

FINANCIAL DEVELOPMENT, GROWTH VOLATILITY AND INFORMATION ASYMMETRY IN SUB-SAHARAN AFRICA: DOES LAW MATTER?

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Abstract

We re-examine the law–finance theory relying on 33 countries in sub-Saharan Africa over the period 2004–2011. Our evidence suggests that legal origin significantly explains cross-country differences in financial development and economic volatility. More importantly, relative to civil law, English common law countries and those in Southern Africa have higher financial sector development both in terms of financial activity and banking efficiency on the back of lower volatility. While private credit bureau positively (negatively) affects financial development (economic volatility) with economically large impact for English legal legacy countries, the latter effect is contingent on the form of legal origin suggesting that, the establishment of information sharing offices per se may be insufficient in taming growth vagaries.

JEL Classification: K42, C32, O43, P48, K10

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1. INTRODUCTION

Indeed, the current literature on finance-law nexus has left much space for engagement in at least three areas: *(i)* re-positioning the debate where the issue of financial development and banking system efficiency is lower; *(ii)* examining the role of legal origin in influencing information sharing for both financial system activity and the fundamental role of financial institutions to transform mobilised deposits into credit for economic agents; and *(iii)* examining the moderation role of legal origin in information asymmetry-economic volatility nexus. Our study makes significant contributions to existing literature in several ways. First, given the evolving legal systems in the sub-region on the back of narrow financial markets, shocks and volatility, we engage the literature by empirically re-examining the law–finance theory and the fundamental role of information sharing in financial development measured in terms of financial activity and efficiency. Second, we also examine how legal origin interacts with information asymmetry in explaining cross-country differences in economic volatility in sub-Saharan Africa (SSA). This study therefore presents a case for the imperative of introducing the previously missing links into the law–finance literature.

A growing body of literature highlights financial development as a key factor in promoting economic growth (Levine, 1997; Beck *et al.*, 2000; Hassan *et al.*, 2011; Ibrahim and Alagidede, 2016) and reducing economic volatility (Denizer *et al.*, 2000; Ibrahim

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and Alagidede, 2017). Recent studies identify legal origin as important factor influencing cross-country differences in financial development and growth (La Porta *et al.*, 1998; Levine, 1998; Beck *et al.*, 2003). More importantly, the law–finance theory suggests that common law countries have better prospects for financial development than civil law countries. The reasons are that common laws are more likely to protect the private property rights relative to the State, and they tend to be dynamic to changing country landscape (La Porta *et al.*, 1998; Beck and Levine, 2003).

There is literature proffering that limited access to finance has been on account of higher information asymmetry (Triki and Gajigo, 2014; Asongu *et al.*, 2015). Consequently, the desire to increase financial access and financial development has led to the establishment of information sharing offices notably the private credit bureaus (PCBs) across SSA countries with the intent of reducing information asymmetry between borrowers and lenders in the financial markets. Indeed, some authors (Batuo and Kupukile, 2010; Allen *et al.*, 2011) have argued that the establishment of information sharing offices is based on the premise that, the limited access to finance (and financial development more generally) by prospective borrowers is constrained by such factors (namely eligibility of bank lending, physical access and affordability) that can be explained by information asymmetry.

Theoretically, information sharing offices are expected to serve as agents of financial intermediation by narrowing information gap between borrowers and lenders. According to Jappelli and Pagano (2002), by reducing information asymmetry, these information sharing bureaus are able to increase competition and reduce bottlenecks in access to finance thus aiding in efficient capital allocation. However, recent literature on information asymmetry (see Asongu *et al.*, 2015) has doubted the ability of these information sharing offices to inspire competition in the financial sector for increased financial access.

For most part, studies on information asymmetry and financial development (Ivashina, 2009; Houston *et al.*, 2010; Tanjung *et al.*, 2010) have failed to (i) engage the crucial role of law in financial development in the light of evolving legal systems in SSA and (ii) incorporate the concept of finance given the role of banking institutions in transforming mobilised deposits into credit for productive investment. On the other hand, the law–finance theory literature in Africa (see for instance Asongu, 2011) has been situated around its implications for economic growth and welfare without examining how legal origin explains cross-country differences in economic volatility. More tellingly, how effective law shapes and/or limits information sharing in growth volatility remains an unexplored area of research in SSA. We therefore bridge these research gaps relying on data for 33 SSA countries spanning 2004–2011.

Our evidence suggests that legal origin significantly explains cross-country differences in financial development and economic volatility. More importantly, English common law countries have higher financial sector development both in terms of activity and efficiency accompanied by low growth volatility. Not only is the relationship between the interaction term of legal origin and PCB on volatility negative and statistically significant, it is economically large for the English legal legacy countries. However, juxtaposing the impact of PCB on volatility on one hand and that of transmission channel on the other suggests that, the establishment of information sharing offices per se may be insufficient in taming growth vagaries. We argue that it is the effectiveness of law that is exceedingly relevant in faltering economic volatility. Thus, relative to countries with lax legal systems, those that enforce contracts effectively, protects private property and lender rights have

better information sharing and reduced information asymmetry which are essential in smoothening fluctuations.

The next section of the paper draws the linkages among legal origin, financial sector development and information asymmetry. Section 3 outlines the data and empirical strategy while Section 4 presents the findings. We highlight the policy implications and recommendations in Section 5 and Section 6 concludes the study.

2. LEGAL ORIGIN, FINANCIAL SECTOR DEVELOPMENT AND INFORMATION ASYMMETRY: DRAWING THE LINKAGES

According to Beck and Levine (2003), legal origins have been argued to influence financial development through (i) the political and (ii) adaptability channels. The former is built on two tenets: first, legal legacy varies regarding its emphasis on protecting the rights of private investors compared with that of the State. Second, private property rights protection forms the bedrock of financial development. Thus, primitively, differences in legal traditions may predicate prior variations in the level of financial development (La Porta *et al.*, 1998). Hence, the extent to which legal origin enhances or hampers the financial sector depends on whether it supports the right of private property relative to the State or vice versa. Where the prevailing legal framework supports the State, then private property rights tend to suffer and the reverse also holds. Arguably, relative to the common laws, the political mechanism contends that civil laws are more inclined to protecting the rights of the State as opposed to property rights which has consequential dire implications for financial development (Beck and Levine, 2003). La Porta *et al.* (2003) note that States are more likely to intervene in the judicial system by slowing judges' rulings, offering courts' jurisdiction over cases involving the government or allowing judicial review of the laws governing the country which may lower its powers. La Porta *et al.* (1999) therefore likens civil legal origin to those desirous of building institutions to further confer powers to the State. In this case, a more powerful State is progressively inclined to misappropriate society's resources to its favour which is detrimental to competitive financial market systems. Moreover, a relatively powerful State is more likely to interfere in the operations of the financial sector by directing the flow of financial resources to cronies and ultimately increasing non-performing loans of the financial institutions. The law and finance theory therefore suggests that civil law countries have feeble private property rights protection and a lower financial sector development relative to other legal legacies.

Conversely, the common law has historically been projected to uphold the rights of private property owners against the State. In fact, Rajan and Zingales (2003) argue that compared to civil law countries, governments in common law countries were ineffective in expanding the role of the government at the expense of financial sector development during the interwar period 1919–1939 largely on account of the stronger role of the judiciary. Thus, the law and finance theory contends that the English common law supports financial sector development to a larger extent compared to civil law systems where powers of the State are weakly checked.

Similarly, the second channel – adaptability mechanism – linking legal origin with financial development is also constructed around two areas: First, legal systems vary in their ability to adjust to changing landscapes. Second, if a country's legal system sluggishly adapts to changing circumstances, then large gaps will exist between the economy's

financial needs and the ability of the legal system to support those needs (Beck and Levine, 2003). The adaptability channel therefore predicts that English common law countries have higher proclivity of instituting well developed and functional financial sector than civil law countries. More importantly, the adaptability mechanism affirms that common laws are intrinsically dynamic and responds to the changing needs of countries thus constantly narrowing agents' demands and provisions of the law.

Indeed, the balkanisation and subsequent colonisation of Africa by Europeans resulted in the transplant of their legal doctrines into the host countries. Beyond classifying countries into various colonies (such as the British, French, Portuguese or Belgian), Berkowitz *et al.* (2002) stress that the transplant process also established legal systems in colonised countries consistent with the colonial legacy. La Porta *et al.*'s (1997, 1999) study find that countries that adopts the French civil law have the lowest levels of financial development.¹ Beck *et al.* (2003) empirically examine the political and adaptability channels – respectively proxied by Supreme Court power and case law – in accounting for international differences in stock market, financial intermediary and private property rights development. As espoused by the political channel, it is expected that less State control of the judiciary will result in higher financial development thus hypothesising a positive coefficient of the political channel proxy. However, the authors find support for the adaptability channel but not the political channel as the case law is positively associated with stronger private property rights protection, higher stock market and bank development.

Beyond the political and adaptability channels, legal frameworks must also be capable of propelling agents to disclose full information on their qualities for the usage of other interested parties. In other words, well-functional legal systems ought to be able to ensure “perfect information” in the financial sector by propelling the disclosure of all relevant information to information sharing offices to allow for efficient financial intermediation.

Tchamyou and Asongu (2016:3) define these information sharing offices also known as “credit reference agencies” “as institutions that collect information on an individual or commercial borrowers' obligations from multiple sources, namely: retails lenders, credit card companies and banks (for individuals) and supplies, direct investigation and public sources (for businesses).” Information gathered here is used to write a report on credit history and used by prospective lenders.

Diamond and Dybvig's (1983) theoretical work posits that the key intent of financial intermediaries is to decrease cost of transaction and information owing to information asymmetry between borrowers and lenders. Other studies have highlighted the importance of reducing information asymmetry for increased financial intermediation largely through diversification with financial intermediaries (Diamond, 1984) and communication by banks to investors on potential borrowers (Leland and Pyle, 1977). Thus, the establishment of PCB is a genuine channel of increasing (decreasing) information sharing (information asymmetry) to boost (dampen) financial development (growth volatility).

The substantial empirical literature on information asymmetry-finance nexus have been on assessing how reduced information asymmetry propels financial access (Brown

¹ Levine (1998, 1999) and Levine *et al.* (2000) also find that legal origin importantly explains cross-country differences in the development of bank and stock markets and that the level of finance accounts for the international differences in long run growth.

et al., 2009; Triki and Gajigo, 2014); reduces default rates (Jappelli and Pagano, 2002); mitigates cost of credit (Brown *et al.*, 2009); influences syndicated bank loans (Ivashina, 2009) and affects corruption in lending (Barth *et al.*, 2009). More recently, Asongu *et al.* (2015) have examined the information sharing threshold for financial development in Africa. Evidence from their study shows that, while PCB negatively affects banking system efficiency, the impact of public credit registry is insignificant. On the information sharing-private credit nexus, the authors have established that both public credit registry and PCB are associated with reduced financial activity with the PCB having a huge magnitude.

Indeed, the rising establishment of PCBs in Africa (see Mylenko, 2008) is unsurprising given their key role in financial development as they remove information bottlenecks restricting lenders from investigating and accessing risk registry of borrowers. With this, they play a very critical role in addressing adverse selection from the part of lenders and alleviate moral hazard by addressing the unappealing financial behaviour of borrowers. Ultimately, the financial sector is able to shape and monitor investment choices of agents both in terms of the nature of projects that get funded and their overall contribution to economic growth. Following from the political and adaptability routes, we can presuppose that the extent to which agents disclose information to information sharing bureaus crucially depends on the form of legal origin and this should be higher among British common law countries relative to the French civil law.

Arguably, none of these studies has examined the connection between legal institutions, availability and precision of information on borrower, the efficiency of banks, quality of financial development and growth volatility. Given the role of financial intermediaries, when information on borrower quality is symmetric, default rate is minimised as financial intermediaries effectively monitor resources provided to the financial sector hence dampening growth volatility. Indeed, lenders are often left with issues of adverse selection on account of their lack of information on borrower quality particularly on risks associated with investment needing the borrower to mobilise financial resources. This concern is even more pronounced when lenders are intrinsically unable to control the direction of borrowers in post-credit grant. Given this understanding, a borrower may conceal returns from an underlying investment in order to reduce the possibility of default or amount of repayment at agreed times. This behaviour of borrower is paramount and evident in countries with weak information sharing and legal systems leading to sub-optimal resource allocation, financing of unproductive projects thus exacerbating growth volatility.

Conceivably, countries in SSA are prone to economic volatility due to their nature and financial sector underdevelopment (Ibrahim and Alagidede, 2017). For this reason, financial sector development, premised on effective legal systems, is viewed as essential factor influencing both the level of finance and volatility. Indeed, our focus on the market-supporting institutions including law, information sharing office and financial systems, in explaining long run economic volatility has been identified as important factors for SSA, a clear niche for the sub-region that has become a major puzzle necessitating research efforts to shed light on both its growth vagaries and legal trajectory; and uncover any potential lessons for other developing economies.

Admittedly, very scanty literature pertains to SSA and those existing ones do not particularly show how the evolving legal origins in the sub-region play out in information

asymmetry-volatility nexus apart from their interaction with finance. We address this gap in the literature by first discussing our methodology in the next section.

3. DATA AND METHODOLOGY

3.1 Data

Annual data for the study is sourced from 33 SSA countries comprising 13 English common law origins. The civil law countries consist of 14 French, 4 Portuguese and 2 Belgian. Our sample covers the period 2004–2011. Details of the countries are in Appendix A. The choice of these countries is exclusively based on data availability. For instance, data on information sharing bureaus is only available from 2004 to 2011. The fundamental object of increasing (decreasing) information sharing (asymmetry) is to improve financial intermediation efficiency, lower default rate which has the potential of improving returns on investment and growth. Following Triki and Gajigo (2014), we measure information sharing/asymmetry with the PCBs. Our choice for this proxy is guided around five indicators: access, data sources, ownership, coverage and purpose. Access to PCBs is opened to all lenders and not restricted to only information providers. Data on PCBs are extensive and largely obtained from the public credit registry, courts and tax authorities. On the ownership, beyond central banks and government, ownership of PCBs encapsulates lenders, independent third parties and lender group. In terms of coverage, apart from the large corporations, PCBs also focus on small and medium scale entrepreneurs often with richer data set. Finally, in terms of purpose, the PCBs are established on account of the increasing demand for and need of information on borrowers in the financial sector. Therefore, data on the PCBs provide crucial information of borrower quality and is therefore used to proxy the level of information sharing or asymmetry in the domestic financial markets. We use credit to the private sector as percentage of GDP to proxy the quality of financial development. This measure, which accounts for credit advanced to the private sector thus propelling the utilisation and allocation of funds to more efficient and productive activities has been extensively used in the finance literature (King and Levine, 1993; Levine *et al.*, 2000; Arcand *et al.*, 2012). While this proxy's financial access, as robustness checks, we used the banking system credit on "banking system deposits" to measure the efficiency of the banking system in financial development. The legal origin variables are the English common law, French, Portuguese and Belgian civil laws. Data on GDP growth rates are used to construct growth fluctuations using the generalised autoregressive conditional heteroskedasticity (GARCH) developed by Bollerslev (1986).² Real and monetary shocks proxied by terms of trade and inflation shocks, respectively, are similarly constructed using the GARCH (1, 1) process. The inflation variable is the annual percentage change in the consumer price index while terms of trade is the net barter terms of trade computed as the ratio of export to import price. While data on the legal origin are taken from La Porta *et al.* (2008) and Asongu (2011), data on PCB are sourced from African Development Bank. Data on all the remaining variables are taken from the World Development Indicators of the World Bank. Table 1 presents the summary statistics of the variables.

² This approach was also used by Alagidede and Ibrahim (2017) in modelling exchange rate volatility.

Table 1. Summary statistics (2004–2011)

Variables	Mean	Stand. dev	Coefficient of variation	Minimum	Maximum	Skewness	Kurtosis	Observations
Growth volatility	13.75	10.88	0.79	7.96	26.01	1.20	1.83	256
English	0.40	0.50	1.22	0.00	1.00	0.48	-1.73	256
French	0.42	0.49	1.04	0.00	1.00	0.32	-1.81	256
Portuguese	0.12	0.33	2.75	0.00	1.00	1.67	2.00	256
Belgian	0.06	0.21	3.50	0.00	1.00	0.42	1.07	256
Private credit	22.02	18.35	0.83	0.41	128.43	1.95	7.01	251
Bank credit	43.49	25.11	0.58	15.30	98.21	2.33	9.75	244
Public credit bureau (PCB)	3.98	12.87	3.23	0.00	64.80	1.02	4.77	256
Terms of trade shock	1.93	0.22	0.11	0.31	3.01	-0.42	10.32	256
Inflation shock	3.96	0.95	0.24	1.33	6.70	-1.21	118.13	242
Trade openness	74.11	72.63	0.98	14.55	255.00	0.98	3.12	251

Preliminary findings reveal that out of the sampled 33 countries, majority (42%) align with the French civil law relative to 40% of the English common law. While 12% are of the Portuguese legal origin where legal issues are adjudicated leveraging from the Portuguese civil laws, only 6% are Belgian legal origin which is aligned to the civil law. All variables are average over the sample period and suggest that private credit-to-GDP is 22% relative to the bank credit of 43.49%. To allow for inter-series comparison of variability, we compute the coefficient of variation (CV) as the ratio of standard deviation to mean. Values from the CV show a higher volatility of private credit proportional to bank credit. These taken together may imply higher banking system efficiency relative to the financial system activity. The mean trade openness is 74.11% and has a reasonably large variability. Interestingly, all the series are positively skewed except our shock variables (inflation and terms of trade) which are skewed to the left. We report the correlation coefficients in Appendix B which reveals the level of association between the variables.

3.2 Empirical Strategy

The objective of this paper is to examine whether legal origins explain cross-country differences in finance and volatility and how legal legacy interacts with information sharing in economic fluctuations in SSA. Indeed, estimating such relationships using ordinary least square pose endogeneity problems rendering the estimates biased and inconsistent. For instance, existence of robust legal environment shapes information sharing thus determining the quality of financial development and its impact on growth volatility. This is in synch with the law–finance literature.

It is imperative to note that, two main problems may occur in assessing the impact of financial development on growth volatility: endogeneity bias and reverse causality. Thus a more general antidote to the endogeneity is the use of instrumental variables where the current paper adopts the two-stage least squares (2SLS) with heteroskedasticity-consistent standard errors. This approach which is also used by Beck *et al.* (2003) relies on the identification of structural system of equations with instruments that are weakly correlated with the endogenous regressor.

Given the overarching aim of this study, we address the issues of whether the exogenous legal origins explain financial development and the propensity of the exogenous components of finance to account for cross-country differences in growth volatility besides the financial development. We examine this by specifying our first stage regression as:

$$Finance_{it} = \gamma_1 [English_i] + \gamma_2 [French_i] + \gamma_3 [Portuguese_i] + \gamma_4 [Blocs_i] + \delta X_{it} + v_{it} \quad (1)$$

In the second stage, we estimate the following regression:

$$Volatility_{it} = \mu_1 Finance_{it} + \varphi [Inter_{it}] + \delta X_{it} + u_{it} \quad (2)$$

In both regressions, *Blocs* is a set of the regional blocs while *X* denotes a vector of the exogenous variables that are included in the second stage regression. We include an interaction term, *Inter*, of legal origin and PCB to account for the indirect influence of law on volatility through information sharing. The error terms in the first and second stage regressions are *v* and *u*, respectively.

Following Levine et al. (2000) and Beck et al. (2003), we use the three legal origins (English, French and Portuguese) dummies as instruments.³ Once determined, legal origins stay the same by their nature and may be uncorrelated with growth volatility beyond their relationship with financial development and information sharing. La Porta et al. (1998) show that legal origin crucially shapes national approaches to laws concerning borrowers and lenders and the efficiency with which those laws are broadly applied. Indeed, beyond effective enforcement, since finance is based on contracts, legal origins that produce laws that protect the rights of external investors and lenders will perform a correspondingly better job at increasing (reducing) information sharing (asymmetry). By recognising that concealing vital information with regard to borrower traits and creditworthiness is punishable by law, borrowers reveal their “true” qualities to lenders. With this, legal origin promotes financial development in its allocation of efficient resources. By considering legal origins as not affected by the growth volatility, it satisfies only one of the two requirements for a set of instruments to be regarded as valid. The second requirement is the correlation between the set of instruments and the endogenous regressor. We empirically assess whether our choice of instruments satisfies the exogeneity requirement by conducting the Sargan over-identifying restrictions (OIR) test.⁴ Relative to the number of the endogenous explaining variables and an attempt to mitigate the constraints of the OIR test, we include three additional dummies principally used as instruments. Our additional instruments are the regional blocs comprising Western Africa, Southern Africa, and Eastern Africa where Central African countries are used as the base group.

4. FINDINGS AND DISCUSSIONS

We examine the importance of legal origin in explaining cross-country differences in growth volatility. In other words, we assess the ability of legal origins to explain the cross-country variations in information sharing and financial development, and the propensity of the exogenous components of finance and information sharing channels to account for the differences in countries’ growth volatility. In Table 2, our joint significance test with the Fisher test reveals that legal origins jointly and significantly influence

³ The Belgian legal origin serves as reference.

⁴ It is imperative to note that the Sargan over-identifying restrictions (OIR) test for instrument validity is feasible only in case of over-identification (where the instruments must be higher than the endogenous explaining variables by at least one degree of freedom).

Table 2. *Legal origins, financial development and information asymmetry*

First stage regressions				
Variables	Financial system activity (Private credit-to-GDP)		Banking system efficiency (Bank credit on bank deposits)	
	1	2	3	4
Legal origin:				
English	0.371** (2.902)	0.402*** (3.101)	0.391** (2.757)	0.442** (2.751)
French	0.194*** (3.812)	0.200*** (2.915)	0.291*** (3.713)	0.296*** (3.812)
Portuguese	0.228** (2.011)	0.293*** (3.152)	0.301*** (3.910)	0.321** (2.750)
Regional blocs:				
Western Africa	0.201** (2.370)	0.228*** (3.072)	0.232*** (4.094)	0.259** (2.610)
Southern Africa	0.337*** (4.901)	0.3500** (2.011)	0.341*** (3.523)	0.372** (2.341)
Eastern Africa	0.177* (1.955)	0.195** (2.315)	0.180** (2.097)	0.197** (2.160)
Controls:				
PCB		0.271** (2.111)		0.114*** (1.982)
Term of trade shock		0.159** (2.730)		0.311*** (3.015)
Inflation shock		-0.221*** (-4.012)		-0.301** (-2.731)
Trade openness		0.092*** (5.011)		0.271*** (3.301)
Diagnostics:				
<i>F</i> -test (instruments)	24.11	16.01	25.24	18.90
Adjusted R ²	0.35	0.47	0.33	0.42
No. of observations	184	184	173	173

Notes: *, ** and ***, respectively, denote significance at 10, 5 and 1% level. PCB refers to private credit bureau.

growth volatility suggesting that disaggregating countries by their legal origin reveals the cross-country differences in growth volatility.

We assess the ability of legal origins to explain the variations in financial development both in terms of activity and banking system efficiency. We regress the former (private credit) and the latter (bank credit on bank deposit) on the legal traditions both without (columns 1 and 3) and with controls (columns 2 and 4). Imperatively, the regression of financial development on the instruments is a crucial precondition in the estimation of the 2SLS. Our results provide ample evidence that the set of instruments significantly determine the endogenous regressors of both financial system activity (private credit-to-GDP) and banking system efficiency (bank credit on bank deposits). The values of the *F*-statistics suggest that legal origins importantly explain the differences in financial development in SSA.

More specifically, with regard to columns 1 and 3, our evidence shows that, British common law countries have significantly higher levels of financial system activity and banking system efficiency than the French civil law countries which have relatively lower private credit. Countries that have adopted the Portuguese civil law have significantly higher financial system activity and lies in between the English and French civil law countries. Further finding reveals higher banking system efficiency in all the legal origins relative to the financial system activity.

With regard to the regional blocs, our findings reveal higher financial activity and efficiency among Southern African countries compared to Western and Eastern Africa. Eastern African countries have the lowest financial development while Western Africa is

between the two blocs. For both financial development indicators, coefficients of the regional dummies are higher when we include the controls although banking system efficiency is consistently higher relative to the financial sector activity. To the extent that about 62% of the Southern African countries fall under the English legal origin confirms our earlier evidence that finance is higher among countries that adopts the English legal doctrines. Moreover, based on our sample, 50% of the Western African countries follow the French legal legacy which is relatively lower compared to the English common law countries in relation to the levels of financial sector development. Our sample evidence therefore confirms Mundell's (1972) conjecture that financial development is higher among Anglophone countries relative to the Francophone countries.

We include the control variables in columns 2 and 4 and our findings on legal origin-finance nexuses are robustly positive and significant. Consistently with the earlier finding, English common law countries dominate in the banking efficiency followed by the Portuguese civil laws which has higher bank credit on bank deposits relative to the French civil laws.

As regards to the impact of the covariates on the banking system efficiency, the coefficients of PCB are positive suggesting that higher information sharing is associated with higher financial development. More specifically, a percentage increase in information sharing significantly spurs financial system activity by 0.271 percentage-points. In the case of efficiency of the banking system, higher PCB increases bank credit on bank deposits by 0.114 percentage-points clearly highlighting the importance of reducing information asymmetry to promote the development of the financial sector. Information sharing bureaus are primarily designed to reduce information gap between lenders and borrowers thus increasing financial access in the formal financial sector. Specifically, it does this by mitigating moral hazard on the part of borrowers and adverse selection on the part of lenders culminating in higher incentives for banks to lend.

Turning to the other controls, terms of trade shock is associated with higher financial activity given the sign of the coefficient. As economies are hit by real external shocks, agents in the large tradable sector recalibrate their investment and consumption choices resulting in higher demand for financial resources. However, an increase in monetary shock reduces the amount of private credit available. Our evidence suggests that economies with higher inflation variability are likely to have less active financial activity and less efficient banking systems. A standard elucidation is that higher inflation volatility is associated with greater uncertainty. In the face of information asymmetry, the problem is particularly exacerbated when collateral is required for the efficient functioning of borrowing and lending markets. With low returns on capital during inflationary episodes, the disincentive to save due to high monetary shock inhibits the accumulation of collateral and thereby militating against financial intermediation (Altig, 2003). Moreover, a unit-percentage increase in trade openness significantly improves financial system activity by 0.092 percentage-points. With more openness, there is demand for both external and internal finance hence higher financial activity and efficiency. Indeed, de-restricting international trade allows the entry of efficient financial sector institutions from abroad with a positive spill-over into the domestic financial system which increases both in terms of size and quality. Undoubtedly, openness may potentially be associated with greater risks, including exposure to external real shocks and foreign competition consequently encouraging the development of financial markets largely through the rising demand for finance that can be used to diversify such risks and allow firms to surmount short term liquidity

Table 3. *Legal origins, growth volatility and information asymmetry*

Variables	Second stage regressions					
	Economic volatility (GARCH)			Economic volatility (Standard deviation)		
	1	2	3	4	5	6
Legal origin:						
English	-3.781*** (-5.022)	-3.979*** (-5.771)	-3.981*** (-4.310)	-5.021*** (-3.781)	-5.754*** (-4.731)	-4.012*** (-3.117)
French	-2.803*** (-3.755)	-1.934** (-2.017)	-2.111** (-2.312)	-2.016** (-2.751)	-4.481** (-2.750)	-3.230** (-2.021)
Portuguese	-2.019*** (-4.663)	-1.681** (-2.925)	-1.995* (-1.961)	-1.992*** (-3.217)	-0.981** (-2.045)	-0.182** (-2.399)
Regional blocs:						
Western Africa	-3.012** (-2.042)	-3.191*** (-3.401)	-3.211** (-2.630)	-3.312*** (-3.753)	-3.379** (-2.601)	-3.441*** (-3.991)
Southern Africa	-4.022** (-2.310)	-4.190** (-2.281)	-4.201*** (-4.049)	-4.311** (-2.710)	-4.471*** (-3.231)	-4.801*** (-4.113)
Eastern Africa	-1.878** (-2.511)	-1.993** (-2.403)	-2.151** (-2.620)	-1.902** (-2.351)	-2.120*** (-3.710)	-2.190** (-2.117)
Controls:						
PCB		-0.301** (-2.104)	-		-0.198** (-2.156)	-
Private credit-to-GDP		-0.721** (-2.055)	-0.588** (-2.731)		-0.201*** (-3.040)	-0.141** (-2.903)
Bank credit on bank deposits		-0.511** (-2.034)	-0.500** (-2.722)		-0.432*** (-3.281)	-0.250*** (-3.099)
Terms of trade shock		0.055*** (2.214)	-		0.041* (1.971)	-
Inflation shock		0.097** (2.751)	-		0.068*** (3.771)	-
Transmission:						
English and PCB			-0.921*** (-4.925)			-0.840** (-2.351)
French and PCB			-0.601** (-2.891)			-0.520*** (-3.053)
Portuguese and PCB			-0.442* (-1.901)			-0.372** (-2.055)
Diagnostics						
Hausman test	25.78	32.01	41.87	21.88	38.92	46.35
OIR (Sargan) test	9.21	11.55	12.58	8.37	9.61	10.69
[p-value]	[0.002]	[0.000]	[0.000]	[0.003]	[0.001]	[0.000]
Cragg-Donald Wald <i>F</i> -test	22.45	19.01	17.34	25.87	21.98	19.51
Number of obs.	162	162	162	155	155	155

Notes. *, ** and ***, respectively, denote significance at 10, 5 and 1%. PCB refers to private credit bureau.

constraints or adverse shocks. Thus, openness enhances financial sector development through the demand side (Svaleryd and Vlachos, 2002).

What is also noticeable is that, while terms of trade shock improves financial development, its impact is higher in the banking system efficiency than the financial system activity. In the same view, the impact of openness on efficiency is almost three times higher compared to the financial system activity.

In the next section, we assess whether the exogenous components of financial development explain volatility and whether legal framework explains economic volatility through some other sources apart from finance. This is done at two levels: first without (columns 1 and 4) and second with controls (columns 2, 3, 5 and 6) as shown in Table 3 below. We flatly reject the null hypothesis of the Hausman tests in all the models suggesting the presence of endogeneity bias thus justifying our use of the 2SLS approach.

Overall, our findings show that legal origins dampen growth volatility. More specifically, growth volatility reduction is higher (lower) among countries with the English (Portuguese) while French legal origin lies between the English and Portuguese civil laws

(column 1). The implication is that countries with the English common laws are faster in faltering growth vagaries while those with Portuguese legal origin are slower. In column 2, we estimate legal origin-volatility by including our controls. Our findings show robust and overwhelming evidence that legal origin matter in growth fluctuations. More specifically, the rate at which economic volatility is dampened is faster in English common law countries than those with the French civil laws. Countries with the Portuguese legal origin are however between the English and French legal origins. By including our covariates, what is apparent from the finding is that, while the coefficient of English common law suggests a further dampening effect, inclusion of the controls marginally exacerbates volatility among the French and Portuguese legal origins.

With regard to the regional blocs, our findings reveal negative relationship between the regional blocs and growth volatility among Southern African countries compared to Western and Eastern Africa. The coefficients of Southern Africa are more negative and thus capable of registering lowest economic volatility. Moreover, the coefficients of Eastern Africa denote higher volatility since the coefficients are relatively less negative. Countries in Western Africa have relatively lower volatility and effects fall within the Southern and Eastern African countries. Interestingly, for all the blocs, volatility is lower when measured with the GARCH compared to the standard deviation measure. This notwithstanding, whether measured with conditional or unconditional volatility, the dampening effect is higher when controls and transmission channels are successively introduced given the more negative coefficients.

On the effects of the control variables on growth volatility, the coefficient of PCB is negative and statistically significant at 5% suggesting that higher (lower) information sharing (asymmetry) dampens growth volatility. By ensuring better risk management and improved quality finance, PCB efficiently allocates resources thus reducing volatility by narrowing market imperfections. While higher information sharing improves financial sector development, our evidence further suggests that financial development is also associated with reduced economic fluctuations although the elasticity effect of financial system activity is huge relative to the banking system efficiency. Specifically, the elasticity effect of private credit-to-GDP is at least 1.4 times larger than the banking system efficiency (column 2). Thus, although efficiency in the banking sector dampens growth, their drive to do this is subdued in the face of financial sector activity. The implication is that higher financial development is associated with lower volatility. More importantly, improved financial systems should facilitate a closer match between savers and investors, promotes diversification and potentially reduces risks and fluctuations. Thus, financially underdeveloped economies are expected to experience higher economic volatility thus projecting the beneficial effect of financial activity and banking system efficiency in smoothing growth volatility in countries with well-developed financial sector.

The coefficient of terms of trade shock is positive suggesting that increases in terms of trade shocks heighten volatilities. Specifically, more real external shock magnifies growth volatility by 0.055% following a 1% real external shock. Arguably, variations in the terms of trade affect the economy through relative price fluctuations of imported input and exported output. As such, shock to terms of trade is expected to directly affect the tradable sector and indirectly impacts on the non-tradable sector. It therefore presupposes that, economies with huge non-tradable sector will be relatively immune to real shocks. Our finding therefore highlights the dependency nature on primary commodities of our sampled countries hence the relationship between the terms of trade shock and economic fluctuation is unsurprising.

Growth volatility is also positively associated with monetary shock proxied by inflation shock. Our finding shows that, a unit-percentage rise in monetary shock heightens fluctuations by 0.097 percentage-points. Monetary shock amplifies economic volatility. In fact, theory suggests that whether economic fluctuation is magnified or dampened by inflation volatility well depends on the source of the shock. Monetary shock is expected to stem the tide of macroeconomic volatility when shocks originate from wage-setting but not when emanating from aggregate demand (see De Long and Summers, 1986; Driskill and Sheffrin, 1986). To the extent that monetary shock proxied by inflation fluctuation amplifies volatility underlines the key contribution of aggregate demand in the region's economic volatility. And as argued by Ibrahim and Alagidede (2017), higher aggregate demand can be associated with higher inflation especially when the growing demand does not follow a higher productivity and output.

Consistent with the instrumental variable estimation techniques, we test for the OIR using the Sargan's test. The null hypothesis of the test shows that our set of instruments does not suffer from endogeneity as the exogenous components are uncorrelated with the error terms in the second stage regressions. These findings therefore suggest legal origins explain economic volatility via other transmission channels beyond financial system activity and banking efficiency.

From a theoretical point of view, legal origin may negatively affect growth volatility in several ways. Direct negative effects could come through improvement in institutional framework, improved regulation, corporate governance and efficiency in doing business due to the protection of investor and/or shareholder rights. Apart from the direct dampening effect of legal origin on volatility, existence of efficient legal systems may improve the allocation of capital. Moreover, the legal tradition indirectly falters growth volatility through its effect on information sharing. Without information sharing, lenders are unable to monitor and advice on the investment decision of borrowers. In this case, borrowers may end up using the borrowed funds to finance unproductive investments thereby increase economic volatility. However, with the existence of efficient laws and with the fear of being prosecuted for concealing information on their creditworthiness and investment choices, borrowers are compelled to disclose these information leading to less volatility. We examine this indirect channel by introducing interaction terms of the legal origins and PCB, our proxy for information asymmetry. In column 3, our findings are consistent with our hypothesis and show that apart from the direct effect, legal origin dampens growth volatility by reducing information asymmetry.⁵ The coefficients of the interaction terms are negative and statistically significant at conventional levels. The indirect effect of the legal traditions is higher in English common law countries followed by the French civil law tradition. The impact of the Portuguese civil law regimes on volatility through the PCB is lower and slightly significant at 10%. The lower intrinsic characteristic of the Portuguese civil law to exert large dampening effect on volatility can be attributed to its weak deterrent nature in compelling borrowers to succumb to full disclosure. The marginal effect of English, French and Portuguese legal origins on PCB for growth volatility is -0.921 , -0.601 and -0.442 , respectively, with a corresponding net effect of -0.679 , -0.583 and

⁵ We do not include the real and monetary shocks as exogenous variables as their inclusion makes the Sargan's OIR test impossible due to under-identification. Their exclusion therefore makes the number of instruments larger than that of the endogenous regressors by one degree of freedom.

-0.354.⁶ These findings are far reaching implying that, information about corporations and borrowers is critical for exerting corporate governance and identifying the best investments. Not only is the relationship between the interaction term of legal origin and PCB and volatility negative and statistically significant, it is economically large for the English legal legacy. Thus, countries that enforce contracts effectively, protects shareholder and lender rights have better information sharing and reduced information asymmetry than countries with lax legal system. Invariably, what is apparent from the finding is that, higher information sharing interacted with legal origin falters volatility.

Apart from OIR test, we test for the strength or otherwise the weakness of instruments using Cragg-Donald Wald F -test. For each regression, the Wald F -test statistic exceeded the critical values at 5% significance level implying a rejection of the weak instruments. Thus, our instruments are not only valid but are sufficiently strong. Indeed, our results are robust even after including the transmission channels. The coefficients of the legal origins remain negative and statistically significant and so are the financial development indicators (column 3). However, the ability of financial system activity and banking system efficiency to tame volatility following their individual rise is lower relative to the model without the interaction term (column 2).

In columns through 4 to 6, we provide sensitivity checks by regressing economic volatility using standard deviation of growth rates on the exogenous variables. In column 4, the coefficients of legal traditions are negative and statistically significant at conventional levels with huge impact registered in the English common law countries relative to the Portuguese civil law. Countries with the French civil law doctrines fall between the English and French legal origins. The value of the F -test statistic is consistent with the earlier finding suggesting that grouping countries by their legal procedure provides an important conduit for explaining the variations in growth volatility in SSA. Even after including covariates, volatility is negatively associated with legal origins. Interestingly, while the dampening volatility effect of the English common laws and French civil laws increased, there is reduced volatility elasticity effect of the Portuguese legal origin. The coefficients of PCB and financial development indicators remain negative and statistically significant suggesting their dampening impact on economic volatility. In terms of magnitude of effect, our finding shows that the ability of information sharing and financial development to tame economic volatility – proxied by standard deviation – is lower since the coefficients are less negative. Furthermore, improvement in the financial sector development is more important than information sharing bureaus in their relative effect on output fluctuations. Consistent with the earlier finding, both real and monetary shocks are associated with increased volatility although the effect of the latter is higher.

In column 6, we include the interaction term of legal origins and information asymmetry to examine how it affects volatility proxied by the standard deviation of growth rates. Consistent with the earlier finding, the coefficients of the interaction terms are negative and statistically significant albeit varying magnitudes. For instance, volatility-reducing effect of the English common law is greater and averages at least 2.3 times higher than Portuguese legal origin while countries with the French civil law origins are within the English and Portuguese legal tradition effects. Although the effect of PCB is negative and significant,

⁶ This is computed as [(Mean value of the respective legal origin) \times coefficient of transmission channel] + coefficient of PCB].

juxtaposing the impact of PCB on volatility on one hand and that of transmission channel on the other suggests that, the establishment of information sharing office per se may be insufficient but the effectiveness of the law is relevant in faltering economic volatility. In other words, our findings reaffirm the hypothesis that effectiveness of the legal origin reduces information asymmetry between borrowers and lenders culminating in smoother growth volatility. In this model, the coefficients of legal origin are still robustly negative evidencing their dampening volatility effects. Indeed, effectiveness of the prevailing legal system propels economic agents to disclose key borrower information to information sharing bureaus which are subsequently accessed by financial institutions in pursuing their intermediation roles. Thus, improvement of the informational efficiency permitted by effective legal regime improves the production of *ex ante* and *ex post* information about possible investment and delegated monitoring thereby taming volatility.

5. POLICY IMPLICATIONS AND RECOMMENDATIONS

We discuss key policy implications arising from the study. We have found that legal origins matter in explaining cross-country differences in financial development. More importantly, countries with English common laws experience higher levels of financial activity and banking system efficiency since their legal legacy largely champion private property rights on the back of its responsiveness to changing country's economic and social environment. Indeed, the financial needs of the economy continue to change so that more flexible legal frameworks are better placed at advancing financial development relative to more rigid systems. Undoubtedly, these conditions are fertile grounds for financial sector development.

One important finding documented is the finance-enhancing role of PCB. Theory suggests that information sharing bureaus are expected to facilitate efficient resource allocation in financial intermediation by reducing information asymmetry between borrowers and lenders. Difficulty in accessing corporate records compels financial institutions to rely on local market and community knowledge. While this may appear a norm, it inhibits the financial sector's role in intermediation that supports efficient resource allocation for increased economic growth. Admittedly, fuzzy information investor creditworthiness does not ensure reliable underwriting thus exposing banks to fraud. Apart from their vulnerability to fraud, financial institutions are unable to monitor projects that get funded paving the way for investors to invest in projects with no or low returns thus exacerbating economic volatility. Thus, the establishment of information sharing office may therefore aid in smoothening fluctuations. While this holds, our finding further shows that the efficiency of the information sharing office and the volatility-reducing effect of PCBs depend on how effective the transplanted legal system is in forcing economic agents (such as borrowers and investors) to disclose accurate information in promoting effective capital allocation consistent with long run growth. Thus, countries that grant excessive power to State, and those laws that sluggishly respond to the changing financial needs will experience lower financial sector development and higher volatility. Conclusively, apart from the direct effect of the legal origin, the ineffective prevailing legal systems may be unable to commit agents to fully disclose key information on their credit risk and investment choice. Consequently, bad projects get funded exacerbating growth volatility owing to moral hazards on the part of borrowers.

At the policy level, the relatively sizable effect of PCB highlights some critical issues as regards the best approaches to improve on information sharing. Structural changes in the economy may be an important requirement for arresting volatility as these ensure stronger

domestic institutions necessary for maintaining macroeconomic stability. On the back of this is the need to maintain more agile and effective legal systems that are responsive to changing financial landscape while forcing economic agents to full information disclosure. Developing information sharing bureaus in SSA may present vital space for facilitating the efficient resource allocation role of the financial sector. Once established, information sharing offices should affect the operations of lenders and every economically active individual or firm within country borders. Irrespective of the legal origin, financial institutions may be restricted to ensuring confidentiality in terms of disclosing customer information to third parties. Following from the need to reduce (promote) information asymmetry (sharing) aimed at efficient capital allocations and hence stable macro-economy, it is important for legal frameworks to confer rights on financial institutions to share key information with credit bureaus under their credit contractual agreements. This has imperative implications for credit culture and changing the overall economic behaviour of agents. However, improving information infrastructure for efficient resource allocation is conditioned on the existence of well-functional legal and regulatory systems.

6. CONCLUSIONS

Previous studies on law–finance literature have failed to *(i)* engage the crucial role of law in financial development in the light of evolving legal systems in SSA as well as *(ii)* examine how legal origin explain cross-country differences in economic volatility. In addition, how effectiveness of law shape or limit information sharing in growth volatility is not thoroughly explored. The aim of this study has therefore been to *(i)* examine whether cross-country differences in financial development and economic volatility can be explained by differences in legal origins in SSA and *(ii)* how legal origin interact with information sharing in influencing growth volatility.

Our evidence suggests that legal origin significantly explains cross-country differences in financial development and economic volatility. More importantly, English common law countries and those in Southern Africa have higher financial sector development both in terms of activity and efficiency on the back of lower volatility. Specifically, volatility-reducing effect of the English common law is at least 2.3 times higher than Portuguese legal origin while countries with the French civil law origins are within the two. While PCB positively (negatively) impact on financial sector development (economic volatility), their latter effect is conditioned on the form of legal origin suggesting that, the establishment of information sharing offices per se may be insufficient in taming growth vagaries but the effectiveness of law is exceedingly relevant. At the policy level, maintaining more agile and effective legal systems that are responsive to changing financial landscape while forcing economic agents to improve informational infrastructure is healthy for both financial sector development and macroeconomic stability.

Our study has opened new avenues necessitating further research efforts. First, although the laws in these countries might have evolved, there may not be a fundamental change from their original status. Nonetheless, our legal indicators are relatively time-invariant and therefore empirical evidence are weakly able to explain dynamic influences of effectiveness of law on both financial sector development and growth volatility. Constructing a new legal index capable of monitoring the adaptability mechanism and their implications for macroeconomic stability is particularly apt given the evolving legal and narrow financial sector in SSA. Second, it will also be interesting to examine the linkages between law and

information sharing throughout the conditional distribution of financial sector development and growth volatility components. Perhaps the role of law and information sharing on finance may well depend on the level of financial sector development and type of volatility.

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REFERENCES

- ALAGIDEDE, P. and IBRAHIM, M. (2017). On the causes and effects of exchange rate volatility on economic growth: Evidence from Ghana. *Journal of African Business*, 18: 169-193.
- ALLEN, F., OTCHERE, I. and SENBET, L. W. (2011). African financial systems: A review. *Review of Development Finance*, 1: 79-113.
- ALTIG, D. (2003). *What is the Right Inflation Rate?* Economic Commentary, Federal Reserve Bank of Cleveland, September 15.
- ARCAND, J., BERKES, E. and PANIZZA, U. (2012). *Too much finance?* International Monetary Fund, Research Department.
- ASONGU, S. A. (2011). *Law, Finance, Economic Growth and Welfare: Why Does Legal Origin Matter?* Working Paper No. 11/007, African Governance and Development Institute, Yaoundé.
- , NWACHUKWU, J. and TCHAMYOU, S. V. (2015). *Information Asymmetry and Financial Development Dynamics in Africa*. Working Paper No. 15/025, African Governance and Development Institute, Yaoundé.
- BARTH, J., LIN, C., LIN, P. and SONG, F. (2009). Corruption in bank lending to firms: Cross-country micro evidence on the beneficial role of competition and information sharing. *Journal of Financial Economics*, 99: 361-368.
- BATUO, M. E. and KUPUKILE, M. (2010). How can economic and political liberalization improve financial development in African countries? *Journal of Financial Economic Policy*, 2: 35-59.
- BECK, T. and LEVINE, R. (2003). *Legal Institutions and Financial Development*. Working Paper 10126, National Bureau of Economic Research.
- , DEMIRGÜÇ-KUNT, A. and LEVINE, R. (2003). Law and finance. Why does legal origin matter? *Journal of Comparative Economics*, 31: 653-675.
- , LEVINE, R. and LOAYZA, N. (2000). Finance and the sources of growth. *Journal of Financial Economics*, 58: 261-300.
- BERKOWITZ, D., PISTOR, K. and RICHARD, J. F. (2002). Economic development, legality, and the transplant effect. *European Economic Review*, 47: 165-195.
- BOLLERSLEV, T. (1986). Generalised autoregressive conditional heteroskedasticity. *Journal of Econometrics*, 31: 307-327.
- BROWN, M., JAPPELLI, T. and PAGANO, M. (2009). Information sharing and credit: Firm-level evidence from transition countries. *Journal of Financial Intermediation*, 18: 151-172.
- DE LONG, B. J. and SUMMERS, L. (1986). Is increased price flexibility stabilizing? *American Economic Review*, 76: 1031-1044.
- DENIZER, C., IYIGUN, M. F. and OWEN, A. L. (2000). *Finance and Macroeconomic Volatility*. Paper No.670, Board of Governors of the Federal Reserve System. International Finance Discussion.
- DIAMOND, D. W. (1984). Financial intermediation and delegated monitoring. *Review of Economic Studies*, 51: 393-414.
- and DYBIVIG, P. H. (1983). Bank runs, deposit insurance, and liquidity. *Journal of Political Economy*, 91: 401-449.
- DRISKILL, R. and SHEFFRIN, S. (1986). Is price flexibility destabilizing? *The American Economic Review*, 76: 1031-1044.
- HASSAN, M. K., SANCHEZ, B. and YU, J.-S. (2011). Financial development and economic growth: New evidence from panel data. *The Quarterly Review of Economics and Finance*, 51: 88-104.
- HOUSTON, J. F., LIN, C., LIN, P. and MA, Y. (2010). Creditor rights, information sharing and bank risk taking. *Journal of Financial Economics*, 96: 485-512.
- IBRAHIM, M. and ALAGIDEDE, P. (2016). *Effect of Financial Development on Economic Growth in sub-Saharan Africa: Does Sectoral Growth Matter?* 1st African Review of Economics and Finance Conference, 11-12th August, KNUST, Kumasi, Ghana.
- and ALAGIDEDE, P. (2017). Financial sector development, economic volatility and shocks in sub-Saharan Africa. *Physica A: Statistical Mechanics and Its Applications*, 484: 66-81.

- IVASHINA, V. (2009). Asymmetric information effects on loan spreads. *Journal of Financial Economics*, 92: 300-319.
- JAPPELLI, T. and PAGANO, M. (2002). Information sharing, lending and default: Cross-country evidence. *Journal of Banking and Finance*, 26: 2017-2045.
- KING, R. G. and LEVINE, R. (1993). Finance and growth: Schumpeter might be right. *Quarterly Journal of Economics*, 108: 717-737.
- LA PORTA, R., LOPEZ-DE-SILANES, F., POP-ELECHES, C. and SHLEIFER, A. (2003). *Judicial Checks and Balances*. Working Paper 9775, National Bureau of Economic Research.
- , LOPEZ-DE-SILANES, F. and SHLEIFER, A. (2008). The economic consequences of legal origin. *Journal of Economic Literature*, 46: 285-332.
- , LOPEZ-DE-SILANES, F., SHLEIFER, A. and VISHNY, R. W. (1998). Law and finance. *Journal of Political Economy*, 106: 1113-1155.
- , LOPEZ-DE-SILANES, F., SHLEIFER, A. and VISHNY, R. W. (1997). Legal determinants of external finance. *Journal of Finance*, 52: 1131-1150.
- , LOPEZ-DE-SILANES, F., SHLEIFER, A. and VISHNY, R. W. (1999). The quality of government. *Journal of Law and Economic Organization*, 15: 222-279.
- LELAND, H. E. and PYLE, D. H. (1977). Informational asymmetries, financial structure, and financial intermediation. *The Journal of Finance*, 32: 371-387.
- LEVINE, R. (1997). Financial development and economic growth: Views and agenda. *Journal of Economic Literature*, 35: 688-726.
- . (1998). The legal environment, banks, and long-run economic growth. *Journal of Money, Credit, and Banking*, 30: 596-613.
- . (1999). Law, finance, and economic growth. *Journal of Financial Intermediation*, 8: 36-67.
- , LOAYZA, N. and BECK, T. (2000). Financial intermediation and growth: Causality and causes. *Journal of Monetary Economics*, 46: 31-77.
- MUNDELL, R. (1972). *African trade, politics, and money*. In R. Tremblay (ed), *Africa and Monetary Integration*. Montreal: Les Editions HRW, 11-67.
- MYLENKO, N. (2008). *Developing Credit Reporting in Africa: Opportunities and Challenges*. Paper Presented at African Finance for the 21st Century, High Level Seminar Organized by the IMF Institute in Collaboration with the Joint Africa Institute, Tunis, Tunisia, March 4–5. Available at: <http://www.imf.org/external/np/seminars/eng/2008/afrfin/pdf/mylenko.pdf> [Accessed 21 December 2016].
- RAJAN, R. G. and ZINGALES, L. (2003). The great reversals: The politics of financial development in the 20th century. *Journal of Financial Economics*, 69: 5-55.
- SVALERYD, H. and VLACHOS, J. (2002). Markets for risk and openness to trade: How are they related? *Journal of International Economics*, 57: 369-395.
- TANJUNG, Y. S., MARCIANO, D. and BARTLE, J. (2010). *Asymmetry Information and Diversification Effect on Loan Pricing in Asia Pacific Region 2006–2010*. Working Paper No. 1, Faculty of Business and Economics, University of Surabaya, Timur.
- TCHAMYOU, V. S. and ASONGU, S. A. (2016). Information sharing and financial sector development in Africa. *Journal of African Business*, DOI:10.1080/15228916.2016.1216233
- TRIKI, T. and GAJIGO, O. (2014). Credit bureaus and registries and access to finance: New evidence from 42 African countries. *Journal of African Development*, 16: 73-101.

APPENDIX A: LIST OF COUNTRIES AND LEGAL ORIGIN

Legal origin	Countries	Number
English	Ghana, Kenya, Lesotho, Malawi, Mauritius, Nigeria, Seychelles, Sierra Leone, South Africa, Sudan, Swaziland, Tanzania and Zambia.	13
French	Benin, Burkina Faso, Cameroon, Central African Republic, Chad, Congo Republic, Cote d' Ivoire, Gabon, Madagascar, Mali, Niger, Rwanda, Senegal and Togo.	14
Portuguese	Angola, Cape Verde, Guinea-Bissau and Mozambique.	4
Belgian	Burundi and Democratic Republic of Congo (formerly Zaire)	2
Total		33
Western Africa	Benin, Burkina Faso, Cape Verde, Cote d' Ivoire, Ghana, Guinea-Bissau, Mali, Niger, Nigeria, Senegal, Sierra Leone and Togo.	12
Southern Africa	Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Seychelles, South Africa, Swaziland, Tanzania and Zambia.	10
Central Africa	Angola, Cameroon, Central African Republic, Chad, Democratic Republic of Congo, Congo Republic and Gabon.	7
Eastern Africa	Burundi, Kenya, Rwanda and Sudan.	4
Total		33

APPENDIX B: CORRELATION COEFFICIENTS

Variables	Economic volatility		Legal origins				Financial development		Info. sharing		Controls		
	Volatility	GARCH	English	French	Portuguese	Belgian	Private credit	Bank credit	Public credit	bureau	Terms of trade shock	Inflation shock	Trade openness
Volatility	1.00												
English	-0.242*		1.00										
	(0.082)												
French	0.181		-0.831*	1.00									
	(0.200)		(0.075)										
Portuguese	-0.133		-0.140**	-0.512*	1.00								
	(0.101)		(0.101)	(0.046)									
Belgian	-0.142		-0.201*	-0.132*	-0.240**	1.00							
	(0.111)		(-0.081)	(0.092)	(0.041)								
Private credit	-0.164***		0.231**	-0.564*	0.631**	0.431*	1.00						
	(0.001)		(0.017)	(0.069)	(0.033)	(0.060)							
Bank credit	-0.210**		0.363***	0.721**	0.694*	0.333*	0.873***	1.00					
	(0.041)		(0.002)	(0.040)	(0.060)	(0.051)	(0.003)						
PCB	0.188		0.118	0.320	0.450	0.400	0.531**	0.621*	1.00				
	(0.217)		(0.102)	(0.447)	(0.200)	(0.142)	(0.034)	(0.086)					
Terms of trade shock	0.473**		-0.555	-0.409*	-0.592**	-0.671**	-0.502*	-0.651**	-0.211	1.00			
	(0.026)		(0.121)	(0.084)	(0.041)	(0.037)	(0.070)	(0.027)	(0.111)				
Inflation shock	0.221		0.692	0.723	0.620	0.542	0.522	0.631	-0.532*	0.578*	1.00		
	(0.132)		(0.103)	(0.146)	(0.229)	(0.194)	(0.140)	(0.228)	(0.060)	(0.051)			
Trade openness	-0.530***		0.761*	0.663**	-0.751*	-0.667**	0.771**	0.231*	-0.422*	-0.612**	0.612	1.00	
	(0.004)		(0.082)	(0.030)	(0.059)	(0.030)	(0.041)	(0.062)	(0.055)	(0.043)	(0.173)		

Notes: *, **, *** denote significance at 10, 5 and 1%, respectively. Values in () are the p-values.