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FINANCIAL DEVELOPMENT AND POVERTY REDUCTION: A STUDY OF MIDDLE-INCOME COUNTRIES

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Abstract

This paper examines the impact of financial development on poverty in middle-income countries. To that end, we made recourse to several estimation techniques over a study period stretching from 1980 to 2014. The results indicate that development of the banking system does not necessarily improve the poor's conditions. However, development of the stock market does. Through a sensitivity analysis, we concluded that our banking index is sensitive to the use of the poverty index, while our stock market index is sensitive to the choice of the middle-income vs. high income studied countries.

JEL Classification: O16; G18; G21; G28

Keywords: Financial development, poverty, middle-income countries

ملخص

تبحث هذه الورقة أثر التنمية المالية على الفقر في البلدان المتوسطة الدخل. ولهذه الغاية، لجأنا إلى العديد من تقنيات التقدير خلال فترة دراسة امتدت من 1980 إلى 2014. وتشير النتائج إلى أن تطوير النظام المصرفي لا يؤدي بالضرورة إلى تحسين ظروف الفقراء. وبينما يؤدى تطوير سوق الأوراق المالية إلى ذلك. من خلال تحليل الحساسية، خلصنا إلى أن مؤشرنا المصرفي حساس لاستخدام مؤشر الفقر، في حين أن مؤشر سوق لأوراق المالية لدينا حساس لاختيار البلدان ذات الدخل المتوسط مقابل البلدان ذات الدخل المرتفع.

1. Introduction

Poverty has long been seen as an international plague and has caught the attention of large international bodies like the World Bank (WB) and the International Monetary Fund (IMF). According to Levine J. (2009) "*One of the most difficult problems to be examined by economists is improving the world of the poor*". Indeed, the extent of this phenomena has been fueled by wars, colonial history, financial crises, political unaccountability and even the environment. These latter are known to have amplified the phenomenon. In this regard, fighting it needs a strong will and forceful decisions to reach a sustained solidarity.

Indeed, population living in middle-income countries knows a higher living standards than those living in low-income countries. Generally, their inhabitants have access to more goods and services, but many of them still cannot afford their basic needs. Moreover, poverty rate in this group of countries is more or less terrible. Of the 1.2 billion people living in extreme poverty, only one-third are covered by some form of social protection and about 870 million are still uncovered. Most of them live in lower-middle-income countries (World Bank, 2017).

In addition, the poor have always been engaged in income-generating activities to meet their needs and raise their incomes. However, one of the main problems they face is access to finance. Access to the stock market is partially restricted to corporate shareholder capitalists and access to credit is intended for a particular category of the population. Accordingly, poor people who cannot afford investment guarantees are unable to invest. Then, the banking / stock market mechanisms should play their main role towards the poor in terms of enabling them to benefit from financial services (Kaidi N. & Mensi S. 2017). Many studies have examined the relationship between financial development and poverty (e.g. Beck T. et al., 2007, Jeanneney SG & Kpodar K., 2008, Sehrawat M. & Giri AK, 2015, Abdin J., 2016, Rashid A. & Intartaglia M. 2017, Zahonogo P. (2017) ...). However, our focus in this study is to study this relationship in middle-income countries by referring to two different financial development indicators, namely a banking indicator and a stock market indicator.

To test this relationship, we opted for several estimation techniques (Generalized Least Squares (GLS), Fixed Effects Model (FE), Random Effects Model (RE), and Generalized Method of Moments (GMM). Our sample consists in 36 countries observed over the 1980 to 2014 period. Moreover, we run some sensitivity tests on the chosen poverty variable and the set of countries.

The principal results indicate that the development of the banking system does not improve the poor's conditions in our sample. On the other hand, development of the stock market is beneficial for the poor. For the sensitivity analyses subsection, we obtained that our banking indicator is sensitive to the choice of poverty indicator. Contrarily, our stock market indicator is sensitive to the choice of countries belonging to middle-income vs. high-income group.

The remainder of this paper is structured as follows: The second section presents the theory between FD and poverty. In the third section, we present the literature review. The fourth section describes the methodology. Section five concludes the paper.

2. Theory: the Direct versus the Indirect Link

The literature points to different ways in which financial development may affect poverty. The general trend can be summarized into two effects; a direct effect and an indirect effect. Financial development may directly contribute to poverty reduction mainly through a well-developed financial system and the poor's improved access to financial services, like for an example microfinancing activities. Heads of States and Government's meeting at the United Nations Headquarters at the World Summit in September (2005) stated: *"We recognize the need to ensure poor people's access to financial services, including microfinance and microcredit"*. However, well-managed microfinance can have multiplier effects that allow, especially women and youth, to set up their own projects. Still, if the poor have access to financial services, they can also increase their productive assets, improve their productivity and thus increase their income (Chemli L., 2014).

The second effect, through which financial development can affect poverty, is economic growth, very well known in the literature by the Trickle Down effect. The positive effects of financial development on economic growth have long been supported by Schumpeter JA (1912), Gurley JG & ES Shaw (1955), Goldsmith RW (1969), McKinnon (1973), Levine R. (1999), Calderon C. & Liu (2003). Several authors, like Jalilian H. and Kirkpatrick C. (2002), Honohan P. (2004), Odhiambo NM (2009), Dhrifi A. (2015) supported this theory. However, Fishlow A. (1995), Basu S. & Mallick S. (2007) could not leverage support to the Trickle Down theory. In fact, some economists argue that economic growth resulting from increased economic growth does not necessarily improve the poor's conditions.

3. Review of the literature

The analysis of the relationship between financial development and poverty has been very well documented in the theoretical and empirical literature. Some researchers tried to study the direct relationship between financial development and poverty reduction (Huang Y. & Sing RS, 2015, Boukhatem J., 2016). Some other authors tried to study the indirect relationship through the channel of economic growth (Beck T. & al., 2007, Jeanneney SG & Kpodar K., 2008, Uddin GS & al., 2014, Abosedra S. & al., 2015, Abdin J., 2016...)

3.1. Financial Development and Poverty: the Direct Link

Examining the direct link between financial development and poverty, Ho S-Y. & Odhiambo N.M. (2011) pointed to a causal link in the Chinese context. Their results indicate that the causal link is sensitive to the selected financial development variable. Studying a panel of 35 developed countries, Perez-Moreno S. (2011) proves that the impact of financial development on poverty depends on the nature of the used financial development indicator. When the author uses bank credit to the private sector ratio as a percentage of GDP, the results indicate no causal link from financial development to poverty. On the other hand, when the author uses liquid liqbilities (M3) as a percentage of GDP or money supply M2 as a percentage of GDP, the results become significant. Examining Sub-Saharan African countries, Huang Y. & Sing RS (2015) studied this relationship on a panel of 37 countries during the 1992 to 2006 period. Their results indicate that financial deepening leads to exacerbating income inequality and increasing poverty if it is not accompanied by a strong ownership rights protection. Recently, Kaidi et al. (2018) used the three-stage least squares method to examine the

relationship between FD, quality of institutions and poverty, on a sample of 132 countries, observed over the 1980–2014 period. They proved that FD does not improve the situation of the poor.

3.2. Financial Development and Poverty: the Indirect Link

Studies of the impact of financial development on poverty through economic growth are abundant in the literature. The pioneering study of Beck T. & al. (2007) studied this relationship on a panel of developed and developing countries. The author found evidence indicating that financial development benefits the poor, particularly through promoting economic growth and reducing income inequality. On another sample consisting of developing countries, Jeanneney S. G. & Kpodar K. (2008) examined the direct link of this relationship during the 1966 to 2000 period, using GMM. They used two measures of financial development, percentage of private sector credits to GDP and the M3 / GDP ratio. They concluded that financial development leads to poverty reduction, but this result is only valid when financial development is measured by the liquidity ratio (M3 / GDP). In South Africa, Odhiambo N. M. (2009) examined the causal link between financial development, economic growth and poverty reduction. The author empirically proved that financial development and economic growth lead to poverty reduction. Studying the same relationship in a single country, Shahbaz M. and Ur Rehman I. (2013), Uddin G. S. & al. (2014), Abosedra S. & al. (2015), Abdin J. (2016) proved that financial development promotes economic growth and leads to poverty reduction. Finally, examining a sample of 11 countries in South Asia observed over the 1990 to 2013 period, Sehrawat M. & Giri AK (2015) concluded that financial development and economic growth lead to poverty reduction while inequalities across rural and urban incomes exacerbate poverty.

As noted above, the empirical evidence of above studies seems to neglect to test the relationship between FD and poverty reduction in the middle-income countries. Indeed, those studies didn't highlight the impact of the SM on poverty reduction. Noting, the majority countries belonging to this group of countries, like Nigeria, Ghana, Kenya, India…has known a rise of the financial markets in recent years. This rise was favored by the improved macroeconomic situation in these countries, and by the remarkable performance of the African stock markets during this period (Nkontchou C., 2010). In fact, to fulfill this research gap, we used banking and SM development indicators to analyze this relationship in the middle-income countries.

4. Methodology

4.1. Data and model

In this section, we specify the model presented below to test the relationship between financial development and poverty:

$$POV_{it} = \alpha_0 + \alpha_1 FD_{it} + \alpha_2 GDP_{it} + \alpha_3\, School\_enr_{it} + \alpha_4\, T\_Openness_{it} + \alpha_5 INF_{it} + \alpha_6 POP_{it} + \alpha_7\, Gov\_exp_{it} + \varepsilon_{it} \quad (1)$$

Note that all variables are expressed in logarithm, with POV being poverty indicator, FD is the financial sector development indicator, GDP is GDP per capita, *School_enr* is education level, T_OPENNESS stands for trade openness (% of GDP), INF is inflation rate, POP is

total population, DEP is final government consumption expenditure (% of GDP) and ε is error term.

Recall that this study examines a sample of 36 middle-income countries. The purpose of this study is to test the direct link between financial development and poverty during the 1980 to 2014 period. Noting that all variables represent the World Bank's World Development Indicators (WDI) database. As for our poverty indicator Pov_{it}, it is measured in different ways in the literature. Some studies used the variable population segments living with $ 1 or less per day (Beck T. et al., 2007, Perez-Moreno S, 2011, Singh R. J. & Huang Y, 2015 ...). Note that, the World Bank increased the threshold of $ 0.25, which Cepparulo A. et al. (2016), Rashid A. & Intartaglia M. (2017), Zahonogo P. (2017) have used in their studies. Recently, this threshold is $ 1.90 a day. Some other studies have attempted to use the average income per capita of the poorest 20% of the population (Jeanneney SG & Kpodar K, 2008, Shahbaz M, 2009, RJ Singh & Huang Y, 2015, Coskun Y. & Seven U, 2016 ...) etc. In our study, we use household final consumption expenditure as a poverty variable, like Datt M. & Ravallion G. (2002), Quartey P. (2005), Odhiambo NM (2009), Shahbaz M. & Ur Rahmen I. (2013), Chemli L. (2014), Uddin GS et al. (2014), Dhrifi A. (2015), Sehrawat M. & Giri A.K. (2015). This variable is more informative than the other poverty variables. Moreover, it is available throughout our study period.

As for financial development indicator, it is specified as a banking variable, namely liquid liabilities (M3 / GDP), and a stock market index, namely market capitalization of listed companies as a percentage of GDP (Market_cap). This decomposition of the financial development variable will allow us to test separately the effect of banking development and stock market development on poverty.

In order to examine the relationships discussed above, we use the Generalized Least Squares (GLS) method, to solve the problems of heteroskedasticities and serial autocorrelations in our model. Moreover, based on the test of Hausman J. A. (1978), we use the Fixed Effect Model (FE) or the Random Effect Model (RE). Finally, we use the System Generalized Moments Method (GMM) proposed by Arellano M . & Bond S. (1991), and developed by Blundell R. & Bond S. (1998) to control for endogeneity in our regression model.

In fact, the System GMM method is relevant to explain variation in time series and to account for unobserved specific individual effects, enabling the inclusion of lagged dependent variables as independent variables, and thus allowing for a better control of the endogeneity of all the independent variables (Beck T. et al, 2007). However, the System GMM method has been widely used in recent research, especially by Beck T. et al. (2007), Jeanneney S. J. & Kpodar K. (2008), Singh M. et al. (2010), Johansson A. C. & Wang X. (2012), and Coskun Y. & Seven U. (2016).

4.2. The results and discussion

4.2.1. Descriptive analyzes

Figure 1 shows the evolution of financial development and poverty indicators for middle-income countries during the 1980 to 2015 period. We notice that household final consumption expenditure as a percentage of GDP declined, however the banking indicator tripled from

35.39% of GDP to 126.82% of GDP. As far as the stock market indicator is concerned, we found that it constantly increases from one period to another.

Tables 1 and 2 respectively present the descriptive statistics and the correlation coefficients of the variables retained in our model. For each of the variables, we calculated the Mean, Standard deviation (Std Dev), Min and Max statistics. The correlation coefficients between the considered variables are relatively low.

4.2.2. The results

Before interpreting our results, we need to remind you that we examined our basic relationship by means of: *(i)* First, static panel techniques, namely Generalized Least Squares (GLS) method, Fixed Effects (FE) models and Random Effects (RE) models. *(ii)* Second, the dynamic panel technique, namely the Generalized Method of Moments (GMM). Accordingly, Table 3, particularly regressions 1 and 2, shows the GLS method after correcting for heteroskedasticity and serial autocorrelation problems. Then, in regressions 3 and 4, we opt for the Hausman J. A. (1978) test to choose between the FE model or the RE model. Finally, to solve for the endogeneity problem, we used the GMM in regressions 5 and 6. To have valid instruments, we used the Hansen / Sargan standard test. The null hypothesis states that the instrumental variables do not correlate with the residual. We also run a series of correlation tests (AR2) whose null hypothesis states that there is no second order serial correlation between error terms.

The results reported in Table 3 indicate that the signs of the impact of banking and stock market development on poverty are opposite. Liquid libilities (M3) as a percentage of GDP has a positive and a statistically significant impact on poverty at the 1% and 5% levels in all regressions. Then, development of the banking system does not play a beneficial role in favor of the poor. This corroborates the work of Charlton A. (2008), Noreen S. & al. (2012), Coskun Y. & Seven U. (2016). On the other hand, market capitalization of listed companies as a percentage of GDP has a negative impact on poverty at the 1% level, except in the fourth regression. This latter indicates that development of the stock market is beneficial for the poor. This result is consistent with those of Jeanneney SG & Kpodar K. (2008), Shahbaz M. & Ur Rehman I. (2013), Boukhatem J. (2016). Economics-wise, this can be explained by the fact that bank credits and other means are mostly offered to the rich with guarantees, but the poor are unable to invest to increase their productive assets, raise their incomes and build a more secure future, because they do not have the means to offer investment guarantees. On the other hand, financial markets played a favorable role for the poor. This can be explained by the majority shares held by the State as the main shareholder of financial securities issued on the stock market. The main role of the State in these economies is to invest in financial markets to improve infrastructure, refine social services, ensure pro-poor tax policy, which would have a positive impact on the poor (Kaidi N. & Mensi S., 2017).

For the rest of all our control variables, we notice that they kept the same signs in all regressions, except the GDP and INF variables. This casts strength and robustness on our results. The GDP variable has a significant impact only when the sign is negative, with the exception of the first regression. This result indicates that economic growth of our middle-

income countries has failed to help the poorest segments of society. This suggests an imbalanced distribution of wealth in favor of the wealthy class and at the expense of the poor. In line with theory, promoting education is acting against poverty. The enrollment rate has a positive impact on households' final consumption expenditure (regressions 1, 3 and 4) statistically significant at the 1% and 5% levels. For government's final consumption expenditure (% of GDP), we note that it positively and statistically affects poverty in all regressions, except the 5th regression. We can therefore deduce that income redistribution policies through state interventions, social transfers and the tax system are generally pro-rich in our sample.

4.3 Sensitivity analysis

4.3.1. Sensitivity analysis of poverty indicators

In this section, we conduct a sensitivity analysis of the selected 4 poverty variables, namely poverty gap at $ 1.90 per day (2011 PPP), poverty gap at $ 3.90 per day. (2011 PPP), percentage of poverty with less than $ 1.90 a day and percentage of poverty with less than $ 3.10 a day. Due to insufficient data, our sample is made up of 27 countries selected from the 36 countries surveyed for the 1983 to 2013 period.

The results reported in Tables 4, 5, 6 and 7 indicate that, overall, the development of the financial sector leads to poverty reduction in our sample. As for our banking indicator, we notice that it has a negative and a significant impact in regression 5 of Table 4, regression 3 of Table 5 and regression 3 of Table 7. This result shows that the banking system plays a favorable role to the poor. Moreover, this impact is not observed in the results of our main analysis. Therefore, our banking indicator reflects some sensitivity to the choice of the poverty indicator. As for our stock market indicator, we notice that it has a negative and a significant impact on poverty, in almost all regressions. This indicates that market capitalization of listed companies as a percentage of GDP improves the poor's conditions in our sample. In addition, this result indicates that this variable is not sensitive, neither to the choice of the selected poverty indicator, nor to the estimation technique adopted.

4.3.2. Sensitivity analysis of high income countries

In this subsection, we conduct a second sensitivity analysis on the high-income countries group. Table 8 shows that the variable M3 / GDP has a positive and a statistically significant impact on poverty, at the 1% and 5% levels (regressions 1 and 5). Indeed, for our banking indicator, we notice that it has the same impact for both groups of countries, namely the middle-income group and the high-income group. Then, we conclude that liquid liquidity (M3) as a percentage of GDP does not reduce poverty. Moreover, these are not sensitive to the choice of the sample. For our stock market indicator, we notice that its impact on household final consumption expenditure is negative and significant (Regression 6). The Market_cap variable does not reduce poverty; on the contrary, it exacerbates it. Furthermore, we recall that this variable plays a favorable role for the poor in the middle-income group, but it plays a negative role for the poor in this group of countries. Then, it is sensitive to the choice of the sample.

5. Conclusion and macroeconomic implications

The purpose of this paper is to test the relationship between financial development and poverty in middle-income countries. To this end, we examined a sample of 36 countries observed over the 1980 to 2014 period. In our main analysis in which we selected the variable households' final consumption expenditure as a proxy of poverty, we reached the conclusion that development of the banking system does not improve the poor's conditions. This finding is consistent with those of Charlton A. (2008), Noreen S. et al. (2012), Coskun Y. & Seven U. (2016). However, development of the stock market is beneficial for the poor. This result replicates those of Jeanneney S. G. & Kpodar K. (2008), Shahbaz M. & Ur Rehman I. (2013), Boukhatem J. (2016).

One of the contributions of our study is the sensitivity analyzes conducted on the choices of the poverty variable and the selected group of countries. First, we did the same analysis for our sample of middle-income countries, using four different poverty indicators. Second, we did the same analysis for high-income countries. The main obtained results show that our banking indicator is sensitive to the choice of poverty indicator. On the other hand, our stock market indicator is sensitive to the choice of countries belonging to middle-income vs. high-income group.

Policy-wise, we recommend that policymakers need to support microfinance institutions, particularly in the middle-income group, to support poor people's access to financial instruments. The value of this support is to focus on the poor and help them to invest to increase their productive assets, their income and ensure a more secure future. On the other hand, there is a need to seek safeguards, especially for the poor who are still unable to provide investment guarantees, financed by public institutions and multilateral donors to reduce the interest on the amount lent. It is also important to conduct pro-poor income redistribution policies through state interventions, social transfers and the tax system.

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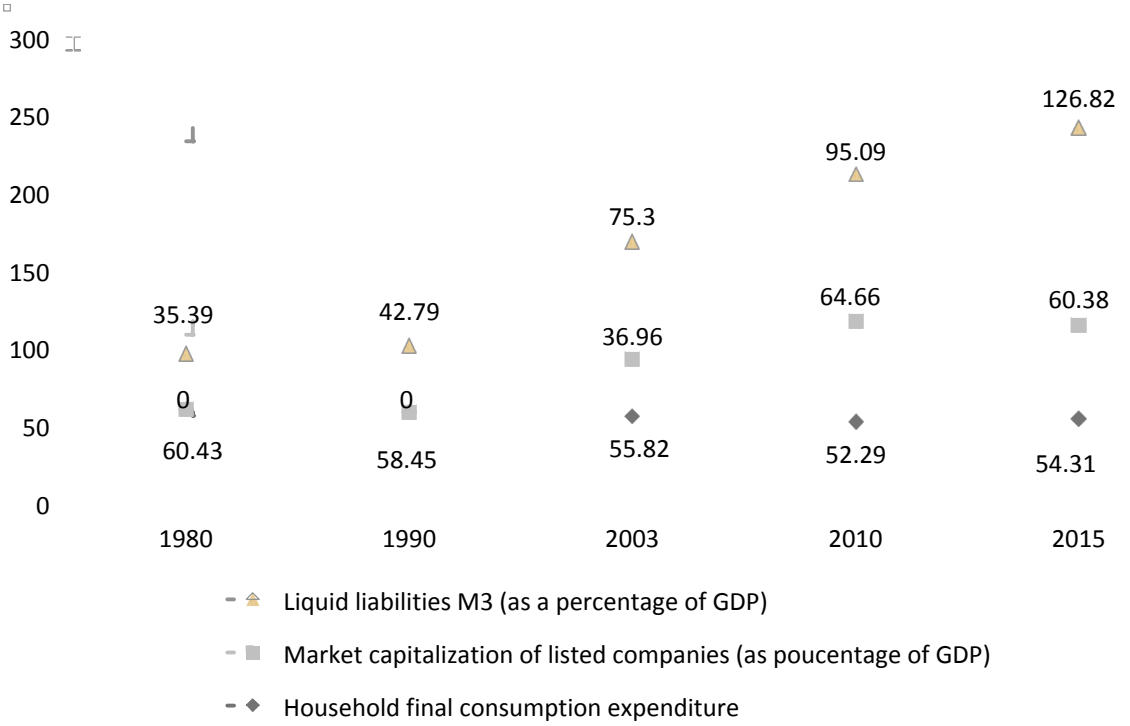
Figure 1: Evolution of the Poverty Index to Financial Development Indicators: Middle Income Countries



Source: Author's calculations based on the World Bank's WDI (2017).
Note: Data of market capitalization of listed companies (% GDP) starts from 2003.

Table 1: Descriptive statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Pov	4 324	4.17	0.24	2.41	5.60
M3/GDP	1 499	3.75	0.60	1.88	5.48
Market_cap	1 832	3.32	1.53	-5.29	11.53
GDP	4 567	25.79	4.04	1.43	36.92
POP	4 830	15.94	1.75	11.07	21.03
T_Openness	4 444	4.23	0.59	1.84	6.28
INF	4 142	1.94	1.43	-13.50	9.65
School_enr	3 440	4.03	0.75	0.91	5.11
GOV_EXP	4 352	2.70	0.39	0.32	4.44

Table 2: Correlation Matrix

	Pov	M3/GDP	Market_cap	GDP	Pop	T_Openness	Inf	Taux_School_enr	GOV_EXP
Pov	1.0000								
M3/GDP	-0.462	1.000							
Market_cap	-0.324	0.449	1.000						
GDP	-0.093	0.022	0.172	1.000					
POP	-0.069	-0.048	0.090	0.440	1.000				
T_Openness	-0.218	0.251	0.186	-0.141	-0.566	1.000			
INF	0.119	-0.270	-0.378	-0.232	0.077	-0.158	1.000		
School_enr	-0.416	0.584	0.261	0.106	0.181	0.234	-0.167	1.000	
GOV_EXP	-0.218	0.225	0.058	-0.185	-0.266	0.207	-0.142	0.177	1.000

Table 3: Results of middle-income countries from the Households' final consumption expenditure measure

	GLS	GLS	FE	FE	GMM	GMM
	(1)	(2)	(3)	(4)	(5)	(6)
LagPov	-	-	-	-	0.69*** (6.77)	0.56*** (12.78)
M3/GDP	-0.19*** (-9.13)	-	-0.14*** (-3.55)	-	-0.06** (-2.04)	-
Market_cap	-	0.03*** (7.30)	-	-0.0009 (-0.14)	-	0.01*** (3.23)
GDP	-0.003 (-1.06)	-0.02*** (-10.89)	0.009 (0.46)	0.01 (0.92)	-0.007** (-2.13)	-0.009*** (-5.14)
INF	-0.03*** (-4.93)	0.002 (0.41)	-0.01 (-1.51)	0.0003 (0.04)	-0.004 (-1.01)	0.0009 (0.20)
T_Openness	-0.01 (-0.98)	-0.07*** (-4.10)	-0.24*** (-5.86)	-0.03 (-1.11)	-0.002 (-0.08)	-0.03*** (-2.86)
School_enr	0.04*** (3.36)	0.004 (0.24)	0.12** (2.32)	0.23*** (3.24)	0.01 (0.70)	-0.007 (-0.68)
GOV_EXP	-0.19*** (-12.33)	-0.21*** (-11.42)	-0.07* (-1.73)	-0.14*** (-4.89)	-0.07 (-1.51)	-0.08*** (-5.00)
POP	-0.02*** (-3.14)	-0.04*** (-6.45)	-0.03 (-0.33)	-0.68*** (-5.38)	-0.001 (-0.13)	-0.01*** (-4.00)
Constant	5.94*** (48.20)	6.38*** (45.50)	5.89*** (4.68)	15.25*** (8.19)	1.93** (2.11)	2.79*** (9.43)
Nbr of Obs	242	183	242	183	229	183
R^2	-	-	0.45	0.30	-	-
Nbr of countries	25	22	25	22	24	22
Sargan/Hansen test	-	-	-	-	0.66	0.29
AR(2)	-	-	-	-	0.23	0.47

Note: GLS is the generalized least squares method, EF is the fixed effects model and GMM is the generalized method of moments. Figures in parentheses represent t-statistics. Sargan / Hansen's over-identification restriction test provides the probability for H0: Joint validity of instruments and AR (2) is Arellano & Bond's second-order autocorrelation test. ***, **, * are respectively statistical significance at the 1%, 5% and 10% levels.

Table 4: Results of the middle-income group from the Poverty headcount ratio at $1.90 a day PPP (%) measure

	MCG	MCG	EA	EF	GMM	GMM
	(1)	(2)	(3)	(4)	(5)	(6)
LagPov	-	-	-	-	1.80*** (3.89)	0.66*** (5.04)
M3/GDP	-0.07 (-0.17)	-	-0.34 (-0.57)	-	-4.30* (-1.73)	-
Market_cap	-	-0.46*** (-4.67)	-	-0.18 (-1.57)	-	-0.24** (-2.83)
GDP	-0.01 (-0.30)	-0.11 (-1.64)	-0.15 (-1.02)	-1.87*** (-8.97)	-0.64* (-1.76)	-0.15** (-2.36)
INF	0.02 (0.38)	-0.08 (-0.86)	0.05 (0.53)	-0.006 (-0.05)	-0.17 (-0.79)	-0.03 (-0.24)
T_Openness	0.16 (0.37)	-0.16 (-0.28)	-0.49 (-0.73)	0.10 (0.22)	-0.74 (-0.69)	-0.89 (-1.62)
School_enr	-1.32*** (-4.93)	-1.09* (-1.80)	-1.32*** (-2.61)	1.17 (1.09)	1.73 (1.14)	-1.49** (-2.26)
GOV_EXP	-0.95** (-2.09)	0.23 (0.48)	0.70 (1.10)	1.05 (2.53)	4.01* (1.82)	0.94** (2.22)
POP	0.23 (1.32)	0.52*** (3.20)	0.34 (0.81)	8.45 (3.96)	1.91* (1.85)	-0.21 (-1.38)
Constant	6.16** (2.21)	2.78 (0.82)	7.24 (1.14)	-99.21*** (-3.15)	-13.65 (-1.17)	16.27*** (2.63)
Nbr of Obs	65	75	65	75	33	45
R^2	-	-	0.31	0.73	-	-
Nbr of countries	19	16	19	16	8	8
Sargan/Hansen test	-	-	-	-	0.29	0.67
AR(2)	-	-	-	-	0.93	0.38

Note: GLS is the generalized least squares method, EF is the fixed effects model and GMM is the generalized method of moments. Figures in parentheses represent t-statistics. Sargan / Hansen's over-identification restriction test provides the probability for H0: Joint validity of instruments and AR (2) is Arellano & Bond's second-order autocorrelation test. ***, **, * are respectively statistical significance at the 1%, 5% and 10% levels.

Table 5: Results of the middle-income group from the Poverty headcount ratio at $3.10 a day PPP (%) measure

	MCG	MCG	FE	FE	GMM	GMM
	(1)	(2)	(3)	(4)	(5)	(6)
LagPov	-	-	-	-	0.74*** (4.49)	0.80*** (7.19)
M3/GDP	0.40 (0.93)	-	-1.08*** (-3.43)	-	0.29 (0.57)	-
Market_cap	-	-0.33*** (-5.29)	-	-0.01 (-0.19)	-	-0.13** (-2.23)
GDP	0.09** (2.13)	-0.06 (-1.32)	-1.19*** (-6.16)	-1.59*** (-14.95)	0.12 (1.38)	-0.07** (-2.19)
INF	0.12 (1.44)	-0.04 (-0.58)	0.10** (2.27)	0.03 (0.42)	0.05 (0.73)	-0.006 (-0.08)
T_Openness	-0.79** (-2.09)	-0.44 (-1.20)	0.16 (0.43)	-0.06 (-0.20)	-0.43 (-1.11)	-0.60* (-1.83)
School_enr	-0.96*** (-5.18)	-0.45 (-1.04)	-0.95** (-2.33)	2.15*** (2.96)	-1.38** (-2.13)	-0.65* (-1.72)
GOV_EXP	-1.38*** (-4.84)	-0.34 (-0.83)	0.44 (1.22)	0.74** (2.65)	-0.04 (-0.10)	0.39* (1.66)
POP	-0.23 (-1.35)	0.38*** (2.90)	7.26*** (6.02)	8.02*** (6.12)	-0.55* (-1.89)	-0.13 (-1.33)
Constant	13.36*** (5.95)	4.05 (1.63)	-80.82*** (-5.39)	-99.83*** (-5.11)	13.02** (2.39)	9.14** (2.21)
Nbr of Obs	70	79	70	79	37	48
R^2	-	-	0.63	0.83	-	-
Nbr of countries	19	16	19	16	8	8
Sargan/Hansen test	-	-	-	-	0.92	0.79
AR(2)	-	-	-	-	0.41	0.63

Note: GLS is the generalized least squares method, EF is the fixed effects model and GMM is the generalized method of moments. Figures in parentheses represent t-statistics. Sargan / Hansen's over-identification restriction test provides the probability for H0: Joint validity of instruments and AR (2) is Arellano & Bond's second-order autocorrelation test. ***, **, * are respectively statistical significance at the 1%, 5% and 10% levels.

Table 6: Results of the middle-income group from the Poverty gap at 1,90 $ per day (2011, PPA) measure

	MCG	MCG	EA	EF	GMM	GMM
	(1)	(2)	(3)	(4)	(5)	(6)
LagPov	-	-	-	-	1.81*** (4.36)	0.59*** (2.96)
M3/GDP	0.45 (1.37)	-	-0.28 (-0.39)	-	0.57 (0.37)	-
Market_cap	-	-0.42*** (-3.36)	-	-0.40*** (-3.18)	-	-0.27* (-1.95)
GDP	-0.04 (-1.00)	-0.14** (-1.96)	-0.26 (-1.49)	-1.47*** (-6.45)	0.14 (0.66)	-0.23** (-2.27)
INF	0.33*** (2.84)	-0.08 (-0.54)	0.11 (0.84)	0.02 (0.23)	0.08 (0.43)	0.11 (1.04)
T_Openness	0.10 (0.24)	-0.21 (-0.31)	-0.29 (-0.34)	-0.03 (-0.08)	-3.70* (-1.74)	-1.38** (-2.10)
School_enr	-1.85*** (-5.75)	-1.13 (-1.49)	-1.76*** (-2.92)	-0.06 (-0.06)	-2.83 (-1.48)	-1.53* (-1.84)
GOV_EXP	-1.31*** (-2.60)	0.38 (0.71)	0.48 (0.60)	0.93** (2.13)	4.21 (1.56)	0.77 (1.61)
POP	0.09 (0.65)	0.46*** (2.68)	0.41 (0.85)	5.68** (2.42)	-1.92* (-1.65)	-0.20 (-1.57)
Constant	8.79*** (3.68)	3.51 (0.89)	8.84 (1.18)	-55.61 (-1.62)	41.20* (1.74)	19.39** (2.42)
Nbr of Obs	64	74	64	74	31	43
R^2	-	-	0.34	0.72	-	-
Nbr of countries	19	16	19	16	7	8
Sargan/Hansen test	-	-	-	-	0.82	0.99
AR(2)	-	-	-	-	0.76	0.54

Note: GLS is the generalized least squares method, EF is the fixed effects model and GMM is the generalized method of moments. Figures in parentheses represent t-statistics. Sargan / Hansen's over-identification restriction test provides the probability for H0: Joint validity of instruments and AR (2) is Arellano & Bond's second-order autocorrelation test. ***, **, * are respectively statistical significance at the 1%, 5% and 10% levels.

Table 7: Results of the middle-income group from the Poverty gap at 3.10 $ per day (2011, PPA) measure

	MCG	MCG	FE	FE	GMM	GMM
	(1)	(2)	(3)	(4)	(5)	(6)
LagPov	-	-	-	-	-0.24 (-0.45)	0.63*** (4.94)
M3/GDP	0.40 (0.93)	-	-1.06** (-2.14)	-	4.03* (1.90)	-
Market_cap	-	-0.33*** (-5.29)	-	-0.08 (-0.91)	-	-0.23*** (-2.60)
GDP	0.09** (2.13)	-0.06 (-1.32)	-1.45*** (-4.78)	-1.73*** (-12.98)	0.64** (2.08)	-0.15*** (-2.68)
INF	0.12 (1.44)	-0.04 (-0.58)	0.09 (1.42)	0.003 (0.03)	0.26 (1.58)	0.01 (0.11)
T_Openness	-0.79** (-2.09)	-0.44 (-1.20)	0.19 (0.33)	-0.16 (-0.39)	-1.27 (-1.65)	-1.29** (-2.39)
School_enr	-0.96*** (-5.18)	-0.45 (-1.04)	-1.32** (-2.07)	1.64* (1.80)	-5.14** (-2.59)	-1.14* (-1.95)
GOV_EXP	-1.38*** (-4.84)	-0.34 (-0.83)	0.64 (1.13)	0.94** (2.67)	-1.58 (-1.22)	0.79** (2.02)
POP	-0.23 (-1.35)	0.38*** (2.90)	8.06*** (4.28)	8.58*** (5.21)	-2.63** (-2.34)	-0.22 (-1.53)
Constant	13.36*** (5.95)	4.05 (1.63)	-87.82*** (-3.75)	-104.11*** (-4.24)	43.23*** (2.71)	17.03*** (2.85)
Nbr of Obs	70	79	70	79	37	48
R^2	-	-	0.54	0.80	-	-
Nbr of countries	19	16	19	16	8	8
Sargan/Hansen test	-	-	-	-	0.50	0.99
AR(2)	-	-	-	-	1.00	0.74

Note: GLS is the generalized least squares method, EF is the fixed effects model and GMM is the generalized method of moments. Figures in parentheses represent t-statistics. Sargan / Hansen's over-identification restriction test provides the probability for H0: Joint validity of instruments and AR (2) is Arellano & Bond's second-order autocorrelation test. ***, **, * are respectively statistical significance at the 1%, 5% and 10% levels.

Table 8: Results of the High Income Group from the Households' final consumption expenditure measure

	GLS	GLS	RE	FE	GMM	GMM
	(1)	(2)	(3)	(4)	(5)	(6)
LagPov	-	-	-	-	0.79*** (41.05)	0.95*** (122.61)
M3/GDP	-0.02*** (-3.37)	-	-0.008 (-0.69)	-	-0.009** (-2.46)	-
Market_cap	-	-0.002 (-1.14)	-	-0.0003 (-0.12)	-	-0.002*** (-2.69)
GDP	-0.01*** (-7.22)	-0.01*** (-8.76)	-0.01*** (-5.43)	-0.004 (-1.31)	-0.003*** (-4.53)	-0.001** (-2.14)
INF	-0.008*** (-3.80)	-0.001 (-0.70)	-0.01*** (-3.04)	-0.01*** (-5.39)	-0.01*** (-5.64)	-0.004*** (-4.85)
T_Openness	-0.04*** (-4.43)	-0.07*** (-14.14)	-0.04*** (-2.72)	-0.07*** (-6.04)	-0.02*** (-4.64)	-0.007*** (-3.82)
School_enr	-0.08*** (-4.35)	-0.07*** (-5.07)	-0.07** (-2.39)	-0.08*** (-3.66)	-0.04*** (-2.99)	-0.02*** (-2.99)
GOV_EXP	-0.13*** (-12.87)	-0.11*** (-14.20)	-0.06*** (-3.64)	-0.04** (-2.41)	-0.02*** (-3.55)	-0.0009 (-0.30)
POP	0.003 (0.95)	0.01*** (7.18)	0.01 (1.00)	-0.16*** (-4.84)	-0.0003 (-0.20)	0.001** (2.53)
Constant	5.41*** (49.23)	5.17*** (58.15)	5.07*** (21.99)	7.63*** (15.33)	1.34*** (11.25)	0.30*** (5.37)
Nbr of Obs	361	770	361	770	345	756
R^2	-	-	0.27	0.25	-	-
Nbr of countries	24	40	24	40	24	40
Sargan/Hansen test	-	-	-	-	0.97	0.08
AR(2)	-	-	-	-	0.25	0.21

Note: GLS is the generalized least squares method, EF is the fixed effects model and GMM is the generalized method of moments. Figures in parentheses represent t-statistics. Sargan / Hansen's over-identification restriction test provides the probability for H0: Joint validity of instruments and AR (2) is Arellano & Bond's second-order autocorrelation test. ***, **, * are respectively statistical significance at the 1%, 5% and 10% levels.

Appendix 1

Variables, definitions and their sources

Variable	Definition	Source
Poverty Index	Household final consumption expenditure Poverty headcount ratio at $1.90 a day PPP (%) Poverty headcount ratio at $3.10 a day PPP (%) poverty gap at $ 1.90 a day (2011 PPP) poverty gap at $ 3.10 a day (2011 PPP)	World Development Indicators, World Bank database
M3/GDP	Liquid liabilities M3 (as a percentage of GDP)	World Development Indicators, World Bank database
Market_cap	Market capitalization of listed companies (as poucentage of GDP)	
GDP	GDP per capita (constant 2010 US$)	World Development Indicators, World Bank database
POP	Total Population	
School_enr	enrollment in high school (% gross)	
INF	Inflation, GDP deflator (% annual)	
Gov_exp	Government final consumption expenditure (as pourcentage of GDP)	
T_Openness	Total exports and imports by GDP	

Note: All variables are in logarithms

Appendix 2

Sample

Sample	Countries
Middle income countries	Armenia, Bangladesh, Bhutan, Bolivia, El Salvador, Cabo Verde, Cameroon, Djibouti, Honduras, Egypt, Kenya, Georgia, Ghana, Guatemela, India, Indonesia, Ivory Coast, Nigeria, Lesotho, Mauritania, Morocco, Moldova, Nicaragua, Pakistan, Papua New Guinea, Philippines, Senegal, Seychelles, Swaziland, Sri Lanka, Syria, Tajikistan, Ukraine, Uzbekistan, Vietnam, Zambia,

Source: World Development Indicators, World Bank database 2015