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Inequality, Finance and Pro-Poor Investment in Africa

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AFRICAN GOVERNANCE AND DEVELOPMENT INSTITUTE

A G D I Working Paper

WP/15/052

Inequality, Finance and Pro-Poor Investment in Africa

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AGDI Working Paper

Research Department

Inequality, Finance and Pro-Poor Investment in Africa

Simplice A. Asongu & Vanessa S. Tchamyou

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Abstract

This study complements existing literature by investigating how investment-driven finance affects inequality in Africa. The empirical evidence is based on restricted and unrestricted Two-Stage Least Squares and a pre-crisis periodicity (1980-2002). Inequality is measured with estimated household income inequality whereas financial development is proxied with financial depth (money supply and liquid liabilities), financial efficiency (at banking and financial system levels), financial activity (from banking and financial system perspectives) and financial size. The findings show that with the exception of foreign investment, financial dynamics of depth, efficiency, activity and size enhance equalizing income-distribution through domestic, private and public investment channels. Policy implications are discussed with particular emphasis on improving inclusive development for the post-2015 sustainable development agenda. Notably, in the current transition from Millennium Development Goals (MDGs) to Sustainable Development Goals (SDGs), mobilizing domestic resources for investment purposes may have greater inclusive benefits than overly reliance on foreign sources of capital.

JEL Classification: D60; E25; G20; I30; O55
Keywords: Finance; Investment; Poverty; Inequality; Africa

1. Introduction

At least three reasons motivate the positioning of an inquiry on the relationship between inequality, finance and pro-poor investment in Africa, notably: the need for investment to finance the continent's growing ambitions; surplus liquidity issues in African financial institutions and exclusive development on the continent. First, the African business literature is consistent with the position that, the need for investment is one of Africa's most important development challenges (see Ndikumana, 2002; Bartels et al., 2009; Tuomi, 2011; Darley, 2012; Asongu, 2012). Second, the highlighted need for investment starkly contrasts with the substantially documented issues of surplus liquidity in African financial institutions (Saxegaard, 2006; Owoundi, 2009; Asongu, 2014ab). Third, an April 2015 World Bank report on attainment of the Millennium Development Goal (MDG) poverty target has revealed that extreme poverty has been decreasing in all regions of the world with the exception of Africa (World Bank, 2015). This is despite the continent enjoying over two decades of growth resurgence (Fosu, 2015a, p. 44), and hosting about seven of the ten fastest growing economies in the world.

The present line of inquiry accounts for the three highlighted concerns by assessing pro-poor investment channels contingent on financial development. The positioning steers clear of recent inclusive development literature which has essentially focused on, *inter alia*: correlates of poverty (Anyanwu, 2013a, 2014a); reinventing foreign aid for inclusive and sustainable development, increasing employment and mitigating poverty (Asongu, 2015a; Fields, 2015; Simpasa et al., 2015; Page & Shimeles, 2015; Jones et al., 2015; Jones & Tarp, 2015; Page & Söderbom, 2015); shifting development paradigms from 'strong economics' to 'soft economics' in order to elicit exclusive development in Africa with a human capability approach (Kuada, 2015); elucidating myths surrounding Africa's growth resurgence (Fosu, 2015bc); gender inequality (Baliamoune-Lutz, 2007; Baliamoune-Lutz, & McGillivray, 2009; Elu & Loubert, 2013; Anyanwu, 2013b, 2014b); recent advances in finance for inclusive and sustainable development (Asongu & De Moor, 2015); debates between absolute pro-poor growth (Ravallion & Chen, 2003) versus relative pro-poor growth (Dollar & Kraay, 2002, 2003); recent growth measurements for inclusive development (Anand et al., 2013; Mlachila et al., 2014); nexuses between inequality, growth and poverty (Fosu, 2010abc, 2011) and inclusive human development from globalization-driven aggregated investment (Asongu, 2013a) and debts (Asongu et al., 2015). The last two streams are closest to this inquiry.

Macroeconomic literature on the relationship between finance and inequality has been limited because of constraints in data availability on income inequality. Unfortunately, the stream of literature on the finance-inequality nexus has three main shortcomings (see Asongu, 2013a), notably: the limited use of financial development concepts; failure to account for concerns about surplus liquidity in African financial institutions and the need to model the relationship with other relevant variables. First, financial development concepts in the finance-inequality literature have been limited to the notions of activity (Batuo et al., 2010) and depth (Kai & Hamori, 2009; Batuo et al., 2010). Moreover, it is important to clarify the financial depth concept because financial depth in the perspective of money supply is not equal to liquid liabilities in every development context. This is essentially because a great chunk of the monetary base in African countries circulates outside the formal banking system (Asongu, 2013b). Second, the employed variables of financial depth and activity fail to account for the ability banks to transform mobilised deposits (financial depth) into credit (financial activity) for economic operators. Integrating this missing financial allocation efficiency dimension is essential to understanding how addressing the substantially documented issues of surplus liquidity in African financial institutions, affects the policy syndrome of exclusive development.

Third, there is an evolving stream of literature assessing how inequality is fuelled by the interaction of macroeconomic and institutional variables, notably: the hypothesis of Azzimonti et al. (2014) on globalisation-driven debts fuelling inequality. The underlying hypothesis has been recently confirmed in Africa (Asongu et al., 2015). We extend this stream of literature by assessing how investment-driven finance affects inequality on the continent. The link between the investigated relationship and theoretical underpinnings of Azzimonti et al. (2014) build on the evidence that in the 1980s and 1990s, most African countries embarked on a series of globalization-driven structural and policy adjustments in the financial sector which fundamentally had as goal to stimulate investment for economic growth and inclusive development (Janine & Elbadawi, 1992; Batuo & Asongu, 2015). The investigation of how finance affects income-inequality through investment channels aligns with foremost literature on the: (i) close connection between the level of investment and economic growth (Barro, 1991; Ben-David, 1998) and (ii) pervasiveness of financial repression in stifling economic growth (McKinnon, 1973; Shaw, 1973).

The rest of the study is structured as follows. Section 2 reviews existing literature. The data and methodology are engaged in Section 3. Section 4 presents and discusses the empirical results while Section 5 concludes with implications.

2. Finance, investment and inequality: theory and evidence

This section is discussed in four main strands, namely: theoretical highlights; the nexus between inequality and finance; the relevance of inequality in financial access and the experience and lessons of financial reforms.

In the first strand, whereas we have already highlighted the Azzimonti et al. (2014) theoretical underpinnings on globalization-driven debts as a source of inequality, it is also important to discuss more foremost theoretical underpinnings on the relationship between finance and inequality. There are two main contrasting views on the finance-inequality relationship. The first maintains an inverted U-shape link between financial development and inequality. Within this framework, the Greenwood and Jovanovic (1990) finding on the finance-growth-inequality nexus predicts a Kuznets relationship between finance and inequality. In other words, in the early stages of development when the financial sector is underdeveloped, inequality augments with financial development. However, this disequalizing impact reduces as the economy develops; progressing to the intermediate phase and then to the mature phase of development where, agents are likely to see their incomes increase as they gain access to the financial intermediary sector. Hence, in the transition from a primitive slow-growing economy to a developed fast-growing one, a nation passes via a stage in which the distribution of wealth across the rich and poor stretches.

Beside the recently documented evidence of globalisation (Asongu et al., 2015) and liberalisation policies (Batuo & Asongu, 2015) as sources of inequality in African countries, sociological and cultural factors have also been used to elicit inequality on the continent. Some contemporary African development studies that have focused on this direction have articulated, *inter alia*: ethnicity (Elu & Loubert, 2013); gender (Baliamoune-Lutz, 2007; Baliamoune-Lutz, & McGillivray, 2009; Anyanwu, 2013b, 2014b) and low human capital (Kuada, 2015).

The second perspective presents a linear relationship between financial development and income-inequality (see Banerjee & Newman, 1993; Galor & Zeira, 1993). The basic theoretical assumption here is that financial market imperfections such as financial asymmetries, credit

histories, transaction and contract enforcement costs could be very binding on the poor who lack collaterals and relational networks. Therefore, even when the poor have projects with high returns, they may still be credit-rationed, which infringes on the efficiency of capital allocation and limits the social mobility of the poor. Under these scenarios, income-inequality rises with financial development. Conversely, improvements in capital allocation efficiency would reduce income inequality by facilitating funding to poor individuals who have productive investments.

In the second strand, the empirical evidence between finance and inequality can be briefly discussed in three main points. The first investigates the link between financial development, growth and inequality. Undernourishment (Claessens & Feijen, 2006) and a population with lower income (Beck et al., 2007) decrease with financial development. A relevant characteristic in this category is the debate over the benefits of financial development. Some authors maintain that financial imperfections such as information and transaction costs are binding on the poor (who lack collaterals and credit histories) and thus a relaxation of these credit constraints will disproportionately benefit the poor. It follows that improvements in capital allocation efficiency is very likely to reduce income-inequality by facilitating funding to poor individuals who have productive investments (Galor & Zeira, 1993; Aghion & Bolton, 1997; Galor & Moay, 2004). On the contrary, some authors have also concluded that financial development primarily helps the rich. This is the case when financial development is not pro-poor at the early stages of development (see Greenwood & Javanovic, 1990).

Studies on the finance-inequality nexus are relatively scarce within the context of Africa due to lack of relevant data on inequality. In a first detailed econometric analysis, Kai and Hamori (2009) examine the link between financial deepening and inequality in sub-Saharan Africa for the period 1980 and 2002 to establish that financial depth mitigates inequality.

Batuo et al. (2010) investigate how financial development is related to income distribution in a panel of 22 African countries for the period 1990-2004 to conclude that income inequality decreases financial sector development. They are consistent with the bulk of theoretical (Galor & Zeira, 1993; Banerjee & Newman, 1993) and empirical (Beck et al., 2004; Beck et al., 2007; Kai & Hamori, 2009) literature which has failed to confirm the Greenwood-Javanovic (1990) hypothesis of an inverted U-Shaped relationship between financial development and inequality. Asongu (2013a) has examined how investment affects income distribution through financial channels to conclude that with the exception of financial

efficiency, financial mechanisms of activity and depth are pro-poor whereas financial size as a mechanism is not significant.

The second point consists of literature that has focused on unequal access to and usage of finance. Whereas in developed countries, more than 90% of households gain access to financial services, access to retail banking services is minimal in the poorer segments of the population in undeveloped countries, with fewer than one-quarter of households having access to basic banking services (Honohan, 2006). The narrative is consistent with recent evidence from Asongu (2015b) which suggest that, of adults living on less than 2USD/day in the world, only 23% possess bank accounts, most of whom are in developing countries. Low usage of finance in lower-income countries is partly traceable to low banking sector outreach. With regard to the second dimension on financial access, it is important to distinguish between financial depth and access to finance. As emphasized by Claessens and Perotti (2007), numbers on the size of loans and deposits per capita are substantially higher in lower income countries compared to their higher income counterparts. This implies that in low income countries, for the most part, usage of formal banking services is restricted to firms and comparatively rich households.

The third point focuses on the effects of inequality in access to finance. Absence of equal opportunities in access to finance may: (i) prompt corruption (Berger & Udell, 1998); (ii) slow-down the growth of firms (Ayyagari et al., 2006; Beck et al., 2005); (iii) decrease entrepreneurial activities and convergence in growth rates between rich and poor countries (Banerjee & Duflo, 2005) and (iv) diminish individual welfare gains such as reduction in the prevalence of hunger, poor health, low education and gender income-inequality (Claessens & Feijen, 2007).

From the discussed theoretical and empirical evidence, financial access is quite skewed and affects competition, individual welfare and enterprise growth. Hence, lack of equal access to finance can undermine growth, reduce welfare and create vulnerabilities during financial crises. In the third strand that follows, the engaged concerns are discussed in light natural economic and political perspectives.

In the third strand on possible reasons for inequality in access to finance, we briefly discuss economic and political factors. On the one hand, natural economic reasons include high fixed cost in offering financial services and barriers created by entry regulations that serve a valid public good (e.g. identification requirements for opening-up a bank account to maintain financial integrity). It is as a result of financial market frictions that the poor cannot invest in

their education despite their high marginal productivity of investment (Galor & Zeira, 1993; Banerjee & Newman, 1993). On the other hand, unequal access could be the result of political influence which creates regulatory obstacles to protect established rents (Rajan & Zingales, 2003; Acemoglu et al., 2005). This means countries with poor political institutions are associated with unequal political influence. Within this framework, powerful groups will affect the regulatory and judicial environments as well as frequently control the allocation of finance directly through bank ownership or via political networking.

The fourth strand discusses the experience of and lessons from financial reforms in three main points. The first presents studies that have focused on the timing and experience of financial liberalization in developing and developed countries over the past two decades (Henry, 2003; Chinn & Ito, 2006). Evidence is provided, especially at the individual firm level that domestic deregulation and liberalization have, *inter alia*: increased the supply of domestic capital, attracted foreign capital and led to more relaxed financial constraints. These have substantially contributed to increasing investment and boosting economic growth. Moreover, on average terms, the liberalization of capital markets has promoted growth, efficiency and asset allocation (Levine & Zervros, 1996; Henry, 2000ab, 2006).

The second point concerns literature that is linked to asset allocation, rents and economic growth opportunities. Within this framework, some studies are consistent on the view that financial and economic reforms have for the most part benefited insiders through the highlighted mechanisms, namely: rents, opportunities of growth and preferential allocation of assets. Notable country-specific examples documenting how the privatization of state-owned banks benefits groups of insiders include: Chile in the 1970s (see Velasco, 1988; Valdes-Prieto, 1992); Mexico in the 1980s (see Haber & Kantor, 2004; La Porta et al., 2003; Haber et al., 2003) and Russia in the 1990s (see Claessens & Pohl, 1995; Perotti, 2002). Other findings supporting this narrative include: preferential allocation of licenses to a selected few insiders (Clarke et al., 2003); benefits from stock market liberalization skewed to the top quantile of the income distribution (Das & Mohapatra, 2003); corporate governance rules designed to profit insiders (Khwaja & Mian, 2005); poor regulation and weak enforcement of rules in liberalized markets avail insiders with room for expropriating minority shareholders (La Porta et al., 2000; Claessens et al., 2002) and financial openness increasing investment and capital allocation at the micro level (see

Henry, 2003) without a corresponding translation into higher economic growth at the macro level.

The third point briefly engages the literature on allocation risk resulting from financial reforms. Within this framework, a banking crisis increases inequality (see Galbraith & Lu, 1999) typically because a financial crisis can be socialized (Dooley, 2000). Conversely, financial crises that are associated with remarkable uncontrolled social unrest can also benefit the poor through looting activities (Akerlof & Romer, 1993). On the redistributive impact of crisis through politics, Glaeser et al. (2003) argue that in many countries, the political answer to institutional subversion by the rich is not institutional reform, but rather a form of massive Robin Hood redistribution. In some circumstances, this backlash slows economic and social progress on the one hand and on the other hand, the effect could simply be a change in the elite. In many cases, reforms are often opportunistic, geared towards political ends; most notably during elections (Dinc, 2004; Brown & Dinc, 2004).

This study complements existing literature by investigating how investment-driven finance affects inequality in Africa. The main reasons justifying the positioning of this inquiry have been substantially engaged in the introduction notably: the need for investment to finance the continent's growing ambitions; surplus liquidity issues in African financial institutions and exclusive development on the continent. The corresponding hypothesis that the empirical section is devoted to testing is: finance-driven investment is pro-poor. However, the pro-poor linkage may depend on the adopted aggregate investment channel.

3. Data and Methodology

3.1 Data

We examine a sample of thirteen African countries for which inequality data is available, namely: Algeria, Botswana, Cameroon, Egypt, Kenya, Malawi, Mauritius, Morocco, Senegal, South Africa, Swaziland, Tanzania and Uganda. Financial development and other macroeconomic indicators are respectively from the Financial Development and Structure Database (FDSD) and African Development Indicators (ADI) of the World Bank.

Due to scarcity in inequality data (e.g. the GINI coefficient) from ADI of the World Bank, we are consistent with recent inclusive development literature (see Kai & Hamori, 2009; Asongu, 2013a) in using the estimated household income inequality data obtained from the

University of Texas Inequality Project (UTIP). Hence, sampled countries are those for which data is available from the UTIP and which have not experienced a civil war during the period 1980-2002. The periodicity also coincides with the two decades of structural adjustment and policy reforms on the African continent. The variables as summarized in Appendix 3 could be classified into the following categories.

Four main financial development variables are used, namely, dynamics in: depth, efficiency, activity and size. First, financial depth is measured from both money supply and liquid liability perspectives. The former represents the monetary base plus demand, saving and time deposits, while the latter denotes financial system deposits. The two indicators are in ratios of GDP (see Appendix 3) and should robustly check each other as either account for over 97% of information in the other (see Appendix 2). Second, financial allocation efficiency is defined as the ability to transform mobilized financial system deposits into credit for economic operators. It is measured as the ratio of: (i) 'bank credit' to 'bank deposits' for banking system efficiency and (ii) 'financial system credit' to 'financial system deposits' for financial system efficiency (see Asongu, 2013c). These two financial allocation efficiency proxies can check each other as either represent more than 88% of variability in one another (see Appendix 2). Third, financial activity refers to the ability of banks to grant credit to economic operators. It is measured with 'private domestic credit by deposit banks' and 'private credit by domestic banks and other financial institutions' for banking system activity and financial system activity respectively. For the purpose of robustness, the latter measure can also be used to check the former because it represents more than 91% of information in the former (see Appendix 2). Fourth, consistent with the FDSD (see Beck et al., 1999) and recent financial development literature (Asongu, 2012bc), financial size is measured as the ratio of 'deposit bank assets' to 'total assets' (deposit bank assets on central bank assets plus deposit bank assets: *Dbacba*).

The above financial development indicators are consistent with theoretical concepts in the FDSD (Beck et al., 1999) and recent empirical applications, notably: studies clearly articulating the concepts of financial depth, efficiency, activity and size in titles (e.g. Asongu, 2013d) or employing them on the basis of a consensus on their relevance in existing literature (Asongu, 2013e).

Four aggregate investment variables are employed as channels, namely: Gross Domestic Investment, Foreign Direct Investment, Gross Public Investment and Gross Private Investment.

The choice of these variables is consistent with Asongu (2013a) who has employed them as instruments in the finance-inequality relationship. In accordance with the finance-growth (Levine & King, 1993; Hassan et al., 2011) and finance-inequality (Dollar & Kraay; Beck et al., 2007; Kai & Hamori, 2009) literature, we control for trade, population growth, government expenditure and GDP growth. We discuss the signs of control variables concurrently with estimated results.

The descriptive statistics and correlation matrix are presented in Appendix 1 and Appendix 2 respectively. It is apparent from the summary statistics that: the variables are quite comparable from mean values and from corresponding variations or standard deviations, we can be confident that reasonable estimated linkages would emerge. The purpose of the correlation matrix is to: avoid concerns of multicollinearity and provide some insights into expected relationships. First, we notice that concerns about multicollinearity which are highlighted in bold are exclusively among financial development variables, with the slight exception of the correlation between Gross Domestic Investment and Gross Private Investment. Hence, specifications in the Two-Stage regressions are tailored to avoid entering these investment variables into the same equation. Moreover, baseline regressions that are employed to test the strength of the instruments are also tailored to avoid concerns of multicollinearity as much as possible. Another objective of the correlation matrix is to inform the study about potential linkages between household inequality and other variables. We notice that with the exception of population growth which is positively correlated with the dependent variable, other variables are negatively correlated with inequality. The positive correlation with population growth is traceable to the fact that poor households mostly account for a substantial part of population growth because they often prefer quantity to quality of children. Moreover, everything being equal, an additional child has a higher diminishing impact on household per capita income in poorer households. Corresponding negative correlations are in accordance with theory in the perspective that financial sector reforms (in depth, efficiency, activity and size) are designed to reduce income-inequality through aggregate investments (domestic, foreign, private and public).

3.2 Methodology

The methodology is discussed in three strands, notably: endogeneity, estimation procedure and robustness checks. On the first strand on endogeneity, although the lack of

financial access has long been recognized as the leading cause of persisting inequality, Claessens and Perotti (2007) have emphasized the need to recognize the reverse effect as well. They are consistent with Acemoglu and Robinson (2005) in highlighting that inequality affects financial development and in particular the 'distribution of access' because unequal access to resources affects *de facto* political power. In accordance with the literature (Rajan & Zingales, 2003; Perotti & Volpin, 2007) in a weak institutional framework where *de facto* political influence dominates *de jure* political representation, inequality renders it easy for established interests to influence access to finance by direct control or regulatory capture of the financial system.

On the second strand, the study is consistent with Beck et al. (2003) in employing a Two-Stage-Least Squares (2SLS) estimation technique with financial dynamics as instrumental variables. In light of the endogeneity concern raised in the preceding paragraph, the paper requires an estimation technique that takes account of endogeneity. The Instrumental Variable (IV) estimator can avoid the bias that Ordinary Least Squares (OLS) estimates suffer-from (absence of consistency) when independent variables are correlated with the error term in the equation of interest. Another appeal worth articulating is the close connection between investment and finance in the effects of financial reforms, which provides another justification for the use of financial dynamics as instrumental variables. Thus the IV model assesses if financial dynamics of depth, efficiency, activity and size affect income-inequality through domestic, foreign, private and public investment channels.

The adopted 2SLS procedure consists of the following steps: (i) justify the use of a 2SLS over an OLS estimation technique with the Hausman-test for endogeneity; (ii) show that instrumental variables (financial intermediary dynamics) are exogenous to the endogenous components of explaining variables (investment channels), conditional on other covariates (control variables) and (iii) verify if the financial instruments are valid and not correlated with the error-term in the equation of interest with an Over-identifying restrictions (OIR) test.

Thus the above methodology will include the following regressions.

First-stage regression:

$$InvestmentChannel_{it} = \gamma_0 + \gamma_1(FinDepth)_{it} + \gamma_2(FinEfficiency)_{it} + \gamma_3(Finactivity)_{it}$$
$$\gamma_4(Finsize)_{it} + \alpha_i X_{it} + \upsilon \qquad (1)$$

Second-stage regression:

$$Inequality_{it} = \sigma_0 + \sigma_1 (Investment Channel)_{it} + \beta_i X_{it} + \mu \quad (2)$$

In the two equations, X is a set of independent variables that are included in first-stage regressions. For the first and second equations, v and u, respectively represent the error terms. Instrumental variables are the four financial intermediary dynamics of depth, efficiency, activity and size.

In the third strand, robustness of the results are ensured by: (i) using Heteroscedasticity and Autocorrelation Consistent (HAC) standard error regressions; (ii) controlling for the consistency of financial channels with alternative instrumental indicators and (iii) employing restricted and unrestricted regressions.

4. Empirical Analysis

This section presents results from cross-country regressions to assess the: (i) importance of financial dynamics in explaining cross-country variations in income-inequality; (ii) ability of financial dynamics to explain cross-country differences in aggregate investments and (iii) ability of the exogenous components of investment to account for cross-country differences in income distribution.

4.1 Inequality and Finance

In Table 1, we regress the estimated household income inequality indicator on financial intermediary dynamics of depth, efficiency, activity and size and also test for their joint significance. We avoid simultaneous involvement of financial aspects of depth and activity in the same regression in order to limit concerns of multicollinearity. With the exception of financial size, the use of alternative indicators in each financial channel provides a robust account of the validity in 'significances and signs' of estimated coefficients. The results in Table 1 show that distinguishing countries by financial dynamics helps explain cross-country differences in income-inequality. These findings have been documented by an extensive literature (Beck et al., 2004; Beck et al., 2007; Kai & Hamori, 2009; Batuo et al., 2010). Even after controlling for population growth and GDP growth, financial intermediary dynamics jointly enter into all regressions significantly (see third to the last line of Table 1 on significance of the Fisher-test). At least judging from empirical literature, we expected negative signs for the channels of

financial depth (Kai & Hamori, 2009; Batuo et al., 2010) and financial activity (Beck et al., 2004; Beck et al., 2007; Batuo et al., 2010). As for financial efficiency and size, we cannot firmly establish with certainty the right signs because to the best of our knowledge previous studies have not modelled the finance-inequality relationship in this light. However, based on the correlation analysis discussed earlier, we expected the coefficients to display negative signs. Population growth and GDP growth have the expected positive and negative signs respectively.

Table 1: Inequality and Finance regressions

			Dependent Variable: Estimated Household Income Inequality							
			Mod. 1	**Mod.1***	Mod.2	**Mod.2***	Mod.3	**Mod.3***	Mod.4	**Mod.4***
		Constant	**48.88*** (38.15)**	**47.16*** (37.94)**	**43.47*** (32.92)**	**43.93*** (31.78)**	**45.86*** (23.18)**	**44.53*** (22.66)**	**40.37*** (21.66)**	**40.50*** (20.80)**
	Financial Depth	Monetary Base	**-13.2*** (-7.828)**	---	---	---	**-12.4*** (-7.130)**	---	---	---
		Liquid liabilities	---	**-13.9*** (-6.815)**	---	---	---	**-12.7*** (-5.938)**	---	---
	Financial Efficiency	Banking S. Efficiency	**-2.68*** (-3.039)**	---	**2.148** (2.359)**	---	**-3.40*** (-3.717)**		1.100 (1.149)	---
Instruments		Financial S. Efficiency	---	**-1.282* (-1.829)**	---	**2.806*** (3.009)**	---	**-1.692** (-2.335)**	---	**1.862* (1.900)**
	Financial Activity	Banking S. Activity	---	---	**-19.5*** (-7.286)**	---	---	---	**-18.4*** (-6.76)**	**-9.087*** (-4.169)**
		Financial S. Activity	---	---	---	**-10.4*** (-4.888)**	---	---	---	
	Financial Size	Dbacba	**4.885** (2.579)**	**4.92** (2.419)**	**6.175*** (3.028)**	2.216 (1.088)	**6.661*** (3.389)**	**6.210*** (2.971)**	**8.189*** (3.917)**	**4.094* (1.947)**
		Popg	---	---	---	---	**0.968** (2.443)**	**0.822** (2.024)**	**1.079*** (2.708)**	**1.125*** (2.710)**
Control Variables		GDPg	---	---	---	---	**-0.154* (-1.939)**	-0.129 (-1.588)	**-0.173** (-2.132)**	-0.118 (-1.396)
Fisher test			**20.83*** **	**15.87*** **	**18.06*** **	**8.32*** **	**14.49*** **	**10.75*** **	**13.41*** **	**6.90*** **
Adjusted R^2			0.219	0.171	0.196	0.092	0.243	0.186	0.229	0.121
Number of Observations			213	216	211	216	211	214	209	214

Dbacba: Deposit bank assets on Central bank assets plus Deposit bank assets. Popg: Population growth rate. GDPg: GDP growth rate. *,**,***: significance levels of 10%, 5%, and 1% respectively. Mod: Model. S:system.

4.2 Investment and Finance

Table 2 assesses whether financial dynamics explain cross-country differences in the indicators which characterize the investment channel. We regress proxies of domestic, foreign, private and public investments on the financial instrumental dynamic variables. While Panel A is concerned with domestic and foreign investments, Panel B focuses on private and public investments. We report the Fisher-test of whether the instruments taken together significantly explain cross-country variations in the investment channels. Clearly, financial dynamics help explain cross-country variations in the investment channels, as the F-test for the joint significance of these instruments is significant at the 1% level in all regressions.

Table 2: First-Stage Investment-Finance regressions

			Panel A: Domestic and Foreign Investments							
			Domestic Investment				Foreign Investment			
			Mod.5	**Mod.5***	Mod.6	**Mod.6***	Mod.7	**Mod.7***	Mod.8	**Mod.8***
		Constant	**8.790*** (3.883)**	**10.13*** (4.576)**	**11.08*** (5.575)**	**10.65*** (5.446)**	0.701 (1.458)	0.333 (0.733)	0.471 (0.991	-0.032 (-0.050)
	Financial Depth	Monetary Base	**13.29*** (7.216)**	---	---	---	**-1.37** (-2.31)**	---	---	---
		Liquid liabilities	---	**13.04*** (5.859)**	---	---	---	**-1.76** (-2.51)**	---	---
	Financial Efficiency	Banking S. Efficiency	-1.481 (-1.499)	---	**-4.70*** (-4.534)**	---	**-1.21*** (-3.388)**	---	**-0.89** (-2.55)**	---
Instruments		Financial S. Efficiency	---	**-3.09*** (-3.924)**	---	**-6.12*** (-6.165)**	---	**-0.89*** (-3.029)**	---	**-0.969*** (-2.88)**
	Financial Activity	Banking S. Activity	---	---	**12.05*** (4.338)**	---	----	---	**-2.31** (-2.44)**	---
		Financial S. Activity	---	---	---	**7.518*** (3.410)**	---	---	---	**-1.23* (-1.661)**
	Financial Size	Dbacba	**7.520*** (3.493)**	**9.333*** (4.268)**	**5.59** (2.538)**	**8.800*** (4.262)**	1.262 (1.463)	**1.653* (1.790)**	**1.63* (1.75)**	**2.77*** (3.948)**
		Trade	---	---	---	---	**0.010*** (2.615)**	**0.009** (2.267)**	**0.012*** (2.983)**	---
		G.E	---	---	**0.393*** (3.782)**	**0.439*** (4.289)**	---	---	---	0.028 (0.821)
Control Variables		Popg	**0.832* (1.816)**	**0.899* (1.963)**	---	---	---	---	---	---
		GDPg	**0.255*** (2.797)**	**0.192** (2.120)**	**0.286*** (3.020)**	**0.220** (2.412)**	**0.106*** (3.532)**	**0.102*** (3.438)**	---	---
Fisher test			**20.35*** **	**19.03*** **	**16.20*** **	**18.62*** **	**12.88*** **	**12.368*** **	**12.28*** **	**7.674*** **
Adjusted R^2			0.277	0.261	0.233	0.256	0.200	0.191	0.159	0.099
Number of Observations			253	256	251	256	238	241	238	243

			Panel B: Private and Public Investments							
			Private Investment				Public Investment			
			Mod. 9	**Mod. 9***	Mod.10	**Mod.10***	Mod. 11	**Mod.11***	Mod. 12	**Mod.12***
		Constant	**4.684*** (3.626)**	**5.831*** (4.683)**	**6.362*** (4.911)**	**6.676*** (5.101)**	**6.165*** (4.284)**	**6.253*** (4.414)**	**9.265*** (7.084)**	**7.923*** (5.193)**
	Financial Depth	Monetary Base	**4.082*** (2.611)**	---	---	---	**7.819*** (6.495)**	---	---	---
		Liquid liabilities	---	**3.194* (1.728)**	---	---	---	**7.646*** (5.374)**	---	---
	Financial Efficiency	Banking S. Efficiency	**1.563* (1.865)**	---	0.091 (0.107)	---	-0.898 (-1.493)	---	**-2.764*** (-4.159)**	---
Instruments		Financial S. Efficiency	---	0.510 (0.724)	---	-0.499 (-0.588)	---	**-1.58*** (-3.287)**	---	**-3.085*** (-4.482)**
	Financial Activity	Banking S. Activity	---	---	**7.01*** (2.993)**	---	---	---	**6.852*** (3.848)**	---
		Financial S. Activity	---	---	---	2.840 (1.471)	---	---	---	**3.928*** (2.612)**
	Financial Size	Dbacba	**5.57*** (2.584)**	**6.383*** (2.754)**	**4.625** (2.057)**	**6.753*** (2.951)**	**-3.92*** (-2.798)**	**-2.626* (-1.842)**	**-3.822** (-2.578)**	-1.733 (-1.156)
		Trade	**0.025** (2.498)**	**0.020** (1.973)**	**0.026*** (2.640)**	**0.020* (1.947)**	---	---	---	---
		G.E	---	---	---	---	---	---	0.059 (0.884)	0.078 (1.140)
Control Variables		Popg	---	---	---	---	0.407 (1.430)	**0.473* (1.660)**	---	0.120 (0.399)
		GDPg	---	---	---	---	---		-0.046 (-0.764)	---
Fisher test			**13.49*** **	**11.38*** **	**14.25*** **	**11.14*** **	**13.44*** **	**11.58*** **	**5.414*** **	**5.035*** **
Adjusted R^2			0.167	0.141	0.176	0.138	0.169	0.146	0.083	0.075
Number of Observations			250	253	248	253	245	248	242	248

Dbacba: Deposit bank assets on Central bank assets plus Deposit bank assets. Popg: Population growth rate. GDPg: GDP growth rate. G.E: Government Expenditure. *,**,***: significance levels of 10%, 5%, and 1% respectively. Mod: Model. S: system.

It is worth noting that this is the first-step of the 2SLS approach where, the instruments must be exogenous to the endogenous components of the investment channels, conditional on other covariates (control variables). The signs of estimated coefficients are broadly consistent with recent African literature on the finance-development nexus (Asongu, 2014cd). All significant control variables also have the right signs. In essence, there is some consensus in the literature on the view that trade openness is associated with higher levels of financial development (see Do & Levchenko, 2004; Huang & Temple, 2005).

4.3 Restricted 2SLS regressions

Table 3 addresses two main issues, notably: (i) whether the exogenous components of investment channels explain income-inequality conditional on financial dynamics and (ii) if financial dynamics explain income-inequality beyond investment channels. To make these investigations we use the 2SLS regressions with financial instrumental variables. Thus we integrate Equation (2) into the first-stage regressions (first equation). Whereas the first issue is addressed by the significance of estimated coefficients, the second is investigated by the overidentifying restrictions (OIR) test whose null hypothesis is the position that the instruments (financial channels) are not correlated with the error term of the equation of interest (Equation 2). Therefore, a rejection of the null hypothesis of the OIR test is a rejection of the position that financial dynamics explain income-inequality only through investment channels. Robustness checks are done at three stages, namely the: (i) use of alternative indicators of each financial instrumental dynamic as apparent in the last two columns of Tables 3 and 4; (ii) application of alternative models with Heteroscedasticity and Autocorrelation Consistent (HAC) Standard Errors captured by models with the "*" indication and (iii) introduction of an (a) autonomous (constant) investment measure in the regressions when the OIR test rejects its null hypothesis.

Table 3 reveals restricted 2SLS inequality regressions. We first justify our choice of a 2SLS estimation method with a Hausman test. The null hypothesis of this test is the view that estimated coefficients by OLS are consistent. In other words, they do not suffer from endogeneity because the exogenous variables in the equation of interest are not correlated with the error term. Should the Hausman test fail to reject the null hypothesis (absence of endogeneity) we do not consider the 2SLS estimation method appropriate because estimates by OLS are efficient and consistent. With OLS, we find strong evidence of endogeneity in all eight

regressions. Conditional on the nature of identification (difference between instruments and endogenous regressors) we report the weak instrument test of first-stage regressions with Cragg-Donald statistics. Given concerns about multicollineatity we do not simultaneously use domestic and private investments in the same regression.

The first issue is addressed by the significance of estimated coefficients corresponding to the investment channel. With regard to the second concern, rejection of the null hypothesis of the OIR test in all eight regressions shows that financial channels do not explain income-inequality only through investment channels. Therefore the instruments are correlated with the error term in the equation of interest. In other words, the financial dynamics do not address the concern of endogeneity (which affect investment channels). The presence of biased estimates due to endogeneity can be further confirmed by the signs of estimated coefficients. At least judging from theoretical postulations (Galor & Zeira, 1993; Banerjee & Newman, 1993), empirical literature (Beck et al., 2004; Beck et al., 2007; Kai & Hamori, 2009; Batuo et al., 2010) and to some extend common-sense, we expect financial dynamics (instruments) to reduce income-inequality through aggregate investment channels. Indeed this was the vision of first and second generation financial reforms in sampled countries. The findings in Table 3 are also antagonistic with our initial expectations from correlation analysis which has revealed that all investment channels are negatively correlated with income distribution. Given the invalidity of these instruments under a restricted 2SLS hypothesis, we relax the restriction assumption and suppose the presence of an (a) autonomous (constant) level of investment. Therefore we replicate the regressions in Table 3 with an unrestricted 2SLS approach presented in Table 4.

Table 3: Finance, Inequality and Restricted Investment with HAC

		Dependent Variable: Estimated Household Income Inequality							
		Model 13	**Model 13***	Model 14	**Model 14***	Model 15	**Model 15***	Model 16	**Model 16***
Investment Channels	Domestic	---	---	**1.775*** (12.26)**	**1.775*** (4.480)**	**1.988*** (6.585)**	**1.988*** (3.321)**	---	---
	Foreign	---	---	**6.488** (2.342)**	**6.488*** (0.873)**	**6.826** (2.493)**	6.826 (0.949)	**9.463*** (3.273)**	9.463 (1.233)
	Private	**2.644*** (11.15)**	**2.644*** (13.24)**	---	---	---	---	**2.188*** (6.201)**	**2.188*** (4.669)**
	Public	**1.301*** (2.649)**	**1.301*** (2.717)**	---	---	-0.625 (-0.776)	-0.625 (-0.441)	1.023 (1.559)	1.023 (0.852)
Hausman test		**370.782***	**370.782***	**322.413***	**322.41***	**390.22***	**390.22***	**522.58***	**522.58***
OIR(Sargan) test		**49.050***	**49.050***	**44.388***	**44.388***	**33.484***	**33.484***	**18.336***	**18.336***
P-value		[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Weak Instrument test(F)		---	---	---	---	---	---	---	---
Cragg-Donald		12.017	---	3.106	---	3.017	---	4.017	
Adjusted R^2		0.156	0.156	0.058	0.058	0.028	0.028	0.020	0.020
F-Statistics		---	---	---	---	**367.62***	**69.718***	**273.38***	**56.220***
Observations		202	202	199	199	191	191	191	191

Instruments	Constant, Money Supply, Banking System activity, Banking system Efficiency, Financial size
Robustness Instruments	Constant, Liquid Liability, Financial System Activity, Financial System Efficiency, Financial size

(): z-statistics. Chi-square statistics for Hausman test. LM statistics for Sargan test. [ ]:p-values. Cragg-Donald Weak Instrument test. *, **, ***: significance levels of 10%, 5% and 1% respectively. Models with the "*" sign are in Heteroscedasticity and Autocorrelation Consistent(HAC) standard errors.

4.4 Unrestricted 2SLS regressions

Consistent with the analytical approach employed for Table 3, Table 4 addresses the two main issues. First, rejection of the null hypothesis of the Hausman test in all eight regressions validates the 2SLS estimation method. While the significance of estimated coefficients addresses the first concern, the second issue is fully addressed by the OIR test in six of the eight regressions. Failure to reject its null hypothesis in models 18 to 20 shows that financial channels do not explain the redistributive effect of income beyond aggregate investment mechanisms in the presence of autonomous or constant investment. This confirms the channels of instruments are valid and the issue of endogeneity is no longer relevant because the instrumental financial dynamics are not correlated with the error term in the unrestricted equation of interest. Results show that while domestic, public and private investments have a redistributive impact of reducing income-inequality, foreign investment does the contrary. This finding on foreign direct investment is consistent with the investment-inequality literature (Pan-Long, 1995; Basu & Guariglia, 2007). In a recent study where foreign direct investment is the proxy for globalization (Kai & Hamori, 2009), its disequalizing effect depends on the level of development in the country: a conclusion that aligns with some theoretical postulations (see Greenwood & Jovanovic , 1990).

Table 4: Finance, Inequality and Unrestricted Investment with HAC

		Dependent Variable: Estimated Household Income Inequality							
		Model 17	**Model 17***	Model 18	**Model 18***	Model 19	**Model 19***	Model20	**Model 20***
	Constant	**58.682*** (21.68)**	**58.682*** (12.97)**	**54.429*** (13.82)**	**54.429*** (8.928)**	**52.449*** (12.70)**	**52.449*** (8.260)**	**54.697*** (13.23)**	**54.697*** (9.718)**
	Domestic	---	---	**-0.640*** (-3.404)**	**-0.640** (-2.293)**	**-0.438* (-1.864)**	-0.438 (-1.278)	---	---
	Foreign	---	---	**4.146*** (3.084)**	**4.146* (1.849)**	**3.926*** (3.111)**	**3.926* (1.822)**	**2.931*** (2.788)**	**2.931** (2.076)**
Investment Channels	Private	**-0.591*** (-3.537)**	**-0.591** (-2.263)**	---	---	---	---	**-0.553** (-2.343)**	**-0.553* (-1.830)**
	Public	**-0.902*** (-4.840)**	**-0.902** (-2.295)**	---	---	-0.307 (-0.840)	-0.307 (-0.640)	**-0.803*** (-3.190)**	**-0.803*** (-2.861)**
Hausman test		**14.928*** **	**14.928*** **	**48.567*** **	**48.567*** **	**49.072*** **	**49.072*** **	**39.059*** **	**39.059*** **
OIR(Sargan) test		16.775	16.775	**2.376**	**2.376**	**1.952**	**1.952**	**2.479**	**2.479**
P-value		[0.000]	[0.000]	**[0.304]**	**[0.304]**	**[0.162]**	**[0.162]**	**[0.115]**	**0.115]**
Weak Instrument test(F)		---	---	---	---	---	---	---	---
Cragg-Donald		**11.45**	---	3.869	---	3.749	---	3.666	---
Adjusted R^2		0.160	0.160	0.026	0.026	0.020	0.020	0.059	0.059

F-Statistics	**15.972*** **	**4.651** **	**8.687*** **	**3.464*** **	**6.059*** **	**2.283* **	**9.038*** **	**4.592*** **
Observations	202	202	199	199	191	191	191	191
Instruments	Constant, Money Supply, Banking System activity, Banking system Efficiency, Financial size							
Robustness Instruments	Constant, Liquid Liability, Financial System Activity, Financial System Efficiency, Financial size							

(): z-statistics. Chi-square statistics for Hausman test. LM statistics for Sargan test. [ ]: p-values. Cragg-Donald Weak Instrument test. *, **, ***: significance levels of 10%, 5% and 1% respectively. Models with the "*" sign are in Heteroscedasticity and Autocorrelation Consistent (HAC) standard errors.

5. Concluding implications and further directions

This study has complemented existing literature by investigating how investment-driven finance affects inequality in Africa. The empirical evidence is based on restricted and unrestricted Two-Stage Least Squares and a pre-crisis periodicity (1980-2002). Inequality is measured with estimated household income inequality whereas financial development is proxied with financial depth (money supply and liquid liabilities), financial efficiency (at banking and financial system levels), financial activity (from banking and financial system perspectives) and financial size. Accordingly, in order to assess the income-redistributive effects of first and second generation investment-targeted financial reforms of the 1980s and 1990s respectively, we have investigated how financial dynamics of depth, efficiency, activity and size have affected income-inequality through domestic, foreign, private and public investment channels. The findings show that with the exception of foreign investment, financial dynamics of depth, efficiency, activity and size enhance equalizing income-distribution through domestic, private and public investment channels.

The equalizing linkages are broadly consistent with theoretical (Galor & Zeira, 1993; Banerjee & Newman, 1993) and empirical (Beck et al., 2004; Beck et al., 2007; Kai & Hamori, 2009; Batuo et al., 2010) literature. The disequalizing effect of foreign investment also aligns with theoretical postulations (Greenwood & Jovanovic, 1990) because the income-redistributive effect of foreign investment may be contingent on country-specific levels of development (Kai & Hamori, 2009). In essence, the hypothesis of an inverted U-shape relationship between foreign investment and inequality may be relevant in this context because sampled countries are at their early stages of industrialization.

As a policy implication, financial reforms that target poverty reduction at the early stage of development in a country should focus on private, public and domestics investments. However as the country matures in terms of economic development, financial reforms favoring globalization by means of foreign direct investment may be pro-poor. Given that foreign

investment is also an indicator of financial globalization (Lane & Milesi-Ferretti, 2006), the conclusions of the study also support the theoretical postulation of Azzimonti et al. (2014) on the view that globalization-fuelled debts is a source of inequality: a postulation in developed countries that has been confirmed in African countries within the framework of concessional and non-concessional debts (Asongu et al., 2015).

In the current transition from Millennium Development Goals (MDGs) to Sustainable Development Goals (SDGs), mobilizing domestic resources for investment purposes may have greater inclusive benefits than overly reliance on foreign sources of capital. Hence, in view of achieving the post-2015 inclusive development objectives, foreign investment policies in the sampled countries would need to be tailored towards more inclusive development benefits. These may require, among others: an improvement in the legitimacy and credibility of external sources of finance on the continent; some insurance that foreign investment benefits the poor; contracts by domestic governments and foreign bilateral partners should be mandated by citizens and some restraints imposed on the purely capitalistic ideals of foreign investment. Future research devoted to improving extant literature could use interviews and focused groups to further assess the established linkages.

Appendices

Appendix 1: Summary Statistics

Variables	Mean	S.D	Min.	Max.	Skewness	Kurtosis	Obser.
Income Inequality(EHII)	45.128	5.140	29.033	64.360	-0.224	0.905	247
Domestic Investment(GDI)	21.829	7.069	5.608	43.406	0.399	-0.003	288
Foreign Investment(FDI)	1.213	2.067	-7.125	10.294	1.338	4.383	275
Private. Investment(Priv.I)	13.607	5.234	2.303	34.516	0.146	0.301	281
Public Investment(Pub. I)	6.840	3.900	0.000	22.149	0.825	0.587	276
Openness(Trade)	69.245	36.366	22.303	205.13	1.409	1.312	289
Government Expenditure(G.E)	16.101	4.501	6.971	31.554	0.554	0.438	287
Population growth(Popg)	2.603	0.867	0.670	6.238	0.253	1.673	299
GDP growth(GDPg)	3.978	4.181	-10.240	19.450	0.109	1.399	286
Money Supply(M2)	0.377	0.212	0.046	0.830	0.589	-0.836	288
Liquid Liabilities(Fdgdp)	0.305	0.182	0.026	0.742	0.574	-0.840	286
Banking Efficiency(BcBd)	0.766	0.407	0.070	2.259	1.070	1.274	294
Financial Efficiency(FcFd)	0.855	0.492	0.139	2.606	1.514	2.201	286
Banking Activity(Pcrb)	0.227	0.167	0.011	0.698	0.975	0.143	281
Financial Activity (Pcrbof)	0.269	0.238	0.011	1.325	1.996	4.844	288
Financial Size(Dbacba)	0.741	0.198	0.110	0.999	-0.702	0.238	273

S.D: Standard Deviation. Min : Minimum. Max : Maximum. Obser : Number of observations.

Appendix 2: Correlation Matrix

Investment Variables				Control Variables				Instrumental Variables							Income Inequality	
								Fin. Depth		Fin. Efficiency		Fin. Activity		F. Size		
GDI	FDI	Priv.I	Pub. I	Trade	G.E	Popg	GDPg	M2	Fdgdp	BcBd	FcFd	Pcrb	Pcrbof	Dbacba	EHII	
1.000	0.090	**0.587**	0.430	0.338	0.391	-0.154	0.226	0.402	0.354	-0.074	-0.148	0.225	0.075	0.316	-0.297	GDI
	1.000	0.089	0.024	0.358	0.057	0.007	0.318	-0.047	-0.060	-0.208	-0.198	-0.158	-0.153	0.123	-0.022	FDI
		1.000	-0.168	0.313	0.208	-0.217	0.120	0.218	0.200	0.134	0.107	0.296	0.189	0.365	-0.271	Priv. I
			1.000	0.085	0.210	-0.001	0.055	0.251	0.185	-0.202	-0.270	0.011	-0.125	-0.104	-0.161	Pub. I
				1.000	0.392	-0.215	0.308	0.026	0.074	-0.072	-0.129	0.001	-0.084	0.502	-0.041	Trade
					1.000	0.084	0.077	0.017	0.004	0.084	0.132	0.087	0.145	0.271	-0.021	G.E
						1.000	0.041	-0.420	-0.458	0.096	0.068	-0.286	-0.231	-0.357	0.211	Popg
							1.000	-0.042	-0.053	-0.195	-0.208	-0.146	-0.170	0.031	-0.041	GDPg
								1.000	**0.976**	-0.081	-0.011	**0.693**	**0.563**	0.306	-0.413	M2
									1.000	-0.054	0.052	**0.744**	**0.642**	0.391	-0.375	Fdgdp
										1.000	**0.883**	0.507	0.455	0.343	-0.060	BcBd
											1.000	**0.621**	**0.716**	0.370	-0.055	FcFd
												1.000	**0.915**	**0.527**	-0.366	Pcrb
													1.000	0.494	-0.242	Pcrbof
														1.000	-0.073	Dbacba
															1.000	EHII

GDI: Gross Domestic Investment. FDI: Foreign Direct Investment. Priv.I: Private Investment. Pub.I: Public Investment. Trade: Openness. G.E: Government Final Expenditure. Popg: Population growth rate. GDPg: GDP growth rate. M2: Money Supply. Fdgdp: Liquid liabilities. BcBd: Bank credit on Bank deposits. FcFd: Financial system credit on Financial system deposits. Pcrb: Private domestic credit by deposit banks. Pcrbof: Private domestic credit by deposit banks and other financial institutions. Dbacba: Deposit bank assets on Central bank assets plus deposit bank assets. EHII: Estimated Household Income Inequality. Fin: Financial.

Appendix 3: Definition of variables

Variables	Sign	Definition of variables	Sources
Income Inequality	EHII	Estimated Household Income Inequality	UTIP, Kai and Hamori (2009)
Domestic Investment	GDI	Gross Domestic Investment (% of GDP)	World Bank(WDI)
Foreign Investment	FDI	Foreign Direct Investment (% of GDP)	World Bank(WDI)
Private Investment	Priv.I	Gross Private Investment (% of GDP)	World Bank(WDI)
Public Investment	Pub.I	Gross Public Investment (% of GDP)	World Bank(WDI)
Openness	Trade	Imports(of goods and services) plus Exports(of goods and services) on GDP	World Bank(WDI)
Government Expenditure	G.E	General Government Final Consumption Expenditure (% of GDP)	World Bank(WDI)
Population growth	Popg	Average annual population growth rate	World Bank(WDI)
Growth of GDP	GDPg	Average annual GDP growth rate	World Bank(WDI)
Economic financial depth(Money Supply)	M2	Monetary Base plus demand, saving and time deposits	World Bank(FDSD)
Financial system depth(Liquid liabilities)	Fdgdp	Financial system deposits	World Bank(FDSD)
Banking system allocation efficiency	BcBd	Bank credit on Bank deposits	World Bank(FDSD)
Financial system allocation efficiency	FcFd	Financial system credit on Financial system deposits	World Bank(FDSD)
Banking system activity	Pcrb	Private credit by deposit banks	World Bank(FDSD)
Financial system activity	Pcrbof	Private credit by deposit banks and other financial institutions	World Bank(FDSD)
Financial size	Dbacba	Deposit bank assets on Central banks assets plus deposit bank assets	World Bank(FDSD)

GDI: Gross Domestic Investment. FDI: Foreign Direct Investment. Priv.I: Private Investment. Pub.I: Public Investment. Trade: Openness. G.E: Government Final Expenditure. Popg: Population growth rate. GDPg: GDP growth rate. M2: Money Supply. Fdgdp: Liquid liabilities. BcBd: Bank credit on Bank deposits. FcFd: Financial system credit on Financial system deposits. Pcrb: Private domestic credit by deposit banks. Pcrbof: Private domestic credit by deposit banks and other financial institutions. Dbacba: Deposit bank assets on Central bank assets plus deposit bank assets. EHII: Estimated Household Income Inequality. WDI: World Development Indicators. FDSD: Financial Development and Structure Database. UTIP: University of Texas Inequality Project.

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