financial efficiency, (A) assets, (O) operating expenses (P), staff (I) inputs , gross loan portfolio (F) and financial income as output (O) . While aop_ifb is: financial efficiency, (A) assets, (O) operating expenses (P), staff (I) inputs, number of active female borrowers (F), and benefit to the poorest (B). gdp is the gross domestic products. IM_effect is the absolute values of the impacts on employment induced by the projected financial impact of the COVID-19 infection.

Table 2. Multicollinearity diagnostics

	AOP-IFO	ACE-FB	GDP 1	GDP 2	GDP3	GDP4	IM-effect 1	IM-effect 2	IM-effect 3	IM-effect 4
AOP-IFO	–									
ACE-FB	−0.28*	–								
GDP 1	−0.34**	0.61***	–							
GDP 2	−0.32**	0.62***	0.99***	–						
GDP3	−0.32**	0.60***	0.97***	0.97***	–					
GDP4	−0.41***	0.64***	0.96***	0.98***	0.94***	–				
IM-effect 1	−0.31**	0.41***	0.91***	0.92***	0.94***	0.88***	–			
IM-effect 2	−0.28*	0.32***	0.84***	0.89***	0.90***	0.79***	0.98***	–		
IM-effect 3	−0.24*	0.35***	0.84***	0.89***	0.92***	0.79***	0.97***	0.97***	–	
IM-effect 4	−0.41***	0.53***	0.97***	0.95***	0.95***	0.98***	0.89***	0.87***	0.86***	–

Note: aop_ifo is: financial efficiency, (A) assets, (O) operating expenses (P), staff (I) inputs , gross loan portfolio (F) and financial income as output (O) . While ACE_FB is: assets (a), operating expense (c), and personnel (e), number of active female borrowers (F), and benefit to the poorest (B). gdp is the gross domestic products. IM_effect is the absolute values of the impacts on employment induced by the projected financial impact of the COVID-19 infection.

Table 3. Financial efficiency and change in macroeconomic conditions due to COVID-19

VARIABLES	a	b	c	d	e	f	g	h
	AOP-IFO	AOP-IFO	AOP-IFO	AOP-IFO	AOP-IFO	AOP-IFO	AOP-IFO	AOP-IFO
gdp_chg_1 GDP 1	−0.410***							
	(-2.68)							
gdp_chg_2 GDP 2		−0.356***						
		(-4.78)						
gdp_chg_3 GDP 3			−0.214***					
			(-4.92)					
gdp_chg_4 GDP 4				−0.186***				
				(-4.78)				
IM-effect 1					−0.963***			
					(-3.83)			
IM-effect 2						−0.676***		
						(-3.78)		
IM-effect 3							−0.387***	
							(-4.10)	
IM-effect 4								−0.398***
								(-4.78)
Observations	81	81	81	81	81	81	81	81
R-squared	0.503	0.528	0.538	0.526	0.469	0.506	0.511	0.559

Notes:

[a]The estimated coefficient is shown by the first row (number), and the t-value of significance is represented by the second row (number in parentheses).

[b]To mitigate the effects of severe outliers, we minorized all continuous variables between the 1st and 99th percentiles.

[c]if p 0.10; if p 0.05; if p 0.01. Every test is two-tailed.

Impact of COVID-19 on MFI financial efficiency

$$ace\_lr = \beta 0 + \beta 1 COVIDi + \sum Controlsi + \varepsilon i$$

To examine the impact of COVID on MFI's financial efficiency, we develop the following model to investigate the association between the impact of COVID-19 on MFI financial efficiency:

AOP-IFO I is our financial efficiency measure for company a; COVID I is a vector that comprises eight measures of the influence of COVID-19 on firm a, including *gdp 1 a*, gdp2 a, gdp3 a, gdp4 a, IM effect 1 a, IM effect 2 a, IM

Table 4. The funding rate's impact on social efficiency

COVID-19 impact on GDP

Dep. Var.	GDP-1			GDP2			GDP 3			GDP4		
	AOPI-FB (1)	Funding rate (2)	AOPI_FB (3)	AOPI_FB (4)	Funding rate (5)	AOPI_FB (6)	AOPI_FB (7)	Funding rate (8)	AOPI_FB (9)	AOPI_FB (10)	Fundingrate (11)	AOPI_FB (12)
COVID	0.478*** (5.86)	−0.003 (-0.15)	0.475** (5.77)	0.368*** (5.72)	0.000 (0.069)	0.358*** (5.46)	0.192*** (5.46)	0.001 (0.15)	0.186*** (5.32)	0.198*** (5.64)	0.003 (0.44)	0.193*** (5.561)
fundingrate			−0.546 (−0.78)			−0.606 -(−0.91)			−0.632 (−0.91)			−0.683 (−1.12)
Sobel test	β1=0.490 ***α1=−0.003, β2=−0.513, β'1=0.484*** Sobel test z-stat = |0.126 | < |0.97|			β1=0.376*** α1=0.000, β2=−0.587 β'1=0.311*** Sobel test z-stat = |-0.061| < |0.97|			β1=0.182*** α1=0.001,β2=−0.634 β'1=0.182*** Sobel test z-stat = |-0.111| < |0.97|			β1=0.199*** α1=0.002,β2=−0.768 β'1= 0.189*** Sobel test z-stat = |-0.370| < |0.97|		
Mediation effect	No mediation			No mediation			No mediation			No mediation		
N	73			73			73			73		

[a]The first row (number) represents the estimated coefficient, the second row (number in parentheses) represents the t-value of significance.
[b]We winsorized all continuous variables at the 1st and 99th percentiles to moderate the possible effects of extreme outliers.
[c]*if p < 0.10; **if p < 0.05; *** if p < 0.01. All tests are two-tailed.

effect 3 a, and IM effect 4 a. The results of the estimation of the above equation are shown in Table 4. MFI financial efficiency is reduced by COVID-19's nominal GDP effect on gdp chg 1 in Column 1 (1 = -0.397, p less than 0.01) in the "best scenario"

The results are consistent across Columns (2), (3) and (4) for gdp- 2 (β 1 = −0.356, p < 0.01), gdp_ 3 (β 1 = −0.214, p < 0.01), and gdp_ 4 (β 1 = −0.184, p < 0.01), respectively, suggesting that the potential GDP impact of COVID-19 generally lowers MFI financial efficiency in all scenarios. Likewise, for the impact of COVID-19 on employment, Column (5) shows that under the "best case", IM_ effect_1 significantly lowers AOP-IFO (β 1 = −0.963, p < 0.01). The results remain consistent across Columns (6), (7) and (8), where they show that financial efficiency is decreased by IM-effect 2 (β 1 = −0.676, p < 0.01), IM_ effect 3 (β 1 = −0.387, p < 0.01) and IM-effect 4 (β 1 = −0.398, p < 0.01).

This is interesting, since as a scenario progresses from the best to the worst, the marginal effect of the anticipated GDP and employment impact from COVID-19 on financial efficiency continues to diminish. For example, in the "best case," the marginal effect of gdp 1 on AOP-IFO is 0.410, which decreases steadily as the situation deteriorates. Among the effects on employment, a similar effect is seen. The findings in Table 3 suggest that the COVID-19-induced economic slowdown has a negative impact on MFI financial performance.

Impact of COVID-19 on social efficiency of MFI

We investigate the role of the funding rate in mediating the effect of COVID-19 on social efficiency. Table 4 shows the outcomes. The following equation is estimated to find the results:

$$ace\_wp = \beta 0 + \beta 1 COVIDi + \sum Controlsi + \varepsilon i$$

We see that funding grate has a minor indirect influence on AOPI-FB, but the direct effect from gdp_ 1 (β'1 = 0.490, p < 0.01), gdp_chg_2 (β'1 = 0.311, p < 0.01), gdp_3 (β'1 = 0.182, p < 0.01), and gdp- 4 (β'1 = 0.189, p < 0.01).

This is interesting, since as a scenario progresses from the best to the worst, the marginal effect of the anticipated GDP and employment impact from COVID-19 on financial efficiency continues to diminish. For example, in the "best case," the marginal effect of gdp 1 on AOP-IFO is 0.410, which decreases steadily as the situation deteriorates. Among the effects on employment, a similar effect is seen. The findings in Table 4 suggest that the COVID-19-induced economic slowdown and therefore has a negative impact on MFI financial performance.

Conclusion

This study examines whether and how the potential economic impact of the recent outbreak of COVID-19 will affect the financial and social efficiency of MFI using DEA analysis. In terms of financial efficiency, we found that COVID-19 had a negative impact on MFI but had a positive impact on MFI's social efficiency. Our results are resilient to various scenarios of potential impacts of COVID-19. In other words, the higher the MFI interest rate at the time of occurrence, the more likely a vulnerable borrower will fail to repay the loan. As a result, higher interest rates are expected to reduce financial efficiency. Our research is increasing evidence of the impact of macroeconomic conditions on MFI performance. We will use new evidence from recent and ongoing COVID-19 epidemics to specifically investigate the relationship between pandemics and MFI efficiency.

It should be noted that the estimated economic impact of COVID-19 is based solely on 2021 GDP and employment data, so the results of this study need to be interpreted in the light of limits. Future research may include testing assumptions on a larger scale as new data become available and disagree with the results.

Practical implications: The findings of this research have important implications for MFI trying to control efficiency during a pandemic. It sheds light to the policy makers when making decision in recession times. One must be careful with economic efficiency of MFI as it has an important role in reducing poverty.

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Biographical Statement of Author(s)

Dr. Sara Ravan Ramzani is a Senior Business Lecturer & Program team leader, exerts primarily as a principal supervisor for Master and PhD researchers in management and business accounting stream.

She was educated at University Putra Malaysia, where she received her PhD in Economics and information systems in 2015. Sara has published 84 papers to date, and received the "best innovative paper award" from the Sydney International Business Research Conference in 2018. Sara is also the Chief Executive Editor of the Journal of Development Economics, Springer, and sits on Horizon journals editorial board from 2019 -2022. She is the main author for SDG9 and SGD 16.

Sara has several years of experience as a senior lecturer, programme leader and postgraduate director at international universities in Malaysia and Singapore, and has supervised 24 PhD students, primarily in the fields of Project Management, Business, and Finance.

Dr. Sara R Ramzani
GISMA Business School
14469 Potsdam
Brandenburg, Berlin
Germany
E-mail: sara.ramzani@gisma.com

Dr Behrooz Gharleghi has several years of teaching, research, and practical experiences in various capacities in Malaysia, Peru, and Ger many.

He has published several articles in the area of financial economics, monetary economics, and business management and currently is the Associate Editor of the Jurnal Ekonomi Malaysia. He has led on and collaborated in various international research projects from the United Nations, F.A.O, Volkswagen Foundation, and the Malaysian Ministry of Higher Education.

Dr. Behrooz Gharleghi
Arden University
10963 Berlin
Germany
E-mail: gharleghi.bn@gmail.com

Dr. Alison Watson is the Head of School of Leadership and Management. Having taught at Arden for 15 years, she has supported many students on various management courses at all levels of study.

Prior to this, Alison was an operations and project manager for a number of large retailers, and therefore has a wealth of experience in the field of business and management.

Dr. Alison Watson
Arden University
London
U.K.
E-mail: awatson@arden.ac.uk

Dr Phungmayo Horam is Academic Lead at Arden Berlin and advisor to Steinbeis Renewable Energy Centre, India. He is a Resource Economist with a PhD from Humboldt University, and has over four years' experience in project implementation under the Sustainable Future-Megacities project sponsored by the German Ministry of Education and Research (BMBF).

Horam specialises in Project Management and the application of Economics and legal frameworks for evaluating policy design and transaction risks in the renewable energy sector.

Dr. Phungmayo Horam
Arden University
10963 Berlin
Germany
E-mail: phoram@arden.ac.uk