

Microfinance, Competition and Growth

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Abstract

This paper analyzes the relationship between microfinance, competition and growth in a sample of 119 countries over the period 1999-2018. Our results are fourfold. First, we show that microfinance increases economic growth. Second, we identify investment as the main channel explaining the positive effect of microfinance on growth. Third, our study highlights that the conventional financial sector and microfinance are substitutes and not complements in emerging and developing countries. Finally, we show that competitive microfinance markets allow increasing the positive effect of microfinance on growth.

JEL classification:

Keywords: Microfinance, Economic Growth, Concentration, Panel Data

1 Introduction

The microfinance industry is increasingly growing. Between 2010 and 2018, the size of credits granted each year by microfinance institutions (hereafter MFIs) has soared from 54 Mds in 2010 to 124 Mds in 2018 worldwide. Meanwhile, the number of borrowers has risen from 105 M in 2010 to 140 M in 2018. This impressive expansion is mainly explained by the lack of access to conventional financial services in many developing countries. By facilitating access to credit, the microfinance sector allows the poorest households to invest in productive projects ([Dalla Pellegrina \(2011\)](#)) and to get access to a better education ([Adjei et al. \(2009\)](#)).

In response to the rapid growth of MFIs, an increasing number of studies have started examining the economic effects of microfinance. Since the initial objective of microfinance was to improve the well-being of poor people, these works are mainly concerned with the effects of microfinance on poverty, inequality, education, health and, to a lesser extent, the empowerment of women. The large majority of these studies use survey data and provide analysis at the microeconomic level. Among the most interesting are the works of ([Karlan and Zinman 2010](#)) on South Africa, ([Karlan and Zinman 2011](#)) on the Philippines, ([Augsburg et al. 2015](#)) on Bosnia and Herzegovina, ([Tarozzi et al. 2015](#)) on Ethiopia, ([Angelucci et al. 2015](#)) on Mexico and ([Banerjee et al. 2015](#)) on India. The conclusions of these studies are mixed. Some find that microfinance improves the socioeconomic status of poor people by reducing poverty and inequality, some find no effect and some even find that microfinance increases poverty.

Due to the lack of large databases on microfinance institutions until very recently, there has been much less work at the macroeconomic level. However, contrary to microeconomic studies, these works globally conclude that microfinance contributes to reducing inequality and poverty ([Imai et al. \(2012\)](#), [Hermes \(2014\)](#) and [Bangoura et al. \(2016\)](#)). Therefore, even if microfinance does not reduce inequality and poverty in all countries - given the specific constraints and structural framework within which each of these economies operates - it nevertheless reduces inequality and poverty at a global level. According to ([Bangoura et al. 2016](#)), this could be explained by the fact

that microfinance would stimulate growth, thus reducing poverty. To the best of our knowledge, no clear cross-country evidence exists on the role of microfinance, nor on the optimal structure of the microfinance market, in promoting economic growth.

The purpose of this paper is to fill this gap in the literature and to assess the relationship between microfinance, competition and growth. To this end, we use a large panel of 119 emerging and developing countries over the 1999-2018 period. Our results show that microfinance strongly contributes to increase growth, in particular in low and middle-income countries. We also study the channels through which microfinance positively affects growth. In particular, we show that microfinance boosts investment which is one of the main determinants of economic growth. We also analyze the substitutability/complementary between the microfinance sector and the conventional financial sector. In this respect, we show that both sectors are substitutes and not complements. Finally, this study offers a reflection on the optimal structure of the microfinance market and highlight a negative relationship between the degree of concentration of the microfinance sector and growth. In other words, the more concentrated the microfinance sector is, the lower its impact on growth. Encouraging the development of a competitive microfinance sector to boost the economic activity must therefore be a top priority in developing countries with low access to the conventional financial sector.

The remainder of the paper is organized as follows. The next section describes the data. Section 3 discusses the relation between microfinance and economic growth. Section 4 examines the optimal structure of the microfinance sector. Section 5 concludes.

2 Data

We conduct an empirical analysis on a large unbalanced panel of 119 emerging and developing countries over the period 1999-2018. The selection of countries is based on the availability of data. Specifically, all countries for which microfinance data

were available have been included in our sample¹.

Our data on microfinance stem from the Microfinance Information Exchange (MIX) database. MIX is a nonprofit organization whose purpose is to promote financial inclusion by providing easily accessible data and specialized information services. MIX contains the largest and the most accurate collection of microfinance data. It provides information on more than 3000 MFIs and 100 millions borrowers in more than 100 emerging markets worldwide. All in all, MIX is the most used dataset in the recent literature on microfinance (Ahlin et al., 2011, Hermes et al., 2011, Bauchet and Morduch, 2012, Imai et al., 2012, Wagner and Winkler, 2013, D’espallier et al., 2017)

In order to measure the size of the microfinance sector in a given country, we use the logarithm of the Gross Loan Portfolio (GLP) per capita indicator. This variable includes all outstanding principals due for all outstanding client loans. This encompasses current, delinquent, and renegotiated loans, but not loans that have been written off. In other words, this index can be considered as a good proxy of the size of the microfinance sector. Moreover, MIX provides microfinance data at the country level but also at the institution level. In our study, country level data are used to examine the relation between microfinance, investment and growth and institution level data are used to study the growth-maximizing structure of the microfinance sector in terms of competition and concentration.

Other variables include the usual determinants of economic growth. All come from the World Development Indicators (WDI) and the World Governance Indicators (WGI) databases of the World Bank. We include investment (Khan and Reinhart (1990)), openness (Harrison (1996)), inflation (De Gregorio (1993)) and we use the logarithm of the initial level of real GDP per capita (Barro (1991)) to control for conditional convergence. Moreover, for robustness purposes, we successively include domestic credit (King and Levine (1993)), foreign direct investment (Borensztein et al. (1998)), government effectiveness (Alam et al. (2017)), unemployment (Eriksson (1997)), education (Barro (1996)) and population growth (Solow (1956))

¹Table 14 in Appendix provides a list of all the countries included in the sample, classified by income.

as additional control variables. Table 1 displays some descriptive statistics of our sample, Table 12 (in Appendix) exposes the correlation matrix between regressors and Table 13 (in Appendix) summarizes the variables and sources of information used.

Table 1: Descriptive statistics

	Mean	Std. dev.	Min	Max
Log GLP per capita	1.41	2.50	-10.48	6.92
Concentration ratio	0.87	0.16	0.21	1
HHI	5507.47	3109.85	336.25	10000
Economic Growth	3.01	4.64	-27.23	59.89
Initial GDP Per Capita	7.61	1.04	5.25	9.74
Trade	74.24	31.41	0.16	277.13
Inflation	6.77	11.26	-10.06	359.93
Investment	22.36	7.15	2.00	69.67
Domestic Credit	33.54	27.87	0.49	161.13
Foreign direct investment	1.45	3.64	-7.44	48.78
Education	67.49	26.81	5.29	132.81
Unemployment	7.80	6.44	0.31	37.25
Population growth	1.61	1.23	-9.08	7.78
Government effectiveness	-0.48	0.56	-2.24	1.27

3 How does microfinance affect growth?

In this section, our analysis is organized around three major issues. First, we explore the relation between the size of the microfinance sector and economic growth. Second, we focus on one of the main channels that may explain the impact of microfinance on growth, namely investment. Third, we investigate if microfinance is a substitute or a complement to the conventional financial sector. The general empirical strategy consists in estimating fixed effects regressions and to address the endogeneity problem using instrumental variables.

3.1 Microfinance and growth

As a preliminary step in our analysis, we first estimate the following regression model

$$Growth_{it} = \alpha_1 GLP_{it} + \alpha_2' X_{it} + \varepsilon_{it} \quad (1)$$

where $Growth_{it}$ corresponds to the GDP per capita growth rate in country i at time t , GLP_{it} is the logarithm of the gross loan portfolio per capita variable that measures the size of the microfinance sector, X_{it} is a vector of control variables and ε_{it} is the error term.

Table 2: Fixed-effects regressions before endogeneity correction

	Dependent variable: GDP per capita growth rate						
	[1]	[2]	[3]	[4]	[5]	[6]	[7]
Log GLP per capita	0.473*** (0.072)	0.497*** (0.074)	0.413*** (0.068)	0.364*** (0.091)	0.496*** (0.072)	0.416*** (0.084)	0.471*** (0.072)
Trade	0.039*** (0.007)	0.039*** (0.007)	0.041*** (0.007)	0.038*** (0.010)	0.038*** (0.007)	0.037*** (0.007)	0.041*** (0.007)
Inflation	-0.021** (0.009)	-0.020** (0.009)	-0.021** (0.009)	-0.032* (0.019)	-0.023** (0.009)	-0.031 (0.019)	-0.022** (0.009)
Initial GDP Per Capita	-8.140*** (0.613)	-8.020*** (0.725)	-6.976*** (0.593)	-8.564*** (0.883)	-8.639*** (0.620)	-9.022*** (0.667)	-8.135*** (0.619)
Investment	0.032 (0.023)	0.033 (0.024)	0.020 (0.023)	0.028 (0.030)	0.008 (0.024)	0.024 (0.024)	0.033 (0.023)
Domestic Credit		-0.007 (0.012)					
Foreign direct investment			0.034*** (0.010)				
Education				0.039** (0.017)			
Unemployment					-0.291*** (0.058)		
Government effectiveness						1.523** (0.686)	
Population growth							-0.469** (0.209)
N	1582	1556	1565	1144	1567	1473	1564

Standard errors are in parentheses. Significance Codes, *** : 0.01; ** : 0.05; * : 0.1.

The results of this first regression are reported in Table 2. The coefficients associated with the logarithm of the GLP per capita are always positive and highly significant. Therefore, any increase in the size of the microfinance sector leads to an increase in the GDP per capita growth rate. This result is robust to the inclusion of a number of additional control variables. In addition, the other determinants of growth have the expected sign and are significant.

Further, as usual in growth regressions, we need to address the endogeneity of the explanatory variables. To this end, we re-estimate Equation 1 using a 2SLS approach. We regress each explanatory variable on specific instrumental variables and we then regress the GDP growth rate on the predicted values of the regressors. The instruments we use to control endogeneity are of two types. We use internal instruments for all variables except the GLP and external instruments for the GLP. For the usual determinants of growth, we use the lagged values of these variables as instruments. For the GLP variable, we resort to two instrumental variables: the number of depositors and the operating expenses. The number of depositor represents the number of individuals who currently have funds on deposit within a microfinance institution. The operating expenses variable includes all expenses which are not related to financial and credit loss impairment, such as personnel expenses, depreciation, amortization and administrative expenses. Both variables come from the MIX Market database. For obvious reasons, the number of depositors and the operating expenses are expected to be strongly correlated with the GLP variable.

Table 3 reports the results of the second stage estimation². Overall, they are qualitatively similar to those of Table 2. The values of the GLP coefficients are even higher after correcting for endogeneity and their level of significance remains very high. In addition, Table 3 shows that our selected instruments are statistically valid. The Anderson and Cragg-Donald tests lead to reject the null hypothesis of underidentification and weak identification. Moreover, regarding overidentification, we do not reject the null hypothesis of the Sargan test. This implies that all excluded instrumental variables are exogenous. Finally, the p-value of the Davidson-MacKinnon test indicates that we should reject the null hypothesis of exogeneity between microfinance and growth, thereby justifying the need for a 2SLS approach. From Table 3, we can then argue that microfinance robustly and significantly contributes to increase economic growth.

²For convenience and to make the article easier to read, we do not report the results of the first stage estimation. However, these results are available on request from the authors.

Table 3: Fixed effects regressions with endogeneity correction

	Dependent variable: GDP per capita growth rate						
	[1]	[2]	[3]	[4]	[5]	[6]	[7]
Log GLP per capita	1.464*** (0.295)	1.481*** (0.306)	1.388*** (0.294)	1.770*** (0.445)	1.466*** (0.295)	1.390*** (0.326)	1.490*** (0.304)
Trade	0.010 (0.010)	0.007 (0.010)	0.007 (0.010)	0.007 (0.013)	0.010 (0.010)	0.014 (0.010)	0.011 (0.010)
Inflation	-0.002 (0.010)	-0.001 (0.010)	-0.001 (0.010)	-0.042* (0.023)	-0.003 (0.010)	-0.061*** (0.023)	-0.001 (0.010)
Initial GDP Per Capita	-13.086*** (1.296)	-14.737*** (1.364)	-11.905*** (1.318)	-14.971*** (1.491)	-13.256*** (1.296)	-13.904*** (1.334)	-13.221*** (1.334)
Investment	0.053* (0.028)	0.046 (0.028)	0.014 (0.029)	0.034 (0.037)	0.048 (0.028)	0.042 (0.029)	0.052* (0.028)
Domestic Credit		0.040** (0.016)					
Foreign direct investment			0.233*** (0.043)				
Education				-0.006 (0.032)			
Unemployment					-0.104 (0.079)		
Government effectiveness						2.315*** (0.878)	
Population growth							0.146 (0.286)
Endogeneity Test (Davidson-MacKinnon)	9.675 [0.001]	9.232 [0.002]	8.639 [0.003]	8.824 [0.003]	9.757 [0.001]	9.023 [0.002]	9.592 [0.002]
Under-Identification Test (Anderson)	137.967 [0.000]	130.711 [0.000]	132.297 [0.000]	76.702 [0.000]	137.060 [0.000]	129.700 [0.000]	131.848 [0.000]
Weak-Identification Test (Cragg-Donald)	79.606 [0.000]	74.887 [0.000]	75.903 [0.000]	42.474 [0.000]	78.968 [0.000]	74.793 [0.000]	75.526 [0.000]
Over-Identification Test (Sargan)	0.030 [0.863]	0.087 [0.768]	0.012 [0.914]	0.012 [0.911]	0.077 [0.781]	0.003 [0.958]	0.003 [0.862]
N	1086	1069	1072	804	1081	1020	1079

Standard errors are in parentheses. Significance Codes, *** : 0.01; ** : 0.05; * : 0.1.

3.2 Microfinance and investment

How does microfinance foster economic growth? In his famous book entitled *Creating a World Without Poverty*, Muhammad Yunus wrote: "*Microcredit is supposed to describe loans offered with no collateral to support income-generating businesses aimed*

at lifting the poor out of poverty"³. In these lines, the father of modern microfinance expressed his wish to see the poor investing in productive projects. Have microcredits really contributed to boosting investment? If so, it could be one of the main channels through which microfinance positively affects economic growth in addition to reducing to poverty (Imai et al. (2012)).

On this issue, a number of studies of limited scope have already analyzed the behavior of borrowers with regard to the money they have borrowed. Most conclude that microcredits are often used, at least partially, for productive purposes. For instance, Dalla Pellegrina (2011) has shown that microfinance loans are mainly channeled toward productive and non-agricultural activities. Similar results are found by Imai et al. (2010) in India, Imai and Azam (2012) in Bangladesh or Schicks (2014) in Ghana.

The objective of this subsection is to investigate if microfinance programs have contributed on a global scale to increasing investment in productive projects, thus explaining the positive effect of microfinance on growth highlighted in the previous subsection. To do this, we estimate the following model

$$INV_{it} = \beta_1 GLP_{it} + \beta_2' Z_{it} + \varepsilon_{it} \quad (2)$$

where $Instrument_{it}$ denotes the instruments used to control the endogeneity of the regressors and Z_{it} is a vector that contains the same control variables as X_{it} except investment. The instruments to control endogeneity are the lags of the regressors.

Table 4 generalizes the results of micro studies at the macro level and shows that microfinance programs globally promote investment. The logarithm of the GLP per capita is always positive and significant at the 1% level, regardless of the additional variables introduced into the model. This means that microloans are used in investment projects and not only for consumption purposes. Moreover, all the tests carried out confirm the validity of our instruments. Therefore, since investment is positively related to growth (see Table 2 and Table 3), this variable can be considered as a

³Yunus, M. (2009). *Creating a World Without Poverty: Social Business and the Future of Capitalism*. Public Affairs, p. 68.

channel through which microfinance positively affects growth.

Table 4: Fixed effects regressions with endogeneity correction for investment

	Dependent variable: Investment						
	[1]	[2]	[3]	[4]	[5]	[6]	[7]
Log GLP per capita	0.498*** (0.088)	0.512*** (0.090)	0.495*** (0.088)	0.351*** (0.098)	0.501*** (0.088)	0.584*** (0.099)	0.496*** (0.089)
Trade	0.050*** (0.008)	0.051*** (0.008)	0.045*** (0.008)	0.056*** (0.010)	0.048*** (0.008)	0.057*** (0.009)	0.049*** (0.008)
Inflation	-0.034*** (0.010)	-0.034*** (0.010)	-0.034*** (0.010)	-0.044** (0.019)	-0.037*** (0.010)	-0.069*** (0.021)	-0.035*** (0.010)
Initial GDP Per Capita	0.285 (0.676)	0.496 (0.810)	0.494 (0.688)	1.828** (0.871)	-0.314 (0.683)	-0.798 (0.744)	0.189 (0.686)
Domestic Credit		-0.007 (0.013)					
Foreign direct investment			0.203*** (0.039)				
Education				0.018 (0.018)			
Unemployment					-0.371 (0.064)		
Government effectiveness						0.878 (0.758)	
Population growth							-0.028 (0.229)
N	1473	1455	1457	1078	1458	1365	1456

Standard errors are in parentheses. Significance Codes, *** : 0.01; ** : 0.05; * : 0.1.

3.3 Are the microfinance and the conventional financial sectors substitutes or complements?

For a long time, the development of the conventional financial sector has been considered beneficial for growth (see e.g. King and Levine, 1993 ; Levine and Zervos, 1998, Beck et al., 2000). However, several studies have recently nuanced this opinion. Arcand et al. (2015) have shown a negative effect of financial development when credit to the private sector reaches 100% of the GDP. In the same vein, Benczur et al. (2019) have found a threshold effect in the finance-growth nexus. According to Summer (2013) and Piketty (2014), the increase of the size of the financial sector can lead to real negative returns to capital and inequality which, in turn, slow down economic growth. Another explanation is that the majority of credit allocation is no longer directed towards productive investment projects but towards the investment in financial assets (Bezemer et al., 2014). Thus, we want to explore if microfinance is a complement or substitute to the conventional financial system.

To address this issue, we introduce an interaction term in Eq. (1) between the logarithm of the GLP per capita and the domestic credit variable

$$Growth_{it} = \gamma_1 GLP_{it} + \gamma_2 DC_{it} + \gamma_3 DC_{it} \times GLP_{it} + \gamma'_4 X_{it} + \varepsilon_{it}, \quad (3)$$

where DC_{it} represents the domestic credit used as a proxy of the size of the conventional financial sector⁴. Note that we control endogeneity using the same instruments as in the previous subsection.

Hence, we can respectively obtain, *ceteris paribus*, the marginal effects of GLP and domestic credit on growth

$$\frac{\partial Growth_{it}}{\partial GLP_{it}} = \gamma_1 + \gamma_3 DC_{it} \quad \text{and} \quad \frac{\partial Growth_{it}}{\partial DC_{it}} = \gamma_2 + \gamma_3 GLP_{it}. \quad (4)$$

As shown in Eq. (4), this specification with an interaction term implies that the impact of microfinance on growth depends on the depth of the conventional financial sector and that the impact of domestic credit on growth depends on the depth of the microfinance sector.

Table 5 reports the results of parameter estimation in regression (3). The coefficient associated with the log of GLP per capita and domestic credit are positive and significant, which is consistent with both the previous subsection and the literature on financial development. However, the interaction term between the two variables is significantly negative. Therefore, when the depth of the conventional financial sector increases, the effect of microfinance on growth becomes less and less beneficial. Similarly, a deeper microfinance sector mitigates the impact of a more developed conventional financial sector. Consequently, the conventional financial sector and the microfinance sector can be viewed as substitutes from a growth-maximizing strategy perspective.

⁴The informations provided by the World Bank indicate that microcredits are not included in the domestic credit variables.

Table 5: Panel Data Estimation (IV): Substituability of the microfinance and the conventional financial sectors

	Dependent variable: GDP per capita growth rate					
	[1]	[2]	[3]	[4]	[5]	[6]
Log GLP per capita	1.850*** (0.464)	1.799*** (0.465)	2.465*** (0.736)	1.856*** (0.465)	1.734*** (0.502)	1.885*** (0.478)
Trade	0.007 (0.010)	0.003 (0.010)	0.004 (0.014)	0.007 (0.010)	0.013 (0.011)	0.008 (0.010)
Inflation	0.003 (0.011)	0.005 (0.012)	-0.045* (0.024)	0.002 (0.011)	-0.052** (0.024)	0.003 (0.011)
Initial GDP Per Capita	-14.730*** (1.385)	-13.504*** (1.437)	-16.733*** (1.594)	-14.844*** (1.388)	-15.423*** (1.428)	-14.917*** (1.427)
Investment	0.042 (0.029)	0.003 (0.030)	0.035 (0.039)	0.040 (0.029)	0.031 (0.031)	0.042 (0.031)
Domestic Credit	0.074*** (0.021)	0.069*** (0.022)	0.115*** (0.030)	0.072*** (0.022)	0.068*** (0.022)	0.075*** (0.021)
Log GLP per capita×Domestic Credit	-0.009** (0.004)	-0.009** (0.004)	-0.015** (0.007)	-0.009** (0.004)	-0.008* (0.004)	-0.009** (0.004)
Foreign direct investment		0.236*** (0.044)				
Education			-0.039*** (0.040)			
Unemployment				-0.061 (0.083)		
Government effectiveness					2.641 (0.964)	
Population growth						0.169 (0.295)
Endogeneity Test (Davidson-MacKinnon)	8.901 [0.002]	8.294 [0.004]	8.736 [0.003]	9.002 [0.002]	7.831 [0.005]	8.815 [0.003]
Under-Identification Test (Anderson)	78.725 [0.000]	74.562 [0.000]	41.353 [0.000]	78.119 [0.000]	76.486 [0.000]	74.943 [0.000]
Weak-Identification Test (Cragg-Donald)	42.455 [0.000]	40.023 [0.000]	21.671 [0.000]	42.070 [0.000]	41.324 [0.000]	40.223 [0.000]
Over-Identification Test (Sargan)	0.030 [0.861]	0.007 [0.932]	0.025 [0.874]	0.054 [0.815]	0.000 [0.994]	0.031 [0.860]
N	1069	1055	792	1064	1003	1062

Standard errors are in parentheses. Significance Codes, *** : 0.01; ** : 0.05; * : 0.1.

4 The optimal market structure of the microfinance sector

In this section, we study the optimal structure of the microfinance sector. To this end, we construct two indicators to measure the degree of concentration of the microfinance sector, namely the concentration ratio (CR-3) and the Herfindahl-Hirschman Index (HHI).

The concentration ratio corresponds to the sum of market shares measured in total outstanding loans of the three largest microfinance institutions (CR-3)⁵. In addition, the Herfindahl-Hirschman Index (HHI) is determined by summing the squared market shares of all active microfinance institutions in the market

$$HHI = \sum_{i=1}^n s_i^2 \quad (5)$$

where s_i is the market share of the microfinance institution i and n is the number of MFIs. We should note that contrary to the previous section where the data used were national, we resort in this section to institution data. As for national data, they stem from the MIX market database.

4.1 Direct and indirect effects of microfinance concentration: preliminary results

To examine the direct and indirect effects of microfinance concentration on economic growth, we estimate the following regression

$$Growth_{it} = \beta GLP_{it} + \lambda MC_{it} + \gamma X_{it} + \theta GLP_{it} \times MC_{it} + \varepsilon_{it}, \quad (6)$$

where MC_{it} corresponds to the microfinance indicator (CR-3 or HHI), X_{it} is a vector of control variables and the interaction term captures the indirect effect of concen-

⁵This indicator is very usual in the banking competition literature. For more details, see for instance [Bourke \(1989\)](#).

tration.

The preliminary estimations are reported in Table 6 (columns 1 to 4). Before correcting for endogeneity, this table provides evidence that microfinance competition is beneficial for growth. Since the signs associated with the concentration ratios are negative, the higher the concentration of the microfinance sector, the lower economic growth.

In columns 5 to 8, we control for endogeneity. The instruments are the same as those used in the previous section, i.e. operating expense and the number of depositors in MFIs for the GLP and the one-year lags for the other determinants of economic growth. The results of the first stage regression show that the selected instruments are statistically valid. First, the coefficients of our instruments are statistically significantly different from 0. Second, the Anderson and Cragg-Donald tests lead to reject the null hypothesis of underidentification and weak identification. Moreover, regarding overidentification, we do not reject the null hypothesis of the Sargan test. This implies that all excluded instrumental variables are exogenous. Finally, the p-value of the Davidson-MacKinnon test indicates that we should reject the null hypothesis of exogeneity between microfinance and growth, thereby justifying the need for a Two Stages Least Squares approach.

The results of the second stage estimation displayed in Table 6 (columns 5 to 8) show no direct effect of the concentration degree of the microfinance sector for CR-3 but a significant and negative effect for HHI. Therefore, the conclusions regarding the direct effect of concentration on growth are mixed. However, the impact of the GLP per capita on growth depends on the market structure of the microfinance industry. Indeed, we can see that the interaction between the GLP per capita and the concentration index is always negative and significant, regardless of the index used (CR-3 or HHI). This means that the positive impact of microfinance on growth is mitigated as the sector becomes less competitive. As a result, a growth-maximizing government should promote competitive microfinance markets in order to enhance economic growth.

Table 6: Panel Data Estimations

Explanatory Variables	Fixed Effect							
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
Log GLP per capita	0.433*** (0.076)	1.172*** (0.386)	0.421*** (0.074)	0.681*** (0.148)	1.491*** (0.344)	1.740*** (0.471)	1.428*** (0.300)	1.440*** (0.308)
Trade	0.039*** (0.007)	0.039*** (0.007)	0.039*** (0.007)	0.039*** (0.007)	0.010 (0.010)	0.014 (0.010)	0.010 (0.010)	0.013 (0.010)
Inflation	-0.021** (0.009)	-0.021** (0.009)	-0.020** (0.009)	-0.019** (0.009)	-0.002 (0.010)	-0.006 (0.010)	-0.001 (0.010)	-0.003 (0.010)
Initial GDP Per Capita	-8.125*** (0.612)	-8.327*** (0.621)	-8.099*** (0.612)	-8.332*** (0.622)	-13.116*** (1.342)	-11.312*** (0.860)	-13.173*** (1.278)	-12.054*** (0.948)
Investment	0.032 (0.023)	0.031 (0.023)	0.029 (0.023)	0.029 (0.023)	0.052* (0.028)	0.066** (0.027)	0.051* (0.028)	0.062** (0.027)
CR-3	-1.773 (1.095)	-1.420 (1.377)			0.541 (1.657)	0.527 (1.674)		
Interaction (Log GLP per capita×CR-3)		-0.775* (0.397)				-0.663** (0.336)		
HHI			-0.0001*** (0.00005)	-0.0001** (0.00006)			-0.0001** (0.00007)	-0.0001* (0.00008)
Interaction (Log GLP per capita×HHI)								-0.00004* (0.00002)
Endogeneity Test (Davidson-MacKinnon)					8.457 [0.003]	10.169 [0.001]	9.905 [0.001]	12.301 [0.000]
Under-Identification Test (Anderson)					110.482 [0.000]	122.726 [0.000]	135.451 [0.000]	190.308 [0.000]
Weak-Identification Test (Cragg-Donald)					61.704 [0.000]	69.434 [0.000]	77.846 [0.000]	116.712 [0.000]
Over-Identification Test (Sargan)					0.031 [0.859]	0.296 [0.586]	0.033 [0.855]	0.203 [0.652]
N	1582	1582	1582	1582	1086	1086	1086	1086

Standard errors are in parentheses. Significance Codes, *** : 0.01; ** : 0.05; * : 0.1.

4.2 Robustness checks

In this subsection, we carry out four types of robustness checks. First, we examine the sensitivity of our results to additional explanatory variables. Second, we analyze the microfinance sector competition-growth nexus using alternative instruments. Third, since our results may hide some disparities between countries, we split our sample and focus on the low and middle income economies. Fourth, we run the regressions using five-years growth periods to control for potential fluctuations.

The first set of robustness extends the results of Table 6 using other determinants of growth. The additional variables are domestic credit, foreign direct investment, education, government effectiveness, unemployment and population growth. The results are reported in Table 7 when we use the concentration ratio CR-3 and Table 8 when we use the HHI index. Note that we only report the results after correcting for endogeneity. Overall, the results are similar to those reported in Table 6. Nevertheless, we can observe that when we add other control variables, we can sometimes obtain a significant and negative direct effect of microfinance concentration. Therefore, under some conditions, a concentrated microfinance market can directly and indirectly lead to a reduction of growth. Moreover, Tables 7 and 8 highlight that all additional explanatory variables are on the whole, statistically significant and their signs are consistent with theory.

Second, we consider another instrumental variable. In addition to the use of the number of depositors and operating expense in MFIs, we add an institutional variable, namely voice and accountability, as a third instrumental variable. Table 9 exhibits similar results as those presented before and the use of three instrumental variables instead of two does not have any impact on the validity of our instruments, as shown by the endogeneity, Davidson-Mackinnon, Cragg-Donald and Sargan tests.

In Table 10, we remove high income countries from our sample⁶ to make sure that our results remain robust in low and middle income countries which are the most concerned countries by microfinance. This removing does not lead to any qualitative

⁶We remove nine countries: Chile, Croatia, Hungary, Panama, Poland, Romania, Slovak Republic, Trinidad and Tobago and Uruguay

change in the results.

Finally, the literature that analyzes the relationship between financial development and growth in panel sometimes uses five-year (or ten-year) periods. In the other regressions in our study, we decided not to focus on five-year (or ten-year) periods because of the limited time span of our sample. However, for the sake of robustness, we present in Table 11 some results showing that our results remain significant when we use five-year forward moving average variables

In sum, all these robustness checks enable us to state with confidence that there is a strong relationship between microfinance and growth and that competition between MFIs reinforces this beneficial effect.

5 Conclusion

This study contributes to the empirical literature that analyses the macroeconomic effects of microfinance at a global level. Using a sample of 119 countries over the period 1999-2018, we have examined the impact of microfinance on growth and the role of investment in this relation. We also proposed a discussion on the substitutability between the microfinance sector and the conventional financial sector. Finally, we have investigated the growth-maximizing structure of the microfinance sector by looking at the relation between competition/concentration and economic growth.

Our results are fourth-fold. First, we have shown that microfinance is strongly correlated with increased growth. This result is robust to the inclusion of additional instrumental variables. Second, we have identified investment as a fundamental variable through which the effect of microfinance on growth is channeled. Third, we have highlighted the substitutability of the microfinance sector with the conventional financial sector. Fourth, our analysis provides recommendations for countries in which microfinance constitutes a relatively large part of the financial sector. In order to maximize growth, governments should promote systems where the microfinance sector is highly competitive rather than systems where the microfinance sector is concentrated among only a few institutions.

This study calls for further research on the macroeconomic effects of microfi-

nance. In particular, it would be interesting in the future to refine the analysis of the transmission channels of the effects of microfinance by using more disaggregated national data. In addition, further analysis of the structure of financial systems in which microfinance plays a prominent role should be undertaken.

Table 7: Results of Fixed Effects estimations with additional explanatory variables (Concentration Index: CR-3)

	Dependent variable: GDP per capita growth rate					
	[1]	[2]	[3]	[4]	[5]	[6]
Log GLP per capita	1.735*** (0.480)	1.660*** (0.464)	2.081*** (0.613)	1.732*** (0.472)	1.826*** (0.529)	1.774*** (0.484)
Trade	0.009 (0.010)	0.011 (0.010)	0.014 (0.013)	0.014 (0.010)	0.019* (0.011)	0.014 (0.010)
Inflation	-0.007 (0.010)	-0.005 (0.010)	-0.049** (0.023)	-0.007 (0.010)	-0.068*** (0.023)	-0.006 (0.010)
Initial GDP Per Capita	-13.178*** (1.014)	-10.201*** (0.868)	-13.016*** (1.171)	-11.476*** (0.862)	-12.066*** (0.931)	-11.412*** (0.873)
Investment	0.059** (0.027)	0.027 (0.028)	0.042 (0.037)	0.061** (0.027)	0.056* (0.028)	0.066** (0.027)
CR-3	0.255 (1.701)	0.755 (1.636)	1.715 (2.085)	0.472 (1.677)	1.740 (1.837)	0.606 (1.685)
Interaction (Log GLP per capita×CR-3)	-0.715** (0.347)	-0.629* (0.330)	-0.915** (0.419)	-0.656* (0.336)	-0.854** (0.386)	-0.675** (0.343)
Domestic Credit	0.054*** (0.016)					
Foreign direct investment		0.232*** (0.043)				
Education			0.019 (0.026)			
Unemployment				-0.107 (0.080)		
Government effectiveness					2.222** (0.880)	
Population growth						0.162 (0.289)
Endogeneity Test (Davidson-MacKinon)	8.776 [0.003]	9.262 [0.002]	9.512 [0.002]	10.124 [0.001]	9.208 [0.002]	10.131 [0.001]
Under-Identification Test (Anderson)	121.754 [0.000]	119.260 [0.000]	87.054 [0.000]	121.727 [0.000]	104.462 [0.000]	117.533 [0.000]
Weak-Identification Test (Cragg-Donald)	68.884 [0.000]	67.251 [0.000]	48.852 [0.000]	68.756 [0.000]	58.271 [0.000]	66.085 [0.000]
Over-Identification Test (Sargan)	0.538 [0.463]	0.224 [0.636]	0.203 [0.652]	0.422 [0.515]	0.091 [0.763]	0.306 [0.580]
N	1069	1072	804	1081	1020	1079

Standard errors are in parentheses. Significance Codes, *** : 0.01; ** : 0.05; * : 0.1.

Table 8: Results of Fixed Effects estimations with additional explanatory variables (Concentration Index: HHI)

	Dependent variable: GDP per capita growth rate					
	[1]	[2]	[3]	[4]	[5]	[6]
Log GLP per capita	1.440*** (0.313)	1.369*** (0.306)	1.690*** (0.410)	1.436*** (0.309)	1.422*** (0.347)	1.465*** (0.317)
Trade	0.009 (0.010)	0.010 (0.010)	0.011 (0.013)	0.013 (0.010)	0.016 (0.010)	0.013 (0.010)
Inflation	-0.003 (0.010)	-0.001 (0.010)	-0.043* (0.023)	-0.003 (0.010)	-0.059** (0.023)	-0.002 (0.010)
Initial GDP Per Capita	-13.841*** (1.088)	-10.931*** (0.962)	-13.641*** (1.213)	-12.229*** (0.949)	-12.796*** (1.014)	-12.155*** (0.967)
Investment	0.055** (0.027)	0.024 (0.027)	0.042 (0.037)	0.056* (0.027)	0.055** (0.028)	0.062** (0.027)
HHI	-0.0001* (0.00008)	-0.0001* (0.00007)	-0.00005 (0.0001)	-0.0001* (0.00008)	-0.00006 (0.00009)	-0.0001* (0.00008)
Interaction (Log GLP per capita×HHI)	-0.00005** (0.00002)	-0.00004* (0.00002)	-0.00006** (0.00002)	-0.00004* (0.00002)	-0.00006** (0.00003)	-0.00004* (0.00002)
Domestic Credit	0.049*** (0.016)					
Foreign direct investment		0.229*** (0.042)				
Education			0.006 (0.027)			
Unemployment				-0.119 (0.079)		
Government effectiveness					2.120** (0.874)	
Population growth						0.154 (0.283)
Endogeneity Test (Davidson-MacKinnon)	10.970 [0.000]	10.972 [0.000]	11.371 [0.000]	12.303 [0.000]	10.459 [0.001]	12.275 [0.000]
Under-Identification Test (Anderson)	187.589 [0.000]	183.525 [0.000]	129.302 [0.000]	188.937 [0.000]	167.724 [0.000]	182.804 [0.000]
Weak-Identification Test (Cragg-Donald)	114.960 [0.000]	111.820 [0.000]	77.707 [0.000]	115.662 [0.000]	101.324 [0.000]	111.107 [0.000]
Over-Identification Test (Sargan)	0.399 [0.527]	0.145 [0.703]	0.109 [0.740]	0.329 [0.566]	0.044 [0.834]	0.207 [0.649]
N	1069	1072	804	1081	1020	1079

Standard errors are in parentheses. Significance Codes, *** : 0.01; ** : 0.05; * : 0.1.

Table 9: Results of Fixed Effects estimations with an additional instrument

	Dependent variable: GDP per capita growth rate			
	[1]	[2]	[3]	[4]
Log GLP per capita	1.553*** (0.355)	1.832*** (0.509)	1.466*** (0.320)	1.458*** (0.340)
Trade	0.012 (0.010)	0.015 (0.010)	0.011 (0.010)	0.013 (0.010)
Inflation	-0.003 (0.011)	-0.008 (0.010)	-0.002 (0.010)	-0.004 (0.010)
Initial GDP Per Capita	-13.512 (1.327)	-11.558*** (0.881)	-13.502*** (1.287)	-12.326*** (0.977)
Investment	0.051* (0.029)	0.065** (0.028)	0.050* (0.028)	0.062** (0.027)
CR-3	0.604 (1.645)	0.704 (1.726)		
Interaction (Log GLP per capita×CR-3)		-0.753** (0.360)		
HHI			-0.0001** (0.00007)	-0.0001** (0.00008)
Interaction (Log GLP per capita×HHI)				-0.0005* (0.00002)
Endogeneity Test (Davidson-MacKinnon)	10.581 [0.0voiceandacc01]	11.153 [0.000]	11.013 [0.000]	12.117 [0.000]
Under-Identification Test (Anderson)	112.181 [0.000]	111.766 [0.000]	128.935 [0.000]	167.769 [0.000]
Weak-Identification Test (Cragg-Donald)	41.951 [0.000]	41.732 [0.000]	49.180 [0.000]	67.032 [0.000]
Over-Identification Test (Sargan)	0.842 [0.656]	1.782 [0.410]	1.153 [0.561]	2.027 [0.362]
N	1058	1058	1058	1058

Additional instrument = voice and accountability

Standard errors are in parentheses. Significance Codes, *** : 0.01; ** : 0.05; * : 0.1.

Table 10: Results of Fixed Effects estimations - Low and Middle income countries

	Dependent variable: GDP per capita growth rate			
	[1]	[2]	[3]	[4]
Log GLP per capita	1.651*** (0.394)	1.923*** (0.556)	1.612*** (0.334)	1.621*** (0.344)
Trade	0.020 (0.013)	0.021 (0.013)	0.020 (0.013)	0.021 (0.013)
Inflation	-0.052** (0.023)	-0.053** (0.023)	-0.046** (0.023)	-0.045** (0.023)
Initial GDP Per Capita	-14.571*** (1.599)	-12.587*** (1.000)	-14.763*** (1.501)	-13.461*** (1.097)
Investment	0.0003 (0.040)	0.017 (0.038)	0.0003 (0.038)	0.014 (0.037)
CR-3	0.014 (2.034)	0.228 (2.158)		
Interaction (Log GLP per capita×CR-3)		-0.725* (0.413)		
HHI			-0.0002** (0.00009)	-0.0001** (0.0001)
Interaction (Log GLP per capita×HHI)				-0.00005* (0.00003)
Endogeneity Test (Davidson-MacKinon)	7.179 [0.007]	8.825 [0.003]	9.055 [0.002]	11.560 [0.000]
Under-Identification Test (Anderson)	82.461 [0.000]	92.714 [0.000]	104.988 [0.000]	155.636 [0.000]
Weak-Identification Test (Cragg-Donald)	46.058 [0.000]	52.548 [0.000]	60.763 [0.000]	97.926 [0.000]
Over-Identification Test (Sargan)	0.057 [0.810]	0.394 [0.530]	0.072 [0.788]	0.322 [0.570]
N	790	790	790	790

Standard errors are in parentheses. Significance Codes, *** : 0.01; ** : 0.05; * : 0.1.

Table 11: Results of Fixed Effects estimations (with five-year forward moving average of growth)

	Dependent variable: GDP per capita growth rate			
	[1]	[2]	[3]	[4]
Log GLP per capita	0.912*** (0.184)	0.971*** (0.251)	0.897*** (0.162)	0.860*** (0.166)
Trade	-0.006 (0.006)	-0.003 (0.005)	-0.005 (0.006)	-0.003 (0.005)
Inflation	0.007 (0.005)	0.004 (0.004)	0.007 (0.005)	0.006 (0.004)
Initial GDP Per Capita	-11.636*** (0.775)	-10.280*** (0.507)	-11.687*** (0.754)	-10.766*** (0.567)
Investment	0.031** (0.015)	0.044*** (0.014)	0.031** (0.015)	0.039*** (0.014)
CR-3	0.127 (0.936)	-0.376 (0.880)		
Interaction (Log GLP per capita×CR-3)		-0.361** (0.173)		
HHI			-0.00004 (0.00004)	-0.00006 (0.00004)
Interaction (Log GLP per capita×HHI)				-0.00002** (0.00001)
Endogeneity Test (Davidson-MacKinon)	13.806 [0.000]	11.646 [0.000]	16.728 [0.000]	16.187 [0.000]
Under-Identification Test (Anderson)	89.335 [0.000]	89.971 [0.000]	108.905 [0.000]	140.614 [0.000]
Weak-Identification Test (Cragg-Donald)	49.954 [0.000]	50.291 [0.000]	62.660 [0.000]	84.776 [0.000]
Over-Identification Test (Sargan)	11.462 [0.000]	14.599 [0.000]	11.685 [0.000]	14.235 [0.000]
N	874	874	874	874

Standard errors are in parentheses. Significance Codes, *** : 0.01; ** : 0.05; * : 0.1.

References

- Adjei, J. K., Arun, T., Hossain, F., et al. (2009). *The role of microfinance in asset-building and poverty reduction: The case of Sinapi Aba Trust of Ghana*. Brooks World Poverty Institute, University of Manchester.
- Alam, M. R., Kiterage, E., and Bizuayehu, B. (2017). Government effectiveness and economic growth. *Economic Bulletin*, 37(1):222–227.
- Angelucci, M., Karlan, D., and Zinman, J. (2015). Microcredit impacts: Evidence from a randomized microcredit program placement experiment by compartamos banco. *American Economic Journal: Applied Economics*, 7(1):151–82.
- Augsburg, B., De Haas, R., Harmgart, H., and Meghir, C. (2015). The impacts of microcredit: Evidence from bosnia and herzegovina. *American Economic Journal: Applied Economics*, 7(1):183–203.
- Banerjee, A., Duflo, E., Glennerster, R., and Kinnan, C. (2015). The miracle of microfinance? evidence from a randomized evaluation. *American Economic Journal: Applied Economics*, 7(1):22–53.
- Bangoura, L., Mbow, M. K., Lessoua, A., and Diaw, D. (2016). Impact of microfinance on poverty and inequality a heterogeneous panel causality analysis. *Revue d'économie politique*, 126(5):789–818.
- Barro, R. J. (1991). Economic growth in a cross section of countries. *The quarterly journal of economics*, 106(2):407–443.
- Barro, R. J. (1996). Determinants of economic growth: A cross-country empirical study. Technical report, National Bureau of Economic Research.
- Borensztein, E., De Gregorio, J., and Lee, J.-W. (1998). How does foreign direct investment affect economic growth? *Journal of international Economics*, 45(1):115–135.

- Bourke, P. (1989). Concentration and other determinants of bank profitability in europe, north america and australia. *Journal of Banking & Finance*, 13(1):65–79.
- Dalla Pellegrina, L. (2011). Microfinance and investment: A comparison with bank and informal lending. *World development*, 39(6):882–897.
- De Gregorio, J. (1993). Inflation, taxation, and long-run growth. *Journal of monetary economics*, 31(3):271–298.
- Eriksson, C. (1997). Is there a trade-off between employment and growth? *Oxford Economic Papers*, 49(1):77–88.
- Harrison, A. (1996). Openness and growth: A time-series, cross-country analysis for developing countries. *Journal of Development Economics*, 2(48):419–447.
- Hermes, N. (2014). Does microfinance affect income inequality? *Applied Economics*, 46(9):1021–1034.
- Imai, K. S., Arun, T., and Annim, S. K. (2010). Microfinance and household poverty reduction: New evidence from india. *World Development*, 38(12):1760–1774.
- Imai, K. S. and Azam, M. S. (2012). Does microfinance reduce poverty in bangladesh? new evidence from household panel data. *Journal of Development studies*, 48(5):633–653.
- Imai, K. S., Gaiha, R., Thapa, G., and Annim, S. K. (2012). Microfinance and poverty: A macro perspective. *World development*, 40(8):1675–1689.
- Karlan, D. and Zinman, J. (2010). Expanding credit access: Using randomized supply decisions to estimate the impacts. *The Review of Financial Studies*, 23(1):433–464.
- Karlan, D. and Zinman, J. (2011). Microcredit in theory and practice: Using randomized credit scoring for impact evaluation. *Science*, 332(6035):1278–1284.
- Khan, M. S. and Reinhart, C. M. (1990). Private investment and economic growth in developing countries. *World development*, 18(1):19–27.

- King, R. G. and Levine, R. (1993). Finance and growth: Schumpeter might be right. *The quarterly journal of economics*, 108(3):717–737.
- Schicks, J. (2014). Over-indebtedness in microfinance—an empirical analysis of related factors on the borrower level. *World development*, 54:301–324.
- Solow, R. M. (1956). A contribution to the theory of economic growth. *The quarterly journal of economics*, 70(1):65–94.
- Tarozzi, A., Desai, J., and Johnson, K. (2015). The impacts of microcredit: Evidence from ethiopia. *American Economic Journal: Applied Economics*, 7(1):54–89.

Appendices

Table 12: Correlation Matrix

Variables	Growth	Initial	TRADE	INF	INVT	GLP	CR-3	HHI	DEP	EXP	DC	FDI	EDU	UNMP	POP	GOVT	VOIC
Growth	1.000																
Initial	-0.019	1.000															
TRADE	0.112*	0.119*	1.000														
INF	-0.043	-0.083*	-0.051*	1.000													
INVT	0.173*	0.082*	0.144*	-0.096*	1.000												
GLP	0.033	0.205*	0.146*	-0.176*	0.153*	1.000											
CR-3	-0.025	0.096*	0.178*	0.032	-0.001	-0.274*	1.000										
HHI	-0.027	0.184*	0.208*	0.026	-0.016	-0.262*	0.783*	1.000									
DEP	0.028	-0.036	-0.177*	-0.021	0.038	0.200*	-0.207*	-0.182*	1.000								
EXP	0.006	0.151*	-0.148*	-0.051*	0.055*	0.352*	-0.379*	0.440*	0.440*	1.000							
DC	-0.021	0.470*	0.197*	-0.138*	0.241*	0.184*	0.053*	0.145*	0.117*	0.123*	1.000						
FDI	0.138*	-0.047*	0.166*	0.009	0.165*	-0.045	0.044	0.070*	-0.073*	-0.050*	-0.028	1.000					
EDU	0.021	0.781*	0.175*	-0.052	0.074*	0.328*	0.008	0.101*	0.018	0.202*	0.460*	0.019	1.000				
UNMP	-0.049*	0.369*	0.162*	-0.035	-0.072*	0.078*	0.167*	0.150*	-0.122*	-0.114*	0.177*	0.042	0.388*	1.000			
POP	-0.157*	-0.536*	-0.110*	0.047	-0.090*	-0.194*	-0.047*	-0.156*	-0.029	-0.063*	-0.297*	0.023	-0.660*	-0.343*	1.000		
GOVT	0.064*	0.615*	0.066*	-0.194*	0.210*	0.162*	0.046	0.144*	0.037	0.136*	0.597*	-0.033	0.544*	0.191*	-0.429*	1.000	
VOIC	-0.045	0.470*	0.027	-0.134*	-0.006*	0.209*	0.017	0.072*	0.016	0.097*	0.244*	-0.048*	0.410*	0.135*	-0.316*	0.600*	1.000

Notes: Growth = Economic growth; Initial = Initial real GDP per capita; TRADE = Trade; INF = Inflation; INVT = Investment; GLP = Log GLP per capita; DEP =

= Number of depositors; EXP = Operating expense; DC = Domestic Credit; FDI = Foreign direct investment; EDU = Education; UNMP = Unemployment; POP =

Population growth; GOVT = Government effectiveness; VOIC = Voice & accountability

* Significant at 5%

Table 13: Variable Definitions and Sources

Variable	Variable Definition	Source
GDP per capita growth (annual %)	Annual percentage growth rate of GDP per capita based on constant local currency. Aggregates are based on constant 2010 U.S. dollars.	WDI
Trade (% of GDP)	Trade is the sum of exports and imports of goods and services measured as a share of gross domestic product.	WDI
Inflation, consumer prices (annual %)	Inflation as measured by the consumer price index reflects the annual percentage change in the cost to the average consumer of acquiring a basket of goods and services that may be fixed or changed at specified intervals, such as yearly.	WDI
Investment: Gross fixed capital formation (% of GDP)	Includes land improvements, plant, machinery, and equipment purchases; and the construction of roads, railways, and the like, including schools, offices, hospitals, private residential dwellings, and commercial and industrial buildings.	WDI
Domestic credit to private sector (% of GDP)	It refers to financial resources provided to the private sector by financial corporations, such as through loans, purchases of nonequity securities, and trade credits and other accounts receivable, that establish a claim for repayment.	WDI
Foreign direct investment, net outflows (% of GDP)	It refers to direct investment equity flows in an economy. It is the sum of equity capital, reinvestment of earnings, and other capital.	WDI
Education: School enrollment, secondary (% gross)	Gross enrollment ratio is the ratio of total enrollment, regardless of age, to the population of the age group that officially corresponds to the level of education shown. Secondary education completes the provision of basic education that began at the primary level, and aims at laying the foundations for lifelong learning and human development, by offering more subject- or skill-oriented instruction using more specialized teachers.	WDI
Unemployment, total (% of total labor force)	Unemployment refers to the share of the labor force that is without work but available for and seeking employment.	WDI
Population growth (annual %)	Annual population growth rate for year t is the exponential rate of growth of midyear population from year t-1 to t, expressed as a percentage . Population is based on the de facto definition of population, which counts all residents regardless of legal status or citizenship.	WDI
Population Growth (annual %)	Annual population growth rate for year t is the exponential rate of growth of midyear population from year t-1 to t, expressed as a percentage. Population is based on the de facto definition of population, which counts all residents regardless of legal status or citizenship.	WDI
Government Effectiveness	Government Effectiveness captures perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies.	WGI
Voice and Accountability	Voice and Accountability captures perceptions of the extent to which a country's citizens are able to participate in selecting their government, as well as freedom of expression, freedom of association, and a free media.	WGI
Gross Loan Portfolio	All outstanding principals due for all outstanding client loans. This includes current, delinquent and renegotiated loans, but not loans that have been written off. It does not include interest receivable.	MIX Market
Number of depositors	The number of individuals who currently have funds on deposit with the financial institution (MFI)	MIX Market
Operating expense	Includes expenses not related to financial and credit loss impairment, such as personnel expenses, depreciation, amortization and administrative expenses.	MIX Market

Table 14: List of Countries by Income Classification

No.	Low Income	No.	Lower Middle Income	No.	Upper Middle Income	No.	High Income
1	Afghanistan	26	Angola	68	Albania	111	Chile
2	Burkina Faso	27	Bangladesh	69	Argentina	112	Croatia
3	Burundi	28	Benin	70	Armenia	113	Hungary
4	Central African Rep	29	Bhutan	71	Azerbaijan	114	Panama
5	Chad	30	Bolivia	72	Belize	115	Poland
6	Dem Rep Congo	31	Cambodia	73	Bosnia and Herzegovina	116	Romania
7	Ethiopia	32	Cameroon	74	Brazil	117	Slovak Republic
8	Gambia	33	Comoros	75	Bulgaria	118	Trinidad and Tobago
9	Guinea	34	Congo Rep	76	China	119	Uruguay
10	Guinea-Bissau	35	Cote d'Ivoire	77	Colombia		
11	Haiti	36	Egypt Arab Rep	78	Costa Rica		
12	Liberia	37	El Salvador	79	Dominican Republic		
13	Madagascar	38	Eswatini	80	Ecuador		
14	Malawi	39	Ghana	81	Fiji		
15	Mali	40	Honduras	82	Gabon		
16	Mozambique	41	India	83	Georgia		
17	Niger	42	Kenya	84	Grenada		
18	Rwanda	43	Kyrgyz Republic	85	Guatemala		
19	Sierra Leone	44	Lao PDR	86	Guyana		
20	Sudan	45	Moldova	87	Indonesia		
21	Syrian Arab Rep	46	Mongolia	88	Iraq		
22	Tajikistan	47	Morocco	89	Jamaica		
23	Togo	48	Myanmar	90	Jordan		
24	Uganda	49	Nepal	91	Kazakhstan		
25	Yemen	50	Nicaragua	92	Kosovo		
		51	Nigeria	93	Lebanon		
		52	Pakistan	94	Malaysia		
		53	Papua New Guinea	95	Mexico		
		54	Philippines	96	Montenegro		
		55	Senegal	97	Namibia		
		56	Solomon Islands	98	North Macedonia		
		57	Sri Lanka	99	Paraguay		
		58	Tanzania	100	Peru		
		59	Timor-Leste	101	Russian Federation		
		60	Tunisia	102	Samoa		
		61	Ukraine	103	Serbia		
		62	Uzbekistan	104	South Africa		
		63	Vanuatu	105	St Lucia		
		64	Vietnam	106	Suriname		
		65	West Bank and Gaza	107	Thailand		
		66	Zambia	108	Tonga		
		67	Zambia	109	Turkey		
				110	Venezuela		