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**Revisiting the efficiency and institutions debate: The interaction of
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Revisiting the efficiency and institutions debate: The interaction of legal origins and ethnic heterogeneity

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Abstract

We analyse the interaction between legal origins and ethnic heterogeneity and their combined impact on national efficiency. We hypothesise that in the presence of high ethnic heterogeneity common-law system performs worse than civil-law one in terms of economic efficiency. Our empirical tests on the sample of African countries support our hypothesis.

Key words: national efficiency, institutions, legal origins, ethnic heterogeneity

JEL: K15, K40, O10, O43, O47

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Revisiting the efficiency and institutions debate: The interaction of legal origins and ethnic heterogeneity

Introduction

We contribute to the large literature on institutions, efficiency, and development by focusing on the interaction between legal origins and ethnic heterogeneity and their combined impact on national efficiency. While ethnicity and legal origins have been independently studied and shown to be important determinants of national economic performance there is no study analysing how the two factors interact. We carry out our empirical tests on the sample of African countries which are characterised by high ethnic heterogeneity, often emanating from haphazardly drawn colonial borders, while the legal systems in Africa have been exogenously implanted by their colonisers. Our main result is that in the presence of high ethnic heterogeneity, in Africa, common-law system performs worse than civil-law one in terms of national economic efficiency.

Analytical framework and hypotheses

Summary of two literature strands

Hall and Jones (1999) provide compelling evidence that the differences in output per worker across countries are strongly associated with the differences in social infrastructure, which they define as the combination of underlying institutions and public policies. Social infrastructure favourable to national efficiency minimises diversion of resources and ensures the prices are set right, such that individuals capture the social returns to their actions as private returns.

The basis of social infrastructure are the legal origins which in the spirit of Hayek and according to La Porta et al. (2008) define the style of social control of economic life. Common law stands for strategy that seeks to support private market outcomes, whereas civil law seeks to replace such outcomes with state-desired allocations. We can think of French civil law as a system of social control that is relatively more concerned with disorder, and relatively less with dictatorship, in finding solutions to social and economic problems. In

contrast, English common law is relatively more concerned with dictatorship and less with disorder. These features suggest that in conflict situations the more centralised civil law system is likely to perform economically better while in cohesive, orderly societies the more decentralised common law system would be more efficient.

A major factor that significantly affects the likelihood of conflict and degree of cohesiveness in the society is ethnic heterogeneity. Easterly and Levine (1997) show that ethnic heterogeneity explains a large part of cross-country differences in public policies adopted and the resulting national economic efficiency in Africa. Ethnically heterogeneous societies may find it difficult to coordinate and agree on the optimal provision of public goods and policy design. They also are usually politically unstable because ethnic heterogeneity may weaken the organisation of the government, thus weakening the centralisation of control emphasised by Shleifer and Vishny (1993) and weakening the useful checks and balances emphasised by Persson et al. (1997). Weaker organisation makes it harder to minimise resource diversion and deal with market failure (Easterly and Levine 1997).

Modelling the interaction

The historic connection of common law to strong protection of property rights against state actions as compared to the civil law which is connected to a strong and less constrained central government leads to an important structural difference—the role of judiciary (Mahoney, 2001). In the common-law system, judges are independent policy makers occupying a high-status office, whereas in the civil-law system, judges are (relatively) low-status civil servants without authority to create legal rules. This difference in the judicial role fragments power more in common-law system than in civil-law one. There is a near consensus in economics that fragmentation limits the ability of government actors (executive and legislature) to grant, and therefore of interest groups to obtain, rents because it is more difficult to coordinate the decisions and actions of multiple actors (La Porta et al., 2008).

This is certainly true for homogeneous, democratic societies where separation of powers exists and good governance is achieved by the presence of effective checks and balances. According to Persson et al. (1997), however, there are two conditions for checks and balances to be effective: (i) there is a conflict of interests between the executive and the legislature and (ii) legislative decision-making requires joint agreement by both bodies. A mere conflict of interests between the executive and legislature is not a sufficient condition to

improve accountability. The key condition to make separation of powers support good governance and prevent abuse of power is that no policy can be implemented unilaterally.

If the society, however, is characterised by high ethnic heterogeneity and fragile institutions, where ethnic groups have divergent interests, the two conditions are unlikely to simultaneously hold. Thus, when the power is split between ethnic groups, condition (i) is likely to be upheld, however, condition (ii) is often unlikely to hold. Then the ability of the government to implement cohesive policies will be limited and in equilibrium public bodies with opposing interests would compete and make independent claims on government resources. Without effective joint decision-making, separation of powers would worsen accountability by creating a ‘common-pool’ problem where each group seizes its share of the pool of rents until the pool is exhausted (Persson et al., 1997).

In summary, the presence of ethnic heterogeneity in a country with common-law system, fostering fragmentation of power results in a less stable and disorderly political and economic environment compared to a country with civil-law system, characterised by a more centralised government. Thus, we hypothesise that in ethnically heterogeneous societies common-law system would lead to worse social infrastructure relative to civil-law system where the government is centralised and provides for better coordination. In terms of economic efficiency, we would expect that ethnically heterogeneous countries with common-law system perform worse than civil-law countries.

Econometric analysis

Model specification and data

We test our hypothesis about the impact of institutions on efficiency within a stochastic frontier (SF) framework, which is developed to estimate the underlying production technology along with technical inefficiency score (Kumbhakar and Lovell, 2000).

Technically efficient countries operate at the production possibility frontier while the shortfall from the frontier represents the measure of technical inefficiency. To overcome the inherent weaknesses of the standard Cobb-Douglas production function, we estimate a flexible translog formulations (equation 1) in a balanced pannel of 47 African (11 Middle-East, North African (MENA) and 36 Sub-Sahara African (SSA)) countries over the period 1970-2013.

$$\ln Y_{it} = \beta_{0i} + \sum_j \beta_j \ln X_{jit} + \frac{1}{2} \sum_j \sum_{m=1}^3 \beta_{jm} \ln X_{jit} \ln X_{mit} + \sum_j \beta_{jT} \ln X_{jit} T + \beta_T T + \frac{1}{2} \beta_{TT} T^2 + \beta_C C_i + v_{it} - u_{it} \quad (1)$$

Output (Y) is GDP in constant 2005 USD and X_{jit} denotes the j^{th} (m^{th}) input - capital (K), labour (L), and human capital (H) - in country i and year t . K is constructed from the accumulation of investment in constant 2005 USD, L is the number of workers employed, and H is the average years of schooling of the adult population. Data sources are Penn World Tables (Feenstra et al., 2015) for Y , K , and L and Barro and Lee (2013) for H . The production function is augmented with country fixed effects C_i and a time trend T ; the set of bs represents the parameters to be estimated. The error term is a composite of statistical noise v_{it} and a non-negative stochastic term u_{it} , representing technical inefficiency, which is modelled as (equation 2):

$$u_{it} = Z_{it} \delta + \omega_{it}, \quad (2)$$

where Z_{it} is a vector of exogenous factors, δ is a vector of parameters to be estimated and ω_{it} is a random error following the truncated normal distribution. The factors included in Z are common drivers of economic efficiency such as human capital (H), FDI share in gross capital formation (FDI), imports share in GDP ($Trade$), domestic credit share of private sector in GDP ($Credit$). Data for FDI are taken from International Monetary Fund (IMF) and International Financial Statistics (IFS) while data for $Trade$ and $Credit$ are taken from World Bank Development Indicators.

Following on previous discussion we extend the inefficiency equation (2) with variables measuring the independence of judiciary (*Judiciary*), ethnic heterogeneity (*Ethnic*), and countries' legal origins. *Judiciary* is a categorical variable ranging between 1 (fully dependent) and 4 (fully independent) based on Bertelsmann Stiftung's (2014) Transformation Index. We measure ethnic heterogeneity using data on ethnic fractionalisation from Alesina et al. (2003). The two binary variables of legal origins are *Common* taking a value 1 if the country has adopted the English common law system and *Civil* taking value 1 if the country adopted the French civil law system; data are sourced from La Porta et al. (2008).

Equations (1) and (2) are estimated by maximum likelihood (ML) one step procedure within a panel setup following Battese and Coelli (1995). Summary statistics are reported in Table 1.

- Table 1 here –

Estimation results

The upper panel of Table 2 presents the translog production function estimates while the lower panel, which is of main interest, reports estimated parameters of the inefficiency equation. All estimated coefficients and corresponding elasticities of the production function are plausible and of comparable magnitudes found in relevant studies. For the inefficiency equation three specifications (*S*) are developed to test the robustness of the results. *S1* includes only standard economic drivers, *Ethnic*, *Common* and *Civil*. *S2* adds the interaction terms of *Judiciary* and *Ethnic* with legal origins so as to identify whether the impact of *Judiciary* and *Ethnic* on inefficiency varies with country's legal system. *S3* augments *S2* with two more structural determinants, the share of manufacturing to GDP (*Man*) and government spending to GDP (*Gov*). Using information criterion (B.I.C.) we identify that out of the three nested specifications *S2* is the preferred one. Regarding the inefficiency estimates, a negative coefficient means that the associated variable reduces inefficiency. The coefficients of economic controls *H*, *FDI*, *Trade*, and *Credit* in *S2* and *Man* and *Gov* in *S3* have the expected sign and are statistically significant.

- Table 2 here –

The autonomous variables of main interest *Judiciary*, *Ethnic*, *Common*, and *Civil* show the expected signs, similar to previous studies – independent judiciary positively affect efficiency while high ethnic heterogeneity impacts efficiency negatively. In our sample, we find that civil-law system positively affects efficiency but common law does not have a statistically significant effect. When the interaction terms of the legal-system variables with judiciary are considered, we find that independent judiciary has a significant positive effect on efficiency irrespective of legal system confirming the important synergy between judiciary independence and common law.

The most important result, however, following our theoretical discussion is that the interaction terms of legal-system indicators and *Ethnic* show the expected effects – ethnic heterogeneity negatively affects efficiency in countries with common-law system while in

civil-law countries there is no such negative effect. Figure 1 illustrates the efficiency and ethnic heterogeneity relationship. The fitted regression lines from a pooled OLS estimation by legal-system subsample – civil vs. common law - have slopes -0.030 (0.015) and 0.001(0.100) respectively.

- Figure 1 here –

Conclusion

We hypothesised that in common-law system, fostering fragmentation of power, ethnic heterogeneity results in a less stable and disorderly political and economic environment compared to civil-law system, with centralised government, which achieves better coordination. Our estimation results from the sample of African countries demonstrate that indeed common-law system performs worse than civil-law one in terms of national economic efficiency. This finding could be relevant beyond Africa, including the developed countries in Europe and North America characterised by rising ethnic heterogeneity.

Table 1: Summary Statistics

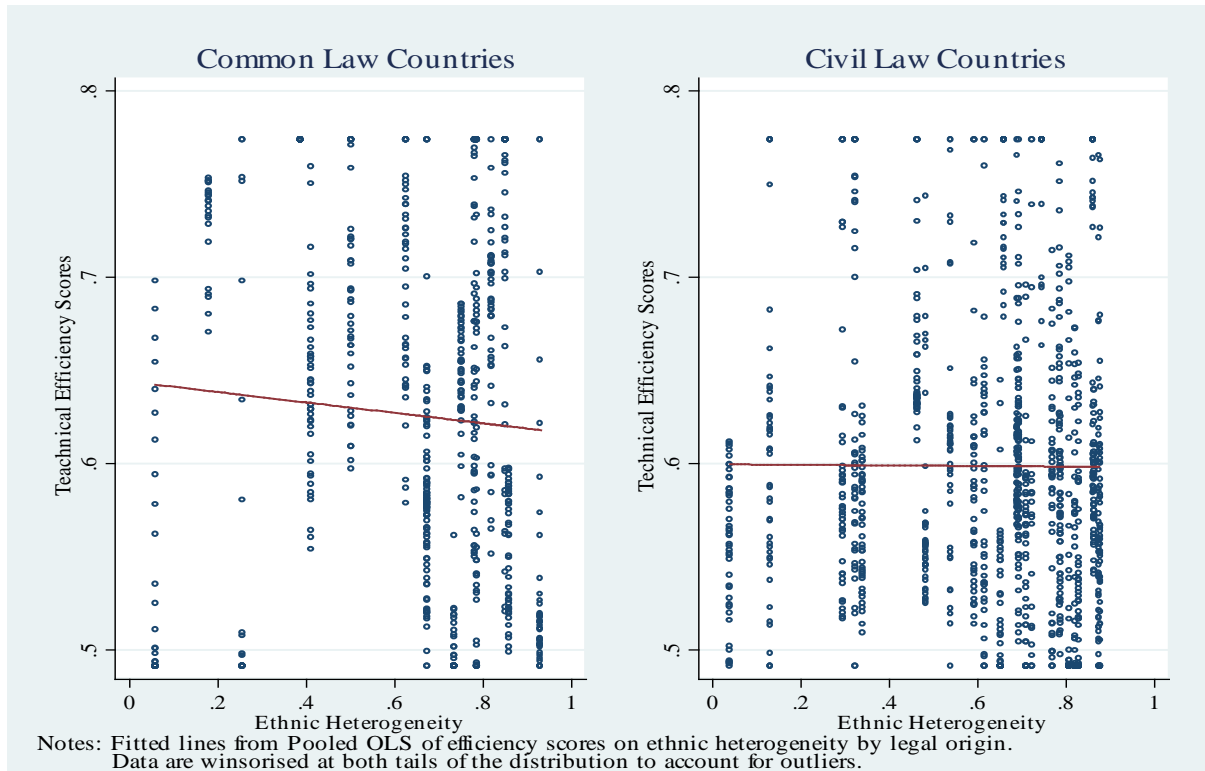
Variable	Observations	Mean	SD	Minimum	Maximum
<i>lnY</i>	1717	3.827	0.661	0.661	5.717
<i>lnK</i>	1717	3.789	0.533	0.725	5.768
<i>lnL</i>	1717	3.290	0.725	0.533	4.382
<i>lnH</i>	1717	0.540	0.289	-0.538	1.029
<i>FDI</i>	1717	8.752	17.654	0.001	251.586
<i>Trade</i>	1717	40.341	24.475	2.040	250.500
<i>Credit</i>	1717	30.982	41.072	0.002	300.080
<i>Judiciary</i>	1717	0.462	0.499	0	1
<i>Ethnic</i>	1717	0.5178	0.3085	0.01	0.89
<i>Common</i>	1717	0.408	0.492	0	1
<i>Civil</i>	1717	0.534	0.499	0	1

Table 2: SF Maximum Likelihood Estimates

Parameter	S1		S2		S3	
	Coefficient	SE	Coefficient	SE	Coefficient	SE
<i>Production Function</i>						
β_K	0.255**	0.025	1.965***	0.003	1.784***	0.089
β_L	-0.092	0.055	0.087***	0.005	0.759***	0.0356
β_H	0.191**	0.098	2.821***	0.008	0.135***	0.053
β_{KK}	0.027**	0.007	0.480***	0.001	0.601***	0.004
β_{LL}	0.022	0.015	-0.262***	0.001	-0.286***	0.005
β_{HH}	-0.102	0.068	5.047***	0.006	15.500***	0.108
β_{KL}	-0.044***	0.009	0.368***	0.001	-0.656***	0.004
β_{KH}	-0.003	0.020	-0.675***	0.001	2.922***	0.023
β_{LH}	0.161***	0.032	-0.328***	0.002	-3.419***	0.022
β_T	0.005	0.004	-0.551***	0.001	-0.340***	0.001
β_{TT}	0.001***	0.000	0.035***	0.000	0.000***	0.000
β_{KT}	0.003***	0.001	-0.039***	0.000	-0.090***	0.000
β_{LT}	-0.004***	0.001	0.010***	0.000	0.166***	0.001
β_{HT}	-0.003	0.003	-0.155***	0.000	6.784***	0.891
<i>Inefficiency Equation</i>						
<i>H</i>	-0.637**	0.299	-0.002***	0.000	-0.133***	0.011
<i>FDI</i>	-0.002	0.004	0.003***	0.000	0.001	0.000
<i>Trade</i>	0.016**	0.007	-0.002***	0.000	-0.002***	0.000
<i>Credit</i>	-0.129**	0.001	-0.002***	0.000	-0.009**	0.001
<i>Judiciary</i>	0.675	0.726	-0.458***	0.060	-2.291***	0.029
<i>Ethnic</i>	0.757**	0.100	0.812**	0.070	0.311*	0.032
<i>Common</i>	-1.144	0.951	0.003	0.006	0.367***	0.020
<i>Civil</i>	-3.273**	1.758	-0.085***	0.002	-0.904***	0.020
<i>Man</i>					-0.013***	0.000
<i>Gov</i>					-0.030***	0.001
<i>Common</i> × <i>Judiciary</i>			-0.089***	0.008	-0.893***	0.029
<i>Civil</i> × <i>Judiciary</i>			-0.777***	0.007	-1.959***	0.042
<i>Common</i> × <i>Ethnic</i>			0.878***	0.013	0.680***	0.003
<i>Civil</i> × <i>Ethnic</i>			1.132	0.220	1.676	0.230
Observations	1711		1711		1711	
Log-Likelihood	781.624		987.654		240.508	
B.I.C.	-550.834		-987.908		-240.727	
Chi2(8)			354.352/0.000			
<i>Variance Parameters</i>						
$\gamma = \frac{\sigma_u^2}{\sigma^2}$	0.958	0.020	0.898	0.000	0.980	0.000
σ^2	0.042	0.158	0.103	0.000	0.020	0.003

Notes: *** 1%; **5%; * 10%; Chi2(8) - the null indicates joint insignificance of all interaction terms.

Figure 1: Efficiency and Ethnic Heterogeneity



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