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**Law and Finance in Africa**

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**Abstract**

This paper assesses how legal origin influences financial development through regulation quality and the rule of law. It employs all the dimensions identified by the Financial Development and Structure Database of the World Bank. The law channels are instrumented with legal origins to account for financial intermediary dynamics of depth, efficiency, activity and size. The results broadly support the benefits of law mechanisms in financial development. The findings only show partial support for the consensus that English common law countries provide better conditions for financial development. While they dominate in dynamics of depth, activity and size, French civil law countries have an edge in financial allocation efficiency. Portuguese civil law countries broadly fall in-between. With the exception of financial efficiency, French civil law sub-Saharan African (SSA) countries are least while North African countries dominate even English common law countries in financial intermediary aspects of depth and activity. French SSA countries dominate overall in allocation efficiency.

*JEL Classification:* G2; K2; K4; O1; P5

*Keywords:* Law; Finance; Banks; Africa

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## 1. Introduction

Hitherto most empirical studies on the law-finance nexus have been of global appeal and based on very limited data. After the pioneering study of La Porta et al. (hence LLSV, 1998) the collection of law data in developing countries became a priority for the World Bank. As far as we have reviewed, the absence of a study that reflects the African context in light of pioneering studies and resulting hypotheses is an important missing link in the literature. Hence, the major contribution of this paper is that, it is the first to use data collected after pioneering studies on the law-finance nexus to assess hypotheses (and conclusions) resulting there-from exclusively in the context of Africa<sup>2</sup>. Accordingly, the African continent is an ideal premise for testing the hypotheses of pioneering studies for two main reasons: it is lagging in terms of financial development and has been a fertile ground for neocolonialism<sup>3</sup>. The link between legal origin and the finance-growth nexus that has been investigated in the literature can be classified in five main strands.

The first strand consists of a growing body of work which suggests that cross-country differences in legal origin explain cross-country differences in financial development and growth. LLSV (1998) pioneered this strand and many authors have since taken from them in the assertion that English common law countries have better prospects for financial development than their French civil law counterparts. They posit that countries with common law traditions (French civil law traditions) furnish the strongest (weakest) legal protection to shareholders and creditors (LLSV, 1998, 2000). The edge of English legal origin over the French colonial legacy

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<sup>2</sup> Macroeconomic law quality data on the African continent was not available before the pioneering work of LLSV (1998). The first working paper of this study was published by the National Bureau of Economic Research (NBER) in 1996. Data on 'the quality of regulation' and 'the rule of law' for the African continent were only available that same year.

<sup>3</sup> Neocolonialism from a law/political perspective is the perpetration of colonial legacy (legal traditions) through economic and political means. Most pioneering studies have focused on exploring how (LLSV, 1998) and why (Beck et al., 2003) legal traditions matter in financial development.

has been generalized and extended to many other dimensions of management and government: more informative accounting standards (LLSV, 1998), better institutions with less corrupt governments (LLSV, 1999) and more efficient courts (Djankov et al., 2003). While this strand has been largely dedicated to understanding *if* legal origin matter in financial development, the concern of *why* legal origin matter remained elusive until Beck et al. (2003) assessed some theories to address the issue.

In the second strand, Beck et al. (2003) have shed some light on the concern of *why* legal origin matter in finance by empirically assessing two channel-based theories. The political channel lays emphasis on how legal traditions differ in the priority they attribute to the rights of individual investors vis-à-vis the State. It follows that championing investors' rights should have a greater bearing on financial development. The adaptability channel postulates that legal traditions differ in their capacity to adapt to changing business circumstances. This implies that countries in which legal systems provide for adjustments with respect to changing and evolving circumstances are rewarded with a higher propensity to financial development. Therefore this strand solves the 'why' puzzle by asserting that legal origin matters in financial progress because traditionally, legal origins differ in their ability to adapt and adjust efficiently to changing and evolving economic conditions.

The third strand consists of a substantial body of studies championing the positive nexus between finance and growth. Accordingly, financial development significantly contributes to a country's overall economic growth (McKinnon, 1973). This optimism is shared and empirically supported at the country level (King & Levine, 1993; Levine & Zervos, 1998), as well as at industry and firm levels (Jayaratne & Strahan, 1996; Rajan & Zingales, 1998).

The law-finance (growth) nexus is covered by the fourth strand. It provides evidence for the link among law, finance and economic growth at firm, industry and country levels (Demirguc-Kunt & Maksimovic, 1998; Beck & Levine, 2002).

The fifth strand that focuses on African countries is pioneered by the Mundell (1972) conjecture, which theorized that Anglophone countries shaped by British activism and openness (to experiment) would naturally be rewarded with higher levels of financial development than their francophone neighbors (geared by French reliance on monetary stability and automaticity)<sup>4</sup>. Recent literature on the African continent has either wholly (Agbor, 2011) or partially (Asongu, 2013a) confirmed the edge of English common law countries in growth and finance prospects respectively<sup>5</sup>. Historically it should be noted that the partition of sub-Saharan Africa into British and French spheres in the 19<sup>th</sup> century resulted in the implementation of two distinct colonial policies<sup>6</sup>. The present paper steers clear of Agbor (2011) and Asongu (2013a) by providing a threefold contribution to the literature: (1) investigation of the law-finance nexus in the whole African continent with particular emphasis on the North ( French sub-Saharan) African dummy to capture the effects of North (French sub-Saharan) African countries; (2) employment of law

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<sup>4</sup> “*The French and English traditions in monetary theory and history have been different... The French tradition has stressed the passive nature of monetary policy and the importance of exchange stability with convertibility; stability has been achieved at the expense of institutional development and monetary experience. The British countries by opting for monetary independence have sacrificed stability, but gained monetary experience and better developed monetary institutions.*” (Mundell, 1972; pp.42-43). It should be noted that both France and Britain implemented currency boards in their colonial empires. The difference however is that unlike the former British African colonial empires where currency boards were dismantled immediately following independence, French African colonial currency boards have been maintained up to date.

<sup>5</sup> While Agbor (2011) assesses how colonial origin affects economic performance, Asongu (2013a) proposes four theories in examining why legal origin matter in growth and welfare. Both studies are focused on the sub-Saharan part of the African continent.

<sup>6</sup>The British and French implemented two different colonial policies. While the French imposed a highly centralized bureaucratic system that clearly underlined empire-building, the British on their part administered decentralized, flexible and pragmatic policies. Economic ambitions dominated British colonial activities who sought to transform their colonies into commercially viable trading countries through the indirect-rule: producing raw material and consuming British manufactures. The French on their part propagated their imperial ambitions through the policy of assimilation.

indicators to assess the relationship between legal origin and finance<sup>7</sup> and; (3) usage of recent data for more focused and updated policies implications<sup>8</sup>. In addition to the above, as far as we have reviewed, this is first empirical assessment of the Mundell (1972) conjecture and LLSV (1998)<sup>9</sup> hypotheses using law channels for the African continent.

The rest of the paper is organized in the following manner. Section 2 discusses various law channels. The dynamics of financial intermediary development are examined in Section 3. Data and methodology are discussed and outlined respectively in Section 4. The empirical analysis and discussion of results are covered in Section 5. We conclude with Section 6.

## **2. Law channels and finance theory**

We theorize two main law mechanisms linking legal origin to finance: regulation quality and the rule of law. Firstly, for the regulation quality channel we posit that a legal system that allows for independent bodies that set rules, oversee them and sanction those who fail to respect them is more likely to create favorable conditions for financial development. This is because the power of the government in business activities is largely limited by the presence of the independent bodies that check the organs of power. Most French civil law countries are characterized by little decentralization, absence of federations, no senates at parliamentary levels, appointment of judges and governors by the central government...etc; factors which substantially mitigate the quality of regulation. On the other hand, on average regulatory organs in English common law countries are not appointed by governments for the most part and hence,

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<sup>7</sup> While Agbor (2011) has used the channels of education and trade in investigating how colonial origin affects the economic performance of sub-Saharan African countries, Asongu (2013a) has employed financial channels in explaining why colonial legacy matter in growth and welfare. In this study we use law channels.

<sup>8</sup> Whereas the data used by Agbor (2011) is for the period 1960 to 2000, Asongu (2013a) is based on data from 1986 to 2008. The data employed in the present study is for the period 1996 to 2008.

<sup>9</sup>The findings show that common law countries generally have the strongest legal protection of corporate shareholders and creditors, while French civil law countries are the weakest in legal protection of investors (La Porta et al., 1998; page 1).

not subject to allegiance to the powers that be. This independence guarantees greater regulation quality and consequently better conditions for respect of the rule of law.

Secondly, the 'rule of law' channel sustains that legal traditions differ in their emphasis on private property rights laws vis-à-vis State power. While countries with civil law origin provide for legal systems that tend to emphasize the rights of the State rather than those of private property holders, common law legal traditions champion private property rights that enable more favorable conditions for financial development. As emphasized by Beck et al. (2003), a powerful State will tend to create policies and institutions that divert the flow of competitive financial intermediary market. Moreover, a powerful State would interfere in financial markets and create adverse conditions for financial development. Therefore, we are consistent with LLSV (1998) in the assertion that countries with French civil law legacies would nurse legal systems that engender less positive effects on financial development.

### **3. Financial intermediary dynamics and law**

Linkages between finance and law could be hypothesized in terms of financial intermediary dynamics of depth, efficiency, activity and size.

In accordance with Asongu (2013a), we argue that the quantity of money supply in the economy (M2) and the amount of money held by deposit money banks (Liquid liabilities) depend on legal origins. Financial depth should be higher in countries with English common law than in countries with French civil law legacy because the former provides more appealing conditions for openness (to trade and capital) and competition. It follows that in an economic atmosphere where openness and competition are championed; some direct consequences are higher money velocity and bank deposits.

Legal origins are also exogenous to financial allocation efficiency. Consistent with Asongu (2011), it is relevant to distinguish legal origins in terms of financial efficiency because, from a theoretical standpoint, French civil law countries have an edge in terms of allocation efficiency because they predominantly have fixed exchange regimes. In fact, he has proposed an ‘inflation uncertainty theory’ in providing theoretical justification and empirical validity as to why French civil law countries have higher levels of financial allocation efficiency. Accordingly, inflation uncertainty which is typical of floating exchange rate regimes accounts for the less allocation efficiency in English common law countries.

The relative importance of openness and competition should induce a broader financial system (size) in common law countries than in their civil law counterparts. In the presence of a competitive atmosphere (in which a country is opened to trade and capital as championed by English common law), the corresponding increase in financial transactions and institutions will have a direct impact on broadening the size of the financial system.

Financial activity is a corollary of financial depth as the latter is the immediate result of the former. Countries that are opened and competitive will turn to induce greater economic activity which naturally moves hand in glove with financial activity. It follows that countries with common law legacies have greater levels of financial activity than those with civil law origin.

## **4. Data and Methodology**

### **4.1 Data**

We examine a sample of 38 African countries with British, French and Portuguese legal origins for the period 1996-2008. The law (and control variables) and financial indicators are obtained from African Development Indicators (ADI) and the Financial Development and



Structure Database (FDSD) of the World Bank (WB) respectively. Limitations to the number of countries and time span are due to constraints in data availability. We include origin of countries in our data to control for endogeneity. As pointed-out by Beck et al. (2003) from Berkowitz et al. (2002), it is important to distinguish between legal origin countries (United Kingdom, France, the U.S.A, Germany, Austria and Switzerland) which constituted the legal traditions from transplant countries which received the legal legacies. For the purpose of this study the concern is less relevant because only transplant countries are investigated. Categorization of countries in terms of legal origin, correlation analysis (showing the linkages among key variables used in the paper) and variable definitions (with corresponding sources) are presented in Appendix 1, Appendix 2 and Appendix 3 respectively. From a preliminary assessment of the correlation coefficients, there do not appear to be any serious issues in terms of the nexuses to the estimated.

#### *4.1.1 Law indicators*

*Regulation Quality:* according to the World Bank, the quality of regulation captures perceptions on the ability of the government to formulate and implement sound policies and regulations that enable and foster private sector development. Information for the indicator is obtained from representative and non-representative sources. The indicator is measured in percentile rank from 0 to 100.

*Rule of Law:* this indicator captures perceptions on the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of property rights, the courts, the police, contract enforcement, as well as the likelihood of crime and violence. It is measured in percentile rank from 0 to 100 with a plethora of criteria from representative and non-representative sources.

It is interesting to note that these two measures broadly incorporate the four indicators employed by Beck et al. (2003) in theorizing the political and adaptability channels of law.

#### *4.1.2 Financial intermediary variables*

Financial intermediary variables are obtained from the FDSD. We are unable to collect data on financial markets because Ivory Coast is the only country in sub-Saharan Africa (of French civil law origin) with information on stock markets. Moreover, the regional nature of its financial market presents a practical difficulty of disentangling the individual contributions (weights) of the eight West African countries that constitute the stock market (seven French legal origin countries and one Portuguese legal tradition country). Conversely, we find many English law tradition countries with stock market information (Ghana, Kenya, Malawi, Mauritius, Namibia, Nigeria, Swaziland, Tanzania, Uganda, Zambia, Zimbabwe...etc). Stock market data is also available for the four North African countries. Ultimately, because of information asymmetry on stock markets the analysis is limited to the financial intermediary sector. Consistent with the FDSD (Demirgüç-Kunt et al., 1999) and recent African finance literature (Asongu, 2013b, c) the financial variables are classified in four main strands.

Financial depth is measured both from overall-economic and financial system perspectives with indicators of broad money supply ( $M2/GDP$ ) and financial system deposits ( $Fdgdg$ ) respectively. While the former denotes the monetary base ( $M0$ ) plus demand, saving and time deposits, the latter represents liquid liabilities (or deposits) of the financial system. It is important to distinguish between these two aggregates of financial depth because, since we are dealing exclusively with developing countries, a great chunk of the monetary bases does not transit through formal banking institutions. Both variables are in ratios of GDP and should

robustly check each other as either account for over 97% of information in the other (Appendix 2).

By efficiency, we neither refer to the profitability-oriented concept of financial efficiency nor to the production efficiency of decision making units in the financial sector (via Data Envelopment Analysis: DEA). What we seek to emphasize is the ability of banks to effectively fulfill their fundamental role of transforming mobilized deposits into credit for economic operators. We account for indicators of *banking-system-efficiency* and *financial-system-efficiency* (respectively ‘bank credit on bank deposits: *Bcbd*’ and ‘financial system credit on financial system deposits: *Fcfd*’). Like in the case of financial depth, these two financial allocation efficiency proxies can check one another as either represents more than 87% of variability in the other (Appendix 2).

In line with the FDSO, we appreciate financial intermediary activity as the ratio of “deposit bank assets” to the “total assets” (deposit bank assets on central bank assets plus deposit bank assets: *Dbacba*). It is unfortunate we could not find another indicator of financial size despite a thorough search, numerous computations and correlation analyses.

Financial intermediary activity here is defined as the ability of banks to grant credit to economic operators. Accordingly, the FDSO provides two main measures of financial activity. (1) *Banking system activity* measured as ‘private domestic credit by deposit banks: *Pcrb*’. (2) *Financial system activity* proxied with ‘private domestic credit by deposit banks and other financial institutions: *Pcrbof*’. Here again, the latter indicator checks the former as it represents more than 93% of information in the former (Appendix 2).

#### 4.1.3 Instrumental variables

We employ traditional legal origin dummies for the English, French and Portuguese colonial legacies. In order to add subtlety to the analysis for more policy options, we include dummies for French sub-Saharan Africa (SSA) and North Africa. The two additional dummy variables also help in mitigating constraints of the Sargan overidentifying restrictions (OIR) test for instrument validity<sup>10</sup>. These dummies are primarily used as instruments. But for the SSAfrican dummy which reflects about 85% of the French legal origin dummy, all other dummies reflect quite distinction information or variability (see Appendix 2). These instruments have been substantially documented in the economic development literature (La Porta et al., 1997; Stulz & Williamson, 2003; Beck et al., 2003). The use of legal origin dummy instrumental variables to instrument financial law variables is consistent with recent African finance (Asongu, 2012a) and institutional (Asongu, 2012b) literature. The legal origin classification is guided by La Porta et al. (2008, p. 289).

#### *4.1.4 Control variables*

The choice of the control variables is crucial on two counts. On the one hand, it enables an assessment of the strength of the instruments in the first-stage regressions. This is the first condition for the Instrumental Variable (IV) estimation procedure, in which the endogenous components of the law channels must be explained by the instruments conditional on other covariates (control variables). On the other hand, the control variables included in the second-stage regressions should be based on sound intuition and empirical validity. Whereas combinations of six control variables are used in assessing the strength of the instruments (first-

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<sup>10</sup> An OIR test is only applicable in the presence of over-identification. That is, the instruments must be higher than the endogenous explaining variables by at least one degree of freedom. In the cases of exact-identification (instruments equal to endogenous explaining variables) and under-identifications (instruments less than endogenous explaining variables) an OIR test is by definition impossible.

stage regressions), only three of the control variables are used in the IV estimation procedure due to constraints in degrees of freedom required by the Sargan OIR test for instrument validity (already discussed above). For control variables of the IV regression, the choice of inflation (Asongu, 2011), GDP growth and openness to trade (Agbor, 2011) are consistent with recent African literature. To these three variables we add population growth, GDP per capita growth and government's final consumption expenditure.

Intuitively, we expect economic prosperity (in GDP and GDP per capita terms), government expenditure and openness to improve the quality of law while population growth and inflation should have the opposite effect. Economic prosperity naturally provides more resources (government expenditure) allocated to the respect of the rule of law. Openness to trade improves the quality of institutions in Africa (Asongu, 2013d). On the other hand, while high inflation could substantially deteriorate the quality of institutions (as officials recourse to corrupt means of making ends meet), high positive demographic change that is not accompanied by a corresponding increase in security officials (or advancements in security technology) could eventually lead to more disrespect for the rule of law and regulations in place. Ultimately, the choice of the control variables is broadly in accordance with the finance literature (Levine & King, 1993; Hassan et al., 2011).

#### *4.1.5 Brief comparative analysis*

Table 1 shows comparative summary statistics for the various legal origins employed in the study. An overall perspective suggests that contrary to popular consensus, North African countries on average dominate in financial intermediary dimensions of depth, activity and size. Another very remarkable element is the overwhelming dominance of French civil law countries in financial intermediary efficiency, which is consistent with Asongu (2011). We also notice that

the quality of law is highest in North African and least in Portuguese (French SSA) countries. The distinctive features of French SSA civil law countries and Portuguese civil law countries justify the intuition for adding their dummies to the mainstream instrumental variables.

A preliminary assessment of cross-country differences in levels of trade and inflation is in line with the law-finance (growth) theory. Accordingly, English countries averagely demonstrate higher levels of trade because they traditionally have legal systems that provide for openness and competition, in accordance with Agbor (2011). Moreover, the dominance of English countries in comparison to their French counterparts in prospects for economic prosperity is also in accordance with the findings of Agbor. Conversely, the dominance of French civil law in terms of financial allocation efficiency is consistent with the Mundell (1972) conjecture and recent African law-finance literature (Asongu, 2011).

**Table 1: Comparative Statistics**

Stats	Data	Financial Intermediary Development Variables							Law Variables		Control Variables					Instrumental Variables					
		Depth		Efficiency		Activity		Size	Reg. Qua.	Rule of Law	Infl.	Trade	Popg	Gov. Exp.	GDPg	GDP pcg	Eng.	Frch.	Port.	Frssa	Nafri
		M2	Fdgdg	Bcbd	Fcfid	Pcrb	Pcrbof	Dbacba													
Mean	English	0.382	0.330	0.613	0.694	0.205	0.254	0.727	0.378	0.407	10.79	87.88	2.096	16.09	4.654	2.49	---	---	---	---	---
	French	0.267	0.190	0.840	0.858	0.153	0.161	0.729	0.305	0.278	3.748	65.31	2.577	12.62	4.146	1.55	---	---	---	---	---
	Portuguese	0.346	0.252	0.496	0.495	0.143	0.143	0.701	0.267	0.259	112.57	94.20	2.172	13.18	6.404	3.916	---	---	---	---	---
	Frenchssa	0.198	0.128	0.860	0.873	0.108	0.110	0.684	0.280	0.243	3.873	63.40	2.832	11.96	4.076	1.236	---	---	---	---	---
	Northafrica	0.656	0.542	0.721	0.754	0.393	0.417	0.895	0.422	0.472	3.959	68.45	1.450	14.70	4.616	3.135	---	---	---	---	---
	Data	0.323	0.255	0.708	0.750	0.174	0.197	0.725	0.332	0.330	18.84	77.64	1.450	14.14	4.597	2.202	0.421	0.473	0.105	0.394	0.105
S.D	English	0.274	0.255	0.279	0.505	0.199	0.317	0.265	0.185	0.216	14.87	46.61	0.869	5.72	3.70	3.50	---	---	---	---	---
	French	0.176	0.156	0.281	0.304	0.142	0.156	0.178	0.148	0.175	8.744	28.85	1.16	4.73	4.21	3.96	---	---	---	---	---
	Portuguese	0.216	0.207	0.185	0.177	0.141	0.141	0.272	0.164	0.250	574.06	34.92	0.382	4.44	7.12	6.87	---	---	---	---	---
	Frenchssa	0.062	0.055	0.241	0.254	0.052	0.056	0.158	0.135	0.156	9.55	30.20	1.102	4.848	4.48	4.12	---	---	---	---	---
	Northafrica	0.179	0.156	0.367	0.416	0.195	0.211	0.120	0.135	0.141	3.581	20.29	0.334	2.782	2.303	2.304	---	---	---	---	---
	Data	0.232	0.218	0.301	0.409	0.170	0.240	0.228	0.171	0.211	193.5	39.88	1.02	5.41	4.45	4.24	0.494	0.499	0.307	0.489	0.307
Min.	English	0.001	0.001	0.177	0.209	0.001	0.001	0.017	0.044	0.029	-100	17.85	-1.07	5.41	-16.7	-17.1	---	---	---	---	---
	French	0.069	0.029	0.143	0.144	0.020	0.020	0.331	0.054	0.019	-100	21.57	0.591	2.650	-12.6	-15.1	---	---	---	---	---
	Portuguese	0.102	0.054	0.133	0.137	0.011	0.011	0.110	0.044	0.014	-3.50	36.80	1.414	6.331	-28.1	-29.6	---	---	---	---	---
	Frenchssa	0.069	0.029	0.188	0.178	0.020	0.020	0.331	0.054	0.019	-100	21.57	0.707	2.650	-12.6	-15.1	---	---	---	---	---
	Northafrica	0.318	0.235	0.143	0.144	0.041	0.041	0.627	0.156	0.105	18.67	38.36	0.591	6.77	-2.22	-3.59	---	---	---	---	---
	Data	0.001	0.001	0.133	0.137	0.001	0.001	0.017	0.044	0.014	-100	17.85	-1.07	2.65	-28.1	-29.6	0.00	0.00	0.00	0.00	0.00
Max.	English	1.279	1.054	1.574	2.606	0.810	1.624	1.155	0.792	0.810	132.82	255.0	4.23	35.13	27.46	22.61	---	---	---	---	---
	French	1.057	0.858	1.718	1.646	0.704	0.698	1.264	0.698	0.610	31.11	156.8	10.56	28.76	33.62	29.06	---	---	---	---	---
	Portuguese	0.802	0.739	0.807	0.806	0.477	0.478	0.999	0.556	0.767	4145	179.0	3.03	21.28	20.61	17.11	---	---	---	---	---
	Frenchssa	0.410	0.309	1.718	1.646	0.246	0.279	1.003	0.698	0.519	31.11	156.8	10.56	28.76	33.62	29.06	---	---	---	---	---
	Northafrica	1.057	0.858	1.277	1.614	0.704	0.698	1.264	0.688	0.610	0.339	124.6	1.923	19.35	12.21	10.59	---	---	---	---	---
	Data	1.279	1.054	1.718	2.606	0.810	1.624	1.264	0.792	0.810	4145	255.0	10.56	35.13	33.62	29.06	1.00	1.00	1.00	1.00	1.00
Obs.	English	199	199	206	199	199	199	201	160	159	193	208	208	193	208	208	---	---	---	---	---
	French	226	226	231	226	226	226	231	180	180	220	225	234	222	234	234	---	---	---	---	---
	Portuguese	52	52	52	52	52	52	52	40	40	52	39	39	39	52	52	---	---	---	---	---
	Frenchssa	187	187	192	187	187	187	192	150	150	181	186	195	183	195	195	---	---	---	---	---
	Northafrica	52	52	52	52	52	52	52	40	40	52	52	52	52	52	52	---	---	---	---	---
	Data	477	477	489	477	477	477	484	380	379	465	472	481	454	494	494	494	494	494	494	494

S.D: Standard Deviation. Min: Minimum. Max: Maximum. Obs: Observations. M2: Monetary Base. Fdgdg: Financial system deposits. Bcbd: Bank credit on Bank deposits. Fcfid: Financial system credit on Financial system deposits. Pcrb: Private domestic credit by deposit banks. Pcrbof: Private domestic credit by financial institutions (deposit money banks and other financial institutions). Dbacba: Deposit bank assets on central bank assets plus deposit bank assets. Reg.Qua: Regulation Quality. Infl: Inflation. Popg: Population growth. Gov.Exp: Government Expenditure. GDPg: GDP growth. GDPpcg: GDP per capita growth. Eng: English legal origin. Frch: French legal origin. Port: Portuguese legal origin. Frssa: French sub-Saharan Africa. Nafri: North Africa.

## 4.2 Methodology

### 4.2.1 Estimation method

In line with Beck et al. (2003) and recent African legal origin literature (Agbor, 2011; Asongu, 2013a), we employ a Two-Stage-Least Squares (TSLS) with dummies of legal origins as instrumental variables. This estimation technique has the particular advantage of addressing the issue of endogeneity since the instrumental variable estimator can avoid the bias of Ordinary Least Squares (OLS) estimates when the explanatory variables in a regression are correlated with the error term. Moreover, the problem statement of the paper is consistent with the IV strategy: assessment of how legal origins play out on finance through the proposed law channels. The IV approach entails the following steps:

- justify the use of a TSLS over an OLS estimation technique with the Hausman-test for endogeneity;
- show that instrumental variables (legal origins) are exogenous to the endogenous components of the proposed explaining variables (law channels), conditional on other covariates (control variables);
- verify the instruments are valid and not correlated with the error-term in the equation of interest with an OIR test.

The adopted methodology has two main stages.

First-stage regression:

$$LawChannel_{it} = \gamma_0 + \gamma_1(British)_i + \gamma_2(French)_i + \gamma_3(Portuguese)_i + \gamma_4(NorthAfrica)_i + \alpha_i X_{it} + v_{it} \quad (1)$$

$$LawChannel_{it} = \lambda_0 + \lambda_1(British)_i + \lambda_2(Frenchssa)_i + \lambda_3(Portuguese)_i + \lambda_4(NorthAfrica)_i + \phi_i X_{it} + \mu_{it} \quad (2)$$



Second-stage regression:

$$Finance_{it} = \beta_0 + \beta_1(Qualityofregulation)_{it} + \beta_2(Ruleoflaw)_{it} + \sigma X_{it} + \eta_{it} \quad (3)$$

In the three equations,  $X$  is a set of exogenous variables that are included in some of the second stage regressions. For the first, second and third equations,  $\nu$ ,  $\mu$  and  $\eta$  respectively denote the error terms. Instrumental variables are the five legal origin dummies. *Frenchssa*: dummy for French SSA.

#### 4.2.2 Choice of second-stage endogenous regressors of control

As we must have highlighted above, the choice of endogenous control variables for the second-stage of the TSLS procedure is very crucial for the validity of the empirical specification. Accordingly, when the instruments are invalid, the degree of identification (difference between the number of instruments and endogenous explaining variables) is reduced by adding supplementary channels (control variables). Misspecification issues will arise if the added channels are not theoretically and empirically valid as transmission mechanisms from the instrumental variables to the dependent variable. Hence, the choice of the control covariates must a priori be justified by an underlying theory and sound empirics: trade, GDP growth (Agbor, 2011) and inflation (Asongu, 2011).

Trade openness is a valid channel of control because contrary to the French civil law legacy, English common law is based on openness (and competition) since colonies were fashioned to be trading societies (raw material producers and consumers of British manufactures). The basis for inflation is in accordance with the Mundell (1972) conjecture and the Asongu (2011) theory already discussed above. GDP growth as a transmission

mechanism is consistent with Agbor (2011) who has established that African countries of English common law legacy have been rewarded with higher economic performance than their counterparts of French civil law.

## **5. Cross-country regressions**

This section presents the results of cross-country regressions to assess the importance of legal origin in explaining cross-country variances in financial development, the ability of legal origin to explain cross-country disparities in the quality of regulation and rule of law and; the ability of the exogenous components of the law channels (quality of regulation and rule of law) to account for cross-country differences in financial development.

### **5.1 Legal origins and financial intermediary dynamics**

In Table 2, we regress the financial intermediary development indicators on the British, French (or French SSA), Portuguese and North African legal origin dummies and also test for their joint significance. The Fisher test shows that distinguishing African countries by legal origin helps explain cross-country differences in financial dynamics of depth, efficiency, size and activity. Thus this confirms the pioneering findings of LLSV (1998), later backed by Beck et al. (2003) and recently confirmed in Africa (Asongu, 2013a). Even after controlling for trade, inflation, population growth, government expenditure and GDP growth, the legal origin dummies enter jointly significantly in all regressions at a 1% significance level.

The results in Table 2 also reveal that while English legal origin countries on average have substantially higher levels of financial intermediary depth, size and activity, their French legal origin counterparts on average overwhelmingly dominated in financial intermediary efficiency. Countries with Portuguese legal origin fall in-between. This confirms recent

findings in the law-finance and law-growth nexuses by Asongu (2013a) and Agbor (2011) respectively. The inclusion of two more dummies to the analysis sheds more light on North-African and French SSA countries. The former dominates English legal origin countries in financial depth and activity, while the latter has on average lower levels of financial depth and size. A common sense inference is that North African countries dominate their French SSA counterparts in financial intermediary dynamics of depth, activity and size. While French and French SSA dummies are not included in the same regressions, the inferences above are broadly in line with the exploratory results from the comparative statistics in Table 1.

**Table 2: Financial dynamics and legal origin regressions**

		Financial Depth		Financial Efficiency		Financial Activity		Financial Size	
		Model 1	Model 1*	Model 2	Model 2*	Model 3	Model 3*	Model 4	Model 4*
		M2	Fdgdg	Bcbd	Fcfd	Pcrb	Pcrbof	Dbacba	Dbacba
Legal origin dummies (Instruments)	English	<b>0.351***</b> (8.860)	<b>0.208***</b> (9.148)	<b>0.968***</b> (15.68)	<b>0.421***</b> (6.550)	<b>0.171***</b> (5.828)	<b>0.239***</b> (5.374)	<b>0.587***</b> (15.41)	<b>0.499***</b> (16.42)
	French	<b>0.196***</b> (5.077)	---	<b>1.160***</b> (19.18)	---	<b>0.067***</b> (2.993)	---	<b>0.549***</b> (18.92)	---
	Frchssa	---	<b>0.045**</b> (2.257)	---	<b>0.704***</b> (13.10)	---	<b>0.130***</b> (2.864)	---	<b>0.502***</b> (18.97)
	Portuguese	<b>0.449***</b> (9.689)	<b>0.217***</b> (5.889)	<b>0.896***</b> (12.21)	<b>0.420***</b> (4.449)	<b>0.147***</b> (4.520)	<b>0.178***</b> (3.380)	<b>0.741***</b> (16.23)	<b>0.578***</b> (11.70)
	Nafri	<b>0.382***</b> (13.74)	<b>0.410***</b> (15.74)	<b>-0.164***</b> (-3.721)	<b>0.423***</b> (6.132)	<b>0.249***</b> (11.00)	<b>0.307***</b> (7.687)	<b>0.187***</b> (6.866)	<b>0.597***</b> (17.10)
	Trade	<b>0.001***</b> (6.066)	<b>0.001***</b> (7.509)	<b>-0.001***</b> (-4.982)	<b>-0.001***</b> (-2.635)	---	---	<b>0.0009***</b> (3.771)	<b>0.002***</b> (8.321)
Control Variables	Inflation	<b>-0.003***</b> (-4.500)	<b>-0.000***</b> (-2.691)	<b>-0.003***</b> (-2.719)	---	<b>-0.002***</b> (-3.720)	<b>-0.002**</b> (-2.513)	<b>-0.003***</b> (-4.109)	<b>-0.0001***</b> (-3.067)
	Gov. Exp	---	---	---	<b>0.021***</b> (5.825)	<b>0.004***</b> (2.810)	<b>0.007***</b> (3.991)	<b>0.006***</b> (3.570)	---
	GDPg	---	<b>-0.004**</b> (-2.206)	---	---	---	---	---	<b>0.005**</b> (1.983)
	Popg	<b>-0.032***</b> (-3.470)	---	<b>-0.057***</b> (-3.807)	---	---	<b>-0.036***</b> (-3.080)	---	---
F-test(for Instruments)		<b>77.41***</b>	<b>212.12***</b>	<b>17.79***</b>	<b>249.4***</b>	<b>36.49***</b>	<b>71.52***</b>	<b>24.16***</b>	<b>679.75***</b>
Adjusted R <sup>2</sup>		0.525	0.775	0.192	0.779	0.301	0.545	0.256	0.916
Observations		415	428	425	423	413	413	404	433

M2: Monetary Base. Fdgdg: Financial system deposits. Bcbd: Bank credit on Bank deposits. Fcfd: Financial system credit on Financial system deposits. Pcrb: Private domestic credit by deposit banks. Pcrbof: Private domestic credit by financial institutions. Dbacba: Deposit bank assets on central bank assets plus deposit bank assets. Popg: Population growth. Gov.Exp: Government Expenditure. GDPg: GDP growth. GDPpcg: GDP per capita growth. \*, \*\*, \*\*\*: significance levels of 10%, 5% and 1% respectively.

The edge in financial efficiency by French SSA countries over North African countries is consistent with the Mundell (1972) conjecture. Most of the significant control

variables have the right signs: government expenditure, trade and GDP growth broadly improve financial development while inflation has the opposite effect.

## 5.2 Legal origins and law channels

Table 3 is based on Eqs (1) and (2) and assesses whether legal origin explains cross-country differences in the indicators which characterize the law channel. We regress the law channels on the legal origin dummy variables. We report the F-tests of whether the legal origin dummy variables taken together significantly explain cross-country differences in law channels. It can be concluded that legal origin helps explain cross-country variations in the quality of regulation and rule of law at a 1% significance level. It is worth noting that this is the first condition for the use of a TSLS methodology which requires that the endogenous components of regressors of interest be explained by the instruments (legal-origins) conditional on other covariates (control variables).

From a comparative view point, English common-law countries on average overwhelmingly dominate both in the quality of regulation and the rule of law. They are closely followed by countries with Portuguese legal origin. French SSA and North Africa closely follow the overall French average but when French SSA is directly compared with North Africa, the latter has a small edge. These results are broadly consistent with the law-finance theory which supports the dominance of English legal origins. The findings are also in line with the theoretical propositions and empirical validity of the political and adaptability channels (Beck et al., 2003)<sup>11</sup>. Most of the significant control variables have the expected

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<sup>11</sup> “Consistent with the law and finance theory, Table 3 indicates that British common law countries have significantly greater judicial independence, i.e., less state control over the judiciary, and significantly more adaptable legal systems than do French legal origin countries. Specifically, the tenure of Supreme Court judges and their ability to control administrative cases are all, on average, greater in British common law countries.

signs: trade openness, government expenditure and economic prosperity broadly favor institutional quality while inflation and population growth have the opposite effect.

**Table 3: Law and legal origin regressions**

	Regulation Quality				Rule of Law				
	Model 5	Model 5*	Model 5**	Model 5***	Model 6	Model 6*	Model 6**	Model 6***	
Legal origin dummies (Instruments)	English	<b>0.371***</b> (28.48)	<b>0.454***</b> (17.38)	<b>0.357***</b> (26.09)	<b>0.245***</b> (8.751)	<b>0.395***</b> (25.46)	<b>0.429***</b> (9.086)	<b>0.383***</b> (24.14)	<b>0.244***</b> (7.063)
	French	<b>0.286***</b> (21.92)	<b>0.363***</b> (12.31)	---	---	<b>0.247***</b> (15.97)	<b>0.263***</b> (5.639)	---	---
	Frcsssa	---	---	<b>0.280***</b> (19.92)	<b>0.186***</b> (7.949)	---	---	<b>0.243***</b> (15.02)	<b>0.086***</b> (3.227)
	Portuguese	<b>0.267***</b> (10.35)	<b>0.390***</b> (10.75)	<b>0.267***</b> (9.831)	<b>0.212***</b> (5.693)	<b>0.259***</b> (8.441)	<b>0.473***</b> (8.484)	<b>0.259***</b> (8.242)	<b>0.293***</b> (6.324)
	Nafri	<b>0.115***</b> (4.131)	<b>0.069**</b> (2.367)	<b>0.333***</b> (12.14)	<b>0.238***</b> (7.521)	<b>0.188***</b> (5.684)	<b>0.158***</b> (4.791)	<b>0.376***</b> (11.89)	<b>0.238***</b> (7.305)
Control Variables	Trade	---	---	---	---	<b>0.0008***</b> (3.129)	---	<b>0.001***</b> (4.097)	
	Inflation	---	<b>-0.001*</b> (-1.684)	---	---	<b>-0.003***</b> (-3.456)	---	<b>-0.002***</b> (-2.616)	
	Gov. Exp	---	---	---	<b>0.007***</b> (4.622)	---	---	<b>0.007***</b> (4.332)	
	GDPg	---	<b>0.005**</b> (2.407)	---	---	---	---	---	
	GDPpcg	---	---	---	<b>0.005**</b> (2.317)	---	---	---	---
Popg	---	<b>-0.035***</b> (-3.537)	---	---	---	<b>-0.026***</b> (-2.190)	---	---	
F-test(for Instruments)	<b>13.71***</b>	<b>11.17***</b>	<b>353.82***</b>	<b>251.86***</b>	<b>25.16***</b>	<b>24.99***</b>	<b>275.58***</b>	<b>232.80***</b>	
Adjusted R <sup>2</sup>	0.091	0.149	0.788	0.813	0.160	0.305	0.744	0.837	
Observations	380	348	380	346	379	346	379	315	

Popg: Population growth. Gov.Exp: Government Expenditure. GDPg: GDP growth. GDPpcg: GDP per capita growth. \*, \*\*, \*\*\*: significance levels of 10%, 5% and 1% respectively.

### 5.3 Examination of law channels using a simple instrumental variable procedure

Table 4 examines two issues: whether the exogenous components of the law indicators explain financial development (depth and efficiency) and if legal origin explains financial development through some other mechanisms beyond the proposed law channels. To make these assessments, we use the TSLS estimation methodology. Hence, Eq. (3) is integrated into the estimations at this juncture of the analysis. In either combination of Eqs (1) and (3) or Eqs (2) and (3), two pairs of four legal origins are used as instrumental variables. French and French-SSA are not employed simultaneously. Even when all five instruments are used, the

*Similarly, the use of case law and the ability to use equity rather than statutory law in making judgments are, on average, greater in British common law countries” (Beck et al., 2003; p.667).*

results do not change significantly<sup>12</sup>. While the first issue is tackled by the significance (and signs) of estimated coefficients, the second is addressed by the Sargan OIR for instrument validity. The null hypothesis of this test is the position that the instruments do not explain financial development beyond the law mechanisms. In other words, the null is the stance that the instruments are not correlated with the error term in the equation of interest: Eq. (3). Hence, a rejection of the null hypothesis is a support for the view that the instruments explain financial development beyond the proposed law channels. Accordingly, when the endogenous control variables are employed in the TSLS estimations, results of OIR-test become a general specification for the validity of the instruments. A Hausman test is also used to justify the choice of the IV procedure. The null hypothesis of this test is the position that OLS estimates are efficient and consistent. Hence, a rejection of the null confirms the presence of endogeneity and lends credit to the choice of the IV approach.

**Table 4: TSLS regressions for Financial Depth and Efficiency**

		Panel A: TSLS regressions for Financial Depth							
		Financial Depth				Financial System Deposits			
		Monetary Base				Financial System Deposits			
		Model 7	Model 7*	Model 7**	Model 7***	Model 8	Model 8*	Model 8**	Model 8***
		M2	M2	M2	M2	Fdgdp	Fdgdp	Fdgdp	Fdgdp
Law Channels	Reg. Quality	<b>1.021***</b> (9.113)	---	<b>3.459***</b> (3.222)	---	<b>0.823***</b> (26.68)	---	<b>2.981***</b> (1.805)	---
	Rule of Law	---	<b>1.026***</b> (10.99)	---	<b>1.958***</b> (6.889)	---	<b>0.833***</b> (32.84)	---	<b>1.815***</b> (6.623)
	Trade	---	---	<b>-0.011**</b> (-2.309)	<b>-0.004**</b> (-3.447)	---	---	<b>-0.009**</b> (-2.311)	<b>-0.004***</b> (-3.688)
Control Variables	Inflation	---	---	<b>0.002*</b> (1.725)	<b>0.0008*</b> (1.754)	---	---	<b>0.002*</b> (1.805)	<b>0.0009**</b> (-3.688)
	Hausman test	<b>68.204***</b>	<b>68.008***</b>	<b>178.38***</b>	<b>124.61***</b>	<b>26.37***</b>	<b>25.93***</b>	<b>152.76***</b>	<b>139.83***</b>
	OIR(Sargan) test	79.152***	63.359***	<b>0.246</b>	<b>3.811</b>	93.69***	77.017***	<b>1.081</b>	<b>0.532</b>
	P-values	[0.000]	[0.000]	<b>[0.884]</b>	<b>[0.148]</b>	[0.000]	[0.000]	<b>[0.582]</b>	<b>[0.766]</b>
	Weak I. Test(F-stats)	<b>381.01***</b>	<b>335.03***</b>	---	---	<b>325.5***</b>	<b>235.11***</b>	---	---
	Adjusted R <sup>2</sup>	0.161	0.397	0.005	0.227	0.232	0.466	0.011	0.218
	F-stats	---	---	<b>21.62***</b>	<b>102.53***</b>	---	---	<b>19.36***</b>	<b>78.066***</b>
	Observations	365	364	326	325	365	364	326	325

<sup>12</sup> To further investigate if the significantly high correlation between the French SSA and French dummies have some bearing on the outcome of the regressions, for each model we perform three different regressions: the first and second in which we independently verify the validity of the French and French SSA dummies as instruments and the third in which we use both. We do not find any substantial difference in results. This routine is respected for results of Tables 5-6.

Panel B: TSLS regressions for Financial Efficiency									
Financial Efficiency									
Banking System Efficiency					Financial System Efficiency				
		Model 9	Model 9*	Model 9**	Model 9***	Mod. 10	Mod. 10*	Mod.10**	Mod.10***
		BcBd	BcBd	BcBd	BcBd	FcFd	FcFd	FcFd	FcFd
Law Channels	Reg. Quality	<b>2.046***</b> (32.05)	---	<b>2.056***</b> (26.89)	---	<b>2.159***</b> (30.46)	---	<b>2.015***</b> (4.240)	---
	Rule of Law	---	<b>1.957***</b> (24.95)	---	-0.845 (-1.424)	---	<b>2.083***</b> (23.93)	---	0.138 (0.307)
	Trade	---	---	---	<b>0.012***</b> (4.786)	---	---	0.0005 (0.255)	0.008 (4.330)
Control Variables	Inflation	---	---	-0.0006 (-1.024)	<b>-0.002**</b> (-2.513)	---	---	---	---
	Hausman test	<b>184.08***</b>	<b>250.73***</b>	<b>161.27***</b>	<b>304.01***</b>	<b>84.35***</b>	<b>157.2***</b>	<b>78.47***</b>	<b>162.35***</b>
	OIR(Sargan) test	87.274***	93.86***	79.65***	18.31***	54.08***	64.12***	51.10***	40.26***
	P-values	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
	Weak I. Test(F-stats)	325.58***	235.11***	---	---	---	235.11***	---	---
	Adjusted R <sup>2</sup>	0.037	0.00007	0.035	0.002	0.091	0.011	0.072	0.047
	Fisher-stats	---	---	---	<b>85.44***</b>	---	---	---	---
	Observations	375	374	353	333	365	364	346	345

M2: Monetary Base. Fdgd: Financial system deposits. BcBd: Bank credit on Bank deposits. FcFd: Financial system credit on Financial system deposits. Reg: Regulation. \*, \*\*, \*\*\*: significance levels of 10%, 5% and 1% respectively.

Results in Table 4 support both law indicators as channels to financial intermediary depth (panel A) and efficiency (panel B). Hence, the first concern is addressed. For the second issue, (but for the 5<sup>th</sup>, 6<sup>th</sup>, 9<sup>th</sup> and 10<sup>th</sup> columns of panel A) the Sargan OIR-test results broadly show that legal origins explain financial development through other mechanisms beside the proposed law channels. The choice of the IV procedure is justified by the overwhelming rejection of the null hypothesis of the Hausman test.

**Table 5: TSLS regressions for Financial Activity and Size**

Panel A: TSLS regressions for Financial Activity									
Financial Activity									
Banking System Activity					Financial System Activity				
		Mod.11	Mod.11*	Mod.11**	Mod.11***	Mod.12	Mod.12*	Mod.12**	Mod.12***
		Pcrb	Pcrb	Pcrb	Pcrb	Pcrbof	Pcrbof	Pcrbof	Pcrbof
Law Channels	Reg. Quality	<b>0.556***</b> (26.25)	---	<b>2.089***</b> (3.603)	---	<b>0.635***</b> (20.28)	---	<b>2.058***</b> (3.844)	---
	Rule of Law	---	<b>0.562***</b> (26.79)	---	<b>1.158***</b> (7.357)	---	<b>0.643***</b> (20.25)	---	<b>1.240***</b> (6.587)
	Trade	---	---	<b>-0.006***</b> (-2.646)	<b>-0.002***</b> (-3.815)	---	---	<b>-0.006***</b> (-2.629)	<b>-0.002***</b> (-3.118)
Control Variables	Inflation	---	---	<b>0.001*</b> (1.729)	0.0003 (1.334)	---	---	0.0009 (1.488)	0.0001 (0.577)
	Hausman test	<b>0.007</b>	<b>9.111***</b>	<b>98.83***</b>	<b>46.12***</b>	1.549	<b>3.56*</b>	<b>28.35***</b>	<b>20.02***</b>
	OIR(Sargan) test	81.31***	51.20***	<b>0.172</b>	6.099**	39.85***	19.72***	<b>1.744</b>	<b>1.880</b>
	P-values	[0.000]	[0.000]	[0.917]	[0.047]	[0.000]	[0.000]	[0.418]	[0.390]
	Weak I. Test(F-stats)	<b>325.58***</b>	<b>235.11***</b>	---	---	<b>325.58***</b>	<b>235.11***</b>	---	---
	Adjusted R <sup>2</sup>	0.383	0.384	0.135	0.299	0.330	0.284	0.164	0.261
	F-stats	---	---	<b>23.54***</b>	<b>106.23***</b>	---	---	<b>35.19***</b>	<b>97.09***</b>
	Observations	365	364	326	325	365	364	326	325

		<b>Panel B: TSLS regressions for Financial Size</b>			
		<b>Financial Size</b>			
		<b>Financial Size</b>		<b>Financial Size</b>	
		Mod.13 Dbacba	Mod.13 * Dbacba	Mod.13** Dbacba	Mod.13*** Dbacba
Law	Reg. Quality	<b>2.225***</b> <b>(43.24)</b>	---	<b>1.881***</b> <b>(4.520)</b>	---
Channels	Rule of Law	---	<b>2.156***</b> <b>(34.40)</b>	---	<b>0.576***</b> <b>(2.370)</b>
Control	Trade	---	---	0.001 (0.637)	<b>0.006***</b> <b>(6.266)</b>
Variables	Inflation	---	---	0.0007 (1.617)	-0.0001 (-0.324)
Hausman test		<b>466.34***</b>	<b>477.61***</b>	<b>275.42***</b>	<b>400.91***</b>
OIR(Sargan) test		23.06***	51.35***	14.14***	30.41***
P-values		[0.000]	[0.000]	[0.000]	[0.000]
Weak I. Test(F-stats)		<b>325.58***</b>	<b>235.11***</b>	---	---
Adjusted R <sup>2</sup>		0.239	0.207	0.134	0.094
F-stats		---	---	<b>547.09***</b>	<b>584.34***</b>
Observations		372	371	331	330

Pcrb: Private domestic credit by deposit banks. Pcrbof: Private domestic credit by financial institutions. Dbacba: Deposit bank assets on central bank assets plus deposit bank assets. Reg: Regulation. \*, \*\*, \*\*\*: significance levels of 10%, 5% and 1% respectively.

Like with Table 4, Table 5 below addresses the two main issues. The overwhelming rejection of the Hausman test confirms the presence of endogeneity and choice of estimation technique. On the first concern, the findings support the relevance of law channels in financial development dynamics of activity (Panel A) and size (Panel B). On the second concern, the Sargan OIR test results are consistent with those in Table 4. Hence, legal origin explains finance beyond the proposed law mechanisms. However, when other channels to financial development are controlled for (5<sup>th</sup>, 9<sup>th</sup> and 10<sup>th</sup> columns of Panel A), the instruments become valid and do not explain financial development beyond the proposed mechanisms, conditional of the controlled covariates. This finding leaves room for the exploration of the extended IV procedure.

#### **5.4 Examination of law channels using an extended Instrumental Variable (IV) procedure**

The findings from Tables 4-5 have broadly shown that legal origin explains financial development beyond its ability to explain cross-country differences in the proposed law mechanisms when other determinants of financial development are not controlled for



(Assertion 1). Conversely, the findings have also revealed that when other channels to financial development are controlled for, legal origin does not explain finance beyond the proposed law channels (Assertion 2). The purpose of this section is to use an extended IV procedure to verify these assertions. Consistent with Beck et al. (2003) this procedure requires the simultaneous examinations of the proposed law mechanisms.

**Table 6: Extended IV procedure with simultaneous law channels**

		Panel A: Extended IV Procedure without covariates							
		Financial Depth		Financial Efficiency		Financial Activity		Financial Size	
		Mod. 15	Mod.15*	Mod.16	Mod.16*	Mod.17	Mod.17*	Mod.18	Mod.18*
		M2	Fdgdg	Bcbd	Fcfd	Pcrb	Pcrbof	Dbacba	Dbacba
Law Channels	Reg. Quality	<b>-1.435***</b> (-3.415)	<b>-1.820***</b> (-4.209)	<b>6.961***</b> (6.798)	<b>6.561***</b> (6.493)	<b>-0.886***</b> (-2.912)	<b>-1.091**</b> (-2.571)	<b>4.234***</b> (6.592)	---
	Rule of Law	<b>2.442***</b> (5.861)	<b>2.629***</b> (6.131)	<b>-4.882***</b> (-4.826)	<b>-4.388***</b> (-4.380)	<b>1.437***</b> (4.762)	<b>1.720***</b> (4.086)	<b>-1.997***</b> (-3.153)	---
Hausman test		<b>118.62***</b>	<b>100.34***</b>	<b>396.27***</b>	<b>154.20***</b>	<b>39.83**</b>	<b>30.30***</b>	<b>578.62***</b>	---
OIR(Sargan) test		23.29***	9.29**	8.902**	7.234*	16.22***	<b>4.82</b>	<b>3.890</b>	---
P-values		[0.000]	[0.025]	[0.030]	[0.064]	[0.001]	<b>[0.185]</b>	<b>[0.273]</b>	---
Adjusted R <sup>2</sup>		0.400	0.389	0.102	0.119	0.209	0.123	0.115	---
F-stats		---	---	---	---	---	---	---	---
Observations		364	364	374	364	364	364	371	---

  

		Panel B: Extended IV Procedure with covariates							
		Financial Depth		Financial Efficiency		Financial Activity		Financial Size	
		Mod. 19	Mod.19*	Mod.20	Mod.20*	Mod.21	Mod.21*	Mod.22	Mod.22*
		M2	Fdgdg	Bcbd	Fcfd	Pcrb	Pcrbof	Dbacba	Dbacba
Law Channels	Reg. Quality	0.463 (0.387)	-0.630 (-0.751)	<b>9.076***</b> (3.761)	<b>8.266***</b> (3.768)	0.501 (0.714)	-0.172 (-0.273)	<b>4.240***</b> (3.495)	---
	Rule of Law	<b>1.680**</b> (2.003)	<b>2.144***</b> (3.648)	<b>-5.752***</b> (-3.397)	<b>-5.094***</b> (-3.314)	<b>0.879*</b> (1.788)	<b>1.376***</b> (3.105)	<b>-1.964**</b> (-2.252)	---
Control Variables	Trade	<b>-0.008**</b> (-2.225)	<b>-0.005**</b> (-1.999)	-0.008 (-1.214)	-0.006 (-0.973)	<b>-0.005**</b> (-2.478)	-0.002 (-1.505)	-0.004 (-1.122)	---
	GDPg	<b>0.050*</b> (1.664)	0.033 (1.537)	0.058 (0.941)	0.036 (0.658)	0.027 (1.545)	0.006 (0.394)	<b>0.063**</b> (2.000)	---
Hausman test		<b>172.84***</b>	<b>152.91***</b>	<b>309.10***</b>	<b>137.74***</b>	<b>84.10***</b>	<b>29.77***</b>	<b>270.74***</b>	---
OIR(Sargan) test		<b>0.279</b>	<b>0.717</b>	<b>1.736</b>	<b>1.823</b>	<b>1.121</b>	<b>2.442</b>	<b>0.062</b>	---
P-values		<b>[0.596]</b>	<b>[0.396]</b>	<b>[0.187]</b>	<b>[0.176]</b>	<b>[0.289]</b>	<b>[0.118]</b>	<b>[0.802]</b>	---
Adjusted R <sup>2</sup>		0.086	0.223	0.103	0.129	0.185	0.234	0.048	---
F-stats		<b>47.35***</b>	<b>66.50***</b>	<b>41.708***</b>	<b>60.35***</b>	<b>43.00***</b>	<b>67.55***</b>	<b>159.23***</b>	---
Observations		345	345	355	345	345	345	352	---

\*, \*\*, \*\*\*: significance levels of 10%, 5% and 1% respectively. M2: Monetary Base. Fdgdg: Financial system deposits. Bcbd: Bank credit on Bank deposits. Fcfd: Financial system credit on Financial system deposits. Pcrb: Private domestic credit by deposit banks. Pcrbof: Private domestic credit by financial institutions. Dbacba: Deposit bank assets on central bank assets plus deposit bank assets. Reg: Regulation

Panel A (B) of Table 6 shows results of the extended IV regression without (with) control variables. For Panel A, but for the 8<sup>th</sup> and 9<sup>th</sup> columns where the OIR-test is not rejected, results overwhelmingly justify the first assertion derived from Tables 4-5. The second assertion is examined in Panel B. Accordingly; the overwhelming failure to reject the

null hypothesis of the OIR test in all seven regressions confirms the validity of the assertion. It follows that legal origin explains financial intermediary development through no other mechanisms beside the proposed law channels when other potential exogenous determinants of finance (justified by the law-finance theory) are controlled for. The use of TSLS is justified by the rejection of the null hypothesis of the Hausman-test in all seven regressions. It should also be noted that while Cameroon and Rwanda operate in the mixture of French civil law and English common law, there is no significant change in the results when these two countries are dropped from the French sample.

Before concluding, it is relevant to balance the analysis by pointing out some caveats. Accordingly, some doubts have been documented about the ‘law and property rights theory’, which suggest that British common law supports financial development to a greater extent than civil law systems. The legal origins theory from which the underlying theory is derived suggests that common law systems (strong property rights, the role of the judiciary...etc) promote financial development better than civil law systems. Four points are relevant here. Firstly, some scholars doubt whether the distinction between common law and civil law can be justified from a historical perspective (Deakin & Siems, 2010, p. 10). Secondly, with internationalization, modern trends make the common law/civil law distinction even less persuasive. Rwanda falls along this line. Thirdly, it is not clear why in substance we may expect differences in common law and civil law systems on the pure assumption that common law tradition is characterized by independent judges and juries (relatively weaker reliance on statutes and the preference for contracts and private litigation as a means of dealing with social harms), whereas civil law tradition is characterized by state-employed judges, great reliance on legal and procedural codes, and a preference for state regulation over private

regulation (Asongu, 2012c). Fourthly, the classification of countries into common law and civil law categories disregards: the ongoing influence of their pre-transplant law; the mixture and modification at the moment when some copying of foreign law occurs; and the post-transplant period (in which the transplanted law may be altered or applied differently from the origin country).

## **6. Conclusion**

While previous studies have investigated the law-finance nexus from a broad spectrum, the absence of relevant data on Africa has rendered it difficult to verify the established hypotheses of pioneering studies. Accordingly, the African continent is an ideal premise for testing the hypotheses of these pioneering studies for two main reasons: it is lagging in terms of financial development and has been a fertile ground for neocolonialism.

In essence, this paper has assessed how legal origin influences financial development through regulation quality and the rule of law. It has employed all the dimensions identified by the Financial Development and Structure Database of the World Bank. The law channels have been instrumented with legal origins to account for financial intermediary dynamics of depth, efficiency, activity and size. The results broadly support the benefits of law mechanisms in financial development. The findings only show partial support for the consensus that English common law countries provide better conditions for financial development. While they dominate in dynamics of depth, activity and size, French civil law countries have an edge in financial allocation efficiency. Portuguese civil law countries broadly fall in-between. With the exception of financial efficiency, French civil law sub-Saharan African (SSA) countries are least while North African countries dominate even

English common law countries in financial intermediary aspects of depth and activity. French SSA countries dominate overall in allocation efficiency.

We have also found evidence that legal origin explains financial development beyond its ability to explain cross-country differences in law channels when other determinants of financial development are not controlled for. Conversely, when other mechanisms (that are consistent with theory and empirical validity) are controlled for; legal origin does not explain financial development beyond law mechanisms. Caveats of the law-finance theory have been discussed.

## Appendices

### Appendix 1: Presentation of legal origin and countries

Legal origin	Countries	Num.
English	Botswana, Egypt, Gambia, Ghana, Kenya, Lesotho, Malawi, Mauritius, Nigeria, Seychelles, Sierra Leone, South Africa, Sudan, Swaziland, Tanzania, Zambia.	16
French	Algeria, Benin, Burkina Faso, Burundi, Cameroon, Central African Republic, Chad, Congo Republic, Côte d'Ivoire, Gabon, Madagascar, Mali, Morocco, Niger, Rwanda, Senegal, Togo, Tunisia.	18
Portuguese	Angola, Cape Verde, Guinea-Bissau, Mozambique.	4
French sub-Saharan Africa	Benin, Burkina Faso, Burundi, Cameroon, Central African Republic, Chad, Congo Republic, Côte d'Ivoire, Gabon, Madagascar, Mali, Niger, Rwanda, Senegal, Togo.	15
North Africa	Algeria, Egypt, Morocco, Tunisia.	4

Num: Number of countries.

## Appendix 2: Correlation Analyses

Financial Intermediary Development Variables							Law Variables		Control Variables						Instrumental Variables					
Depth	Efficiency		Activity			Size	Reg. Qua.	Rule of Law	Infl.	Trade	Popg	Gov. Exp.	GDPg	GDP pcg	Eng.	Frch.	Port.	Frssa	Nafri	
1.000	0.974	-0.07	-0.00	0.74	0.598	0.394	0.402	0.630	-0.06	0.30	-0.46	0.33	-0.05	0.057	0.21	-0.230	0.034	-0.43	0.50	M2
	1.000	-0.04	0.069	0.80	0.685	0.460	0.482	0.682	-0.05	0.32	-0.49	0.37	-0.01	0.101	0.29	-0.283	-0.004	-0.46	0.45	Fdgdg
		1.000	0.870	0.40	0.421	0.259	0.193	-0.008	-0.11	-0.23	0.010	-0.07	-0.09	-0.08	-0.26	0.415	-0.242	0.40	0.01	Bcbd
			1.000	0.53	0.679	0.282	0.302	0.105	-0.08	-0.23	-0.04	0.04	-0.09	-0.07	-0.11	0.250	-0.217	0.24	0.003	Fcfd
				1.00	0.930	0.515	0.619	0.620	-0.06	0.106	-0.41	0.24	-0.02	0.077	0.15	-0.115	-0.063	-0.31	0.450	Pcrb
					1.000	0.454	0.575	0.533	-0.05	0.050	-0.35	0.26	-0.03	0.055	0.19	-0.145	-0.079	-0.29	0.318	Pcrbof
						1.000	0.489	0.455	-0.09	0.210	-0.29	0.27	0.06	0.133	0.007	0.016	-0.036	-0.14	0.258	Dbacba
							1.000	0.799	-0.09	0.046	-0.27	0.19	0.02	0.086	0.231	-0.149	-0.129	-0.24	0.181	Reg. Qua.
								1.000	-0.09	0.239	-0.34	0.34	0.000	0.082	0.308	-0.233	-0.116	-0.33	0.230	Rule of L.
									1.00	0.103	0.039	-0.14	0.078	0.072	-0.035	-0.074	0.172	-0.06	-0.027	Infl.
										1.000	-0.40	0.37	-0.01	0.082	0.228	-0.295	0.124	-0.28	-0.081	Trade
											1.00	-0.33	0.22	-0.01	-0.204	0.229	-0.047	0.40	-0.301	Popg
												1.00	-0.02	0.061	0.309	-0.276	-0.054	-0.33	0.037	Gov. Exp.
													1.000	0.971	0.010	-0.096	0.139	-0.09	0.001	GDPg
														1.000	0.059	-0.143	0.138	-0.18	0.075	GDPpcg
															1.000	-0.809	-0.292	-0.68	-0.118	Eng.
																1.000	-0.325	0.85	0.189	Frch.
																	1.000	-0.27	-0.117	Port.
																		1.00	-0.277	Frssa
																			1.000	Nafri

M2: Monetary Base. Fdgdg: Financial system deposits. Bcbd: Bank credit on Bank deposits. Fcfd: Financial system credit on Financial system deposits. Pcrb: Private domestic credit by deposit banks. Pcrbof: Private domestic credit by financial institutions. Dbacba: Deposit bank assets on central bank assets plus deposit bank assets. Reg.Qua: Regulation Quality. Infl: Inflation. Popg: Population growth. Gov.Exp: Government Expenditure. GDPg: GDP growth. GDPpcg:GDP per capita growth. Eng: English legal origin. Frch: French legal origin. Port: Portuguese legal origin. Frssa: French sub-Saharan Africa. Nafri: North Africa.

### Appendix 3: Variable definitions

Variables	Signs	Variable definitions	Sources
<b>Dependent Variables</b>			
Financial system Depth	M2	Money Supply (% of GDP)	FDSD (World Bank)
Banking System Depth	Fdgd	Liquid Liabilities (% of GDP)	FDSD (World Bank)
Banking System Efficiency	BcBd	Bank credit on Bank deposit	FDSD (World Bank)
Financial System Efficiency	FcFd	Financial credit on Financial deposit	FDSD (World Bank)
Banking System Activity	Pcrb	Private domestic credit by deposit banks (% of GDP)	FDSD (World Bank)
Financial System Activity	Pcrbof	Private domestic credit by deposit banks and other financial institutions (% of GDP)	FDSD (World Bank)
Financial System Size	Dbacba	Deposit bank assets on (Deposit bank assets plus Central bank assets)	FDSD (World Bank)
<b>Independent Variables</b>			
Regulation Quality	Reg. Qua.	Regulation Quality (estimate): Measured as the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development.	WDI (World Bank)
Rule of Law	Rule of Law	Rule of Law (estimate): Captures perceptions of the extent to which agents have confidence in and abide by the rules of society and in particular the quality of contract enforcement, property rights, the police, the courts, as well as the likelihood of crime and violence.	WDI (World Bank)
<b>Control Variables</b>			
Inflation	Infl.	Consumer Price Index (Annual %)	WDI (World Bank)
Openness	Trade	Imports + Exports of Commodities (% of GDP)	WDI (World Bank)
Population Growth	Popg	Population Growth Rate (annual %)	WDI (World Bank)
Government Expenditure	Gov. Exp.	Government Final Expenditure (% of GDP)	WDI (World Bank)
Global Economic Prosperity	GDPg	GDP Growth Rate (annual %)	WDI (World Bank)
Per Capita Economic Prosperity	GDPpcg	GDP per Capita Growth rate (annual %)	WDI (World Bank)

WDI: World Development Indicators. GDP: Gross Domestic Product. FDSD: Financial Development and Structure Database.

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