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Abstract

The Ali (2013, EB) findings on the nexuses among institutions, finance and investment could have an important influence on policy and academic debates. This paper relaxes his hypotheses on the conception, definition and measurement of finance and institutions because they are less realistic to developing countries to which the resulting policy implications are destined. We dissect with great acuteness the contextual underpinnings of financial development dynamics and elucidate why the Acemoglu & Johnson (2005) justification provided for the measurement of property rights institutions (PRI) is lacking in substance. Using updated data (1996-2010) from 53 African countries, we provide more robust evidence on the substitution of institutions and finance in investment. Results under many baseline and augmented scenarios are not consistent with the underlying paper. Justifications for the differences in findings are discussed. As a policy implication, the Ali (2013, EB) findings for countries with poor financial systems may not be relevant for Africa.

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1. Introduction

This note is in response to Ali (2013, EB) on the substitution of finance and institutions in prospects of private investment. We relax his hypotheses on the conception, definition and measurement of finance and institutions because they are less realistic to developing countries to which the resulting policy implications are destined. Indeed the paper concludes that the findings are more relevant to developing countries which inherently have poor financial systems: "*This note presents evidence which shows that PRI and FD promote private investment in developing countries. More importantly, the analysis indicates that the impact of PRI on investment varies with the level of financial sector development, such that a strong PRI increase private investment especially in countries where the financial system is either missing or inadequate. On the contrary, well-functioning financial systems do not seem to increase the beneficial effect of property rights on investment. We postulate that this is so because well-functioning institutions can perform similar functions to sophisticated financial systems including the reduction of information and transaction costs and thereby enhance private investment in the absence of well developed financial sectors*" (Ali, 2013, p. 1129).

In light of the above, we discuss four main shortcomings in the underlying paper with respect to developing countries: absence of an inherent nexus between the financial development measurement and private investment; context of the conception and measurement of financial development dynamics in developing countries; periodicity for relevance of policy implications and; measurement of property rights institutions (PRI).

First, we argue that contrary to Ali (2013), the intuition on a potential nexus between financial development and private investment should not be based on financial system deposits. Accordingly, deposits must be transformed into credit for economic operators in order to be materialized into private investments. The financial systems of developing countries are substantially suffering from surplus liquidity (deposit) issues. The excess

liquidity concerns in African financial systems have been substantially documented in recent financial development literature (Saxegaard, 2006; Fouda, 2009; Asongu, 2011; 2012a; 2013a,b,c; 2014a,b). In light of the above, the nexus between deposits and private investment as provided by Ali (2013) may hypothetically not support his conclusions in African countries where deposits cannot easily be transformed into credit for economic operators.

Second, because the financial system maybe inadequate in developing countries (as per the conclusion of Ali), a great chunk of the monetary base may not transit through the formal financial system as deposits. Hence, using only financial system deposits to appreciate the levels of financial development in less developed countries inherently presents variable omission issues. We address this concern by employing all the dimensions identified by the Financial Development and Structure Database (FDSD) of the World Bank (WB). These include: financial depth (at overall economic and financial system levels); financial efficiency (from banking system and financial system perspectives), financial activity (at banking system and financial system levels) and financial size. In essence, the 'substitution of finance and institutions in investment' could be in the perspectives of financial dynamics of depth, allocation efficiency, activity and size.

Third, the intuition of using an updated dataset is threefold. (1) The 1970 to 1999 period used by Ali (2013) may not be the best periodicity to capture 'property rights institutions' (PRI) in developing countries. We argue that PRI were for the most part imposed on developing countries during second generation reforms of the Bretton Woods institutions (Asongu, 2014c; Batuo & Kupukile, 2010). Hence, consistent with recent openness literature (Asongu, 2013bde), a 1996-2010 sample period is more appropriate[2]. (2) The use of an

[2] In the 1980s and 1990s, most developing countries embarked on a plethora of policy initiatives at financial and institutional levels with the objective of given impetus to economic prosperity through financial allocation efficiency and investment opportunities (Janine & Elbadawi, 1992). First generation reforms entailed inter alia, the following policies: allowing of interests rates to be market determined; relaxing of control on international capital movements; abolishing explicit control on the pricing and allocation of credit; relaxing of control on

updated dataset provides findings with more updated and focused policy implications. (3) The use of five-year data averages by the underlying study also presents one main shortcoming: post 1990 second generation institutional and financial reforms are captured only by two periods.

Fourth, the use of Polity IV to appreciate PRI is somehow lacking in substance. While Acemoglu & Johnson (2005) are used by the author to justify the choice, we argue that the indicator is only limited to political governance. Consistent with recent property rights literature (Andrés & Asongu, 2013, p. 671-672), PRI entail a plethora of governance mechanisms. Therefore, we complement Polity IV with a composite indicator of political (political stability and voice & accountability), economic (government effectiveness and regulation quality) and institutional (rule of law and corruption-control) governance.

Drawing from the above, the present note assesses the three main hypotheses of Ali (2013).

Hypothesis 1: The incidence of finance on private investment is positively significant.

Hypothesis 2: The effect of PRI on private investment is also positively significant.

Hypothesis 3: The interaction of *Hypothesis 1* and *Hypothesis 2* on private investment is negative implying that the positive effects are stronger in countries with poorer and/or inadequate financial systems.

The rest of the note is organized as follows. Section 2 discusses the data and outlines the methodology. Empirical results and discussion are covered in Section 3. Section 4 concludes with policy recommendations.

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international capital movements and; reducing direct government intervention in bank credit decisions. On the other hand, reforms of the second generation focused on institutional and structural constraints, among others: improvement of the regulatory, supervisory, legal and institutional environments; restoration of bank soundness and; rehabilitation of financial infrastructure (Batuo et al., 2010; Asongu, 2013bd).

2. Data and Methodology

2.1 Data

We examine a sample of 53 African countries with annual data from African Development Indicators (ADI) of the World Bank (WB) and the Financial Development and Structure Database (FDSD) for the period 1996 to 2010. Limitations to the scope of countries and periodicity of analysis have a threefold justification. First, the African continent for the most part consists of poor countries with inadequate financial systems. Hence, this positioning is consistent with the hypotheses from the findings of Ali (2013). Second, constraints in data availability on institutional quality, since government quality indicators of the WB only date from 1996. Third, the motivation of capturing second generation reforms (which targeted institutional constraints) for more focused and updated policy implications.

2.1.1 Private investment and financial development dynamics

Consistent with Ali (2013) we measure private investment as a proportion of GDP. In addition to financial depth, we extend the underlying study by presenting the 'substitution of finance and institutions in investment' in financial perspectives of allocation efficiency, activity and size. Moreover, we complement the existing measurement of financial system depth (deposits) with overall economic depth (money supply) that integrates the informal financial sector.

Firstly, from a financial depth perspective we appreciate financial depth both from overall-economic and financial system dimensions with indicators of broad money supply (*M2/GDP*) and financial system deposits (*Fdgdp*) respectively. The monetary base (M0) plus demand, saving and time deposits constitute the former whereas liquid liabilities (or deposits) make-up the latter.

Secondly, in line with underpinnings discussed in the introduction, financial efficiency measures the ability of deposits (money) to be transformed into credit for private investment

purposes. This second indicator appreciates the fundamental mission of financial institutions in transforming mobilized deposits into credit for private investment. We account for both *banking-system-efficiency* and *financial-system-efficiency* (respectively 'bank credit on bank deposits: *Bcbd'* and 'financial system credit on financial system deposits: *Fcfd'*).

Thirdly, financial activity is measured in terms of credit. This further emphasizes the ability of banks to grant credit for private investment purposes. We proxy for both for *financial-system-activity* and *banking-system-activity* with "private credit by deposit banks and other financial institutions: *Pcrbof*" and "private domestic credit by deposit banks: *Pcrb*" respectively.

Fourthly, *financial system size* is measured in terms of deposit bank assets (credit) as a proportion of total assets (deposit bank assets plus central bank assets). The correlation analyses presented in Appendix 2 show that (but for financial size) the two indicators adopted for each financial dynamic can be used to robustly check the other, owing to their high degrees of substitution (correlation).

2.1.2 Property rights institutions (PRI) and control variables

The baseline PRI is the Polity IV as employed by Ali (2013) and justified with Acemoglu & Johnson (2005). We complement this indicator of political governance with other indicators of political, economic and institutional governance. The institutional index derived is the first principal component of political (political stability and voice & accountability), economic (government effectiveness and regulation quality) and institutional (rule of law and corruption-control) governance. Details of this composition are presented in *Section 2.2.1* below.

In order to ensure consistency, the control variables are broadly in line with Ali (2013). Trade openness, inflation and economic prosperity are used in the conditioning information set. We expect economic prosperity and trade openness to increase private

investment whereas inflation should mitigate it. This is essentially because trade and economic prosperity come with growth and investment opportunities. On the other hand, inflation creates uncertainties in returns to investment that could ultimately discourage private investment prospects.

The summary statistics, correlation analysis and variables are detailed in the appendices. Appendix 1 on the summary statistics shows that the variables employed in the panel regressions have quite some degree of variation such that one should be comfortable and confident that reasonable estimated nexuses would emerge. The purpose of the correlation analyses in Appendix 2 is to mitigate the potential issues of overparametization and multicollinearity in the financial development dynamics. The definition of the variables and corresponding sources are presented in Appendix 3.

2.2 Methodology

2.2.1 Principal Component Analysis

In line with Asongu (2013b), due to the high degree of substitution (correlation) among various governance variables, there is redundancy of some information. Therefore we use Principal Component Analysis (PCA) to reduce the dimensions of political, economic and institutional governance. PCA is a widely used statistical method to reduce a larger set of correlated variables into a smaller set of uncorrelated variables called principal component (PC) that reflect most of the information in the original dataset. Hence, the objective is to reduce six governance indicators (government-effectiveness, political stability, corruption-control, rule of law, regulation quality, and voice & accountability) into a single variable.

In the decision of which PC to retain for common factors, the criteria used is from Kaiser (1974) and Jolliffe (2002). They advise that only PCs with an eigenvalue greater than one should be selected. As presented in Table 1 below, the first PC is appropriate since it has an eigenvalue of 4.642 and summarizes more than 77% of information in the combined

institutional indicators. Hence, the retained first PC will represent our institutional index (*Instidex*).

Table 1: Principal Component Analysis (PCA) for Institutional Index (Instidex)

Principal Components	Component Matrix(Loadings)						Proportion	Cumulative Proportion	Eigen Value
	V & A	R.L	R.Q	G.E	PS	CC			
First P.C	0.383	0.443	0.403	0.429	0.374	0.413	0.773	0.773	4.642
Second P.C	0.297	-0.021	-0.369	-0.350	0.774	-0.230	0.077	0.851	0.466
Third P.C	0.750	-0.223	0.353	-0.127	-0.300	-0.396	0.066	0.917	0.398

P.C: Principal Component. V& A: Voice & Accountability. R.L: Rule of Law. R.Q: Regulation Quality. GE: Government Effectiveness. PS: Political Stability. CC: Control of Corruption.

2.2.2 Estimation Technique

To ensure consistency, the estimation strategy is the same as in Ali (2013). Accordingly, when compared with other cross-country analysis, dynamic panel data estimation has many advantages (Demirgüç-Kunt & Levine, 2008; Asongu, 2013b). The dynamic panel regression model in first difference is presented as follows:

$$PI_{i,t} - PI_{i,t-1} = \sigma_1(PI_{i,t-1} - PI_{i,t-2}) + \sigma_2(F_{i,t} - F_{i,t-1}) + \sigma_3(PRI_{i,t} - PRI_{i,t-1}) + \sigma_4(FPRI_{i,t} - FPRI_{i,t-1})$$

$$+ \sigma_5(T_{i,t} - T_{i,t-1}) + \sigma_6(E_{i,t} - E_{i,t-1}) + \sigma_7(I_{i,t} - I_{i,t-1}) + (\xi_t - \xi_{t-1}) + (\varepsilon_{i,t} - \varepsilon_{i,t-1}) \quad (1)$$

Where 't' represents the period and 'i' stands for a country. PI is private investment; F, financial development (depth, efficiency, activity or size); PRI, property rights institutions (Polity IV or Institutional index); $FPRI$, interaction between finance (F) and property rights institutions (PRI); T, trade openness; E, economic prosperity; I, inflation; η_i is a country-specific effect; ξ_t is a time-specific constant and; $\varepsilon_{i,t}$ an error term. Between the system GMM estimation (Arellano & Bover, 1995; Blundell & Bond, 1998) and the difference GMM estimator (Arellano & Bond, 1991), we go for the former with respect to Bond et al. (2001, pp. 3-4). In the specification of the estimations, the *two-step* GMM approach is preferred to the *one-step* approach because it corrects for heteroscedasticity. We use three year non-

overlapping intervals to mitigate short-run disturbances and control for the issue of instrument proliferation in GMM estimations. Hence, the basic condition for using GMM estimation is met: N>T (53>5). Moreover, the instruments are substantially lower than the number of cross-sections.

In summary, the principal arguments for dynamic system GMM estimation are that it: controls for the potential endogeneity in all the regressors, mitigates potential biases of the difference estimator in small samples and, does not eliminate cross-country variation (Asongu, 2013f).

3. Empirical analysis and discussion of results

This section assesses three main issues: (1) the incidence of financial dynamics and institutions on private investment; (2) the substitution of financial dynamics and institutions in private investment and; (3) the validity of (1) and (2) when an institutional index (*Instidex*) is used in place of *Polity IV* in the measurement of PRI. While Section 3.1 deals with the first-two concerns (Tables 2-3), the third issue is assessed in Section 3.2 (Tables 4-5). The validity of the models by means of the Sargan OIR and AR(2) tests are broadly confirmed since their null hypotheses are not overwhelmingly rejected[3].

3.1 Updated financial dynamics and baseline PRI measurement

Tables 2-3 below assess the Ali (2013) hypotheses using financial dynamics and the baseline PRI measurement (Polity IV). While Table 2 reports financial dynamics of depth and efficiency, Table 3 is concerned with financial dynamics of activity and size. Panel A(B) of

[3] To examine the validity of the model, we have performed two tests, notably the Arellano and Bond test for autocorrelation which investigates the null hypothesis of no autocorrelation and the Sargan-test which examines the over-identification restrictions. The latter test investigates if instruments are uncorrelated with the error term in the equation of interest. The null hypothesis of this test is the stance that the instruments as a group are strictly exogenous (that is, they do not suffer from endogeneity). We only report AR(2) in difference because it is more relevant than the AR(1). Overwhelmingly for almost all estimated models, we are neither able to reject the AR(2) null hypothesis for the absence of autocorrelation nor the Sargan null for the validity of the instruments.

Table 2 report's findings of financial depth (efficiency) whereas Panel A(B) of Table 3 shows results of financial activity (size).

But for the positive effect of financial size on private investment in Panel B of Table 3, the Ali (2013) hypotheses are overwhelmingly rejected under the assumption of financial dynamics with the baseline PRI measurement. In essence, the following could be established. (1) All the financial dynamics and PRI estimates have the expected signs. (2) Neither PRI (as measured by Polity IV) nor financial dynamics (of depth, efficiency and activity) improve private investment. (3) Financial size has a positive incidence on private investment. (4) The interaction between financial dynamics and PRI do not significantly augment the dependent variable. (5) The significant control variables have the expected signs: trade (inflation) has a positive (negative) impact on the private investment.

Table 2: Financial depth and financial efficiency

	Panel A: Financial Depth, Institutions and Private investment							
	Money Supply (M2)				**Liquid Liabilities (Fdgdp)**			
Private Investment(-1)	0.150	**0.464****	0.221	0.221	0.150	**0.456****	0.215	0.215
	(0.552)	**(0.044)**	(0.595)	(0.595)	(0.552)	**(0.036)**	(0.577)	(0.577)
Constant	**6.139*****	**4.744****	**5.414*****	**5.414*****	**6.139*****	**4.964*****	**5.628*****	**5.628*****
	(0.001)	**(0.020)**	**(0.000)**	**(0.002)**	**(0.001)**	**(0.000)**	**(0.001)**	**(0.001)**
Growth	**0.515***	**0.282***	0.432	0.432	**0.515***	0.270	0.423	0.423
	(0.055)	**(0.096)**	(0.339)	(0.339)	**(0.055)**	(0.102)	(0.303)	(0.303)
Inflation	**-0.0008*****	**-0.034*****	-0.031	-0.031	**-0.0008*****	**-0.037*****	**-0.034***	**-0.034***
	(0.000)	**(0.000)**	(0.104)	(0.104)	**(0.000)**	**(0.000)**	**(0.077)**	**(0.077)**
Trade	0.030	0.011	0.034	0.034	0.030	0.0122	0.033	0.033
	(0.369)	(0.689)	(0.547)	(0.547)	(0.369)	(0.666)	(0.517)	(0.517)
PRI (Polity IV)	0.060	---	-0.001	-0.001	0.060	---	-0.017	-0.017
	(0.661)		(0.991)	(0.991)	(0.661)		(0.916)	(0.916)
Financial Depth (M2)	---	3.570	4.160	---	---	4.349	---	---
		(0.294)	(0.310)			(0.229)		
Liquid Liabilities(Fdgdp)	---	---	---	---	---	---	5.080	---
							(0.181)	
PRI*M2	---	---	---	-1.386	---	---	---	---
				(0.310)				
PRI*Fdgdp	---	---	---	---	---	---	---	-1.693
								(0.181)
Time effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
AR(2)	**0.383**	**0.729**	**0.519**	**0.519**	**0.383**	**0.727**	**0.491**	**0.491**
	(0.701)	**(0.465)**	**(0.603)**	**(0.603)**	**(0.701)**	**(0.466)**	**(0.622)**	**(0.622)**
Sargan OIR	**11.480**	**9.302**	**11.591**	**11.591**	**11.480**	**9.437**	**11.013**	**11.013**
	(0.175)	**(0.317)**	**(0.170)**	**(0.170)**	**(0.175)**	**(0.306)**	**(0.200)**	**(0.200)**
Wald (joint)	**211.59*****	**38.86*****	**39.21*****	**39.21*****	**211.59*****	**36.542*****	**39.57*****	**39.57*****
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**
Countries	44	41	39	39	44	42	39	39
Instruments	14	17	18	18	14	17	18	18
Observations	155	141	133	133	155	142	134	134

	Panel B: Financial Efficiency, Institutions and Private investment							
	Banking System Efficiency (BcBd)				Financial System Efficiency (FcFd)			
Private Investment(-1)	0.150	0.345	0.129	0.129	0.150	0.356	0.028	0.028
	(0.552)	(0.118)	(0.616)	(0.616)	(0.552)	(0.255)	(0.956)	(0.956)
Constant	**6.139*** **	**3.700* **	4.299	4.299	**6.139*** **	**5.437** **	**5.321** **	**5.321** **
	(0.001)	**(0.063)**	(0.158)	(0.158)	**(0.001)**	**(0.012)**	**(0.031)**	**(0.031)**
Growth	**0.515* **	**0.417** **	0.554	**0.554* **	**0.515* **	0.324	0.595	0.595
	(0.055)	**(0.014)**	(0.083)	**(0.083)**	**(0.055)**	(0.130)	(0.314)	(0.314)
Inflation	**-0.0008*** **	**-0.0008*** **	**-0.0007*** **	**-0.0007*** **	**-0.0008*** **	**-0.039*** **	-0.033	-0.033
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	(0.190)	(0.190)
Trade	0.030	0.026	0.032	0.032	0.030	0.030	0.064	0.064
	(0.369)	(0.146)	(0.409)	(0.409)	(0.369)	(0.345)	(0.196)	(0.196)
PRI (Polity IV)	0.060	---	0.008	0.008	0.060	---	0.007	0.007
	(0.661)		(0.963)	(0.963)	(0.661)		(0.966)	(0.966)
B. Sys. Efficiency(BcBd)	---	1.506	2.824	---	---	---	---	---
		(0.367)	(0.292)					
F. Sys. Efficiency(FcFd)	---	---	---	---	---	0.065	0.506	---
						(0.923)	(0.758)	
PRI*BcBd	---	---	---	-0.941	---	---	---	---
				(0.292)				
PRI*FcFd	---	---	---	---	---	---	---	-0.168
								(0.758)
Time Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
AR(2)	**0.383**	**0.797**	**0.639**	**0.639**	**0.383**	**0.728**	**0.149**	**0.149**
	(0.701)	**(0.425)**	**(0.522)**	**(0.522)**	**(0.701)**	**(0.466)**	**(0.881)**	**(0.881)**
Sargan OIR	**11.480**	**6.724**	**10.343**	**10.343**	**11.480**	**6.381**	**12.317**	**12.317**
	(0.175)	**(0.566)**	**(0.241)**	**(0.241)**	**(0.175)**	**(0.604)**	**(0.137)**	**(0.137)**
Wald (joint)	**211.59*** **	**136.32*** **	**187.59*** **	**187.59*** **	**211.59*** **	**105.09*** **	**34.665*** **	**34.66*** **
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**
Countries	44	45	43	43	44	41	39	39
Instruments	14	17	18	18	14	17	18	18
Observations	155	159	151	151	155	137	129	129

***, **, and * indicate significance at 1%, 5% and 10% levels respectively. AR(2): Second Order Autocorrelation test. OIR: Overidentifying Restrictions test. M2: Money Supply (Overall Economic Depth). Fdgdp: liquid liabilities (Financial System Depth). BcBd: Bank credit on bank deposit (Banking System Efficiency). FcFd: Financial credit on financial deposit (Financial System Efficiency). PRI: Property Rights Institutions. B. Sys: Banking System. F. Sys: Financial System. The significance of bold values is twofold. 1) The significance of estimated coefficients and the Wald statistics. 2) The failure to reject the null hypotheses of: a) no autocorrelation in the AR(2) tests and; b) the validity of the instruments in the Sargan OIR test.

Table 3: Financial activity and financial size

	Panel A: Financial Activity, Institutions and Private investment							
	Banking System Activity (Pcrb)				Financial System Activity (Pcrbof)			
Private Investment(-1)	0.150	**0.441** **	0.215	0.215	0.150	**0.412** **	0.172	0.172
	(0.552)	**(0.019)**	(0.574)	(0.574)	(0.552)	**(0.022)**	(0.664)	(0.664)
Constant	**6.139*** **	**4.672** **	**5.663*** **	**5.663*** **	**6.139*** **	**5.135*** **	**6.013*** **	**6.013*** **
	(0.001)	**(0.012)**	**(0.002)**	**(0.000)**	**(0.001)**	**(0.000)**	**(0.001)**	**(0.001)**
Growth	**0.515* **	**0.312* **	0.413	0.413	**0.515* **	**0.330* **	0.454	0.454
	(0.055)	**(0.068)**	(0.330)	(0.330)	**(0.055)**	**(0.070)**	(0.295)	(0.295)
Inflation	**-0.0008*** **	**-0.037*** **	**-0.034* **	**-0.034* **	**-0.0008*** **	**-0.040*** **	**-0.038** **	**-0.038** **
	(0.000)	**(0.002)**	**(0.071)**	**(0.071)**	**(0.000)**	**(0.002)**	**(0.046)**	**(0.046)**
Trade	0.030	0.017	0.036	0.036	0.030	0.022	0.043	0.043
	(0.369)	(0.495)	(0.443)	(0.443)	(0.369)	(0.376)	(0.389)	(0.389)
PRI (Polity IV)	0.060	---	-0.040	-0.040	0.060	---	-0.038	-0.038
	(0.661)		(0.812)	(0.812)	(0.661)		(0.831)	(0.831)
B. Sys. Activity (Pcrb)	---	5.251	5.562	---	---	---	---	---
		(0.180)	(0.151)					
F. Sys. Activity (Pcrbof)	---	---	---	---	---	1.877	2.577	---
						(0.502)	(0.311)	
PRI*Pcrb	---	---	---	-1.854	---	---	---	---
				(0.151)				
PRI*Pcrbof	---	---	---	---	---	---	---	-0.859
								(0.311)
Time Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
AR(2)	**0.383**	**0.712**	**0.485**	**0.485**	**0.383**	**0.697**	**0.403**	**0.403**

	(0.701)	**(0.476)**	**(0.627)**	**(0.627)**	**(0.701)**	**(0.485)**	**(0.686)**	**(0.686)**
Sargan OIR	**11.480**	**8.704**	**10.691**	**10.691**	**11.480**	**9.036**	**10.779**	**10.779**
	(0.175)	**(0.367)**	**(0.219)**	**(0.219)**	**(0.175)**	**(0.339)**	**(0.214)**	**(0.214)**
Wald (joint)	**211.59*** **	**40.877*** **	**37.02*** **	**37.02*** **	**211.59*** **	**39.86*** **	**34.22*** **	**34.22*** **
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**
Countries	44	41	39	39	44	41	39	39
Instruments	14	17	18	18	14	17	18	18
Observations	155	142	134	134	155	142	134	134

Panel B: Financial Size, Institutions and Private investment

	Financial Size (Dbacba)			
Private Investment(-1)	0.150	0.350	0.251	0.251
	(0.552)	(0.172)	(0.332)	(0.332)
Constant	**6.139*** **	1.941	**4.926***	**4.926***
	(0.001)	(0.434)	**(0.057)**	**(0.057)**
Growth	**0.515***	**0.351***	0.388	0.388
	(0.055)	**(0.059)**	(0.177)	(0.177)
Inflation	**-0.0008*** **	**-0.0006*** **	**-0.0006*** **	**-0.0006*** **
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**
Trade	0.030	0.010	-0.007	-0.007
	(0.369)	(0.495)	(0.768)	(0.768)
PRI (Polity IV)	0.060	---	0.170	0.170
	(0.661)		(0.267)	(0.267)
Financial Size (Dbacba)	---	**5.655*** **	3.791	---
		(0.005)	(0.225)	
PRI*Dbacba	---	---	---	-1.263
				(0.225)
Time Effects	Yes	Yes	Yes	Yes
AR(2)	**0.383**	**0.663**	**0.653**	**0.653**
	(0.701)	**(0.507)**	**(0.513)**	**(0.513)**
Sargan OIR	**11.480**	**7.649**	**9.017**	**9.017**
	(0.175)	**(0.468)**	**(0.340)**	**(0.340)**
Wald (joint)	**211.59*** **	**127.72*** **	**192.20*** **	**192.20*** **
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**
Countries	44	45	43	43
Instruments	14	17	18	18
Observations	155	157	149	149

***, **, and * indicate significance at 1%, 5% and 10% levels respectively. AR(2): Second Order Autocorrelation test. OIR: Overidentifying Restrictions test. Pcrb: Private domestic credit by deposit banks (Banking System Activity). Pcrbof: Private domestic credit by deposit banks and other financial institutions (Financial System Activity). Dbacba: Deposit bank assets on deposit bank assets plus central bank assets (Financial Size). PRI: Property Rights Institutions. B. Sys: Banking System. F. Sys: Financial System. The significance of bold values is twofold. 1) The significance of estimated coefficients and the Wald statistics. 2) The failure to reject the null hypotheses of: a) no autocorrelation in the AR(2) tests and; b) the validity of the instruments in the Sargan OIR test.

3.2 Updated financial dynamics and modified PRI measurement

Tables 4-5 below assess the third issue outlined in the introduction of Section 3. Accordingly, the three hypotheses of the introduction are examined using financial development dynamics and a modified PRI measurement (institutional index). Whereas Table 4 reports financial dynamics of depth and efficiency, Table 5 is concerned with financial dynamics of activity and size. Panel A(B) of Table 4 report's findings of financial depth (efficiency) whereas Panel A(B) of Table 5 shows results of financial activity (size).

One similarity and one difference emerge from the second scenario. The former is a positive effect of financial size on private investment in Panel B of Table 5 while in the latter PRI (as measured by the institutional index) now has a positive effect on the dependent variable. Hence, the new measurement of PRI is found to have an appealing incidence on private investment. But for the above exceptions, the Ali (2013) hypotheses are still overwhelmingly rejected under the scenario of financial dynamics with modified PRI measurement.

In summary, the following could be established. (1) The financial dynamics and PRI estimates have the expected signs. (2) While PRI as measured by *Instidex* has a positive effect on the dependent variable, financial dynamics (of depth, efficiency and activity) do not improve private investment. (3) Financial size has a positive incidence on private investment. (4) The interaction between financial dynamics and PRI do not significantly augment the dependent variable. (5) The significant control variables have the expected signs: trade (inflation) has a positive (negative) impact on the private investment.

Table 4: Financial depth and financial efficiency

	Panel A: Financial Depth, Institutions and Private investment							
	Money Supply (M2)				**Liquid Liabilities (Fdgdp)**			
Private Investment(-1)	**0.401***	**0.464****	**0.471****	**0.471****	**0.401***	**0.456****	**0.460*****	**0.460*****
	(0.051)	**(0.044)**	**(0.020)**	**(0.020)**	**(0.051)**	**(0.036)**	**(0.008)**	**(0.008)**
Constant	**5.231*****	**4.744****	**5.017****	**5.017****	**5.231*****	**4.964*****	**5.186*****	**5.186*****
	(0.002)	**(0.020)**	**(0.019)**	**(0.019)**	**(0.002)**	**(0.000)**	**(0.006)**	**(0.006)**
Growth	**0.326***	**0.282***	**0.284***	**0.284***	**0.326***	0.270	**0.292***	**0.292***
	(0.056)	**(0.096)**	**(0.072)**	**(0.072)**	**(0.056)**	(0.102)	**(0.065)**	**(0.065)**
Inflation	**-0.0006*****	**-0.034*****	**-0.025***	**-0.025***	**-0.0006*****	**-0.037*****	**-0.027****	**-0.027****
	(0.000)	**(0.000)**	**(0.051)**	**(0.051)**	**(0.000)**	**(0.000)**	**(0.044)**	**(0.044)**
Trade	0.009	0.011	0.005	0.005	0.009	0.0122	0.006	0.006
	(0.642)	(0.689)	(0.838)	(0.838)	(0.642)	(0.666)	(0.799)	(0.799)
Institutional index (Instidex)	**0.711*****	---	**0.527***	**0.527***	**0.711*****	---	0.497	0.497
	(0.000)		**(0.081)**	**(0.081)**	**(0.000)**		(0.125)	(0.125)
Money Supply (M2)	---	3.570	2.025	---	---	4.349	---	---
		(0.294)	(0.553)			(0.229)		
Liquid Liabilities (Fdgdp)	---	---	---	---	---	---	2.433	---
							(0.516)	
Instidex*M2	---	---	---	-1.088	---	---	---	---
				(0.553)				
Instidex*Fdgdp	---	---	---	---	---	---	---	-1.307
								(0.516)
Time Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
AR(2)	**0.799**	**0.729**	**0.766**	**0.766**	**0.799**	**0.727**	**0.739**	**0.739**
	(0.424)	**(0.465)**	**(0.443)**	**(0.443)**	**(0.424)**	**(0.466)**	**(0.459)**	**(0.459)**
Sargan OIR	**8.038**	**9.302**	**8.889**	**8.889**	**8.038**	**9.437**	**9.526**	**9.526**

	(0.429)	**(0.317)**	**(0.351)**	**(0.351)**	**(0.429)**	**(0.306)**	**(0.299)**	**(0.299)**
Wald (joint)	**231.78*** **	**38.86*** **	**63.92*** **	**63.92*** **	**231.78*** **	**36.542*** **	**63.537*** **	**63.537*** **
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**
Countries	46	41	41	41	46	42	41	41
Instruments	17	17	18	18	17	17	18	18
Observations	162	141	140	140	162	142	141	141

	Panel B: Financial Efficiency, Institutions and Private investment							
	Banking System Efficiency (BcBd)				**Financial System Efficiency (FcFd)**			
Private Investment(-1)	**0.401***	0.345	**0.379***	**0.379***	**0.401***	0.356	**0.376***	**0.376***
	(0.051)	(0.118)	**(0.063)**	**(0.063)**	**(0.051)**	(0.255)	**(0.098)**	**(0.098)**
Constant	**5.231*** **	**3.700***	**4.890** **	**4.890** **	**5.231*** **	**5.437** **	**6.382*** **	**6.382*** **
	(0.002)	**(0.063)**	**(0.021)**	**(0.021)**	**(0.002)**	**(0.012)**	**(0.000)**	**(0.008)**
Growth	**0.326***	**0.417** **	**0.341***	**0.341***	**0.326***	0.324	**0.349***	**0.349***
	(0.056)	**(0.014)**	**(0.059)**	**(0.059)**	**(0.056)**	(0.130)	**(0.060)**	**(0.060)**
Inflation	**-0.0006*** **	**-0.0008*** **	**-0.0006*** **	**-0.0006*** **	**-0.0006*** **	**-0.039*** **	**-0.023***	**-0.023***
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.060)**	**(0.060)**
Trade	0.009	0.026	0.010	0.010	0.009	0.030	0.012	0.012
	(0.642)	(0.146)	(0.594)	(0.594)	(0.642)	(0.345)	(0.506)	(0.506)
Institutional index (Instidex)	**0.711*** **	---	**0.678*** **	**0.678*** **	**0.711*** **	---	**0.710** **	**0.710** **
	(0.000)		**(0.000)**	**(0.005)**	**(0.000)**		**(0.024)**	**(0.024)**
B. Sys. Efficiency (BcBd)	---	1.506	0.753	---	---	---		---
		(0.367)	(0.629)					
F. Sys. Efficiency (FcFd)	---	---	---	---	---	0.065	-0.790	---
						(0.923)	(0.409)	
Instidex*BcBd	---	---	---	-0.404	---	---		---
				(0.629)				
Instidex*FcFd	---	---	---	---	---	---	---	0.424
								(0.409)
Time Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
AR(2)	**0.799**	**0.797**	**0.828**	**0.828**	**0.799**	**0.728**	**0.731**	**0.731**
	(0.424)	**(0.425)**	**(0.407)**	**(0.407)**	**(0.424)**	**(0.466)**	**(0.464)**	**(0.464)**
Sargan OIR	**8.038**	**6.724**	**8.093**	**8.093**	**8.038**	**6.381**	**6.724**	**6.724**
	(0.429)	**(0.566)**	**(0.424)**	**(0.424)**	**(0.429)**	**(0.604)**	**(0.566)**	**(0.566)**
Wald (joint)	**231.78*** **	**136.32*** **	**261.10*** **	**261.10*** **	**231.78*** **	**105.09*** **	**103.36*** **	**103.36*** **
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**
Countries	46	45	45	45	46	41	41	41
Instruments	17	17	18	18	17	17	18	18
Observations	162	159	158	158	162	137	136	136

***, **, and * indicate significance at 1%, 5% and 10% levels respectively. AR(2): Second Order Autocorrelation test. OIR: Overidentifying Restrictions test. M2: Money Supply (Overall Economic Depth). Fdgdp: liquid liabilities (Financial System Depth). BcBd: Bank credit on bank deposit (Banking System Efficiency). FcFd: Financial credit on financial deposit (Financial System Efficiency). B. Sys: Banking System. F. Sys: Financial System. The significance of bold values is twofold. 1) The significance of estimated coefficients and the Wald statistics. 2) The failure to reject the null hypotheses of: a) no autocorrelation in the AR(2) tests and; b) the validity of the instruments in the Sargan OIR test.

Table 5: Financial activity and financial size

	Panel A: Financial Activity, Institutions and Private investment							
	Banking System Activity (Pcrb)				**Financial System Activity (Pcrbof)**			
Private Investment(-1)	**0.401***	**0.441** **	**0.441*** **	**0.441*** **	**0.401***	**0.412** **	**0.422*** **	**0.422*** **
	(0.051)	**(0.019)**	**(0.003)**	**(0.003)**	**(0.051)**	**(0.022)**	**(0.002)**	**(0.002)**
Constant	**5.231*** **	**4.672** **	**5.155** **	**5.155** **	**5.231*** **	**5.135*** **	**5.584*** **	**5.584*** **
	(0.002)	**(0.012)**	**(0.012)**	**(0.012)**	**(0.002)**	**(0.000)**	**(0.000)**	**(0.006)**
Growth	**0.326***	**0.312***	**0.332***	**0.332***	**0.326***	**0.330***	**0.343***	**0.343***
	(0.056)	**(0.068)**	**(0.061)**	**(0.061)**	**(0.056)**	**(0.070)**	**(0.062)**	**(0.062)**
Inflation	**-0.0006*** **	**-0.037*** **	**-0.027***	**-0.027***	**-0.0006*** **	**-0.040*** **	**-0.027***	**-0.027***
	(0.000)	**(0.002)**	**(0.054)**	**(0.054)**	**(0.000)**	**(0.002)**	**(0.069)**	**(0.069)**
Trade	0.009	0.017	0.009	0.009	0.009	0.022	0.010	0.010
	(0.642)	(0.495)	(0.669)	(0.669)	(0.642)	(0.376)	(0.607)	(0.607)
Institutional index (Instidex)	**0.711*** **	---	0.509	0.509	**0.711*** **	---	**0.636***	**0.636***
	(0.000)		(0.152)	(0.152)	**(0.000)**		**(0.072)**	**(0.072)**
B. Sys. Activity (Pcrb)	---	5.251	2.586	---	---	---	---	---
		(0.180)	(0.566)					
F. Sys. Activity (Pcrbof)	---	---	---	---	---	1.877	-0.271	---
						(0.502)	(0.913)	

Instidex*Pcrb	---	---	---	-1.389 (0.566)	---	---	---	---
Instidex*Pcrbof	---	---	---	---	---	---	---	0.145 (0.913)
Time Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
AR(2)	**0.799**	**0.712**	**0.713**	**0.713**	**0.799**	**0.697**	**0.714**	**0.714**
	(0.424)	**(0.476)**	**(0.475)**	**(0.475)**	**(0.424)**	**(0.485)**	**(0.475)**	**(0.475)**
Sargan OIR	**8.038**	**8.704**	**9.060**	**9.060**	**8.038**	**9.036**	**9.178**	**9.178**
	(0.429)	**(0.367)**	**(0.337)**	**(0.337)**	**(0.429)**	**(0.339)**	**(0.327)**	**(0.327)**
Wald (joint)	**231.78*** **	**40.877*** **	**66.348*** **	**66.348*** **	**231.78*** **	**39.86*** **	**71.20*** **	**71.20*** **
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**
Countries	46	41	41	41	46	41	41	41
Instruments	17	17	18	18	17	17	18	18
Observations	162	142	141	141	162	142	141	141

Panel B: Financial Size, Institutions and Private investment

	Financial Size (Dbacba)			
Private Investment(-1)	**0.401***	**0.350**	**0.413***	**0.413***
	(0.051)	**(0.172)**	**(0.057)**	**(0.057)**
Constant	**5.231*** **	1.941	4.947	4.947
	(0.002)	(0.434)	(0.127)	(0.127)
Growth	**0.326***	**0.351***	0.282	0.282
	(0.056)	**(0.059)**	(0.137)	(0.137)
Inflation	**-0.0006*** **	**-0.0006*** **	**-0.0006*** **	**-0.0006*** **
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**
Trade	0.009	0.010	**-0.002***	-0.002
	(0.642)	(0.495)	**(0.898)**	(0.898)
Institutional index (Instidex)	**0.711*** **	---	**0.679***	**0.679***
	(0.000)		**(0.060)**	**(0.060)**
Financial Size (Dbacba)	---	**5.655*** **	1.420	---
		(0.005)	(0.705)	
Instidex*Dbacba	---	---	---	-0.763 (0.705)
Time Effects	Yes	Yes	Yes	Yes
AR(2)	**0.799**	**0.663**	**0.708**	**0.708**
	(0.424)	**(0.507)**	**(0.478)**	**(0.478)**
Sargan OIR	**8.038**	**7.649**	**8.737**	**8.737**
	(0.429)	**(0.468)**	**(0.364)**	**(0.364)**
Wald (joint)	**231.78*** **	**127.72*** **	**263.93*** **	**263.93*** **
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**
Countries	46	45	45	45
Instruments	17	17	18	18
Observations	162	157	156	156

***, **, and * indicate significance at 1%, 5% and 10% levels respectively. AR(2): Second Order Autocorrelation test. OIR: Overidentifying Restrictions test. Pcrb: Private domestic credit by deposit banks (Banking System Activity). Pcrbof: Private domestic credit by deposit banks and other financial institutions (Financial System Activity). Dbacba: Deposit bank assets on deposit bank assets plus central bank assets (Financial Size). B. Sys: Banking System. F. Sys: Financial System. The significance of bold values is twofold. 1) The significance of estimated coefficients and the Wald statistics. 2) The failure to reject the null hypotheses of: a) no autocorrelation in the AR(2) tests and; b) the validity of the instruments in the Sargan OIR test.

We briefly discuss the differences in results with respect to tested hypotheses in three main strands: the nexus between financial dynamics and private investment (*Hypothesis 1*); the relationship between Polity IV and private investment (*Hypothesis 2*) and; the relevance of the interaction effect (*Hypothesis 3*).

First, on *Hypothesis 1* the overwhelming absence of positive nexuses among financial dynamics (depth, efficiency and activity) and private investment could be explained by the

substantially documented surplus liquidity issues in African financial institutions (Saxegaard, 2006; Fouda, 2009). Financial allocation efficiency could also be appreciated as the ratio of financial depth (deposits and/or money) to financial activity (credit for investment). Hence, the low allocation efficiency also implies low financial activity and high financial depth. On the other hand, the significant positive effect of financial size is not unexpected since it is broadly consistent with recent African finance literature. In comparison to financial dynamics of depth, activity and efficiency, financial size has been found to be the most significantly sensitive to economic activity (Asongu, 2013g, 2014a, b).

Second, *Hypothesis 2* is only partially valid. PRI as measured by Polity IV (Institutional index) insignificantly (significantly) improve private investment. The insignificant effect of Polity IV has a twofold explanation: the *time* and *level* hypotheses for the benefits of democracy. In line with Asongu (2012b), the *time* and *level* hypotheses have been documented: in many countries in Africa (Lemarchand, 1972), Southeast Asia (Scott, 1972), India (Wade, 1985) and Turkey (Sayari, 1977); post 1990 communist countries like Russia (Varsee, 1997) and: many Latin American countries upon different waves of democratization (Weyland, 1998).

Third, the findings of *Hypothesis 3* on the interaction between *Hypothesis 1* and *Hypothesis 2* have a fourfold inference. (1) The hypothesis is not overwhelming validated. (2) The underpinnings of the hypothesis are unfounded in the first scenario (Section 3.1) because: (i) PRI in terms of Polity IV independently have a lower insignificant effect on the dependent variable in comparison to financial dynamics and; (ii) the fact is confirmed by the lower effect of Polity IV when both PRI and financial dynamics are modeled in the same equation. (3) Under the second scenario (with usage of *Instidex*), the underpinnings of the Ali (2013) hypotheses may sound more plausible because: (i) the effects of PRI on private investment are overwhelmingly positively significant and; (ii) the incidence of financial

dynamics on the dependent variable are overwhelmingly positively insignificant. (4) In general terms, differences in the interaction effect could also be explained by the fact that the scope of the interaction effect as elucidated by Ali is one-sided. Accordingly, while *"...strong property rights increase promote increased investment and that this positive effect is stronger in countries with poorer financial systems..."* (Ali, 2013, p. 1), we postulate that the effect of the interaction could also be the other way round: strong financial institutions promoting increase investment with the positive effect stronger in countries with poor PRI.

4. Conclusion and policy recommendations

The Ali (2013, EB) findings on the nexuses among institutions, finance and investment could have an important influence on policy and academic debates. This paper relaxes his hypotheses on the conception, definition and measurement of finance and institutions because they are less realistic to developing countries to which the resulting policy implications are destined. We dissect with great acuteness the contextual underpinnings of financial development dynamics and elucidate why the Acemoglu & Johnson (2005) justification provided for the measurement of property rights institutions (PRI) is lacking in substance. Using updated data (1996-2010) from 53 African countries, we provide more robust evidence on the substitution of institutions and finance in investment. Results under many baseline and augmented scenarios are not consistent with the underlying paper. Justifications for the differences in findings are discussed. As a policy implication: PRI should not be measured strictly from political governance; the context of financial development should be taken into account in the proxying of financial variables and; the Ali (2013) hypotheses for poor countries may not be relevant for Africa.

While it is indisputable that institutions are crucial for Africa's emergence (Fosu, 2013ab), the measurement of PRI in terms of Polity IV has shortcomings. Whereas the

drawbacks on which the note is positioned have already been discussed, it is relevant nonetheless to highlight how Africa is different from other regions of the World in relation to Polity IV which was originally designed as a measurement of political system durability and in later years broadened in terms of analytical scope to entail issues of regime type. In North Africa, the 2011 Arab Spring has not completely subsided. In Egypt, the conception and definition of democracy has been revised several times. Tunisia's transition is yet to fully produce the anticipated results because it is continuously being plagued by social disruptions and political assassinations. The law of the land of post-Gaddafi Libya is still substantially influenced by rebels who neither are willing to succumb to central government authority nor ready to disarm.

The situation of sub-Saharan Africa is no less unappealing as the case of South Sudan is continuously preoccupying the international community. Not to mention her sisterly Central African Republic neighbor with a present situation not much different from the past (the ripples of failed coup d'états that happened between 1996-2003 and the Bush War of 2004-2007). Zimbabwe's protracted politico-economic meltdown, the post-election crises of 2007/2008 in Kenya and, Nigeria's 2008 controversial transition accompanied by a growingly determined Boko Haram, inter alia, merit some mention. Political strife has been a rule of the democratic game in Africa: Angola (1975-2002); Burundi (1993-2005); Chad (2005-2010); Sierra Leone (1991-2002); Liberia (1999-2003); the Congo Democratic Republic; Sudan (with carnages in Durfur); Somalia and Côte d'Ivoire (a resurrected crisis in 2011 after the 1999 coup d'état and 2002-2007 civil war). In summary, seven of the nine cases of total chaos and societal breakdowns known in recent history have been registered in Africa (with the exceptions of Afghanistan and Syria): Angola, Burundi, Sierra Leone, Liberia, Zaire/Congo, Somalia, and Sudan.

Given that Polity IV is also an indicator for priority in political rights; the results go a long way to extending the debate of 'the Washington Consensus versus the Beijing Model' on precedence between 'economic rights' and 'political rights' (Anyanwu & Erhijakpor, 2014; Asongu & Aminkeng, 2013; Lalountas et al., 2011; Asongu, 2014d; Moyo, 2013). Though an endogeneity robust empirical strategy has been employed, in light of the on-going debate, we are tempted to infer that issues of reverse causality may still be at play. Hence, Polity IV (political rights) could be more endogenous to private investment (economic rights). It is also important to note that the policy recommendations are not blanket, as issues of heterogeneity in countries like Botswana and Mauritius may be apparent.

Appendices

Appendix 1: Summary statistics

	Mean	S.D	Min	Max	Obs.
Private Investment (PI)	12.979	9.400	-2.437	112.35	658
Polity IV(PRI)	0.521	5.196	-9.000	10.000	750
Institutional Index (Instidex)	0.105	2.075	-5.399	5.233	598
Overall economic depth : (M2)	0.317	0.229	0.001	1.279	564
Financial system depth (Liquid liabilities)	0.251	0.214	0.001	1.054	567
Banking system efficiency (BcBd)	0.699	0.338	0.133	2.304	706
Financial system efficiency (FcFd)	0.755	0.423	0.137	2.606	567
Banking system activity (Pcrb)	0.171	0.168	0.001	0.869	567
Financial system activity (Pcrbof)	0.194	0.237	0.001	1.739	567
Financial system size (Dbacba)	0.702	0.251	0.017	1.609	693
Economic Prosperity (GDP grpwth)	4.763	7.293	-31.300	106.28	759
Trade Openness	77.853	39.698	17.859	275.23	719
Inflation	57.556	955.55	-100.00	24411	673
Voice & Accountability (V& A)	-0.674	0.734	-2.174	1.047	636
Rule of Law	-0.706	0.682	-2.691	1.053	633
Regulation Quality	-0.687	0.674	-2.729	0.905	631
Government Effectiveness	-0.681	0.614	-1.853	0.807	598
Political Stability (No voilence)	-0.557	0.958	-3.311	1.143	636
Corruption Control	-0.607	0.623	-2.495	1.086	622

S.D: Standard Deviation. Min: Minimum. Max: Maximum. Obs: Observations.

Appendix 2: Correlation Analysis

Financial Development Dynamics							Control variables			Institutions		Private Invest.	
Fin. Depth		Fin. Efficiency		Fin. Activity		F.Size							
M2	Fdgdp	BcBd	FcFd	Pcrb	Pcrbof	Dbacba	GDP	Trade	Infl.	PRI	Instidex	PI	
1.000	0.974	-0.081	-0.018	0.750	0.600	0.389	-0.130	0.225	-0.055	0.069	0.535	0.118	M2
	1.000	-0.050	0.053	0.808	0.689	0.447	-0.101	0.250	-0.053	0.108	0.608	0.143	Fdgdp
		1.000	0.870	0.379	0.377	0.298	-0.055	-0.082	-0.043	0.029	0.227	0.032	BcBd
			1.000	0.509	0.640	0.267	-0.067	-0.149	-0.076	0.077	0.239	-0.033	FcFd
				1.000	0.929	0.500	-0.099	0.074	-0.059	0.121	0.611	0.101	Pcrb
					1.000	0.434	-0.092	0.027	-0.047	0.184	0.554	0.061	Pcrbof
						1.000	-0.072	0.181	-0.051	0.146	0.508	0.194	Dbacba
							1.000	0.125	-0.057	-0.032	0.033	0.372	GDP
								1.000	0.022	-0.074	0.148	0.446	Trade
									1.000	-0.040	-0.099	-0.042	Infl.
										1.000	0.423	-0.011	PRI
											1.000	0.216	Instidex
												1.000	PI

Fin(F): Financial. M2: Money Supply. Fdgdp: liquid liabilities. BcBd: Bank credit on bank deposit. FcFd: Financial credit on financial deposit. Pcrb: Private domestic credit by deposit banks. Pcrbof: Private domestic credit by deposit banks and other financial institutions. Dbacba: Deposit bank assets on deposit bank assets plus central bank assets. GDP: GDP growth rate. Infl: Inflation. PRI: Property Rights Institutions. Instidex: Institutional Index. PI: Private Investment. Invest: Investment.

Appendix 3: Definitions of variables

Variable(s)	Definition(s)	Source(s)
Financial system Depth	Money Supply (% of GDP)	FDSD (World Bank)
Banking System Depth	Liquid Liabilities (% of GDP)	FDSD (World Bank)
Banking System Efficiency	Bank credit on Bank deposit	FDSD (World Bank)
Financial System Efficiency	Financial credit on Financial deposit	FDSD (World Bank)
Banking System Activity	Private domestic credit by deposit banks (% of GDP)	FDSD (World Bank)
Financial System Activity	Private domestic credit by deposit banks and other financial institutions (% of GDP)	FDSD (World Bank)
Financial System Size	Deposit bank assets on (Deposit bank assets plus Central bank assets)	FDSD (World Bank)
Economic Prosperity	GDP growth (annual %)	World Bank (WDI)
Trade	Exports plus Imports of Commodities (% of GDP)	World Bank (WDI)
Inflation	Consumer Price Index (annual %)	World Bank (WDI)
Property Rights Institutions	Polity Index: property rights institutions measured by 'constraint on the executive' from the Polity IV index.	World Bank (WDI)
Institutional Index	First PC of V&A, RL, RQ, GE, PS and CC	PCA
Private Investment	Gross Private Investment (% of GDP)	World Bank (WDI)

WDI: World Bank Development Indicators. FDSD: Financial Development and Structure Database. PCA: Principal Component Analysis. P.C: Principal Component. V& A: Voice & Accountability. R.L: Rule of Law. R.Q: Regulation Quality. GE: Government Effectiveness. PS: Political Stability. CC: Control of Corruption.

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