

Financial inclusion, growth and poverty: Evidence from Africa in COVID-19 era

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Abstract: The Covid-19 pandemic threatens to undermine committed efforts to reduce poverty in Africa. Using panel data on 39 African countries covering the period 2004-2021, our analysis shows that financial inclusion, particularly access to financial services, can be an important driver of poverty reduction in African countries. in the era of Covid-19. Moreover, we have identified the reduction of inequalities as the main channel through which financial inclusion can contribute to alleviating poverty. These results are robust and consistent using different estimation methods and poverty change index. Faced with the risks of increasing extreme poverty due to Covid-19, a policy aimed at improving financial inclusion seems necessary.

JEL Classification

I31, I32, O12, O55

Key words

Financial inclusion
Poverty
Inequality
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INTRODUCTION

Since the outbreak of the COVID-19 pandemic in late December 2019, the WHO (2021) has recorded more than 166.814 million cases of infected persons and nearly 3 million deaths worldwide. To deal with the major health shock, governments have been encouraged to take drastic measures to stop its spread, protect populations and mitigate its negative effects on the economy. These essential health measures have nevertheless generated distortions at the macro-economic level. Indeed, the World Bank and the OECD (2020) point out that the response measures adopted by some countries against COVID-19 has led to several disruptions in national and international value creation and exchange processes with negative repercussions on global economic growth which is expected to be -4.9% in 2020 and 5.4% in 2021 (IMF, 2021). Also, according to World Bank (2020), there is a significant drop in global demand for hydrocarbons (-20% consumption), raw materials (-30% demand for copper, nickel and cobalt) and commodities (-25% for soybeans and -28% for wheat).

Moreover, a study conducted by FAO et al. (2020) highlights that this pandemic has exposed more than 132 million additional people to food insecurity. In addition, the UN (2020) report an estimate of 25 million job losses and 3.4 trillion dollars is lost in labor income due to this pandemic. In the specific case of Africa, the measures put in place to control the spread of COVID-19 have done more harm to Africans as millions of Africans are employed in the informal sector and have suddenly lost their livelihoods and cannot rely on their daily earnings to survive. Considering this last aspect, the UN for Africa (2020) estimates that up to 30 million more people could fall into extreme poverty. Similarly, the work done by ILO (2020), estimates that COVID-19 pandemic will push at least 35 million more workers into poverty at the USD 3.20 threshold.

On the other hand, Vos et al. (2020) show that the COVID-19 pandemic will push at least 22 million more people into extreme poverty if global GDP contracts by 1%. Similarly, Sumner et al. (2020) estimate the short-term economic ramifications of the underlying global pandemic on income poverty using three main scenarios: low (5%), medium (10%) and high (20%). They found that under the extreme scenario of a 20% contraction in income or consumption, the number of people living in poverty could increase from 420 million to 580 million. In essence, this work concludes that the COVID-19 pandemic increases poverty.

Beyond the abundant literature on the analysis of the effects of the COVID-19 pandemic, recent studies question a number of different coping strategies that households can use to mitigate increased poverty. In this sense, Kazianga & Udry (2006) and Fafchamps et al. (1998) support the role of informal risk-sharing networks and the sale of assets to curb poverty increase. Swamy (2014) and Rosenzweig & Wolpin (1993) ever postulated that financial inclusion can prevent a household from falling below the poverty line in case of disasters and adverse shocks. Therefore, Asare et al. (2020) shows that given the globalizing nature of the COVID-19 pandemic shock, households may be less able to rely on the use of informal risk-sharing networks and asset sales as everyone is affected at the same time and asset markets collapse. Indeed, Kasradze (2020), Ozili (2020) and Tarek (2020) suggest that during the COVID-19 crisis, it is more desirable to use financial inclusion to provide better access to financial services to individuals and households to curb the increase in poverty as financial development plays a crucial role in household welfare (Greewood & Smith, 1997; Merton, 1992; Mac Kinnon & Shaw, 1973; Schumpeter, 1911).

In line with this growing literature, this paper contribute to the existing literature with the understanding of the ongoing economic impact of the COVID-19 pandemic on poverty and the extent to which financial inclusion could help to mitigate this adverse shock in Africa. More specifically, based on the poverty decomposition

approach proposed by Datt & Ravallion (1992) we investigate both direct effects of financial inclusion on poverty change and the indirect effects through inequality and growth over the period 2004 to 2018. Furthermore, based on the latest IMF and World Bank projections of global growth in 2020 and 2021, we employ a series of forecasting scenarios to estimate the extent to which boosting financial inclusion could curb the adverse effects of COVID-19 on poverty change in Africa.

Our investigation mainly showed that financial inclusion as a particular access to financial services, is a key factor in reducing poverty in Africa in the era of COVID-19. Moreover, we have identified the reduction of inequality as the main transmission channel through which financial inclusion can help mitigate poverty change. These results are robust and consistent across the usage of different estimation methods and poverty change index.

The rest of the document is structured as follows. The next section gives a brief overview of the literature. Section 2 describes the estimation strategy, while Section 3 presents the empirical results.

1. REVIEW OF THE LITERATURE

Theoretical and empirical discussion linking financial inclusion, inequality and poverty should be highlighted.

1.1. Theoretical background on the link between financial inclusion, inequality and poverty

The theoretical literature contradicts the effects of financial inclusion on poverty and income inequality.

Some models imply that the financial sector contributes to the reduction of poverty and income inequality (Nguena et al., 2021; Nguena, 2018; Nguena & Tsafack Nanfoso, 2014). The lack of collateral and credit history linked to financial imperfections such as information problems and transaction costs can be particularly constraining for the poor. Thus, easing these constraints disproportionately benefits the poor. In addition, the allocative efficiency of capital decreases because of these financial constraints and by impeding the flow of capital to poor people, income inequality increases (Aghion & Bolton, 1997; Galor & Moav, 2004). Thus, financial inclusion contributes to the reduction of poverty and income inequality through the relaxation of the financial sector constraints that limit the access and use of financial services by the poor which also leads to the reduction of income inequality.

On the other hand, some theories find that the financial sector only helps the rich. Indeed, the poor resort to the informal financial sector to have capital which implies that only the rich benefit disproportionately from the formal financial sectors, thus increasing income inequality. Greenwood & Jovanovic (1990) develop a model that implies a non-linear relationship between the financial sector and income inequality. Initially, the poor cannot access or use financial services which leads to an increase in income inequality, as only the rich have access to and the use of these financial services. However, as the economy develops and grows over time, the poor increase their incomes and thus have access to the formal financial sector and can use bank finance. Nguena (2022) highlighted that democracy is not at the basis of the differences.

1.2. Empirical background to the link between financial inclusion, inequality and poverty

The empirical literature on the relationship between financial inclusion, poverty and income inequality is relatively recent. From this literature, we can draw several major and contradictory lessons as follow:

Firstly, financial inclusion hurts poverty. Beck et al. (2007) show that the use of financial services such as private credit allows financial inclusion to contribute to poverty reduction in developing and developed countries. Demirguc et al. (2012) also show that financial inclusion helps to improve welfare and reduce poverty. He proposes the reduction of documentation for deposits, the use of banks by the government for payments, the reduction of costs associated with opening a bank account and using it for savings and any payment. Focusing on deposits, Ayyagari et al. (2013) shows that financial inclusion harms poverty. As interest-bearing deposits increase, so does the income of the poor, leading to poverty reduction. A study conducted in Indonesia by Erlando (2020) show also that financial inclusion contributes to poverty reduction. Li (2018) assesses the effects of financial inclusion on poverty in 25 states in China, with a focus on the role that income level may play in this relationship. He finds that the effect of financial inclusion on poverty is negative.

Secondly, financial inclusion does not have a significant effect on poverty. Unal & Coskun (2016) assess the effect of financial services accessibility on poverty in emerging countries by focusing on the banking market (i.e. private credit and deposits in banks) and financial markets (stock market capitalization to GDP, total value of the stock market traded to GDP, and the stock market turnover ratio). They find that the accessibility of these different financial services is not significant in influencing the poverty level. Accessibility of banking and stock market services does not benefit low-income populations. Neaime & Gaysset (2018), in assessing the effect of the number of ATMs and the number of commercial banks on the ratio of the population living on less than \$1.90, also find that financial inclusion does not have a significant negative effect on poverty in MENA. This insignificant effect of financial inclusion is explained by the fact that the banking system is not sufficiently developed for access to financial services to have a significant negative effect on poverty.

Thirdly, financial inclusion contributes to income inequality. Jauch & Watzka (2016) found that the accessibility of financial services worsens income inequality in developing and developed countries. They put a focus on private credit, the number of ATMs and the minimum value of loans. Unal & Coskun (2016) just that finance does not necessarily benefit people with low incomes. Considering gender inequalities in financial inclusion, Gosksu et al. (2017), also find that financial inclusion has a positive impact on income inequalities. The absence of income equality measures contributes to increased financial exclusion and consequently income inequality. Tita & Aziakpono (2017) find that financial inclusion has a positive effect on income inequality. However, they focus on electronic payments, bank accounts and savings.

Fourthly, financial inclusion harms income inequality. Garcia-Herrero & Tu-regone (2018) show that financial inclusion contributes to the reduction of income inequality. They also find that financial inclusion has a positive effect on income equality. In addition, financial inclusion has more impact on income inequality through income equality. Neaime & Gaysset (2018) also evaluate the effect of financial inclusion on reducing poverty and income inequality. The results show that financial inclusion contributes to mitigating income inequality. Indeed, the increase in the number of banks contributes to the reduction of transaction costs through competitiveness, which also allows low-income populations to use financial services and therefore reduce income inequality. Chu & Chu (2018) assesses the effect of financial inclusion on income inequality in developing and developed countries. They find that financial inclusion hurts income inequality. Comparing the effects, they also find that the effect is greater in developments where investment needs are high. By conducting an analysis on selected transition economies, Dablas-Norris et al. (2015) on the other hand assess the impact of financial inclusion constraints on reducing income inequality. They also find that financial inclusion reduces income inequality.

Dablas-Norris et al. (2015) believe that reducing participation costs, commitment constraints, and interest rates help reduce income inequality. Le et al. (2019) and Nguena & Tsafack Nanfosso (2015) also finds that financial inclusion contributes to reducing income inequality.

Overall, this lack of consensus due to differences in samples and methodological approach motivates new research on the effects of financial inclusion to mitigate the economic growth shock of the COVID-19 health crisis on the growing trend of poverty and inequality in Africa.

2. METHODOLOGICAL STRATEGY

2.1. Sample and data sources

Given the research question, we use three main data sources for 39 African countries. First, the financial inclusion index is extracted from the Financial Access Survey (FAS) database for the period 2004-2018 (IMF, 2019). As an alternative indicator of financial inclusion, following Demirgüç-Kunt et al. (2018), we use the percentage of the population with a bank account. Table 2 in the appendix show the countries with the data.

The second key data is the annual GDP growth rate of countries between 2004 and 2018. In section 4, we forecast poverty levels in Africa in the COVID-19 era, for which we use the latest IMF economic growth projections for the years 2020 and 2021 (IMF, 2020b). To check the robustness of our forecasts, we also use the latest World Bank economic growth projections for the years 2020 and 2021 (World Bank, 2020).

The third key data source is *PovcalNet*, which provides statistics on inequality and poverty. In line with standard practice in the literature, we measure the incidence of poverty in African countries using three international poverty lines of \$1.90, \$3.20, and \$5.50 per day. Specifically, we use the poverty headcount ratio; which measures the proportion of the population that is poor, the poverty gap index; which measures the depth of poverty by considering the average distance between the poor and the poverty line, expressed as a percentage; the squared poverty gap, similar to the previous measure but based on the sum of the squares of the poverty gaps, and the *Watts* poverty index. For a complete picture, see table 3, 4, 5 and 6 in the Appendix respectively for details on data sources, description, correlations and list of countries.

2.2. Empirical strategy

Step by step, we start by applying the poverty-growth-inequality decomposition method proposed by Datt & Ravallion (1992) to understand whether financial inclusion directly or indirectly affects poverty reduction in African countries. At the aggregate level, poverty from one period to the next could change as a result of changes in gross domestic product (GDP) or if GDP is distributed differently. This simple decomposition of poverty, which is theoretically based on the principles of the Lorenz curve, can be estimated empirically. Much research has shown that inequality is particularly detrimental to poverty reduction, as increases in GDP are often captured by the middle or upper classes, with limited trickle-down effects for the poor (Gutiérrez & Méndez, 2017; Ravallion, 2005; van der Weide & Branko, 2018). Thus, at the national level, a period-to-period variation in poverty can be expressed as in equation (1).

$$P_{t+1} - P_t = G(t, t + n, r) + D(t, t + n, r) + R(t, t + n, r) \quad (1)$$

where P_t is the poverty measure at date t , or $t + n$ which can be fully characterized by a poverty line and the Lorenz curve. $G(\cdot)$, $D(\cdot)$ and $R(\cdot)$ denote the growth, redistribution and residual components. The last argument r denotes the reference date with respect to which the observed change in poverty is decomposed. According to Datt & Ravallion (1992), the residual term can be interpreted as the difference between the growth (redistribution) components evaluated at the terminal and initial Lorenz curves. Therefore, if the average income or the Lorenz curve remains unchanged during the decomposition period, the residual disappears.

This decomposition of poverty can easily be implemented by regressing changes in poverty on changes in income inequality, represented by changes in the Gini index, and on changes in real growth in gross domestic product, as shown in equation (2)¹. Note that the decomposition technique is not intended to prove causality, nor to account for the causal determinants of differences in poverty levels, which may be many. Instead, this regression, based on the theoretical properties of the Lorenz curve, estimates the extent to which changes in poverty at the macro level can be attributed to changes in economic growth, changes in redistribution, or the interaction between these two. As this regression is usually run over several years, the literature usually adds year fixed effects as controls to capture the extent to which fluctuations in certain years exacerbate changes in poverty, an approach we follow here (Freije, 2014).

$$\Delta P_{it} = \alpha_i + \beta \Delta Gini_{it} + \gamma GDP\ Growth_{it} + \varphi Year_t + \varepsilon_{it} \quad (2)$$

where ΔP_{it} denotes the annual change in poverty in country i over the annual period t . We use four separate measures of poverty (the headcount ratio, the poverty gap, the poverty gap squared and the Watts index). $\Delta Gini_{it}$ Notes the annual changes in the Gini index, and φ is the regression coefficient for the year fixed effects. We estimate this regression using country-level panel fixed effects, pooling the *Huber-White standard errors* at the country level. To examine the extent to which changes in financial inclusion affect changes in poverty, we modify this poverty decomposition regression. We do this by adding the annual change in the financial inclusion index and the interaction between changes in the financial inclusion index and changes in the **Gini** index, as shown in equation (3). We add these two factors to understand whether improvements in financial inclusion contribute directly to poverty reduction or indirectly by mitigating the adverse effect of rising inequality.

$$\Delta P_{it} = \alpha_i + \beta \Delta Gini_{it} + \gamma croissance_{it} + \xi \Delta inclusion\ financière_{it} + \eta \Delta inclusion\ financière_{it} * Gini_{it} + Année_t + \varepsilon_{it} \quad (3)$$

where **Financial inclusion** _{it} is the change in the overall financial inclusion index in country i over the annual period t . To better understand how financial inclusion can help poverty, we run three separate regressions, using either the change in the overall financial inclusion index, the change in the financial reach or access sub-index, or the change in the financial use sub-index. The regression coefficient η is the interaction between the change in financial inclusion and the change in inequality. A negative coefficient η of interaction would suggest that improvements in financial inclusion would contribute more to poverty reduction in countries with higher levels of income inequality. We estimate this regression using country-level panel fixed effects, pooling *Huber-White standard errors* at the country level.

¹ This poverty decomposition tool has been used to predict how changes in expected levels of economic growth or inequality might affect changes in poverty (Ravallion, 2013).

Table 1. Results of the role of financial inclusion in reducing inequality and poverty

VARIABLES	Headcount			Poverty gap			Poverty sq			Watts		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Gini Index	0.475 (0.335)	0.521 (0.309)	0.405 (0.276)	0.426** (0.199)	0.438** (0.189)	0.369** (0.161)	0.338** (0.134)	0.345** (0.130)	0.293** (0.109)	0.892** (0.358)	0.911** (0.346)	0.781** (0.291)
Cfindex	0.163 (0.130)			0.051 (0.072)			0.018 (0.045)			0.054 (0.120)		
c.changesini#c.changesindex	-11.862 (26.496)			-12.045 (15.423)			-9.374 (10.154)			-23.555 (26.902)		
Gdp	0.038 (0.039)	0.041 (0.059)	0.038 (0.061)	0.004 (0.034)	0.006 (0.064)	0.005 (0.035)	-0.003 (0.022)	-0.002 (0.022)	-0.002 (0.023)	-0.002 (0.060)	0.001 (0.060)	-0.001 (0.062)
Cfin_out		-0.040 (0.141)			-0.004 (0.072)			0.002 (0.048)			0.002 (0.129)	
c.changesini#c.changesfin_out		-23.949 (26.544)			-18.011 (15.663)			-13.568 (10.533)			-34.965 (27.876)	
Cusage			0.143 (0.093)			0.048 (0.046)			0.019 (0.029)			0.056 (0.077)
c.changesini#c.changesusage			-0.659 (13.561)			-2.466 (7.851)			-2.049 (5.036)			-5.086 (13.461)
Constant	-0.008 (0.005)	-0.008 (0.005)	-0.009* (0.005)	-0.006* (0.003)	-0.006* (0.003)	-0.006* (0.003)	-0.004* (0.002)	-0.004* (0.002)	-0.004* (0.002)	-0.010* (0.006)	-0.010* (0.006)	-0.011* (0.006)
Observations	504	504	504	504	504	504	504	504	504	504	504	504
R-squared	0.069	0.072	0.070	0.096	0.099	0.093	0.107	0.110	0.103	0.109	0.112	0.105
Number of idcountry	36	36	36	36	36	36	36	36	36	36	36	36
r2_a	0.0369	0.0396	0.0370	0.0645	0.0677	0.0613	0.0735	0.0788	0.0716	0.0774	0.0807	0.0738

NB: The dependent variables are changes in the headcount, the poverty gap, the poverty gap squared and the Watts index. Δ Gini is the change in income inequality. ***, ** and * indicate statistical significance at the 1%, 5% and 10% levels, respectively.

Source: Authors estimates.

This panel fixed effects regression can help us predict the extent to which a significant decline in GDP growth such as that expected because of COVID-19, or likely changes in inequality could affect poverty in the near future. More importantly, for policy reasons, we can also learn to what extent improvements in financial inclusion could contribute to poverty reduction directly or indirectly. In other words, changes in financial inclusion, or the lack of it may be a consequence of changes in poverty over time, which may be more likely to occur in the poorest countries where, with few exceptions, financial inclusion is not yet widespread.

3. RESULTS AND DISCUSSION

3.1. The effects of financial inclusion on inequality and poverty

Here, we discuss the estimation results of equation (3). We use fixed-effect panel specifications with robust standard errors clustered at the country level. Table 1 above presents the overall results for the relationship between financial inclusion inequality and poverty. We use four different variants of the poverty measure as the dependent variable: Headcount, Poverty gap, Poverty gap squared, and Watts.

Our assessment suggests that over the past two decades, financial inclusion has reduced poverty by offsetting the negative impact of inequality on poverty in Africa. In other words, the financial extension helps reduce existing inequalities in financial services that are likely to enable poor people to smooth their consumption in the face of major shocks such as the ongoing pandemic. Our results are consistent with the experimental literature that has found that financial inclusion helps break down inequality barriers among the most vulnerable groups (e.g., Banerjee and al., 2015; Dupas & Robinson, 2013; Li, 2018). However, unlike other recent cross-country studies, we have shown that financial inclusion does not have a significant direct effect on poverty reduction in Africa. These results are robust to the use of different measures of financial inclusion and poverty measures.

These results are in agreement with that of Goksu et al. (2017) and Naime & Gaysset (2018), who evolve the effect of financial inclusion on the ratio of the population living on less than \$1.90 and the result shows that financial inclusion has no negative and significant effect on poverty. Similarly, Unal & Coskun (2016) assess the effect of financial services accessibility on poverty in emerging countries by focusing on the banking market (i.e. private credit and deposits in banks) and financial markets (stock market capitalization to GDP, total value of stock market traded to GDP, and stock market turnover ratio). They found that the accessibility of these different financial services is not significant in influencing the level of poverty.

Further, this insignificant effect of financial inclusion on poverty may be explained by the fact that the African banking system is not efficient enough, nor is it sufficiently developed in terms of access to financial services and increased banking penetration to have a positive impact on poverty as well as the benefits of a relatively well-developed banking system, do not seem to have reached the poorest segments of the population (Naime & Gaysset, 2018; Unal & Coskun, 2016). For Cumming & Uzuegbunam (2016), the inefficiency of the financial sector leads to low levels of investment due to suboptimal allocation of funds, this may be another factor explaining the non-significant effect on poverty. Similarly, with access to loans still restricted in many African countries, the poor are getting poorer (Cumming and al., 2014).

Furthermore, the results also show a negative and statistically insignificant effect between all measures of financial inclusion and growth. This result is consistent with that of Kahn (2011) who found a negative and significant effect of the financial inclusion index on growth; Financial inclusion may lower loan standards since financial institutions are trying to reach the poor by lowering credit terms, but it can also increase the risk of a bank's reputation, as several countries lower the standard

of establishing financial institutions for rural areas. However, this result contradicts Gutiérrez-Romero et al. (2021), who found a negative and significant effect of improved financial inclusion on growth. The reason could lie in the composition of the sample and the selection of the financial indicator. Our sample consists of African countries, while theirs includes both developing and developed economies. The latter having larger and more diversified financial systems.

3.2. Predictive Analysis of the Role of Financial Inclusion in Mitigating Economic Growth Shocks on Poverty and Inequality in African Countries during COVID-19

We forecast the short-term effects of likely changes in global economic growth due to the COVID-19 crisis on the evolution of the poverty headcount ratio in Africa, using the *PovcalNet* database from the year 2004 to 2018, based only on the \$1.90 per day poverty line. Both the IMF and the World Bank estimate that the global recession will be deeper than expected when the pandemic begins. However, the question remains: how severe would be these economic impacts on poverty? More importantly, what tools could policymakers use to mitigate the adverse effects of falling GDP and likely rising inequality? To shed light on these two questions, we forecast the likely impacts on extreme levels of poverty and the extent to which improvements in financial inclusion could mitigate some of these impacts in Africa.

In addition, during the year 2020, the IMF published two forecasts for the World Economic Outlook (WEO), the first published in April and an update in June 2020, which is the one we use in this analysis (IMF, 2020b). According to this latest IMF projection, global growth is expected to be -4.9% in 2020, and 5.4% in 2021. Despite this expected recovery in 2021, the sharp fall in household income and GDP is likely to hurt low-income households in particular, potentially wiping out years of progress in poverty reduction. In June 2020, the World Bank also released a forecast for global growth, predicting a contraction of 5.2%. The COVID-19 pandemic will also have a severe impact on African economies. GDP growth is expected to contract by 1.15% this year in Africa. It can be legitimately argued that this downward revision is largely due to the COVID-19 crisis.

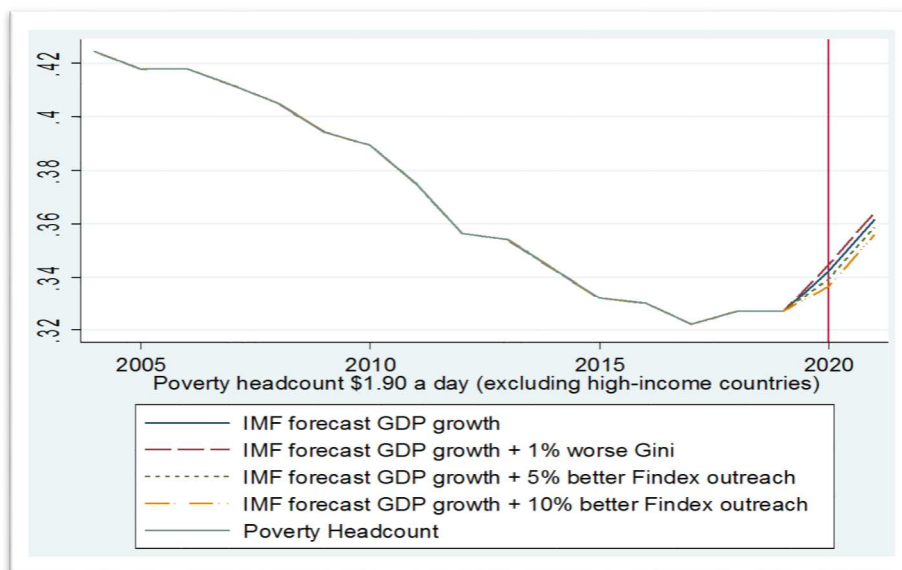
3.2.1. Impact of COVID-19 on people living on less than \$1.90 per day

We begin by forecasting the expected evolution of poverty for all 39 African countries in our sample for which we have both financial inclusion and poverty coverage data, using a poverty line of \$1.90 per day. In this poverty forecast, we focus on two scenarios. The first assumes the evolution of GDP growth in each country as estimated by the IMF for the years 2020 and 2021 (IMF, 2020a). In this scenario, we assume that inequality and the scope of financial inclusion will remain at their pre-COVID-19 levels.

Thus, in figure 1, we present the poverty forecasts at \$1.90 a day threshold for African countries. Thus, our predictions suggest that the incidence of poverty could increase from 32.5% in 2019 to about 34% in 2020 and 36% in 2021, pushing more than 23 million additional people into extreme poverty by the end of 2021. Our results are consistent with those of Diop & al. (2020), who assess the impact of the COVID-19 pandemic on poverty levels in 50 African countries using the *PovcalNet* poverty-monitoring tool. The empirical evidence is based on: (i) pre-COVID-19 macroeconomic projections (October 2019) and revised macroeconomic projections of April 2020 and (ii) three poverty lines, including \$1.90, \$3.20 and \$5.50 per day. They found that the poverty rate will increase by 35.85% for the \$1.90 poverty line, 57.55% for the \$3.20 per day poverty line and 76.42% for the upper poverty line (\$5.5 per day).

Furthermore, given the changes in extreme levels of poverty in African countries as shown in Figure 1, in the second scenario we examine the extent to which improvements in financial inclusion could smooth the impact on the poverty coverage ratio for the African countries in our sample. In addition to these changes in GDP growth, we also assume that inequality (as represented by the Gini index) will increase by 1% in each country. Although in some recessions, inequality may even be reduced for the case of COVID-19 it is very likely that the lowest income households will be more severely affected than the richest, given the differences in vulnerability to price shocks and income shocks due to unemployment or occupational health risks of COVID. Similarly, in addition to the decline in GDP growth, there is a 5% to 10% improvement in the financial capability index and that the Gini index does not change. The baseline scenario, in Figure 1, also suggests that the percentage of people living on less than \$1.90 a day would rise from 36% by 2021 in Africa. Add to this the changes in GDP, which leads to increased inequality, and poverty will increase further. In this case, the increase in poverty could be curbed through substantial improvements in financial inclusion, as suggested in Figure 1, a 10% improvement in financial inclusion could reduce or flourish an increase in poverty due to COVID-19 to around 35.6% of the African population.

Figure 1. Projected number of people living in poverty - \$1.90 a day and the impact of financial inclusion



Source: Authors estimates using data from WDI (2019) and FAS (2019).

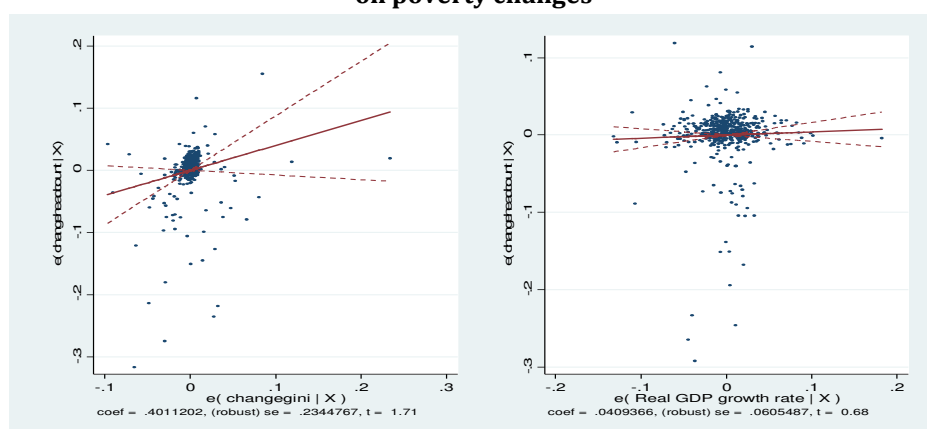
3.2.2. Impact of the COVID-19 on people living on less than \$3.20 and \$5.50 per day

We go on to project the expected overall change in poverty using the \$3.20 and \$5.50 per day poverty lines for African countries using equation (3). Figure 2 in the appendix suggests that the percentage of people living on less than \$3.20 a day would rise from 52.5% in 2019 to nearly 56% by 2021, or nearly 20 million more people will be pushed into poverty. However, this increase in poverty could be

smoothed out at 54.8% with a 10% increase in the financial inclusion index. Similarly, Figure 3 in the appendix shows that in terms of the percentage of people living on less than \$5.50 a day, poverty would rise from 72% in 2019 to almost 74.5% in 2021, pushing almost 129 million people into poverty. However, this increase in poverty could be smoothed out at 73% with a 10% increase in the financial inclusion sub-index alone.

In terms of policy to mitigate the increase in poverty due to the COVID-19 pandemic, overall, our findings are almost similar to that of Gutiérrez-Romero et al. (2021), conducting a study of 121 countries in the world of which their sample takes into account both developing and developed countries, they find that the percentage of people living on less than \$3.20 a day would rise from 24.8% in 2019 to nearly 27.5% in 2021. This increase in poverty could be reduced to 25.4% with a 10% increase in the financial inclusion index. Similarly, the percentage of people living on less than \$5.50 a day would rise from 40% in 2019 to 43% in 2021. However, this increase could be significantly higher with the improvement of the financial inclusion gateway.

Figure 4. Marginal effects of growth and inequality changes on poverty changes



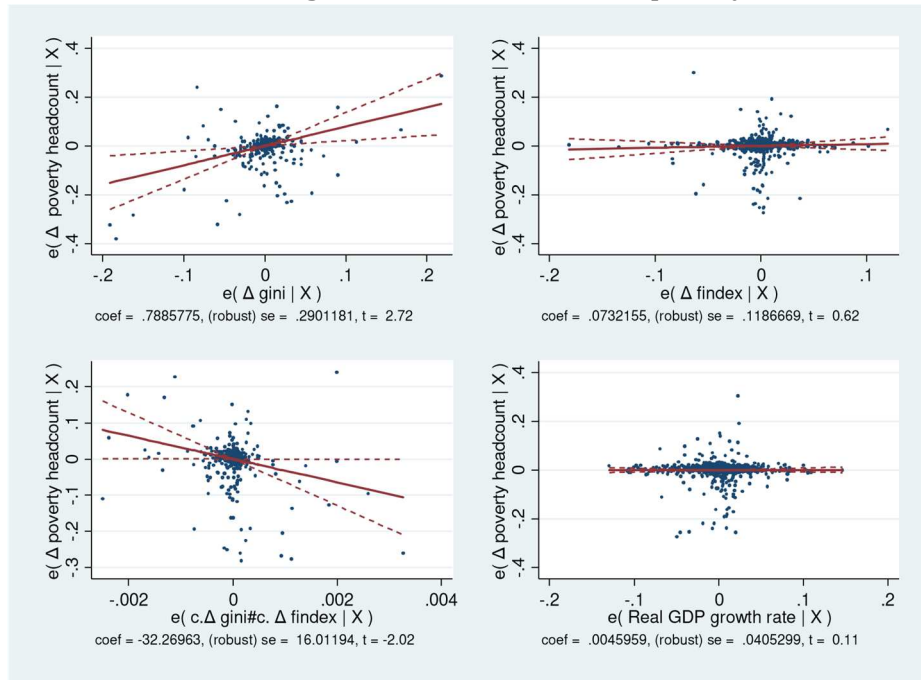
Source : Authors.

In addition, in Figure 4, we plot the marginal effects of all regression coefficients shown in column 1. These marginal effects illustrate the limited effect of growth on poverty reduction, but a stronger effect of inequality on poverty. Similarly, in Figure 5, we plot the marginal effects of all the regression coefficients shown in column 1. These marginal effects illustrate the limited effect of growth on poverty reduction and the strong effect of financial inclusion in reducing the adverse effect of inequality. Note that the interaction between the Gini and financial scope is not statistically significant. This suggests the importance of financial services use in reducing poverty (head-count) in a country with more inequality. We also estimated alternative specifications where we interact the financial inclusion index with the GDP growth rate. These results suggest that financial inclusion contributes to poverty reduction by mitigating the adverse effect of inequality, but not by boosting the effect of growth.

This shows just how the health shock of the COVID-19 pandemic has affected the African economy, through the level of economic growth being lowered, which is likely to accentuate inequality and poverty. This can be seen as a stylized fact for African countries where the modern culture of online banking is still very much in

its infancy and therefore traditional banking remains the mainstay with the need to move individually to financial institutions places that remains reduced during the COVID-19 situation.

Figure 5. Marginal effect of growth, changes in inequality, and changes in financial inclusion on poverty



Source : Own estimates.

3.3. Policy implications

Overall, our \$1.90, \$3.20, and \$5.50 threshold predictions of poverty increase due to the COVID-19 pandemic are in the same range as other previous studies (SuSmner et al., 2020; Diop et al., 2020), these forecasts are based on economic growth projections that naturally involve subjective judgments by IMF and World Bank forecasters and a considerable margin of error (Sandefur & Subramanian, 2020). Moreover, the world has never experienced such a sudden and widespread drop-in economic activity as that observed during the COVID-19 (Gentilini et al., 2020). Furthermore, our analysis allows us to highlight five key implications for policymaking.

Firstly, it is unlikely that the resumption of economic growth will be sufficient to reverse the projected increase in extreme poverty as growth gains are not automatically passed on to the bottom quantiles. Secondly, poor households are likely to suffer the double burden of rising levels of inequality, requiring urgently tailored policies to address them. Although most countries have put in place urgent social assistance COVID-19, in some countries these funds could be used for political patronage, risking benefiting only a fraction of those in need (Birch et al., 2020). Moreover, most of these measures have resulted in urgent temporary cash transfers but not in short or medium-term plans for employment recovery, which is urgently needed to reduce both poverty and inequality (Gutiérrez-Romero et al., 2021).

Thirdly, our analysis suggests that the poorest households would benefit from much wider financial inclusion coverage. However, we do not believe that simply building more bank branches and ATMs close to the poorest households would be a weapon to reduce poverty per head. A very high fraction of Africa's poorest people still does not have access to financial services, because of lack of money, because financial services are not available physically or remotely, and because the fees for opening or using accounts are too high. So, all these constraints need to be addressed to enable the poor to benefit from financial inclusion. Fourthly, for financial inclusion to continue to expand despite the continuing financial crisis, a risk management system needs to be put in place. For example, during the pandemic, greater collaboration between governments and financial institutions would be needed to find less costly forms of financial inclusion such as remote access or mobile phones, and to reduce the administrative burden of opening and using financial accounts. Fifthly, based on the extensive literature on random checks, it is clear that the type of financial services offered matters. If the goal is to reduce poverty among people living in extreme poverty by offering more inclusive micro-savings and credit services, then the type of financial services offered is important.

CONCLUSION

The current pandemic of COVID-19 threatens to undermine existing and committed efforts to reduce poverty in Africa. Using panel data on 39 African countries covering the period 2004-2021, we explore the extent to which improving financial inclusion could help mitigate the impact of COVID-19 on rising poverty.

Our results showed that over the last two decades, poverty has been relatively unresponsive to economic growth and has been deeply affected by levels of inequality. These results are consistent with previous literature (Datt and Ravallion, 1992; van der Weide and Milanovic, 2018). Second, our results showed that over the same period, financial inclusion contributed to poverty reduction. In contrast to other recent cross-country studies that show that financial inclusion directly reduces poverty (e.g., Goksu et al., 2017; Park & Mercado, 2018), these results are robust to the use of different measures of financial inclusion. However, another important aspect of our results is that financial access reduces poverty by offsetting the adverse effect of inequality on poverty. In other words, financial outreach helps to reduce existing inequalities in financial services that are likely to enable poor people to overcome financial hardship and may allow them to smooth their consumption in the face of major shocks like the current pandemic. Our results are in line with the experimental literature that has shown that financial inclusion helps to break down inequality barriers among the most vulnerable groups (e.g. Banerjee et al., 2015; Dupas and Robinson, 2013; Owusu-Fordjour et al., 2020; Li, 2018).

Furthermore, our predictive analysis shows that an additional 23 million people will be pushed into extreme poverty in Africa, undoing years of progress in poverty reduction if adequate measures are not taken. However, our predictive analysis also suggests that a 10% improvement in the use of financial inclusion could slow the rise in poverty. Indeed, the COVID-19 crisis will require flexibility from all relevant sectors, especially the financial sector as millions of poor people and small businesses that have lost their livelihoods will need quick access to government support and financial services such as savings and credit instruments. Financial institutions will have a crucial role to play in keeping the economy afloat, stemming the potential regional contagion of the financial meltdown and helping to improve people's lives and helping resuscitate small businesses once social distancing measures are relaxed.

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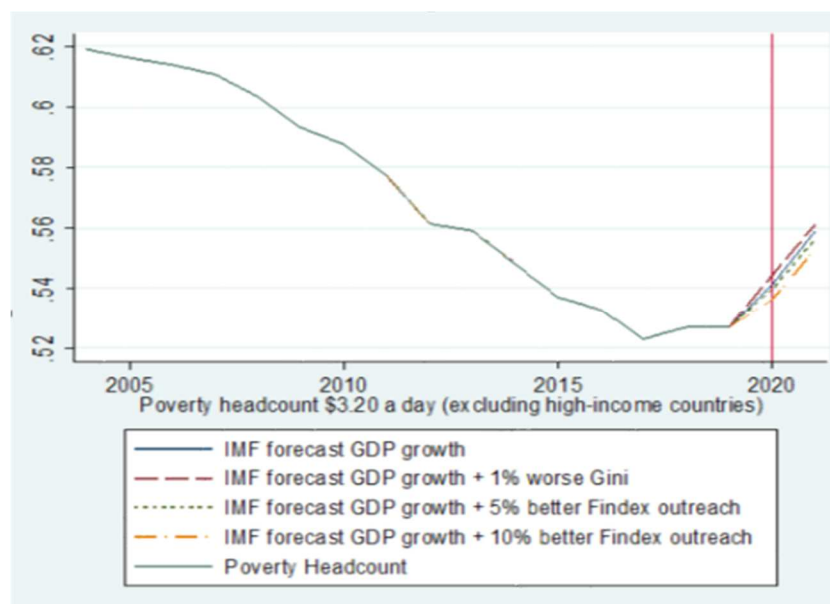
APPENDIX

Table 2. Financial inclusion in Africa

Performance	Countries
(0.1379446; 0.6905003)	South Africa; Namibia; Botswana; Kenya; Maroc.
(0.0696836; 0.1379448)	Algeria; Egypt; Ghana; Gabon; Equatorial guinea; Zimbabwe; Uganda.
(0.0469703; 0.0696836)	Angola; Zambia; Malawi; Mozambique; Mauritania ; Lybia
(0.007886; 0.0469703)	Madagascar; Tanzania; Democratic Republic of Congo; Congo; Cameroon; Central African Republic; Souht Sudan; Chad; Guinea.

Note: Country classification during the year 2018 from the highest to the lowest performance.
Source : Own estimates using the 2019 Financial Access Survey.

Figure 2. Projected number of people living in poverty on less than \$3.20 a day and the impact of financial inclusion



Source : Own estimates.

Figure 3. Projected number of people living in poverty on less than \$5.50 a day and the impact of financial inclusion

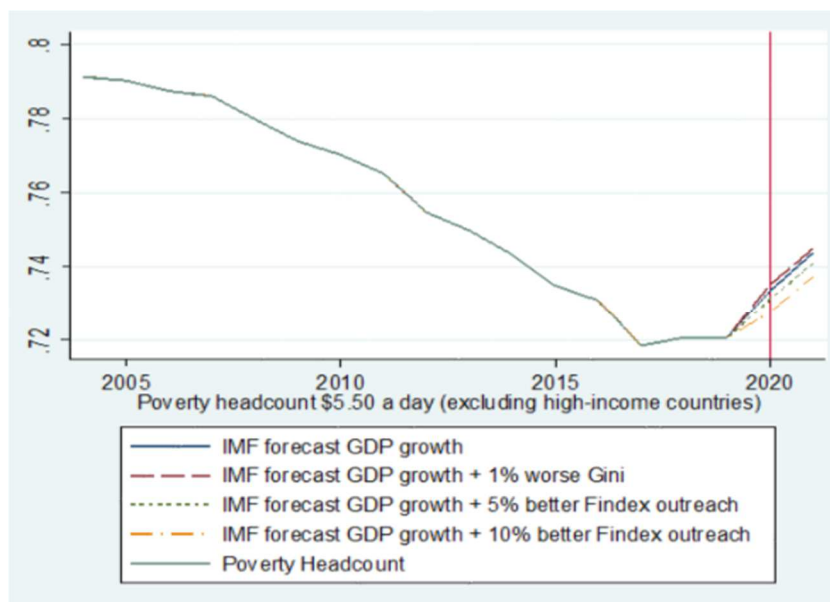


Table 3. Definition and data source

Variable	Code	Indicators	Source
GDP growth	Prgdp	GDP per capita (in constant 2010 dollars)	A
Inequality	Gini index	A measure of inequality between 0 (everyone has the same income) and 100 (the richest person has all the income)	B
Watts Poverty Index	Watts	This is the average across the population of the proportional poverty gaps, as measured by the log of the poverty line to income ratio, where the average is formed over the whole population, counting the non-poor as having a zero-poverty gap.	B
Number of poor people	head-count	Number in % of the population living in households with consumption or income per person below the poverty line	B
Poverty gap	Provgap	The average is based on the whole population treating the non-poor as having a deficit of zero, and the deficit is expressed as a proportion of the poverty line.	B
Poverty gap squared	provgap-sqr	The average is based on the whole population treating the non-poor as having a deficit of zero, and the deficit is expressed as a proportion of the poverty line (then squared).	B
Access to Financial Systems Index	cfin_out	Measure of bank accounts per 1000 people + mobile money transaction value % of GDP/year	C
Financial systems usage index	Cusage	Measure number of bank branches and number of ATMs per 100,000 people and per 1,000 Km ²	C
Global Financial Inclusion Index	Cfindex	cusage + cfindex	C

Database source (2019): A=WDI & IMF; B=PovcalNet; C=World Bank Global Findex. Source: Authors.

Table 4. Descriptive statistics

<i>Variable</i>		<i>Mean</i>	<i>Std.Dev.</i>	<i>Min</i>	<i>Max</i>	<i>Comments</i>
<i>Headco</i>	Overall	0.373	0.255	0.002	0.941	N = 540
	between		0.249	0.004	0.859	n = 36
	within		0.068	0.075	0.639	T = 15
<i>povgap</i>	Overall	0.155	0.135	0.000	0.636	N = 540
	between		0.129	0.001	0.519	n = 36
	within		0.044	-0.041	0.380	T = 15
<i>povgap~r</i>	Overall	0.085	0.087	0.000	0.469	N = 540
	between		0.082	0.000	0.360	n = 36
	within		0.032	-0.058	0.248	T = 15
<i>watts</i>	Overall	0.242	0.233	0.000	1.246	N = 540
	between		0.220	0.001	0.961	n = 36
	within		0.085	-0.151	0.650	T = 15
<i>gini</i>	Overall	0.443	0.085	0.276	0.648	N = 540
	between		0.081	0.276	0.631	n = 36
	within		0.029	0.351	0.659	T = 15
<i>prgdp</i>	Overall	0.042	0.038	-0.098	0.133	N = 540
	between		0.022	-0.059	0.077	n = 36
	within		0.031	-0.082	0.234	T = 15
<i>cfindex</i>	Overall	0.099	0.140	0	0.691	N = 540
	between		0.138	0.005	0.619	n = 36
	within		0.033	-0.039	0.242	T = 15
<i>cfin_out</i>	Overall	0.081	0.137	0	0.726	N = 540
	between		0.136	0.003	0.601	n = 36
	within		0.027	-0.061	0.234	T = 15
<i>cusage</i>	overall	0.124	0.155	0	0.708	N = 540
	between		0.149	0.004	0.643	n = 36
	within		0.047	-0.057	0.417	T = 15

Source : Authors estimates.

Table 5. Correlation matrix for the panel data set

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1) headcount	1.000								
(2) povgap	0.965	1.000							
(3) povgapsqr	0.910	0.986	1.000						
(4) watts	0.923	0.990	0.999	1.000					
(5) gini	0.139	0.144	0.149	0.151	1.000				
(6) prgdp	0.149	0.136	0.124	0.126	-0.036	1.000			
(7) cfindex	-0.518	-0.460	-0.417	-0.429	0.030	-0.022	1.000		
(8) cfin_out	-0.472	-0.415	-0.375	-0.387	-0.046	-0.011	0.972	1.000	
(9) cusage	-0.534	-0.479	-0.436	-0.448	0.114	-0.033	0.964	0.874	1.000

Source : Authors estimates.

Table 6. List of countries

Angola	Guinea	South Sudan
Burundi	Gambia	Sao Tome and Principe
Botswana	Kenya	Eswatini
Central African Republic	Liberia	Seychelles
Cameroon	Lesotho	Chad
Congo, Dem. Rep.	Morocco	Tanzania
Congo, Rep.	Madagascar	Uganda
Djibouti	Mozambique	South Africa
Algeria	Mauritania	Zambia
Egypt	Malawi	Zimbabwe
Gabon	Namibia	
Ghana	Rwanda	

Inclusion financière, croissance et pauvreté à l'ère de la Covid-19 en Afrique

Resumé : La pandémie de Covid-19 menace de saper les efforts engagés pour réduire la pauvreté en Afrique. En utilisant des données de panel sur 39 pays africains couvrant la période 2004-2021, notre analyse montre que l'inclusion financière, en particulier l'accès aux services financiers, peut être un facteur important de la réduction de la pauvreté dans les pays africains à l'ère de la Covid-19. De plus, nous avons identifié la réduction des inégalités comme le principal canal par lequel l'inclusion financière peut contribuer à atténuer la pauvreté. Ces résultats sont robustes et cohérents en utilisant différentes méthodes d'estimation et d'indices de changement de pauvreté. Face aux risques d'accroissement de l'extrême pauvreté du fait de la Covid-19, une politique visant une amélioration de l'inclusion financière paraît nécessaire.

Mots clés

Inclusion financière
Pauvreté
Inégalité
Covid-19
