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Financial Inclusion and Extreme Poverty in The MENA Region: A Gap Analysis Approach

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Abstract

Eradicating extreme poverty – $1.90 per day international poverty line – remains one of the main, but challenging Sustainable Development Goals (SDGs) in the Middle East and North African (MENA) region. As per the latest World Bank statistics of 2018, extreme poverty in the MENA region has increased from 2.7% to 5% over the period from 2013 to 2015. The region ranks as the third highest in the developing regions and has fell short of reducing extreme poverty to half by the year 2015. Using system GMM dynamic panel estimation methodology on annual data for eleven MENA countries and twenty-three Emerging Markets (EMs) over the period 1990 - 2017, the first part of the study estimates the role of financial inclusion – using measures of access and usage – in eradicating extreme poverty (the first goal of SDG). The second part of the study employs a gap analysis to predict the ability of the MENA and EMs countries to achieve the extreme poverty goal by the year 2030 by depending only on the improvement in financial services and no other factors. The results of the study indicate that on one hand financial access measures have a positive statistically significant impact on reducing extreme poverty for the full sample as well as the MENA region. On the other hand, the results suggest that financial usage measures are only statistically significant in reducing extreme poverty for the full sample but not for the MENA region. Finally, the results of the gap analysis show that if current trends of financial access measures continue, all the countries of the MENA region will not be able to close the extreme poverty gap goal by the year 2030 if they depend only on the improvement of the financial access services and no other factors. The results of the gap analysis for the EMs sample shows that only three countries will lag behind in achieving the first goal of the SDGs by the year 2030. Policy considerations can be directed towards developing and promoting the infrastructure needed for the widespread delivery and usage of financial services especially for the countries lagging behind in achieving the extreme poverty goal in the MENA region and EMs.

I. INTRODUCTION

The world has made remarkable progress reducing extreme poverty in the past 25 years. Between 1990 and 2015, the number of people living under $1.90 per day – the benchmark for the international poverty line – dropped by one billion, driving us closer to the United Nations Sustainable Development Goals (SDGs). Still, the benefits of economic growth have reached regions, countries, and individuals unevenly. An unacceptably high number of people – more than 700 million – still live in poverty across the globe, and extreme poverty is becoming more entrenched in some places, especially those fraught by violent conflicts and weak institutions.

In the Middle East and North Africa (MENA), a region particularly vulnerable to fragility, eradicating extreme poverty remains one of the most challenging Sustainable Development Goals. MENA ranks third among developing regions for extreme poverty. According to the latest World Bank data, the proportion of the population living under $1.90 a day rose from 2.6% to 5% between 2013 and 2015, while the number of poor nearly doubled from 9.5 to 18.6 million. Although extreme poverty is much higher in sub-Saharan Africa, the pace at which it is growing in MENA issues a blunt warning that progress cannot be taken for granted. The erosion of past gains risks fueling political, economic and environmental crises – threatening to exacerbate the circumstances of those already struggling to protect their lives and livelihoods.

While research on poverty reduction in the region tends to focus on financial development and governance, less attention has been paid to the role of financial inclusion. SDG 1 – eliminating poverty in all its forms – explicitly highlights the importance of access to financial services. Indeed, evidence from Argentina, India, Kenya, Malawi, Niger, and other countries demonstrates the ways in which financial inclusion can impact on poverty (Klapper, El-Zoghbi, and Hess 2016). When people are included in the financial system, they are better able to improve their health, invest in education and business, and make choices that benefit their entire family. Financial inclusion advances governments, too: Introducing vast segments of the population into the financial system by digitizing social transfers, for example, can cut government costs and reduce leakage, with benefits that ripple across society.

What's more, greater access to financial services accelerates the achievement of other SDGs that are associated with poverty. Savings and loan products advance health and well-being by helping individuals manage medical expenses and recover from health crises. They

foster education by giving families the ability to invest in learning opportunities. They promote gender equality by allowing women greater control over their finances. And they reduce hunger and food insecurity by helping farmers boost production to meet the needs of growing populations. Financial tools alleviate poverty directly and indirectly, through pathways that have been investigated in various countries around the world (see Section II).

Yet, the links between financial inclusion and poverty reduction in MENA are less established. This study aims to analyze the importance of financial inclusion in eradicating extreme poverty by 2030, the year UN Member States set as a target for achieving the SDGs. More specifically, the study seeks to answer the following questions: Do different types of financial inclusion indicators (like those for access and usage) affect poverty alleviation? Is this effect the same across samples of MENA countries and EMs more broadly? Are the countries under study able to use financial inclusion tools exclusively to close the poverty gap by 2030? The remainder of the paper is divided as follows: Section II briefly reviews the literature; Section III describes the data used; Section IV highlights the methodology employed and the model specification; Section V presents our results; and Section VI concludes. An appendix appears at the end of the paper.

II. LITERATURE REVIEW

In 2015, the United Nations called for the proportion of people living in extreme poverty to be cut to less than 3% by 2030. Progress from the previous two decades gave the international community reason to be hopeful: While more than a third of the world lived in extreme poverty in 1990, by 2015, the ratio had fallen to one tenth – the lowest poverty rate in history (World Bank 2018). In recent years, though, the pace of poverty reduction has slowed. And for millions of people in sub-Saharan Africa and MENA, poverty is on the rise.

Researchers have long sought out tools for improving the lives of the poor. Historically, economic growth and income redistribution have been seen as key channels for lifting populations out of poverty, either through domestic policies or foreign aid (Page and Pande 2018). A rich body of literature investigates the ways in which various factors – including access to credit for the poor (often with an emphasis on microcredit), infrastructure investment, the inclusiveness of institutions, availability of information, governance, and others – contribute to prosperity and poverty (see, for instance, Banerjee and Newman 1994, Beck et al. 2007, Banerjee and Duflo 2011, Acemoglu and Robinson 2012).

Our paper homes in on a less-cited variable: financial inclusion. The link between financial inclusion and economic growth has been well documented. While numerous studies show that countries with greater levels of financial access tend to enjoy higher levels of income (Honohan 2004; Demirguc-Kunt and Klapper 2012; Cumming et al. 2014; Klapper, El-Zoghbi, and Hess 2016), evidence that financial inclusion *spurs* economic growth is more recent to emerge.

Over the past several years, researchers have used various dimensions of financial inclusion to point to this causal relationship (El-Zhoghbi, Holle, and Soursourian 2019). In India, measures like banking penetration, deposits, and availability and use of banking services were found to boost growth between 2004 and 2013 (Sharma 2016). A study in Kenya estimated that the expansion of a mobile money service significantly contributed to per-capita income growth (Beck et al. 2018). And in countries in the MENA region, scholars have demonstrated the impact of financial development (Hamdi and Hakimi 2015), banking concentration (Abouzayed and Fayoumi 2016), and households' financial access (Emara and El Said 2019) on growth.

Yet, whether financial services improve the lives of the poor remains a subject of empirical debate. While some studies find no significant effects of financial inclusion on poverty reduction (Seven and Coskun 2016, Neaime and Gaysset 2017), others produce sharp results (Burgess and Pande 2005; Kim, Yu, and Hassan 2018). Evidence from various field experiments indicates that financial services have direct and indirect effects on poverty (Klapper, El-Zoghbi, and Hess 2016). Savings accounts, for example, allow families to absorb financial shocks, accumulate assets, and invest in health and education (Brune et al. 2015; Dupas and Robinson 2013; Karlan et al. 2014; Pande et al. 2012). Indeed, exclusion from financial services has also been shown to slow economic growth and generate so-called poverty traps (Greenwood and Jovanic 1990; Banerjee and Newman 1994; World Bank 2014).

In 2015, Park and Mercado demonstrated a strong link between financial access and poverty reduction in 37 developing Asian economies – until subsequent studies determined that this outcome held only for high- and upper-middle-income economies (Park and Mercado 2018). Page and Pande (2018) give additional reasons to be wary of financial inclusion – citing the risk of elite capture and low repayment rates for state-led programs – and of finance-based solutions to global poverty more broadly.

When it comes to countries in MENA, the link between financial inclusion and the poor is no clearer. Indeed, many researchers turn elsewhere to understand poverty in the region. Banerji and Humphreys (2003) focus on good governance as a crucial component of poverty relief, while Ncube, Anyanwu, and Hausken (2013) find that domestic investment, trade openness, exchange rates, income per capita, and oil rents are key poverty-reducing variables. Neaime and Gaysset (2017) use General Method of Moments (GMM) and Generalized Least Squares (GLS) models to conclude that population, inflation, and trade openness have significant effects on poverty, whereas financial inclusion does not appear to alleviate it.

Still, policymakers are increasingly recognizing that lack of access to finance in MENA is a severe restriction on economic growth and poverty alleviation, as the poor struggle to accumulate savings and cover critical health and education expenses (Alvarez de la Campa 2010, Pearce 2011). The region lags others on key indicators of bank deposits and loan accounts, and despite the expansion of bank branches and microfinance institutions in some MENA countries, vast segments of the population are still cut off from financial services (Pearce 2011).

Our paper seeks to build upon this evidence base. By using access and usage measures of financial inclusion, we contribute to the growing literature that investigates the link between financial inclusion and poverty reduction, with a focus on MENA countries and Emerging Markets. What's more, our gap analysis shows that if current trends of financial access measures continue, all the countries of the MENA sample and only three countries of the EMs sample will not be able to close the extreme poverty gap goal by the year 2030 if they exclusively depend only on the improvement of the financial access services.

III. DATA

The data set is constructed as a panel of country observations from the World Development Indicators of the World Bank's database. The data set includes 34 EMs and MENA countries over the period 1960-2017. The list of countries included in the sample is reported in Tables 1 and 2 of the appendix.

The dependent variable in the model is the poverty head count ratio at $1.90 a day as a percent of the population and the set of explanatory variables contains the common determinants of poverty including of real GDP per capita growth rate, inflation rate, trade as a percent of GDP, mobile subscription per 100 people, population growth, and different financial

inclusion indicators covering different dimensions such as general financial access and financial usage.

The measures of financial access include the number of bank accounts per 1000 adults, the number of commercial bank branches per 100,000 adults, and the number of ATMS per 100,000 adults. The measures of financial usage include the number of borrowers at commercial banks per 1,000 adults, the number of depositors with commercial banks per 1,000 adults, the percentage of firms using banks to finance investments, and the percentage of firms using banks to finance working capital. The list of variables used in the study is reported in Tables 3 through 7 of the appendix.

IV. MODEL SPECIFICATION & METHODOLOGY

Using system GMM dynamic panel estimation methodology on annual data for eleven MENA countries and twenty-three Emerging Markets (EMs) over the period 1990 - 2017, the first part of the study estimates the role of financial inclusion – using measures of access and usage – in eradicating extreme poverty (the first goal of SDG). To perform such an analysis, the following dynamic panel regression methodology is used:

$$Pov_{i,t} = \alpha + \rho Pov_{i,t-1} + \beta X_{i,t} + \delta FI_{i,t} + \varepsilon_{i,t} \qquad (1)$$

$$i = 1, 2, \ldots N, \; t = 1990, \ldots T$$

Where Pov_{it} denotes the Poverty headcount ratio at \$1.90 a day as a percent of the population of country i, at time t, Pov_{it-1} is the lagged poverty variable, X_{it-1} is the vector of explanatory variables which includes the annual GDP growth rate, inflation rate, trade as a percentage of GDP, mobile cellular subscriptions per 100 people, and the annual population growth rate. The variable FI_{it-1} represents financial inclusion indicators that covers different areas namely financial access of the financial system in country i at time t, and ε_{it} is the error term.

To avoid the correlation problems, following Yafee (2003) Equation (1) is estimated using the General Method of Moments estimator (GMM) which consistently estimates the dynamic panel data model (Kitazawa (2003)). It is known in the literature that economic growth models are best estimated by dynamic panel system GMM (Caselli, Equivel and Lefort (1996) and Holtz-Eakin, Newey and Rosen (1988)) which is a methodology proposed by Arellano and Bover (1995), Blundell and Bond (1998), and Blundell, Bond, and Windmeijer (2000) to overcome the bias problems of the difference GMM methodology.

The system GMM combines together Equation (1) with Equation (2), which is simply the first difference of Equation (1) to eliminate the country specific or unobserved effect as suggested by Arellano and Bond (1991):

$$\left(Pov_{i,t} - Pov_{i,t-1}\right) = \alpha + \rho\left(Pov_{i,t-1} - Pov_{i,t-2}\right) + \beta\left(X_{i,t} - X_{i,t-1}\right) + \delta(FI_{i,t} - \delta FI_{i,t-1}) + (\varepsilon_{i,t} - \varepsilon_{i,t-1}) \quad (2)$$

As explained in details in Emara and El Said (2015), The System GMM assumes two extra assumptions over the Difference GMM. To ensure a zero correlation between the right-hand side variable and the list of regressors with the unobserved countries' fixed effects, two additional assumptions are added as follows,

$$\mathrm{E}\left[\triangle Pov_{i,t}\ \varepsilon_{i,t}\right] = 0, \mathrm{For\ t} = 2, \ldots, \mathrm{T}$$

$$\mathrm{E}\left[\triangle M_{i,t}\varepsilon_{i,t}\right] = 0, \mathrm{For\ t} = 2, \ldots, \mathrm{T} \quad (3)$$

where $M_{i,t}$ is the set of all the explanatory variables of Equation (1) or $X_{i,t}$ and $FI_{i,t}$.

Next, a dummy variable for the countries of the MENA is added to the model in order to estimate the impact of financial inclusion in the MENA region. The model explores how the changes in access to finance affect the changes in the growth of per capita real GDP in the MENA region v.s. other countries. To do so a dummy for MENA countries along with an interaction term is added to the model as follows,

$$Pov_{i,t} = \alpha + \rho Pov_{i,t-1} + \beta X_{i,t} + \delta FI_{i,t} + \theta MENA_{i,t} + \varphi\ (MENA_i * FI_{i,t}) + \varepsilon_{i,t} \quad (4)$$

where $\mathrm{MENA_i}$ represents the dummy variable, which takes 1 if country i is a MENA country and zero if not. The total effect of the impact of the different areas of financial inclusion is estimated by adding the coefficient δ to the coefficient φ and the statistical significance of the effect is estimated using the standard errors of these two coefficients.

The last part of the estimation methodology involves performing a gap analysis on the ability of the MENA and EMs countries to achieve the extreme poverty goal by the year 2030 by depending only on the improvement in financial services and no other factors. Using the estimated δ and φ coefficients of Equation (4), the percent of the population living under the $1.90 a day is projected for the year 2030. Using Panda and Kumar (2007) projection methodology which has also been applied in Emara (2014) and Emara and Moore (2004) , the

method of projection proceeds in four main steps. The first step entails specifying the 2030 target level of the SDG indicator under consideration, or SDG1 in this study.

In the second step is required growth of each of the SDG1 is computed using a compound growth rate formula as follows,

$$r = \left[\left(\frac{Pov_{2030}}{Pov_l}\right)^{1/(2030-k)} - 1\right] \qquad (5)$$

where *r* is the required poverty head count ratio growth rate as defined by the percent of the population living under $1.90, Pov_{2030} is the poverty head count ratio in the year 2030, Pov_l is the poverty head count ratio in the latest available year, and *k* is the year of the latest available value of the poverty measure.

Next, the actual growth in the financial access indicator, or *FinAcc*, as measure by the principal component analysis of ATMs per 100,000 adults, bank accounts per 1,000 adults, and bank branches per 100,000 adults, is calculated using the following type of a semi log trend function,

$$FinAcc_t = a + bt\ , \qquad (6)$$

where *a* is the constant of the regression and *b* is the growth rate in the access indicator.

The coefficients of Equation (6) are estimated using time series regression for each country in the MENA sample in a turn. The next step entails using the coefficient φ of Equation (4) together with the parameter *b* of Equation (6) to project extreme poverty percent in the year 2030 as follows,

$$Pov_{2030} = Pov_l(1 + b\ (\delta + \varphi))^{2030-k} \qquad (7)$$

Hence, re-writing Equation (7), the growth rate of the financial access indicator that is required to close the poverty gap by the year 2030 is computed as follows,

$$b_{req} = \left[\left(\frac{Pov_{2030}}{Pov_l}\right)^{1/(2030-k)} - 1\right] \div (\delta + \varphi) \qquad (8)$$

The projected 2030 value of the poverty head count ratio, Pov_{2030}, computed using Equation (7), is assumed to depend solely on the improvement in the financial access services. The difference between the targeted 2030 value of the poverty head count ratio (which is zero in this case) and its projected value is called the SDG gap which can be bridged by other non-financial factors affecting the indicator; let this be economic growth, government spending on

education, openness of the economy, or the indirect effects of financial inclusion on other SDGs that are also expected to affect extreme poverty.

Accordingly, using the results of Equation (5), an SDG gap analysis is undertaken to compute and analyze the difference between the targeted and the projected values for the poverty head count ratio and a financial access gap analysis to compute the growth in the financial access indicator required to close the extreme poverty gap by the year 2030 if the group of countries in our sample depend solely improvement in financial access services and not other factors.

V. ESTIMATION RESULTS

Using Equation (1) as the base model, the estimation results are presented in Table 8 where the poverty variable is regressed on the set of five explanatory variables namely GDP growth rate, inflation rate, trade, population growth rate, mobile subscription, and the lagged poverty variable or the AR(1) term. The first column shows the results of a regressing poverty on its own lag only. The results show an AR(1) coefficient of poverty head count ratio of 0.94% of population representing a short-term positive correlation between poverty and its own lag.

Adding GDP growth rate to the model, Column 2 shows results. The inclusion of this variable does not have a large impact on the sign or significance of the AR(1) coefficient. The coefficient for the GDP growth rate is negative as expected, and is statistically significant where a one percent increase in GDP growth rate rate results in a drop in poverty head count ratio by about 0.081% of population.

As shown in Column 3, adding inflation rate does alter neither the sign nor the statistical significance of the previous two regressors. However, as the results show, the coefficient of inflation rate does not have a statistical significant impact on poverty head count ratio in all the six regressions of this table.

Column 4 shows the results of the regression that adds population growth rate. Adding this regressor does not significantly impact the coefficients of the included regressors. The coefficient for the population growth rate is statistically significant and positive as expected where a one percent increase in the population growth rate results in an increase in poverty head count ratio by about 0.19 % of population.

Next, Column 5 includes the variable trade as a percent of GDP and shows that the addition of this variable does not significantly affect the coefficients and the statistical significance of the previously included regressors. The results show that the coefficient of the trade variable is positive and statistically significant as expected where a one percent increase of trade increases poverty head count ratio by about 0.3% of population.

The final regression of the table adds the variable mobile cellular subscription (per 100 people), as presented in Column 6. The coefficient for this variable is negative and statistically significant as expected, and is interpreted as an increase in mobile subscription by hundred people reduces poverty head count ratio by about 0.002% of the population. Again, the inclusion of this variable does not have a significant impact on included coefficients for the lagged poverty, GDP growth rate, inflation rate, trade as a percent of GDP, and population growth rate. It is important to note that the results of all regressions show no significant evidence of serial correlation in the first-differenced errors at order two. Additionally, the output of the Hansen test confirms that the set of instruments used is exogenous.

To analyze the impact of households' access to financial services on poverty head count ratio, Table (9) provides the estimation results of Equation (4), which adds the measures of financial inclusion to the baseline regression. The access measures cover three main variables namely, the number of ATMs per 100,000 adults (*atm*), the number of bank branches per 100,000 adults (*bb*), and the number of depositors with commercial banks per 1,000 adults (*ba*). Column 1 shows the results of the full sample for the first access indicator, ATMs machines, which has a statistically significant negative impact on poverty head count ratio, where a one unit increase in ATMs leads to a fall in poverty head count ratio by about 0.64% of the population. Similarly, Column 3 shows that a one unit increase in bank accounts per 1000 adults leads to a statistically significant decrease in poverty head count ratio by about 2.02% of the population. Column 5 shows that a one unit increase in bank branches per 1000 adults leads to a statistically significant decrease in poverty head count ratio by about 0.96% of the population.

Next, to analyze the impact of household's access to finance on economic in the eleven MENA countries of our sample an interaction term of the dummy variable MENA is added to the regression. In Columns 2, 4, and 6 the dummy variable for the MENA region is interacted with *atm*, *ba,* and *bb*, respectively. The interaction terms are statically insignificant, with the exception of the interaction term of *atm*.

Column 7 shows that the variable "*acc*", a linear combination using the principal component analysis of the three access to finance indicators, ATM machines, bank branches, and accounts, is negative and statistically significant where a one unit increase in *acc* leads to a statistically significant decrease in poverty head count ratio by about 2.19% of the population. Column 8, however, shows that the interaction term of the dummy for the MENA region with the *acc* indicator has a statistically insignificant impact on poverty head count ratio.

Table (9) also provides the calculations of the total effect of the availability of ATMs machines, bank branches, accounts, and their linear combination on poverty head count ratio in the MENA region. The results show a statistically insignificant total effect for both the *atm* and *bb*. The total effect of bank accounts is negative and statistically significant where a one unit increase in *ba* leads to a decrease in poverty head count ratio by about 0.82% of the population. Finally, the total effect of the variable *acc* is statistically significant for the group of MENA countries, where a one unit increase in that variable results in a decrease in poverty head count ratio by about 0.79% of the population.

Next, to analyze the impact of households' usage of financial services on poverty alleviation, Table (10) introduces financial inclusion measures focusing on the households' usage side namely depositors with commercial banks (*dep*) and borrowers from commercial banks (*bor*). Columns (1) show the results of the full sample and confirm that *dep* has a statistically significant impact on poverty alleviation where an increase in *dep* by one thousand adults reduces poverty head count ratio by 2.02% of the population. Columns (3) show that the variable *bor* has an insignificant impact on poverty alleviation in the full sample. and shows has a statistically insignificant impact on poverty alleviation. Similarly, Column 5 adds the variable "*housusa*" which is a linear combination using the principal component analysis of the two variables *dep* and *bor*. The results show a one unit increase in *housusa* leads to a statistically significantly reduction in poverty head count ratio by 3.89% of the population in the full sample.

Columns 2, 4, and 6 show the impact of households' usage of finance on poverty alleviation in the MENA region where an interaction term of the dummy variable MENA is added to the regression. Again, the dummy variable for the MENA region is interacted with *dep*, *bor, housusa* respectively, where results show that out of the three interaction term the interaction term of dummy MENA with *housusa* is the only statistically significant coefficient, however with an unexpected positive sign.

The last part of the table provides the calculations of the total effect of *dep* and *bor*, and their linear combination, *housusa*, on poverty head count ratio. The results show significant results with only the total effect of *dep*, where an increase in the number of depositors at commercial banks by one thousand adults reduces poverty head count ratio by about 2.01% of the population in the MENA sample.

Next, to analyze the impact of firms' usage of financial services on poverty head count ratio, Table (11) introduces other financial inclusion measures focusing on the usage side namely the percentage of firms using banks to finance investments (*finv*), the percentage of firms using bank loans to finance working capital (*fwork*), and The percentage of firms identifying access to finance as a major constraint (*fc*). Columns (1), (3), and (5) show the results of the full sample and confirm that the three usage variables have insignificant impact on poverty alleviation. Similarly, Column 7 adds the variable "*firmusa*" which is a linear combination using the principal component analysis of the three variables *finv*, *fwork,* and *fc*. The results show a one unit increase in *firmusa* is statistically insignificantly affecting poverty alleviation in the full sample.

Columns 2, 4, 6, and 8 show the impact of firms' usage of finance on poverty alleviation in the MENA sample where an interaction term of the dummy variable MENA is added to the regression. Again, the dummy variable for the MENA region is interacted with *finv, fwork, fc, and firmusa* respectively; where results show that out of the four interaction terms, the interaction term of dummy MENA with *firmusa* is the only statistically significant coefficient.

The last part of the table provides the calculations of the total effect of *finv*, *fwork*, *fc*, and their linear combination, *firmusa*, on poverty head count ratio. The results show insignificant results with the three total effects in the MENA region. This result goes well with the fact that many small firms in the MENA region are constrained in their ability to access finance especially for small and medium-sized enterprises, as reported by the 2016 report prepared jointly by the European Bank for Reconstruction and Development, the European Investment Bank, and the International Bank for Reconstruction and Development / The World Bank.

The last part of the analysis answers the question as of whether the countries under study are able to close the poverty gap by the year 2030 if they depend exclusively on the improvement in the financial inclusion services. We will choose the households' financial

access measure as our measure of financial inclusion since it is the only statistically significant measure of financial inclusion for both the MENA and the full sample.

Using estimated total effect of the financial access index coefficient for the MENA region computed in Table (9), the SDG gap analysis for the MENA sample is performed and the results are presented in Table (12). In each table, the third column computes the required SDG growth rate using Equation (5), the fourth column computes the 2030 SDG projection using Equation (7), and the fifth column computes the SDG Gap by subtracting the 2030 targeted poverty level of zero from the poverty projected level for 2030, or Column (4). Additionally, Column (6) computes the required increase in the financial inclusion access index (computed using the principal component analysis of atms, ba, and bb) using Equation (8) and the Column (7) estimates the actual growth in the financial access index using Equation (6). Finally, Column (8) computes the 2030 financial access gap by subtracting Column (7) from Column (6).

Based on the latest available value for poverty head count ratio, none of the countries in the sample have achieved the targeted level of poverty eradication, however, Jordan and Iran are already close to the targeted poverty level with a latest poverty value of 0.1 and 0.2, respectively. Other countries, such as Djibouti and Yemen are way above their targeted poverty levels with a latest available poverty head count ratio of 22.5% and 18.8% of the population, respectively. For these two countries, they would require a fall in the annual poverty growth rate of 0.3% and 0.65% to close the poverty gap by 2030.

As per the results of Column (5), the estimation of the 2030 gap shows that Yemen, Djibouti, and Iraq will perform the worst out of the entire MENA sample with a poverty head count ratio gap of 7.81%, 3.68%, and 1.65%, of the population respectively. For those three countries, the required annual increase in the financial inclusion access index is 0.75%, 0.73%, and 0.63% in order to close the poverty gap in 2030. The results of Column (8) show that those three countries will miss the poverty target with a financial inclusion growth gap of 0.69% for Iran and 0.60% for each of Djibouti and Iran. On the other hand, Iran and Jordan will be performing the best out of the entire MENA sample with a predicted poverty head count ratio gap of only 0.05% and 0.09%, of the population respectively. For those two countries, in order to close the poverty gap in 2030 they require an increase in the financial inclusion index of 0.59% and 0.47%, respectively

Using estimated financial access index coefficient for the EMs sample region computed in Table (9), the SDG gap analysis is performed and the results are presented in Table (13). As it

can be noticed, the results of the EMs sample are more promising than the MENA sample with an average projected poverty head count ratio of only 0.67% of the population for the EMs sample versus 1.59% of the population for the MENA sample for the year 2030. Based on the latest available values for poverty head count ratio in each country, Column (2) of Table (13) shows that Malaysia, Poland, Russia, and Thailand have already achieved the poverty goal with latest values of zero. The column also shows that based on latest available poverty data, Ukraine, Turkey, Argentina and Hungary have poverty head count ratios less than 0.5% of the population. On the other hand, Venezuela, Bangladesh, and South Africa are having the highest rates of poverty reaching 10.2%, 14.8%, and 18.9% of the population, respectively.

Based on the poverty gap analysis of Column (5), the results show that Romania, Brazil, and Philippines will lag behind in closing the extreme poverty gap in 2030 with a projected poverty head count ratio of 5.23%, 2.09%, and 1.90% of the population, respectively. For those three countries, to close the poverty gap in 2030 they require an increase in the financial inclusion index by about 0.27%, 0.26%, and 0.23%, respectively.

The results show that countries such as China will be almost closing its poverty gap in 2030 by a projected rate poverty head count ratio of only 0.0003% of the population and a projected financial inclusion index of about 0.06% in the year 2030. Similarly, the projected poverty ratios in India and Indonesia are projected to be around 0.02% and 0.03% of the population, respectively, with a projected gap in the required growth of the financial inclusion index of 0.11% and 0.14%, respectively.

VI. Conclusion

Using system GMM dynamic panel estimation methodology on annual data for eleven MENA countries and twenty-three Emerging Markets (EMs) over the period 1990 – 2017, the study uses several measures of financial inclusion covering access and usage of financial services (for both households and firms) to analyze the impact of financial inclusion on eradicating extreme poverty (the first goal of SDG).

The results of the study show that **households'** financial **access measures** (*acc* comprising of *atms, ba*, and *bb*) have statistically significant impact on reducing extreme poverty for the full sample as well as the MENA sample. The results confirm that a one unit increase in the *acc* index results in a fall in poverty head count ratio by about 2.22% and only about 0.79% of the population for the full sample and the MENA sample respectively.

Additionally, the results suggest that households' financial usage measures (*housusa* comprising of *dep* and *bor*) are only statistically significant in reducing extreme poverty in the full sample but not in the MENA sample. The results confirm that a one unit increase in the hous*usa* index results in a fall in poverty head count ratio by about 3.70% of the population in the full sample.

Furthermore, using the firms' financial usage measures (comprising of *finv* and *fwork*), the results shows that they have no statistically significant impact in reducing extreme poverty in either the full sample or the MENA sample. Similarly, using the IMF financial access variables (comprising of *fia* and *fma*), the results show no statistically significant impact in reducing extreme poverty in either the full sample or the MENA sample.

Given that the households' financial access measures, *acc*, is the only statistically significant inclusion measure for both the full and the MENA sample, the second part of the analysis employs a gap analysis using the *acc* index to predict the ability of the MENA and EMs countries to achieve the extreme poverty goal by the year 2030 by depending only on the improvement in financial services and no other factors. The results of the gap analysis show that if current trends of financial access measures continue, countries of the MENA sample will not be able to close the extreme poverty gap goal by the year 2030 if they depend only on the improvement of the financial access services and no other factors.

More specifically, the study predicts that Yemen, Djibouti, and Iraq will perform the worst of all the MENA countries with a poverty gap of 7.81%, 3.68%, and 1.65%, respectively, by the year 2030. On the other hand, Iran and Jordan will be performing the best out of all the MENA countries with a predicted poverty gap of only 0.05% and 0.09%, respectively.

On the other hand, the results of the gap analysis for the EMs sample are more promising than the MENA sample. For EMs the results show that four countries including Malaysia, Poland, Russia, and Thailand have already achieved the extreme poverty goal, and three countries including Romania, Brazil, and Philippines will lag behind in closing the extreme poverty gap by about 5.23%, 2.09%, and 1.90%, respectively. Policy considerations can be directed towards developing and promoting the infrastructure needed for the widespread delivery and usage of financial services especially for the countries lagging behind in achieving the extreme poverty goal in the MENA region and EMs.

REFERENCES

Abuzayed, B. & Fayoumi, N. (2016). Bank concentration, institutional quality, and economic growth: Empirical evidence from MENA countries, *Review of International Business and Strategy*, 26(2), 219 – 231.

Acemoglu, Daron, and James Robinson. 2012. *Why Nations Fail: The Origins of Power, Prosperity, and Poverty*. New York: Crown Publishers.

Alvarez de la Campa, A (2010). Increasing Access to Credit through Reforming Secured Transactions in the MENA Region. World Bank Policy Research Working Paper 5613. Washington, D.C.: World Bank.

Banerjee, A., and A. Newman. 1994. "Poverty, Incentives and Development." American Economic Review Papers and Proceedings, Vol. 84, No. 2, 211–5.

Banerjee, A., and Duflo, E. (2011). Poor Economics: A Radical Rethinking of the Way to Fight Global Poverty. New York: PublicAffairs.

Banerji, A. & Humphreys, C. (2003) Better Governance for Development in the Middle East and North Africa: Enhancing Inclusiveness and Accountability, World Bank, ISBN: 978-0-8213-5635-7, https://doi.org/10.1596/0-8213-5635-6.

Beck, T., A. Demirguc-Kunt, and R. Levine. 2007. "Finance, Inequality, and the Poor." Journal of Economic Growth 12, 27–49.

Beck, Thorsten, Haki Pamuk, Ravindra Ramrattan, and Burak R. Uras. 2018. "Payment Instruments, Finance and Development." Journal of Development Economics 133: 162–86.

Brune, L., X. Gine, J. Goldberg, and D. Yang. 2015. "Facilitating Savings for Agriculture: Field Experimental Evidence from Malawi." NBER Working Paper 20946. Cambridge, Mass.: National Bureau of Economic Research.

Burgess, R., and R. Pande. 2005. "Do Rural Banks Matter? Evidence from the Indian Social Banking Experiment." American Economic Review Vol. 95, No. 3, 780–95.

Cumming, D., Johan, S., Zhang, M., 2014. The economic impact of entrepreneurship: comparing international datasets. Corp. Gov. Int. Rev. 22 (2), 162–178.

Demirguc-Kunt, A., and Klapper, L. (2013). Measuring Financial Inclusion: Explaining Variation in Use of Financial Services across and within Countries. Brookings Papers on Economic Activity, 279-321.

Dupas, P. and J. Robinson. 2013. "Savings Constraints and Microenterprise Development: Evidence from a Field Experiment in Kenya." American Economic Journal: Applied Economics 2013, Vol. 5, No.1, 163–192.

El-Zoghbi, Mayada, Nina Holle, and Matthew Soursourian. 2019. "Emerging Evidence on Financial Inclusion: Moving from Black and White to Color." Focus Note. Washington, D.C.: CGAP.

Emara, N. (2014). Income Elasticity and the Gender Gap: A Challenging MDG for the MENA Countries, Review of Middle East Economics and Finance, 10(3): 263–292.

Emara, N. and El Said, A. (2019). Financial Inclusion and Economic Growth: The Role of Governance in Selected MENA Countries.

Emara, N. and Moore, R. (2014). Effect of Income Elasticity On MDG Health Indicators: The Case of MENA Countries, 2014, Review of Middle East Economics and Finance, 10(1): 53–73.

Greenwood, J., and B. Jovanovic. 1990. "Financial Development, Growth, and the Distribution of Income." The Journal of Political Economy, Vol. 98, No. 5, 1076–107.

Hamdi, H. & Hakimi, A. (2015). Did banks and financial markets developments lead to economic growth in MENA region? Evidence from Dynamic panel data estimation. Online. Available at https://mpra.ub.uni-muenchen.de/64310/

Honohan, P. 2004. "Financial Development, Growth and Poverty: How Close Are the Links?" World Bank Policy Research Working Paper 3203. Washington, D.C.: World Bank.

Karlan, D., A. L. Ratan, and J. Zinman. 2014. "Savings By and For the Poor: A Research Review and Agenda." Review of Income and Wealth, Series 60, No. 1.

Kim, Dai-Won, Jung-Suk Yu, and M. Kabir Hassan. 2018. "Financial Inclusion and Economic Growth in OIC Countries." Research in International Business and Finance 43 (C): 1–14.

Klapper, L., M. El-Zoghbi, and J. Hess. (2016). Achieving the Sustainable Development Goals: The Role of Financial Inclusion. Washington, D.C.: CGAP.

Ncube, M., Anyanwu, J.C., and Hausken, K. (2013). Inequality, Economic Growth, and Poverty in the Middle East and North Africa (MENA). African Development Bank Working Paper Series 195. Tunis: African Development Bank.

Neaime, S. and Gaysset, I. (2018). Financial Inclusion and Stability in MENA: Evidence from Poverty and Inequality. Finance Research Letters 24, 230-237.

Page, L., and Pande, R. (2018). Ending Global Poverty: Why Money Isn't Enough. The Journal of Economic Perspectives, 32(4), 173-200.

Pande, R., S. Cole, A. Sivasankaran, G. Bastian, and K. Durlacher. 2012. "Does Poor People's Access to Formal Banking Services Raise Their Income?" EPPI-Centre, Social Science Research Unit, Institute of Education, University of London. London: University of London.

Park, C.-Y., and R. V. Mercado. 2015. "Financial Inclusion, Poverty, Income Inequality in Developing Asia." Asian Development Bank Economics Working Paper 426. Manila: Asian Development Bank.

Park, C.-Y., and R. V. Mercado. 2018. "Financial Inclusion, Poverty, and Income

Inequality.” *Singapur Economic Review* 63 (1).

Pearce, D., (2011). Financial Inclusion in the Middle East and North Africa, The World Bank Middle East and North Africa Region, Financial and Private Sector Development Unit.

Seven, Ünal, and Yener Coskun. 2016. “Does Financial Development Reduce Income Inequality and Poverty? Evidence from Emerging Countries.” *Emerging Markets Review* 26 (C): 34–63.

Sharma, Dipasha. 2016. “Nexus between Financial Inclusion and Economic Growth: Evidence from the Emerging Indian Economy.” *Journal of Financial Economic Policy* 8 (1): 13–36.

World Bank. 2014. “Global Financial Development Report 2014: Financial Inclusion.” Washington, D.C.: World Bank.

World Bank. 2018. “Poverty and Shared Prosperity 2018: Piecing Together the Poverty Puzzle.” Washington, D.C.: World Bank.

APPENDIX

Table 1 –List of EMs included in the Sample

1	Argentina	15	Philippines
2	Bangladesh	16	Poland
3	Brazil	17	Romania
4	Bulgaria	18	Russia
5	Chile	19	South Africa
6	China	20	Thailand
7	Colombia	21	Turkey
8	Hungary	22	Ukraine
9	India	23	Venezuela
10	Indonesia		
11	Malaysia		
12	Mexico		
13	Pakistan		
14	Peru		

Table 2 –List of MENA included in the Sample

1	Algeria	7	Jordan
2	Djibouti	8	Morocco
3	Egypt	9	Tunisia
4	Iran	10	West Bank & Gaza
5	Iraq	11	Yemen
6	Israel		

Table 3 - Definitions of Economic Variables

Variable Name	WDI Definition	Unit of Measurement	Data Source	Abbreviation
Poverty	Poverty headcount ratio at $1.90 a day (2011 PPP) (% of population). Increase in poverty gap at $1.90 ($ 2011 PPP) poverty line due to out-of-pocket health care expenditure, as a percentage of the $1.90 poverty line	Percent	World Development Indicators.	*pov*
Growth	Annual percentage growth rate of GDP at market prices based on constant local currency. Aggregates are based on constant 2010 U.S. dollars. GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources.	Percent	World Development Indicators.	*gdpgr*
Inflation	Change in the log of Consumer price index (2010 = 100) (Authors computation). Consumer price index reflects changes 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. The Laspeyres formula is generally used. Data are period averages.	Percent	World Development Indicators.	*infl*
Trade	Trade is the sum of exports and imports of goods and services measured as a share of gross domestic product.	Percent	World Development Indicators.	*tra*
Population Growth	Change in the log of Population (Total). 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.	Percent	World Development Indicators.	*popgr*
Mobile	Mobile cellular subscriptions (per 100 people). Mobile cellular telephone subscriptions are subscriptions to a public mobile telephone service that provide access to the PSTN using cellular technology. The indicator includes (and is split into) the	Percent	World Development Indicators.	*mob*

Table 4 - Definitions of Financial Access Variables

Indicator	Definition	Periodicity	Source	Abbreviation
ATMs per 100,000 adults	Automated teller machines are computerized telecommunications devices that provide clients of a financial institution with access to financial transactions in a public place.	1990-2017	World Development Indicators.	*atm*
Bank accounts per 1,000 adults	Number of depositors with commercial banks per 1,000 adults. Depositors with commercial banks are the reported number of deposit account holders at commercial banks and other resident banks functioning as commercial banks that are resident nonfinancial corporations (public and private) and households. For many countries data cover the total number of deposit accounts due to lack of information on account holders. The major types of deposits are checking accounts, savings accounts, and time deposits.	1990-2017	World Development Indicators.	*ba*
Bank branches per 100,000 adults	Commercial bank branches are retail locations of resident commercial banks and other resident banks that function as commercial banks that provide financial services to customers and are physically separated from the main office but not organized as legally separated subsidiaries.	1990-2017	World Development Indicators.	*bb*
Households' Access Index.	The principal component of the last three indicators.	1990-2017	Author computation	*acc*

Table 5 - Definitions of Financial Usage Variables

Indicator	Definition	Periodicity	Source	Abbreviation
Borrowers from commercial banks (per 1,000 adults)	Borrowers from commercial banks are the reported number of resident customers that are nonfinancial corporations (public and private) and households who obtained loans from commercial banks and other banks functioning as commercial banks. For many countries data cover the total number of loan accounts due to lack of information on loan account holders.	1990-2017	World Development Indicators	*bor*
Depositors with commercial banks (per 1,000 adults)	Depositors with commercial banks are the reported number of deposit account holders at commercial banks and other resident banks functioning as commercial banks that are resident nonfinancial corporations (public and private) and households. For many countries data cover the total number of deposit accounts due to lack of information on account holders. The major types of deposits are checking accounts, savings accounts, and time deposits.	1990-2017	World Development Indicators	*dep*
Households' Usage Index	The principal component of the last two indicators.	1990-2017	Author computation	*housusa*

Table 6 - Definitions of Firms' Financial Usage Variables

Indicator	Definition	Periodicity	Source	Abbreviation
Firms using banks to finance investments (% of firms)	The percentage of firms using banks to finance investments.	1990-2017	World Development Indicators	*fiv*
Firms using banks to finance working capital (% of firms)	The percentage of firms using bank loans to finance working capital.	1990-2017	World Development Indicators	*fwork*
Firms identifying access to finance as a major constraint (% of firms)	The percentage of firms identifying access to finance as a major constraint.	1990-2017	World Development Indicators	*fc*
Firms' Usage Index	The principal component of the above three indicators.	1990-2017	Author computation	*firmusa*

Table 7 - Definitions of the IMF Financial Access Variables

Indicator	Definition	Periodicity	Source	Abbreviation
Financial Institutions Access Index	Number of ATMs per 100,000 adults and Bank branches per 100,000 adults	1990-2017	IMF Financial Development Database	*fia*
Financial Markets Access Index	The percent of market capitalization outside of top 10 largest companies and total number of issuers of debt (domestic and external, nonfinancial and financial corporations)	1990-2017	IMF Financial Development Database	*fma*
Financial Access General Index	The principal component of the last two indicators.	1990-2017	Author computation	*accgen*

Table 8: Extreme Poverty: The Benchmark Model

Dependent variable: Poverty headcount ratio at $1.90 a day (2011 PPP) (% of population)

Estimation Method: Arellano-Bover/Blundell-Bond Dynamic Panel System GMM.

Regressors	(1)	(2)	(3)	(4)	(5)	(6)
L.pov	0.937***	0.952***	0.946***	0.940***	0.942***	0.941***
	(0.00788)	(0.00919)	(0.0103)	(0.00980)	(0.0101)	(0.0104)
gdpgr		-0.0811***	-0.0773***	-0.0951***	-0.115***	-0.113***
		(0.0267)	(0.0267)	(0.0311)	(0.0368)	(0.0359)
infl			1.180	1.032	0.664	0.582
			(0.926)	(0.906)	(1.001)	(0.981)
popgr				0.187**	0.134*	0.131*
				(0.0723)	(0.0676)	(0.0707)
tra					0.302*	0.414**
					(0.182)	(0.205)
mob						-0.00165**
						(0.000820)
Observations	680	659	604	604	601	601
Number of countries	32	31	29	29	29	29
Arellano-Bond Test						
Order 1 p-value	0.192	0.187	0.217	0.213	0.206	0.206
Order 2 p-value	0.290	0.302	0.316	0.314	0.316	0.317
Hansen Chi-Square	31.98	30.10	28.58	27.85	27.11	23.96

*Notes: ***, **, * and *' denotes statistical significance at the 1%, 5%, 10%, and 15% levels respectively*

Numbers in round parentheses (.) are the robust standard errors

Table 9: Extreme Poverty & Financial Access Measures

Dependent variable: Poverty headcount ratio at $1.90 a day (2011 PPP) (% of population)

Estimation Method: Arellano-Bover/Blundell-Bond Dynamic Panel System GMM.

Regressors	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
L.pov	0.934***	0.937***	0.939***	0.940***	0.935***	0.935***	0.942***	0.944***
	(0.00872)	(0.0106)	(0.0132)	(0.0140)	(0.00878)	(0.00939)	(0.0117)	(0.0125)
gdpgr	-0.0515**	-0.0488**	-0.0423*	-0.0423*	-0.0454**	-0.0429**	-0.0306*	-0.0303*
	(0.0189)	(0.0190)	(0.0217)	(0.0219)	(0.0205)	(0.0209)	(0.0171)	(0.0175)
infl	1.438	1.444	-1.130	-1.148	0.644	0.849	-1.024	-1.045
	(1.891)	(2.040)	(0.842)	(0.847)	(1.828)	(2.208)	(0.806)	(0.795)
popgr	0.0838*	0.0644	0.0534	0.0443	0.0573	0.0615	0.0127	-0.00431
	(0.0526)	(0.0836)	(0.0916)	(0.117)	(0.0545)	(0.0937)	(0.0801)	(0.109)
tra	0.303**	0.288**	0.208	0.199	0.205*	0.194*	0.156	0.143
	(0.147)	(0.146)	(0.176)	(0.181)	(0.116)	(0.116)	(0.127)	(0.129)
mob	-0.00200	-0.00176	-0.000893	-0.000812	-0.00145	-0.00154	-0.000463	-0.000346
	(0.00172)	(0.00179)	(0.00181)	(0.00185)	(0.00160)	(0.00176)	(0.00147)	(0.00150)
atm	-0.644**	-0.933**						
	(0.309)	(0.382)						
MENA		-0.0882		0.0316		-0.0648		0.0596
		(0.318)		(0.156)		(0.296)		(0.163)
atmMENA		1.209**						
		(0.582)						
ba			-2.020*	-2.055*				
			(1.191)	(1.261)				
baMENA				1.233				
				(1.316)				
bb					-0.960*	-1.179*		
					(0.502)	(0.593)		
bbMENA						2.073		
						(1.404)		
acc							-2.187*	-2.215*
							(1.207)	(1.279)
accMENA								1.427
								(1.408)
Total Effect in MENA		0.276		-0.822***		0.894		-0.788**
		(0.462)		(0.263)		(1.240)		(0.296)
Observations	283	283	128	128	279	279	120	120
Number of countries	29	29	17	17	29	29	17	17
Arellano-Bond Test								
Order 1 p-value	0.115	0.166	0.205	0.205	0.224	0.222	0.114	0.115
Order 2 p-value	0.613	0.203	0.373	0.374	0.307	0.305	0.605	0.613

Hansen Chi-Square	2.91	17.77	10.43	7.89	20.87	13.73	6.96	2.91

*Notes: ***, **, * and *' denotes statistical significance at the 1%, 5%, 10%, and 15% levels respectively. Numbers in round parentheses (.) are the robust standard errors.*

Table 10: Extreme Poverty & Financial Usage Measures

Dependent variable: Poverty headcount ratio at $1.90 a day (2011 PPP) (% of population)

Estimation Method: Arellano-Bover/Blundell-Bond Dynamic Panel System GMM.

Regressors	(1)	(2)	(3)	(4)	(5)	(6)
L.pov	0.939***	0.940***	0.923***	0.926***	0.949***	0.951***
	(0.0132)	(0.0139)	(0.0170)	(0.0173)	(0.0136)	(0.0142)
gdpgr	-0.0423*	-0.0421*	-0.0312	-0.0303	-0.0555*	-0.0538*
	(0.0217)	(0.0220)	(0.0268)	(0.0275)	(0.0324)	(0.0333)
infl	-1.130	-1.092	2.962	2.943	-2.349	-2.217
	(0.842)	(0.847)	(2.279)	(2.180)	(1.799)	(1.712)
popgr	0.0534	0.0446	-0.126	-0.163	0.0712	0.0426
	(0.0916)	(0.118)	(0.108)	(0.116)	(0.115)	(0.140)
tra	0.208	0.201	0.278**	0.271**	0.0485	0.0192
	(0.176)	(0.182)	(0.117)	(0.112)	(0.170)	(0.176)
mob	-0.000893	-0.000866	-0.00149	-0.00139	0.00132	0.00162
	(0.00181)	(0.00186)	(0.00116)	(0.00108)	(0.00168)	(0.00170)
dep	-2.020*	-2.009*				
	(1.191)	(1.211)				
MENA		-0.0567		0.141		-0.00972
		(0.193)		(0.129)		(0.170)
depMENA		0.000146				
		(0.000136)				
bor			-0.00820	-0.0639		
			(0.544)	(0.679)		
borMENA				-0.00826		
				(0.644)		
housusa					-3.698**	-3.931*
					(1.781)	(1.871)
housusaMENA						3.877*
						(1.894)
Total Effect in MENA		-2.008*		-0.072		-0.054
		(1.211)		(0.425)		(0.491)
Observations	128	128	162	162	98	98
Number of countries	17	17	19	19	15	15
Arellano-Bond Test						
Order 1 p-value	0.205	0.205	0.102	0.100	0.013	0.018
Order 2 p-value	0.373	0.372	0.399	0.434	0.216	0.223
Hansen Chi-Square	10.43	8.89	10.83	8.69	6.10	3.53

*Notes: ***, **, * and *' denotes statistical significance at the 1%, 5%, 10%, and 15% levels respectively*

Numbers in round parentheses (.) are the robust standard errors

Table 11: Extreme Poverty & Firm Usage Measures

Dependent variable: Poverty headcount ratio at $1.90 a day (2011 PPP) (% of population)

Estimation Method: Arellano-Bover/Blundell-Bond Dynamic Panel System GMM.

Regressors	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
L.pov	0.894***	0.912***	0.902***	0.922***	0.891***	0.912***	0.902***	0.922***
	(0.0287)	(0.0364)	(0.0337)	(0.0383)	(0.0257)	(0.0426)	(0.0341)	(0.0391)
gdpgr	-0.0300	-0.0483	-0.106*	-0.170**	-0.0554	-0.0696	-0.103	-0.158*
	(0.0569)	(0.0637)	(0.0700)	(0.0777)	(0.0429)	(0.0597)	(0.0710)	(0.0822)
infl	2.175	1.881	4.347*	3.950*	0.367	0.133	4.274*	3.874
	(1.765)	(1.653)	(2.649)	(2.636)	(2.448)	(3.004)	(2.661)	(2.641)
popgr	-0.0113	-0.162	-0.00857	-0.0957	0.0552	-0.142	-0.00825	-0.116
	(0.0852)	(0.263)	(0.0771)	(0.107)	(0.0735)	(0.183)	(0.0778)	(0.119)
tra	0.156	-0.0120	0.188	0.192	0.0675	-0.0779	0.198	0.133
	(0.194)	(0.359)	(0.254)	(0.342)	(0.257)	(0.375)	(0.250)	(0.317)
mob	-0.00170	-0.00102	-0.00125	-0.00135	-0.00329*	-0.00183	-0.00111	-0.000613
	(0.00161)	(0.00171)	(0.00266)	(0.00351)	(0.00162)	(0.00145)	(0.00260)	(0.00355)
finv	-0.00158	0.00192						
	(0.00732)	(0.00901)						
MENA		1.252		1.733***		2.509		1.724***
		(0.795)		(0.541)		(2.663)		(0.560)
finvMENA		-0.0485						
		(0.0656)						
fwork			0.00434	0.0129				
			(0.00847)	(0.00884)				
fworkMENA				-0.0791				
				(0.0552)				
fc			0.00434	0.0129	0.0155	0.0154		
			(0.00847)	(0.00884)	(0.0125)	(0.0186)		
fcMENA				-0.0791		-0.0397		
				(0.0552)		(0.0533)		
firmusa							0.00363	0.0118
							(0.00891)	(0.00958)
firmusaMENA								-0.0939*
								(0.0575)
Total Effect in MENA		-0.047		-0.066		-0.024		-0.082
		(0.069)		(0.058)		(0.051)		(0.060)
Observations	65	65	58	58	58	58	58	58
Number of countries	26	26	26	26	23	23	26	26
Arellano-Bond Test								
Order 1 p-value	0.115	0.166	0.205	0.205	0.224	0.222	0.114	0.115
Order 2 p-value	0.613	0.203	0.373	0.374	0.307	0.305	0.605	0.613
Hansen Chi-Square	2.91	17.77	10.43	7.89	20.87	13.73	6.96	2.91

*Notes: ***, **, * and *' denotes statistical significance at the 1%, 5%, 10%, and 15% levels respectively. Numbers in round parentheses (.) are the robust standard errors.*

Table 12: Extreme Poverty and Financial Access Gap Analysis in MENA Region - Poverty headcount ratio "*Pov*" at $1.90 a day (2011 PPP) (% of population)

Country	*Pov* Latest Year (1)	*Pov* Latest Value (2)	*Pov* Required Growth "r" (3)	2030 *Pov* Projection (4)	*Pov* Gap 2030 (5)	Required Increase in the Financial Access Index (%) (6)	Actual Growth in the Financial Access Index "b" (7)	Financial Access Index Gap (8)
Algeria	2011	0.5	-0.50	0.18	-0.18	0.55	0.07	0.48
Djibouti	2013	22.5	-0.63	3.68	-3.68	0.73	0.13	0.60
Egypt	2015	1.3	-0.61	1.14	-1.14	0.69	0.01	0.68
Iran	2014	0.2	-0.53	0.05	-0.05	0.59	0.10	0.48
Iraq	2012	2.5	-0.56	1.65	-1.65	0.63	0.03	0.60
Israel	2012	0.5	-0.52	0.46	-0.46	0.57	0.01	0.57
Jordan	2010	0.1	-0.44	0.09	-0.09	0.47	0.01	0.46
Morocco	2013	1	-0.56	0.35	-0.35	0.62	0.08	0.55
Tunisia	2010	2	-0.52	0.95	-0.95	0.58	0.05	0.53
West Bank & Gaza	2016	1	-0.63	1.13	-1.13	0.71	-0.01	0.72
Yemen	2014	18.8	-0.65	7.81	-7.81	0.75	0.07	0.69

Source: Authors computation. Note: Financial access index coefficient from Table (9) is equal to -0.788.

Table 13: Extreme Poverty and Financial Access Gap Analysis in Emerging Markets - Poverty headcount ratio "*Pov*" at $1.90 a day (2011 PPP) (% of population)

Country	*Pov* Latest Year (1)	*Pov* Latest Value (2)	*Pov* Required Growth "r" (3)	2030 *Pov* Projection (4)	*Pov* Gap 2030 (5)	Required Increase in the Financial Access Index (%) (6)	Actual Growth in the Financial Access Index "b" (7)	Financial Access Index Gap 2030 (8)
Argentina	2017	0.4	-0.63	0.06	-0.06	0.25	0.06	0.19
Bangladesh	2016	14.8	-0.69	0.58	-0.58	0.29	0.09	0.20
Brazil	2017	4.8	-0.69	2.09	-2.09	0.29	0.03	0.26
Bulgaria	2014	1.5	-0.59	1.01	-1.01	0.24	0.01	0.23
Chile	2017	0.7	-0.64	0.35	-0.35	0.26	0.02	0.24
China	2015	0.7	-0.59	0.00	0.00	0.24	0.18	0.06
Colombia	2017	3.9	-0.69	0.90	-0.90	0.29	0.05	0.24
Hungary	2015	0.5	-0.58	0.38	-0.38	0.23	0.01	0.23
India	2011	4.3	-0.55	0.02	-0.02	0.23	0.11	0.11
Indonesia	2017	5.7	-0.70	0.03	-0.03	0.29	0.16	0.14
Malaysia	2017	0	0	0.00	0.00	0	0.00	0
Mexico	2016	2.5	-0.65	0.70	-0.70	0.27	0.04	0.23
Pakistan	2015	3.9	-0.64	0.26	-0.26	0.26	0.08	0.19
Peru	2017	3.4	-0.69	0.11	-0.11	0.29	0.11	0.18
Philippines	2015	7.8	-0.65	1.90	-1.90	0.27	0.04	0.23
Poland	2016	0	0	0.00	0.00	0	0.03	0
Romania	2015	5.7	-0.65	5.23	-5.23	0.27	0.00	0.27
Russia	2015	0	0	0.00	0.00	0	0.13	0
South Africa	2014	18.9	-0.65	0.88	-0.88	0.27	0.08	0.19
Thailand	2017	0	0	0.00	0.00	0	0.03	0
Turkey	2016	0.2	-0.58	0.29	-0.29	0.23	-0.01	0.24
Ukraine	2016	0.1	-0.56	0.43	-0.43	0.22	-0.05	0.27
Venezuela	2006	10.2	-0.49	0.22	-0.22	0.20	0.07	0.13

Source: Authors computation. Note: Financial access index coefficient from Table (9) is equal to -2.19.