Law, finance, economic growth and welfare: why does legal origin matter?

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Abstract

This paper proposes and empirically validates four theories of why legal origin influences growth and welfare through finance. It is a natural extension of "Law and finance: why does legal origin matter?" by Thorsten Beck, Asli Demirgüç-Kunt and Ross Levine (2003). We find only partial support for the Mundell(1972), La Porta et al. (1998) and Beck et al.(2003) hypotheses that English common-law countries tend to have better developed financial intermediaries than French civil-law countries. While countries with English legal tradition have legal systems that improve financial depth, activity and size, countries with French legal origin overwhelmingly dominate in financial intermediary allocation efficiency. Countries with Portuguese legal origin fall in-between.

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

Keywords: Law; Financial development; Growth; Welfare

1. Introduction

The relationship between legal origin and the finance-growth nexus has been explored in the literature through various strands of research. Currently one might club them into five categories.

With respect to the first strand of research, a growing body of work suggests that cross-country differences in legal origins explain cross-country disparities in financial development and growth. La Porta et al. (hence LLSV, 1998) and a great many authors have generalized the consensus that common-law countries have better prospects for financial development than French-civil-law countries. They postulate that countries with English common-law origin (French civil-law origin) provide the strongest (weakest) legal protection to shareholders and creditors (LLSV, 1998, 2000). This generalization on the superiority of the English legal origin has been extended to other aspects: more informative accounting standards (LLSV, 1998), better institutions with less corrupt governments (LLSV, 1999) and more efficient courts (Djankov et al., 2003). Thus this strand has been largely dedicated to the issue of "*if legal origins matter in financial development*". And *if* they matter, *why* do they?

In the second strand of literature, Beck et al. (2003) shed some light on why legal origins matter in finance by assessing empirically two theories based on channels. The political channel stresses that legal traditions differ in the priority they attribute to the rights of individual investors vis-à-vis the state; which obviously has effects on financial development. The adaptability channel postulates that legal traditions differ in their ability to adjust and adapt to changing commercial circumstances-implying countries with legal systems that provide for adjustments in the capacity to meet-up with changes have a higher propensity to financial

development. Thus this theory solves the "why" puzzle in asserting that legal origin matter for finance because legal traditions differ in their ability to adapt efficiently to evolving economic conditions.

The third strand of literature champions the nexus that financial development would significantly contribute to a country's overall economic growth (McKinnon, 1973). This positive finance-led-growth nexus has been empirically supported at the country level (King and Levine, 1993, Levine and Zervos, 1998), as well as at industry and firm levels (Jayaratne & Strahan, 1996; Rajan & Zingales, 1998).

The fourth strand of literature add growth to the first strand in providing 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, based on Mundell's conjecture (1972) establishes that Anglophone countries in Africa, shaped by British activism and openness (to experiment) would naturally witness a higher level of financial development than their Francophone neighbors: influenced by French reliance on monetary rules and automaticity. To cite him in verbatim: "*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). On a brief historical note, the partition of sub-Saharan Africa into British and French spheres in the 19th century and their implementation of antagonistic colonial policies[1]

[1] The British and French adopted different colonial policies. While the French imposed a highly centralized bureaucratic system that clearly underlined empire-building, the British on the other hand administered

have prompted many researchers in the past decades to investigate how colonial origin have influenced the finance-growth nexus through legal traditions(Mundell, 1972; Assane & Malamud_____; Agbor 2011).

The present paper encompasses all five strands mentioned afore by investigating the law-finance-growth phenomenon with financial intermediary (depth, efficiency, size, activity) and growth (welfare and GDP) dynamics within a colonial-legacy framework. (1) First and foremost, it completes the first and second strands by looking at if British-common-law legal traditions provide better prospects for finance at all quantifiable dynamics of financial intermediation; this would either confirm or reject the generalization that countries with English common-law origin (French-civil-law origin) provide the strongest (weakest) environment for financial development.(2) Secondly, inspired by the motivation of the second and fourth strands we shall contribute to existing literature by providing evidence of "why" legal traditions affect economic growth and welfare through financial development. In like manner as the second strand solved the puzzle of why legal origins matter in finance, we shall postulate and empirically verify channels via which growth is affected by legal origins through finance. (3)With regard to third strand, our empirical analysis should provide evidence as to whether a positive finance-growth nexus holds with respect to legal origins in the context of financial intermediary dynamics. (4) The colonial legacy context of our paper helps assess the validity of Mundell's conjecture in the fifth strand. (5) Last but not the least, the distinction of growth aspects (like welfare and GDP growth) in our analysis shed more light and provide additional emphasis for nexus

decentralized, flexible and pragmatic policies. Economic motives dominated British colonial activities who sought to transform their colonies into commercially viable trading societies through the indirect-rule: producing raw material and consuming British manufactures. The French on their part propagated their imperial motive through the policy of assimilation.

generalization. Thus we shall substantially contribute to existing literature by assessing the following testable hypotheses:

H1: Legal origins explain growth and welfare through our proposed financial channels (See Section 2).

H2: The Mundell(1972), La Porta et al.(1998)[2] and Beck et al.(2003)[3] hypotheses do not apply to every dynamic of financial intermediation.

The rest of the paper is organized as follows. Section 2 discusses various financial channels to growth and welfare. Data sources and methodology are described and outlined respectively in Section 3. Empirical analysis and discussion of results are reported in Section 4. We conclude with Section 5.

2. Law, legal-origin, finance and growth theory

We propose the following law-finance and growth theories based on four financial intermediary channels.

2.1 The financial depth channel

The financial depth channel is based on two premises: money supply and liquid liabilities. We postulate that the quantity of Money in the economy (M2) as well as the amount held by deposit money banks and other financial institutions (financial system deposits) depend on legal tradition. In other words money supply and liquid liabilities depend on legal-origins. If the depth of finance either in the overall economy (M2) or in banks (liquid liabilities) is

[2] The result 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).

[3] "Third German civil law and British common-law countries have significantly better-developed financial intermediaries and markets and better property right protection than French civil-law countries, which is fully consistent with the adaptability channel"(Beck et al.,2003; page 673).

determined by legal tradition, then it should be higher in countries with common-law origin because they provide environments more favorable to openness (trade and capital) and competition. Historically the ruling classes opposed financial development because it gave their competitors an edge and reduced their potential margins. British common-law systems based on private property rights therefore favored competition and openness. To buttress this point further from a colonial perspective, the British and French adopted different colonial policies. While the French imposed a highly centralized bureaucratic system that clearly underlined empire-building, the British on the other hand administered decentralized, flexible and pragmatic policies. Economic motives dominated British colonial activities who sought to transform their colonies into commercially viable trading societies through the indirect-rule: production of raw material and consumption of British manufactures. The French on their part propagated their imperial motive through the policy of assimilation. Therefore British colonial policies based on common-law provide for legal systems that favor financial depth; both at overall economic and bank levels. This has been empirically verified by Rajan and Zingales (2003) who used data from 1913 to 1999. Countries with higher levels of financial depth and activity should therefore be expected to growth faster.

2.2 The financial efficiency channel

We propose financial intermediary allocation efficiency channels based on two factors: bank system efficiency and financial system efficiency. We postulate that countries with French civil-law origin should have legal systems that provide for greater levels of allocation efficiency because their banks lend-out a greater chunk of mobilized funds (deposits). French tradition has always stressed the passive nature of monetary policy, the importance of exchange stability with convertibility, and the need for explicit deposit insurance. On the other hand English common-

law systems with no explicit insurance deposits and monetary independence have sacrificed stability for monetary experience and better developed monetary institutions. Therefore a greater proportion of deposits mobilized by bank are retained in common-law countries to avoid bank-run. A substantial deterrent to bank-run is exchange rate stability which is championed by French civil-law countries. Thus empirically, French civil-law countries with high levels of allocation efficiency should improve faster in growth and welfare.

2.3 The financial size channel

The relative importance of openness and competition should favor a broader financial system in common-law countries than in their civil-law counterparts (French and Portuguese). If a positive finance-growth nexus applies, then we can infer that common-law traditions should give birth to legal systems that induce higher growth and welfare gains through their inherent positive effect of broadening financial systems.

2.4 The financial activity channel

The financial activity channel is based on two premises: 'private credit by domestic banks' for banking-system-activity and 'private domestic credit from banks and other financial institutions' for financial-system-activity. The notions of financial activity and financial depth, though different in conception have the same theoretical basis as in Section 2.1. Thus, activity and depth are two interrelated financial channels that influence growth and welfare; with the greater effect on common-law origin countries followed by Portuguese (French based) civil-law countries and lastly by countries with French civil-law legal tradition.

3. Data and Methodology

3.1 Data

Our data is from 26 sub-Saharan African countries with French-civil; Portuguese-civil and British-common law origins (see Appendix 1 for details). Due to data limitations the panel ranges from 1986 to 2009 for each cross-section. We include origin of countries in our data to take account of endogeneity. Borrowing from Beck et al. (2003), as point-out by 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 formed the legal tradition, from transplant countries which received the legal traditions. However within the framework of our paper this isn't much of an issue because legal origins are primarily used as instruments. We classify collected data into the following three categories.

3.1.1 Financial channels

Indicators of financial channels are obtained after computations from the Financial Development and Structure Database (FDSD). We are unable to collect data from financial markets because Côte d'Ivoire is the sole country with a French civil-legal origin in the database with information on stock markets. The regional nature of this financial market in Côte d'Ivoire makes it even harder to disentangle individual contributions of the eight West African countries that make it up (seven French legal origin countries and one Portuguese legal origin country). In sharp contrast we found many English legal origin countries with information on stock markets (Ghana, Kenya, Malawi, Mauritius, Namibia, Nigeria, Swaziland, Tanzania, Uganda, Zambia, Zimbabwe...etc). This disparity poses a practical difficulty of coming-up with harmonious comparison criteria for stock market data. We are thus poised to restrict our analysis to a financial intermediary framework.

a) Financial depth channel

With respect to our hypotheses, we proxy financial depth both from overall-economic and financial-system perspectives, through indicators of broad money supply (M2/GDP) and financial system deposits (Fdgdp) respectively. These two variables should robustly check each other in the course of our analysis since more than 96% of 'financial system deposits' information is contained in broad money supply (see Appendix 3).

b) Financial allocation efficiency channel

We refer here to neither the profitability-oriented concept of financial efficiency nor the production efficiency of decision making units in the financial sector (through Data Envelopment Analysis). What we seek to bring to light is the ability of banks to effectively address their fundamental role of transforming mobilized deposits to credits. We put forward two proxies for banking system efficiency and financial system efficiency (respectively "bank credit on bank deposits" and "financial system credit on financial system deposits). Preliminary correlation analysis(see Appendix 3) certify the later can check the former and vice-versa, as the former contains over 96% of variability in the later.

c) Financial size channel

Consistent with the FDSD we measure financial intermediary activity as the ratio of "deposit bank assets" to the sum of "deposit bank assets and central bank assets". Unfortunately, unlike proxies for other channels we do not find another proxy that overlap significantly with this variable despite numerous computations.

d) Financial activity channel

This is the ability of banks to grant credit to economic operators. We check bank-sector-activity with financial-sector-activity, proxied by "private domestic credit" and "private credit by domestic banks and other financial institutions" respectively. Correlation analysis reveal each contain more than 98% of information in the other (see Appendix 3).

3.1.2 Growth and Welfare

GDP growth and GDP per capita growth rates are used as indicators of growth and welfare respectively. This is in line with the finance-growth literature (Levine & King, 1993; Hassan et al., 2011). African Development Indicators (ADI) from the World Bank is the source of this data.

3.1.3 Control variables

Borrowing from (Levine & King, 1993; Hassan et al., 2011) we shall control for inflation, trade, population growth and general government final consumption expenditure in the finance-growth regressions. These control variables are also obtained from ADI.

3.2 Methodology

Borrowing from Beck at al. (2003) and more recently Agbor (2011) we use Two-Stage-Least-Squares (TSLS) with dummies of legal origins as instrumental variables. Beyond the numerous advantages of using TSLS (to other conventional regression methods) the object of our paper which is to assess how legal origins affect growth through proposed financial channels require an Instrumental Variable (hence IV) estimation method. Therefore in the course of the IV analysis we shall demonstrate the following:

-justify the use of a TSLS over an Ordinary Least Squares (OLS) estimation method through the Hausman test for endogeneity;

-show that the instruments (legal origins) explain the endogenous components of explanatory variables (financial channels), conditional on other covariates;

-assess that the instruments are valid and not correlated with the error term of the explanatory equation through an Over-Identifying Restriction (OIR) test.

Our methodology includes the following models.

First stage regression:

$$FinancialChannel_{it} = \gamma_0 + \gamma_1(British)_{it} + \gamma_2(French)_{it} + \gamma_3(Portuguese)_{it} + \alpha_i X_{it} + \upsilon \quad (1)$$

Second stage regression:

$$Growth_{it} = \gamma_0 + \gamma_1(FinancialChannel)_{it} + \beta_i X_{it} + \mu \quad (2)$$

In both equations, X is a set of exogenous variables that are included in some of the second stage regressions. For the first and second stage equations, v and u, respectively denote the error terms. Instrumental variables are the three legal origin dummies.

4. Cross-country regressions

This section presents results from panel regressions to assess the importance of legal origin in explaining cross-country variance in economic growth and welfare. That is, the propensity of legal origins to explain cross-country differences in financial-channel indicators and the ability of the exogenous components of financial channels to account for cross-country disparities in growth and welfare.

4.1 Legal origins, growth and welfare

Consistent with Beck et al. (2003), in Table 1 we regress our growth and welfare indicators on British, French and Portuguese legal origin dummies by simple OLS and further test for joint significance. Our choice of only three legal origins is due to data constraints and in line with recent literature (Agbor, 2011). The Fisher-test results for legal origin dummies in Table 1 confirms the consensus that distinguishing countries by legal origin helps elucidate cross-country differences in growth and welfare. The Scandinavian legal origin is captured by the constant. Even after controlling for government expenditure and population growth, there's overwhelming evidence that countries with English common-law legal origins grow faster in terms of GDP and Welfare than those with French civil-law traditions. Countries with Portuguese legal-origin (which is inspired by French civil-law) are between the English and the French. These initial findings are consistent with empirical literature on sub-Saharan Africa (Mundell, 1972; Agbor, 2011)[4]. As in Beck et al. (2003) we also note that based on the results, our instruments are significantly different from each other.

Table 1: Legal origins and growth

		Base Model(Growth:GDPg)		Robustness(Welfare:GDPpcg)	
Legal origin (dummies)	English	**4.291*** (15.46)**	**5.915*** (9.024)**	**1.825*** (6.690)**	**5.149*** (5.462)**
	French	**2.803*** (10.61)**	**4.009*** (7.544)**	**0.041 (0.158)**	**3.30*** (3.630)**
	Portuguese	**4.619*** (8.73)**	**5.859*** (8.312)**	**2.375*** (4.572)**	**5.155*** (5.642)**
Control variables	Gov. Expenditure	---	**-0.095*** (-2.714)**	---	**-0.085** (-2.403)**
	Population Growth	---	---	---	**-0.773*** (-3.432)**
F-test for legal origin (dummies)		**9.479*** **	**8.704*** **	**14.832*** **	**10.795*** **
Adjusted. R^2		0.026	0.038	0.042	0.062
Number of observations		621	585	621	585

GDP growth rate. GDPpcg: GDP per capita growth rate. *,**,***; significance at 10%,5% and 1% respectively.

[4] Agbor (2011) uses trade and education indictors to verify how colonial origin matters in explaining cross-country difference in economic performance in sub-Saharan Africa. His results show that English speaking countries perform better than their French speaking counter-parts, while countries with Portuguese legal origin fall between the two.

4.2 Legal origins and financial channels

Table 2 below investigates by simple OLS whether legal origin explains cross-country difference in financial intermediary development. We regress proxies for various financial channels on legal origins when other covariates apply (panel B) as well as when they don't (panel A). The regression of financial channels on instruments is an essential condition in the TSLS approach. (see equation 1). These first stage regressions provide the basis for assuming instruments are strong and worthwhile[5]. In both panels and for all endogenous regressors (financial channels) we find evidence that the instruments are significant determinants of finance. We report the Fisher (F) statistics which test whether legal origin dummy variables taken together, significantly explain cross-country variations in financial channel indicators. Consistent with our finance and growth theory (see Section 2), Table 2 indicates that British common-law countries have significantly greater levels of financial depth and activity. French civil-law countries also have significantly higher levels of allocation efficiency, while countries with British legal tradition dominate in financial intermediary size. In line with Agbor (2011) the strength of countries with Portuguese legal origin falls between the French and the English. Results in Table 2 are broadly consistent with hypotheses on our law-finance-growth theory outlined in Section 2.

[5] The instruments must be correlated with the endogenous explanatory variables, conditional on the other covariates in the first-stage regression.

Table 2: Legal origins, financial depth, efficiency, activity and size

		Panel A: First Stage Regressions Without control variables						
		Financial Depth		Financial Efficiency		Financial Activity		Fin. Size
		Base M.	Robust M.	Base M.	Robust M.	Base M.	Robust M.	Base M.
		M2	Fdgdp	Bcbd	Fcfd	Pcrb	Pcrbof	Dbacba
Legal origin (dummies)	English	**0.345*** **	**0.290*** **	**0.545*** **	**0.563*** **	**0.149*** **	**0.163*** **	**0.699*** **
		(30.69)	**(27.51)**	**(26.67)**	**(28.55)**	**(20.94)**	**(22.43)**	**(49.77)**
	French	**0.203*** **	**0.130*** **	**1.018*** **	**1.010*** **	**0.129*** **	**0.129*** **	**0.695*** **
		(19.05)	**(12.94)**	**(52.30)**	**(53.58)**	**(19.04)**	**(18.69)**	**(52.57)**
	Portuguese	**0.356*** **	**0.251*** **	**0.716*** **	**0.701*** **	**0.148*** **	**0.147*** **	**0.631*** **
		(16.05)	**(11.66)**	**(17.88)**	**(17.37)**	**(10.13)**	**(9.934)**	**(23.20)**
F-test(legal origin)		**48.01*** **	**61.90*** **	**141.8*** **	**136.43*** **	**2.141**	**5.49*** **	**2.62***
Adjusted. R^2		0.138	0.172	0.313	0.316	0.003	0.015	0.005
Num. of observations		588	586	617	586	586	586	611
		Panel B: First Stage Regressions With control variables(conditional on other covariates)						
Legal origin (dummies)	English	**0.336*** **	**0.274*** **	**0.590*** **	**0.653*** **	**0.190*** **	**0.196*** **	**0.540*** **
		(7.941)	**(6.968)**	**(6.844)**	**(7.589)**	**(6.378)**	**(6.456)**	**(10.23)**
	French	**0.248*** **	**0.170*** **	**1.016*** **	**1.050*** **	**0.185*** **	**0.178*** **	**0.572*** **
		(6.449)	**(4.755)**	**(12.95)**	**(13.37)**	**(6.824)**	**(6.428)**	**(11.95)**
	Portuguese	**0.441*** **	**0.323*** **	**0.768*** **	**0.800*** **	**0.230*** **	**0.224*** **	**0.579*** **
		(10.58)	**(8.325)**	**(9.391)**	**(9.424)**	**(7.833)**	**(7.454)**	**(11.60)**
Control variables	Trade	**0.001*** **	**0.001*** **	**-0.001*** **	**-0.001*** **	**0.0004*** **	**0.0004*** **	**0.001*** **
		(5.866)	**(6.404)**	**(-3.176)**	**(-3.919)**	**(3.030)**	**(2.757)**	**(6.856)**
	Inflation	**-0.001*** **	**-0.001*** **	**-0.002*** **	**-0.001*** **	**-0.0007*** **	**-0.0008*** **	**-0.003*** **
		(-3.503)	**(-3.472)**	**(-3.519)**	**(-2.895)**	**(-3.345)**	**(-3.596)**	**(-6.653)**
	Gov.	**0.003** **	**0.002** **	0.004	0.003	-0.0003	0.0002	0.002
		(2.353)	**(2.427)**	(1.624)	(1.353)	(-0.344)	(0.288)	(1.246)
	Pop.	**-0.055*** **	**-0.053*** **	0.020	0.016	**-0.026*** **	**-0.026*** **	-0.005
		(-6.141)	**(-6.436)**	(1.109)	(0.884)	**(-4.228)**	**(-4.034)**	(-0.462)
F-test(legal origin)		**63.41*** **	**72.85*** **	**55.38*** **	**54.81*** **	**15.30*** **	**15.89*** **	**24.80*** **
Adjusted. R^2		0.414	0.448	0.371	0.378	0.139	0.144	0.207
Num. of observations		530	532	552	532	532	532	546

M2: Broad money supply. Fdgdp: Financial deposit on GDP. Bcbd: Bank credit on bank deposits. Fcfd: Financial credit on financial deposits. Dbacba: deposit bank assets/(deposit bank assets + central bank assets). Pcrb: Private domestic credit on GDP. Prcbof: Private credit from domestic banks and other financial institutions on GDP. English: English legal origin dummy. French: French legal origin dummy. Portuguese: Portuguese legal origin dummy. GDPg: GDP growth rate. GDPpcg: GDP per capita growth rate. Gov: Government final expenditure. Pop: Population growth rate. *,**,***; significance at 10%,5% and 1% respectively. M: Model. Num: Number.

4.3 Examination of financial channels using a simple instrumental variable procedure

Tables 3 and 4 below address the issues of whether the exogenous component of financial channels explain growth and welfare on the one hand; and on the other hand whether legal origin explains growth and welfare through some other mechanisms besides proposed financial channels. To make this assessment we use TSLS with heteroskedasticity and autocorrelation consistent (HAC) standard errors. The first and second stage regressions are

based respectively on equations (1) and (2) of Sections 3.2. Rejection of the null hypothesis of the Hausman-test in 27 of the 28 regressions in Tables 3 and 4 indicate the presence of endogeneity and justify of our use of TSLS as estimation methodology. While coefficients of financial channels address the first issue after controlling for potential endogeneity, the second issues is looked-at by the OIR test. The null hypothesis of the Sargan-OIR test suggests that the instrumental variables do not suffer from the same problem of endogeneity as the exogenous components of the endogenous regressors (financial channels) and therefore are (legal dummies) not correlated with the error terms of the equation of interest (second stage regression). Thus a rejection of the OIR test implies that legal origins explain growth (and welfare) through some other mechanisms other than financial channels. In controlling for other potential exogenous determinants of growth (and welfare) we do not include all the control variables in panel B of Table 2 because of the limited number of instruments[6]. Robustness of our models is ensured by alternative indicators of financial channels. Results in Table 3 provide full support for the fact that the exogenous components of financial depth and efficiency explain growth and welfare. However (but for the effect of financial depth on welfare) given the rejection of the OIR test for almost all the regressions, legal origin dummies explain growth and welfare beyond their ability to explain cross-country variations in financial depth and efficiency channels.

[6] We have just three instruments (dummies of legal origin). In order to test for OIR, the number of instruments must be higher than the number of endogenous regressors by at least one degree of freedom. OIR test is not possible in either exact identification (instruments=endogenous regressors) or under-identification (instruments <endogenous regressors).

Table 3: The depth and efficiency channels

Variables and tests	**Panel A: Second-Stage regressions with Financial Depth channel**							
	Growth(GDPg) regressions				Welfare(GDPpcg) regressions			
	Mod.1	Mod.1*	Mod.2	Mod.2*	Mod.3	Mod.3*	Mod.4	Mod.4*
M2	**12.92*** (8.76)**	---	**11.55** (2.130)**	---	**4.33*** (5.32)**	---	**10.75*** (3.170)**	---
Fdgdp	---	**16.36*** (16.57)**	---	7.398 (1.318)	---	**5.681*** (5.453)**	---	**10.44*** (3.134)**
Gov.	---	---	0.029 (0.288)	**0.143* (1.752)**	---	---	---	---
Pop.	---	---	---	---	---	---	**-0.72** (-2.103)**	-0.42 (-1.620)
Hausman test	**139.9*** **	**147.76*** **	**80.40*** **	**74.36*** **	**9.69*** **	**8.76*** **	**25.29*** **	**16.58*** **
OIR(Sargan) test	**0.860 [0.650]**	7.15** [0.027]	**0.809 [0.368]**	3.658* [0.055]	11.66*** [0.002]	8.25** [0.016]	**0.356 [0.550]**	**2.05 [0.151]**
Weak I. Test(F-stats)	**1154*** **	**353.48*** **	---	---	**1154*** **	**584*** **	---	---

	Panel B: Second-Stage regressions with Financial Efficiency channel							
	Growth(GDPg) regressions				Welfare(GDPpcg) regressions			
	Mod.1	Mod.1*	Mod.2	Mod.2*	Mod.3	Mod.3*	Mod.4	Mod.4*
Bcbd	**4.02*** (9.065)**	---	-0.74 (-0.852)		**0.93** (2.555)**	---	**-4.77** (-2.126)**	---
Fcfd	---	**4.09*** (8.725)**	---	-0.69 (-0.721)	---	**0.95** (2.521)**	---	**-5.44** (-2.204)**
Gov.	---	---	**0.28*** (5.370)**	**0.28*** (5.120)**	---	---	---	---
Pop.	---	---	---	---	---	---	**1.85** (2.372)**	**2.04** (2.387)**
Hausman test	**102.3*** **	**79.84*** **	**102.4*** **	**89.02*** **	**31.68*** **	**24.20*** **	**34.21*** **	**43.93*** **
OIR(Sargan) test	62.50*** [0.000]	57.93*** [0.000]	7.07*** [0.007]	5.93** [0.014]	38.39*** [0.000]	34.55*** [0.000]	10.66*** [0.001]	5.87** [0.015]
Weak I. Test(F-stats)	**1311*** **	**1394*** **	---	---	**1311*** **	**1394*** **	---	---

M2: Broad money supply. Fdgdp: Financial deposit on GDP. Bcbd: Bank credit on bank deposits. Fcfd: Financial credit on financial deposits. English: English legal origin dummy. French: French legal origin dummy. Portuguese: Portuguese legal origin dummy. GDPg: GDP growth rate. GDPpcg: GDP per capita growth rate. Gov: Government final expenditure. Pop: Population growth rate. *,**,***; significance at 10%,5% and 1% respectively. (): z-statistics. Chi-square statistics for Hausman test. LM statistics for Sargan test. [ ]:p-values. Weak I. Test (F-stats): F-statistics for Weak Instrument test at first stage regression. OIR: overidentifying restrictions.

Table 4 below looks at the concern of whether the exogenous components of financial size and activity channels explain growth and whether legal origin explains growth beyond the financial size and activity channels. We employ the same TSLS methodology as above. Firstly, results suggest exogenous components of financial activity and size explain growth and welfare. Given the overwhelming rejection of the OIR test, we conclude that instruments explain growth and welfare beyond their ability to explain cross-country changes in financial intermediary activity and size.

Table 4: The activity and size channels

Variables and tests	Panel A: Second-Stage regressions with Financial Activity channel							
	Growth(GDPg) regressions				Welfare(GDPpcg) regressions			
	Mod.1	Mod.1*	Mod.2	Mod.2*	Mod.3	Mod.3*	Mod.4	Mod.4*
Pcrb.	**26.26*** **	---	8.06	---	**7.81*** **	---	50.78	---
	(7.818)		(0.349)		**(4.266)**		(1.068)	
Pcrbof.	---	**25.21*** **	---	40.44	---	**7.64*** **	---	37.66
		(7.737)		(0.390)		**(4.401)**		(1.283)
Gov.	---	---	0.176	-0.14	---	---	---	---
			(0.798)	(-0.13)				
Pop.	---	---	---	---	---	---	-2.27	-1.66
							(-0.999)	(-1.148)
Hausman test	**179.3*** **	**178*** **	**73.41*** **	**75.63*** **	**13.09*** **	**14.32*** **	**36.58*** **	**34.84*** **
OIR(Sargan) test	5.073*	**3.82**	6.97***	3.32*	20.33***	18.82***	**0.21**	**1.20**
	[0.079]	**[0.147]**	[0.008]	[0.068]	[0.000]	[0.000]	**[0.641]**	**[0.273]**
Weak I. Test(F-stats)	**394*** **	**407*** **	---	---	**394*** **	**407*** **	---	---

	Panel B: Second-Stage regressions with Financial Size channel			
	Growth(GDPg) regressions		Welfare(GDPpcg) regressions	
	Mod.1	Mod.2	Mod.3	Mod.4
Dbacba	**5.21*** **	-2.39	**1.49*** **	18.17
	(13.64)	(-0.684)	**(3.77)**	(1.184)
Gov.	---	**0.35** **	---	
		(2.15)		
Pop.	---		---	-4.39
				(-1.133)
Hausman test	**19.53*** **	**36.36*** **	0.49	**22.50*** **
OIR(Sargan) test	19.41***	**6.78**	28.88***	**1.352**
	[0.000]	**[0.009]**	[0.000]	**[0.244]**
Weak I. Test(F-stats)	**2567*** **		2567***	

Dbacba: deposit bank assets/(deposit bank assets + central bank assets). Pcrb: Private domestic credit on GDP. Prcbof: Private credit from domestic banks and other financial institutions on GDP. English: English legal origin dummy. French: French legal origin dummy. Portuguese: Portuguese legal origin dummy. GDPg: GDP growth rate. GDPpcg: GDP per capita growth rate. Gov: Government final expenditure. Pop: Population growth rate. *,**,***; significance at 10%,5% and 1% respectively. (): z-statistics. Chi-square statistics for Hausman test. LM statistics for Sargan test. [ ]:p-values. Weak I. Test (F-stats): F-statistics for Weak Instrument test at first stage regression. OIR: overidentifying restrictions.

4.3 Examination of channels using an extended instrumental variable procedure

In accordance with Beck et al. (2003), we now explore the financial channels simultaneously using an extended version of the instrumental variable procedure. Due to constraints in instrumental variables (only three present) and issues related to multicolinearity and overparametization, we explore simultaneous channels only on bivariate basis. Examining more than two endogenous regressors simultaneously will result in exact-identification or under-identification which renders the OIR test practically impossible. Therefore we assess whether

the exogenous components of the financial channels explain growth. As in earlier regressions, the presence of two proxies for each channel allows for robustness checks. Rejections of the null hypothesis of the Hausman-test in all 24 regressions in Table 5 indicate the presence of endogeneity and justify of our estimation methodology (TSLS). For the most part, results also suggest that legal origin explains growth (and welfare) through financial channels and not through other mechanisms. For either growth or welfare, we robustly examine 12 regressions using two different financial channels. Of the 24 regressions, 19 do not reject the OIR test, implying the null hypothesis that legal origin explains growth (and welfare) only through financial channels is not rejected. 4 of the 5 regressions that reject the OIR test involve the simultaneous use of size and efficiency variables (either in growth or welfare regressions). This implies legal origins do not explain growth only through financial size and efficiency channels but also through some other mechanisms. The instruments are not only valid through the OIR test but also strong because 20 of the 24 Cragg-Donald statistics for weak instrument test exceed critical values at a 5% significance level; implying the null hypothesis for the existence of weak instruments is rejected for the most part. The presence of negative finance-growth nexus for certain channels (efficiency and size) corroborates results in Tables 3 and 4 respectively. While by virtue of Table 3, the negative results for financial efficiency were significantly expected, those (negative coefficients) of financial activity and size (Panel B of Table 5) resulting from their simultaneous application with depth and activity respectively could be explained by their high correlations (see Appendix 3). This explanation is consistent with Beck et al. (2003). While effects of legal origins through financial channels are greater for GDP growth than welfare when financial channels are considered independently (see Tables 3 and 4), when financial channels are simultaneously considered, effects may weigh greater in favor of either growth or welfare

depending on dynamics (combination of channels). This could provide a basis for further research but in the mean do not reflect the object of our study.

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Table 5: Growth, Welfare and financial channels

Financial Channels	Variables	Panel A: Second-Stage regressions with Growth and financial channels											
		Depth and Efficiency		Depth and Activity		Depth and Size		Efficiency and Activity		Efficiency and Size		Activity and Size	
		Model 1	Model 1*	Model 2	Model 2*	Model 3	Model 3*	Model 4	Model 4*	Model 5	Model 5*	Model 6	Model 6*
Depth	M2	**11.68*** (8.048)**	---	**9.41** (2.380**	---	**10.17*** (3.940)**	---	---	---	---	---	---	---
	Fdgdp	---	**12.72*** (7.813)**	---	6.36 (1.532)	---	**9.36*** (3.740)**	---	---	---	---	---	---
Efficiency	Bcbd	0.47 (0.906)		---	---	---	---	**-1.69* (-1.846)**	---	**-3.00*** (-3.516)**	---	---	---
	Fcfd	---	**1.22*** (2.736)**	---	---	---	---	---	-1.02 (-1.261)	---	**-3.34*** (-3.494)**	---	---
Activity	Pcrb	---	---	7.11 (0.869)	---	---	---	**35.40*** (6.732)**	---	---	---	**63.29** (2.405**	---
	Pcrbof	---	---	---	**15.75** (2.477**	---	---	---	**30.49*** (6.785)**	---	---	---	**40.81*** (2.795)**
Size	Dbacba	---	---	---	---	1.08 (0.988)	**2.38*** (2.882)**	---	---	**8.65*** (8.521)**	**9.11*** (8.004)**	-7.72 (-1.425)	-3.45 (-1.099)
Hausman test		**124.84***	**110.62***	**136.17***	**160.58***	**41.54***	**36.82***	**163.99***	**147.00***	**45.82***	**39.28***	**37.12***	**35.89***
OIR(Sargan) test		**0.021**	**1.313**	**0.068**	**1.65**	**0.302**	**2.291**	**0.887**	**1.88**	6.56**	4.86**	**0.125**	**1.42**
		[0.884]	**[0.251]**	**[0.793]**	**[0.198]**	**[0.582]**	**[0.130]**	**[0.346]**	**[0.170]**	[0.010]	[0.027]	**[0.722]**	**[0.233]**
Cragg-Donald M.E.V test		**94.83**	**92.64**	**24.29**	**55.59**	**46.41**	**59.96**	**37.45**	**45.31**	**63.33**	**53.40**	3.39	6.83
Observations		584	585	583	585	579	579	585	585	608	579	579	579

		Panel B: Second-Stage regressions with Welfare and financial channels											
		Depth and Efficiency		Depth and Activity		Depth and Size		Efficiency and Activity		Efficiency and Size		Activity and Size	
		Model 1	Model 1*	Model 2	Model 2*	Model 3	Model 3*	Model 4	Model 4*	Model 5	Model 5*	Model 6	Model 6*
Depth	M2	**7.98*** (6.144)**	---	**15.74*** (4.345)**	---	**11.86*** (4.700)**	---	---	---	---	---	---	---
	Fdgdp	---	**8.61*** (5.930)**	---	**14.47*** (4.187)**	---	**11.15*** (4.655)**	---	---	---	---	---	---
Efficiency	Bcbd	**-1.53*** (-3.273)**	---	---	---	---	---	**-2.93*** (-3.902)**	---	**-3.72*** (-4.642)**	---	---	---
	Fcfd	---	**-0.98** (-2.470**	---	---	---	---	---	**-2.48*** (-3.667)**	---	**-4.06*** (-4.553)**	---	---
Activity	Pcrb	---	---	**-24.15*** (-3.222)**	---	---	---	**23.62*** (5.488)**	---	---	---	**73.85*** (2.646)**	---
	Pcrbof	---	---	---	**-13.85*** (-2.620)**	---	---	---	**20.51*** (5.445)**	---	---		**48.74*** (3.218)**
Size	Dbacba	---	---	---	---	**-3.38*** (-3.143)**	**-1.95** (-2.470**	---	---	**5.75*** (6.031)**	**6.15*** (5.803)**	**-13.67*** (-2.377)**	**-8.93*** (-2.738)**
Hausman test		**33.01***	**26.83***	**18.73***	**12.85***	**25.94***	**19.08***	**50.57***	**45.24***	**7.57**	**7.40**	**30.38***	**28.53***
OIR(Sargan) test		**0.893**	**2.68**	**0.001**	**2.08**	**0.043**	**2.06**	**2.22**	3.33*	8.50***	5.57**	**0.026**	**1.12**
		[0.344]	**[0.101]**	**[0.972]**	**[0.148]**	**[0.835]**	**[0.150]**	**[0.135]**	[0.067]	[0.003]	[0.018]	**[0.870]**	**[0.289]**
Cragg-Donald M.E.V test		**94.83**	**92.64**	**24.29**	**55.59**	**46.41**	**59.96**	**37.45**	**45.31**	**63.33**	**53.40**	3.39	6.83
Observations		584	585	583	585	579	579	585	585	608	579	579	579

M2: Broad money supply. Fdgdp: Financial deposit on GDP . Bcbd: Bank credit on bank deposits. Fcfd: Financial credit on financial deposits. Dbacba: deposit bank assets/(deposit bank assets + central bank assets). Pcrb: Private domestic credit on GDP. Prcbof: Private credit from domestic banks and other financial institutions on GDP. English: English legal origin dummy. French: French legal origin dummy. Portuguese: Portuguese legal origin dummy. GDPg: GDP growth rate. GDPpcg: GDP per capita growth rate. Gov: Government final expenditure. Pop: Population growth rate. *,**,***; significance at 10%,5% and 1% respectively. (): z-statistics. Chi-square statistics for Hausman test. LM statistics for Sargan test. [ ]:p-values. Weak I. Test (F-stats): F-statistics for Weak Instrument test at first stage regression. OIR: overidentifying restrictions. The critical value of Cragg-Donald's statistics for weak instrument test at 5% significance level with a desired maximal bias (of the Instrumental Variable estimator relative to OLS) of 10% is 13.43.

5. Conclusion

While past works show that legal origin explains growth (Mundell, 1973; Agbor, 2011), this paper examines the financial mechanisms through which legal origin explains growth. We propose four channels. The financial depth and activity channels postulate that legal origins determine money supply, liquid liabilities and ability of financial institutions to allocated credit to economic operators. Countries with common-law origin should experience higher levels of financial depth and activity because the legal tradition provides for a legal system that champions private property rights, a more favorable environment for openness (trade and capital) and competition. Countries with civil-law origin are least in financial depth and activity because historically their financial laws were devised to champion imperialism and financial stability rather than openness and monetary experience. Consistent with Agbor (2011), countries with Portuguese legal origin (which is based on French civil-law) have their financial performances (in depth and activity) lower than the former (common-law origin) but slightly higher than the later (French civil-law origin). Financial intermediary efficiency is highest in countries with Francophone decent because the French tradition has always stressed the passive nature of monetary policy, the importance of exchange stability with convertibility, and the need for explicit deposit insurance. For the fourth channel (financial size), the relative importance of openness and competition should favor a broader financial system in common-law countries than in their civil-law counterparts (French and Portuguese). If a positive finance-growth nexus applies, then we can infer that common-law traditions should induce higher growth and welfare gains through their inherent positive effect of broadening financial systems.

Our results provide evidence that legal origins matter in explaining growth and welfare through financial channels because they are inherently business or risk-averse friendly. Legal systems that provide conditions for openness, competition and free financial market enterprise should benefit more in growth and welfare, while those championing the power of the state, monetary stability and imperialism should significantly experience lower growth through thinner improvements in most financial channels. On the other hand, a legal system that is favorable to financial stability (through monetary dependence and explicit deposit insurance) should gain in financial intermediary efficiency. These findings specifically contribute to the literature by partially rejecting the Mundell (1972), Laporta et al. (1998) and Beck et al. (2003) hypotheses.

Appendices

Appendix 1: Presentation of legal origin and countries

Legal origin	Countries
English	Gambia, Ghana, Kenya, Lesotho, Malawi, Mauritius, Seychelles, Swaziland, Tanzania, Uganda, Zambia
French	Burkina Faso, Cameroon, C.A.R, Chad, Congo Rep., Côte d'Ivoire, Gabon, Madagascar, Mali, Niger, Senegal, Togo
Portuguese	Guinée-Bissau, Cape Verde, Mozambique

Appendix 2: Summary Statistics

		Mean	S.D	Min.	Max.	C.V	Skew.	Kurt.	W.S.D	B.S.D	Obser.
Financial	M2	0.280	0.191	0.004	1.279	0.682	2.196	5.279	0.101	0.162	588
Depth	Fdgdp	0.211	0.183	0.013	1.052	0.869	2.172	4.814	0.096	0.157	586
Financial	Bcbd	0.785	0.398	0.091	2.879	0.508	1.253	2.467	0.306	0.267	617
Efficiency	Fcfd	0.787	0.378	0.139	2.775	0.480	1.262	2.534	0.278	0.267	586
Fin. Size	Dbacba	0.689	0.224	0.045	1.466	0.326	-0.65	0.099	0.159	0.168	611
Financial	Pcrb	0.140	0.113	0.011	0.723	0.808	2.301	7.250	0.067	0.092	586
Activity	Pcrbof	0.145	0.116	0.011	0.723	0.795	2.114	6.087	0.068	0.094	586
Colonial	Englsih	0.423	0.494	0.000	1.000	1.168	0.311	-1.90	0.000	0.503	624
Origin	French	0.461	0.498	0.000	1.000	1.081	0.154	-1.97	0.000	0.508	624
	Portuguese	0.115	0.319	0.000	1.000	2.771	2.407	3.797	0.000	0.325	624
Growth	GDPg	3.639	4.547	-28.1	33.62	1.249	-0.62	8.165	4.466	1.233	621
	GDPpcg	1.061	4.505	-29.6	29.06	4.243	-0.61	7.097	4.369	1.410	621
	Inflation	11.35	23.03	-100	200	2.028	3.549	27.62	20.84	10.97	615
Control	Trade	78.50	40.71	14.55	255	0.518	1.154	1.088	26.07	31.92	585
Variables	Gov.	14.54	5.667	2.650	38.75	0.389	1.072	1.400	4.386	3.753	585
	Pop.	2.588	0.867	-1.07	6.238	0.335	-0.47	1.734	0.723	0.508	598

M2: Broad money supply. Fdgdp: Financial deposit on GDP . Bcbd: Bank credit on bank deposits. Fcfd: Financial credit on financial deposits. Dbacba: deposit bank assets/(deposit bank assets + central bank assets). Pcrb: Private domestic credit on GDP. Prcbof: Private credit from domestic banks and other financial institutions on GDP. English: English legal origin dummy. French: French legal origin dummy. Portuguese: Portuguese legal origin dummy. GDPg: GDP growth rate. GDPpcg: GDP per capita growth rate. Gov: Government final expenditure. Pop: Population growth rate. Obser: Observations.

Appendix 3: Correlation Matrix

Fin. Depth		Fin. Efficiency		F. Size	Financial Activity		Legal origins			Growth & Welfare		Control variables				
M2	Fdgdp	Bcbd	Fcfd	Dbacba	Pcrb	Pcrbof	Eng.	Frch.	Por.	GDPg	GDPpcg	Infl.	Trade	Gov.	Pop.	
1.000	0.965	-0.235	-0.239	0.332	0.723	0.763	0.291	-0.375	0.138	0.005	0.097	-0.155	0.501	0.340	-0.493	M2
	1.000	-0.288	-0.294	0.419	0.758	0.799	0.372	-0.414	0.074	0.042	0.136	-0.106	0.538	0.361	-0.510	Fdgdp
		1.000	0.961	0.089	0.210	0.171	-0.514	0.547	-0.060	-0.228	-0.254	-0.236	-0.310	-0.157	0.181	Bcbd
			1.000	0.066	0.196	0.175	-0.512	0.554	-0.077	-0.198	-0.233	-0.219	-0.361	-0.182	0.219	Fcfd
				1.000	0.522	0.515	0.036	0.022	-0.092	0.061	0.095	-0.306	0.329	0.188	-0.201	Dbacba
					1.000	0.984	0.071	-0.085	0.023	-0.041	0.021	-0.186	0.269	0.129	-0.314	Pcrb
						1.000	0.128	-0.130	0.005	-0.039	0.022	-0.177	0.283	0.167	-0.317	Pcrbof
							1.000	-0.792	-0.309	0.122	0.144	0.251	0.385	0.338	-0.146	Eng.
								1.000	-0.334	-0.171	-0.210	-0.294	-0.330	-0.260	0.257	Frch.
									1.000	0.078	0.105	0.070	-0.095	-0.115	-0.174	Por.
										1.000	0.981	0.036	0.020	-0.062	0.014	GDPg
											1.000	0.007	0.112	-0.013	-0.169	GDPpcg
												1.000	-0.078	-0.093	0.138	Infl.
													1.000	0.411	-0.489	Trade
														1.000	-0.266	Gov.
															1.000	Pop.

M2: Broad money supply. Fdgdp: Financial deposit on GDP . Bcbd: Bank credit on bank deposits. Fcfd: Financial credit on financial deposits. Dbacba: deposit bank assets/ (deposit bank assets + central bank assets). Pcrb: Private domestic credit on GDP. Prcbof: Private credit from domestic banks and other financial institutions on GDP. Eng: English legal origin dummy. Frch: French legal origin dummy. Por: Portuguese legal origin dummy. GDPg: GDP growth rate. GDPpcg: GDP per capita growth rate. Infl:Inflation. Gov: Government final expenditure. Pop: Population growth rate.

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