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Forms of Democracies and Financial Development

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Abstract

The empirical literature on the political economy of finance emphasizes the importance of political institutions as crucial determinants of financial development and shows that democratic regimes are positively and robustly correlated with financial development. By using a three years periodic panel of 140 countries over 1984-2007, we show that democratic regimes appear to be significantly and positively correlated with financial development, but the opposition between democracies and dictatorships is not sufficient to account for differentials in financial development between countries. Indeed, our results highlight a significant and highly heterogeneous relationship between democratic regimes and financial development since the positive effect induced by democracies on financial development is explained by the presence of specific democratic political institutions, namely: parliamentary form of government and to a lesser extent federal state form. Thus, democracies seem to better foster financial development if its constitutional arrangement allows horizontal flexibility and vertical stability in the political decision-making process.

Keywords: financial development; political institutions; positive constitutional economics; comparative politics.

JEL classification codes: D72, G28, H00, P48.

Introduction:

The economic literature, either theoretical or empirical, highlights a positive impact of financial development not only on economic growth (Schumpeter, 1911; King and Levine, 1993; Levine, 1997, 2005), but also on the improvement of population's well-being at macroeconomic level (Beck et al., 2007 ; Demirgüç-Kunt and Levine, 2008 ; Guillaumont-Jeanneney and Kpodar, 2011). This is why, understanding the determinants of financial development has become an important issue addressed in the recent literature (Voghouei et al., 2011a). In this perspective, institutions are considered as long-run determinants of financial development.

Literature show that democratic political institutions have a positive effect on financial development through two key institutional mechanisms: (i) more constrains on the discretion of political power and (ii) more participation of populations in the political decision-making process (Haber and Perotti, 2008). However, these works are mostly limited to the opposition between democracies and dictatorships (Girma and Shortland, 2004; Huang, 2010; Voghouei et al. 2011b; Yang, 2011).

Therefore, we claim that the opposition between democracies and dictatorships is not sufficient to understand thoroughly the effect of political institutions on financial development.¹ Indeed, as Acemoglu (2005) mentioned, the notion of democratic regime indiscriminately gathers a set of economic institutions (i.e., the limitation of government's expropriation power allowing to strengthen property rights) and political institutions (i.e., the various constitutional rules in place in a given political system). Consequently, it turns out to be necessary to open the institutional black-box associated to democratic regimes, in order to have a better understanding of the democracies-financial development nexus.

By using a database on the broadest possible sample of countries from all levels of development (between 140 and 97 countries depending on specifications) over 1984-2007 in a three years periodic panel, we proceed to the disaggregation of the overall effect of democratic regimes on financial development according to the three most representative institutional features of a democratic system namely: forms of government, electoral rules and state forms.² In reference to previous empirical studies related to the relationship between political institutions and financial development (Huang, 2010; Voghouei et al. 2011b), we use a financial development indicator reflecting the depth of financial activities in the form of a composite index extracted from a principal component analysis. Finally, in order to empirically assess the effect of highly inertial institutional variables characterized by a non-random selection pattern, we use systematically two types of econometric estimators, namely Pooled Ordinary Least Squares (POLS) and the Fixed Effect Vector Decomposition (FEVD) estimator (Plümper-Troeger, 2007, 2011).

The main results derived from our estimates show that the effect of democratic regimes on financial development is all the more important that democracies have a parliamentary form of government and to a lesser extent a federal state form. These results show that, contrary to the traditional opposition between *centralist* and *decentralist* paradigms in political governance theories, the "optimal" institutional configuration, in order to promote the depth of financial activities, combines weak horizontal separation of powers (parliamentary form of government) and strong vertical separation of powers (federal state form). It reflects the constitutional configuration of countries like Australia, Belgium, Canada, Germany, India, Pakistan and Spain for instance.

¹ Voigt (2011) insists on the need to overcome the opposition between democracies and dictatorships, insofar as this dichotomy seems far too simple to characterize the complexity of political institutions associated to each democratic regime.

² In the comparative politics literature, these three democratic political institutions are considered as the most representative features of a democratic system (Gerring et al., 2005).

Our study plan is divided into four parts. Section I briefly reviews the various fields of literature covered by this article. Section II presents our econometric methodology. Section III provides a first overview of the relationship between forms of democracies and financial development using descriptive statistics and then details results associated to our econometric analysis. Section IV concludes mentioning its political implications and its potential developments.

Section I: Literature review

a. Political institutions and financial development:

The literature on determinants of financial development has identified four categories of institutions, namely cultural institutions (norms and beliefs), legal institutions (type of legal system, definition and application of the rules of law), economic institutions (rules governing the process of production, allocation and distribution of goods and services) and political institutions (political regimes and constitutional rules).

In this article we focus on the latter type of institutions. Taking the institutional categories of Acemoglu and Johnson (2005), cultural, legal and economic institutions characterized horizontal institutions, i.e. governing interactions between individuals, while political institutions characterized vertical institutions, i.e. governing interactions between political power and individuals.³ Although economic institutions constitute a first-order determinant of financial development, they are, in reference to Acemoglu et al. (2004), determined by the type of political institutions in place in a given political system. Thus, by determining the distribution of political power in a society which in turn will determine the type of economic institutions in place, political institutions appear to be the institutional category at the root of financial development processes. On this point, Persson and Tabellini (2003) indicate that political institutions constitute the institutional framework constraining the political decision-making process. Thus, political institutions ultimately explain the nature of the implemented policies and the quality of the legal and institutional system.⁴ In reference to Haber and Perotti (2008), two major institutional characteristics allow us to explain the role of political institutions in the process of financial development.

Firstly, the gradual emergence of a limited government which translates in a more important control over the actions of political leaders and ultimately results in a better guarantee of property rights and implementation of contracts. These factors help to reduce risks associated with investment activities and therefore allow a growth of capital accumulation.⁵

Secondly, the gradual extension of political rights granted to population induces more participation of population in political life but also more constraints on choices made by political leaders. This leads to the implementation of economic laws promoting better access of populations to financial systems, as well as a greater opening of the local market to competition regarding financial activities.⁶

Consequently, the effects of political institutions on financial development derived mainly from a better quality of political governance. Indeed, by constraining discretion of political power and allowing more participation of population in the political decision-making process, democratic political institutions induce a limitation of political leader's authority and a better inclusion of

³ Acemoglu and Johnson (2005) consider some economic institutions, such as for the enforcement of property rights, as vertical institutions.

⁴ In reference to Acemoglu et al. (2004), when we use the term political institution in our analysis, it refers to the *de jure* dimension of political institutions (the various constitutional rules characterizing a political system). As for the *de facto* dimension of political institutions, the latter is not the subject of our study. On this point, Voghouei et al. (2011b.) show that *de jure* political institutions are far more important than *de facto* political institutions in order to understand financial development.

⁵ This first argument refers to the analyses of North and Weingast (1989) regarding the English Glorious Revolution of 1688.

⁶ For example, the United States in the first half of the 19th century and Mexico in the late 1990's.

population preferences. Two features considered in comparative politics as essential in order to achieve an efficient decision-making process at the political level from a “decentralist” point of view.⁷

Thus, it results from these analyses two levels of understanding of the relationship between political institutions and financial development. The first one is the influence of the overall political regimes (democracies versus dictatorships) on financial development. Empirical analyses of Girma and Shortland (2004), Acemoglu and Johnson (2005), Huang (2010), Voghouei et al. (2011b) and to a lesser extent, Yang (2011), highlight a positive impact of democratic regimes on financial development. The second one is the influence of political institutions, i.e. constitutional rules, within democratic regimes on financial development. Very few empirical studies have addressed this issue (Bordo and Rousseau, 2006; Boudriga and Ghardallou, 2012). As a result, we need to characterize the nature of the relationship between democracies and financial development by disaggregating the overall effect of democratic regimes on financial development according to its main institutional features. In this paper, we carry out this institutional decomposition by focusing on three major features of a democratic regime, i.e. forms of government, electoral rules and state forms.

b. Democratic political institutions and political governance theories:

In order to articulate the numerous analyses relative to the effects of constitutional rules, we distinguish partisan of separation of political power and partisan of concentration of political power, leading to two main paradigms regarding the structuration of political power (Gerring et al., 2009).⁸

The first one advocates the importance of separation, diffusion and fragmentation of political power. The objective of political institutions is to provide a stable environment such as political leader's behaviors can be the most possible predictable (Henisz, 2000, 2004; Stasavage and Keefer, 2003). It is a decentralist model of political governance in terms of horizontal separation of power and federalist in terms of vertical separation of powers. In this perspective, democratic political institutions promoting most separation of political power are presidential form of government, proportional electoral rule, federal state form and bicameral legislative structure.⁹ These political institutions induce a strong reduction of political leader's authority and increase inclusion of citizen's preferences.

The second one advocates an objective of adaptation of political institutions to population's demands. The concentration of political power has an essential role, since flexible government have a strong leadership and are able to defeat any significant conflicts of interests (American Political Science Association, 1950; Olson, 1982; Gerring et al. 2005, 2007, 2009). It is a centralist model of political governance in terms of horizontal separation of powers and unitarist in terms of vertical separation of powers.¹⁰ Democratic political institutions associated with this model of political governance are parliamentary form of government, majoritarian electoral rule, unitary states form and asymmetrical bicameral (or unicameral) legislative structure.¹¹ These political institutions induce a softer limitation of political leader's authority and decrease inclusion of citizen's preferences.

One way to synthetically articulate this trade-off between stability and flexibility in the political decision-making process within a given system of political institutions is to refer to the veto players theory of Tsebelis (1995, 1999, 2002). In connection with the two political governance models

⁷ See section 1.b. for more details about the decentralist paradigm of political governance.

⁸ For a comprehensive literature review about the economic and political effects of democratic political institutions see Persson and Tabellini (2003) and Voigt (2011).

⁹ This constitutional configuration is also related to the Lijphart's (2002) consensus model of democracy. It refers for instance to the Swiss constitutional arrangement.

¹⁰ Alternatively Gerring et al. (2005) displays a centripetal model of political governance.

¹¹ This constitutional configuration is also related to the Lijphart's (2002) majoritarian model of democracy. It refers for instance to the Westminster (UK) constitutional arrangement.

previously mentioned, the second one will have a relatively limited number of veto players. Conversely, a political system favorable to stability at the political decision-making level will have a relatively large number of veto players.

At this point, it is useful to have in mind that resistance to change is one of the explanations of the inferiority of the civil law system with respect to the common law, to ensure promotion of financial development (LaPorta et al., 1998; Beck et al., 2003). Therefore, if we apply this theoretical argument to political institutions one should expect a positive effect on financial development of political institutions related to a limited horizontal and vertical separation of political power. However, literature relative to the political economy of finance (Haber and Perotti, 2008) underlines the importance of constraints on discretion of political power and greater participation of population in political decision-making process in order to promote financial development. In this perspective, one should expect a positive effect on financial development of political institutions related to a strong horizontal and vertical separation of political power. Thus, it seems *a priori* difficult to identify what specific kinds of constitutional arrangement could promote more financial development.

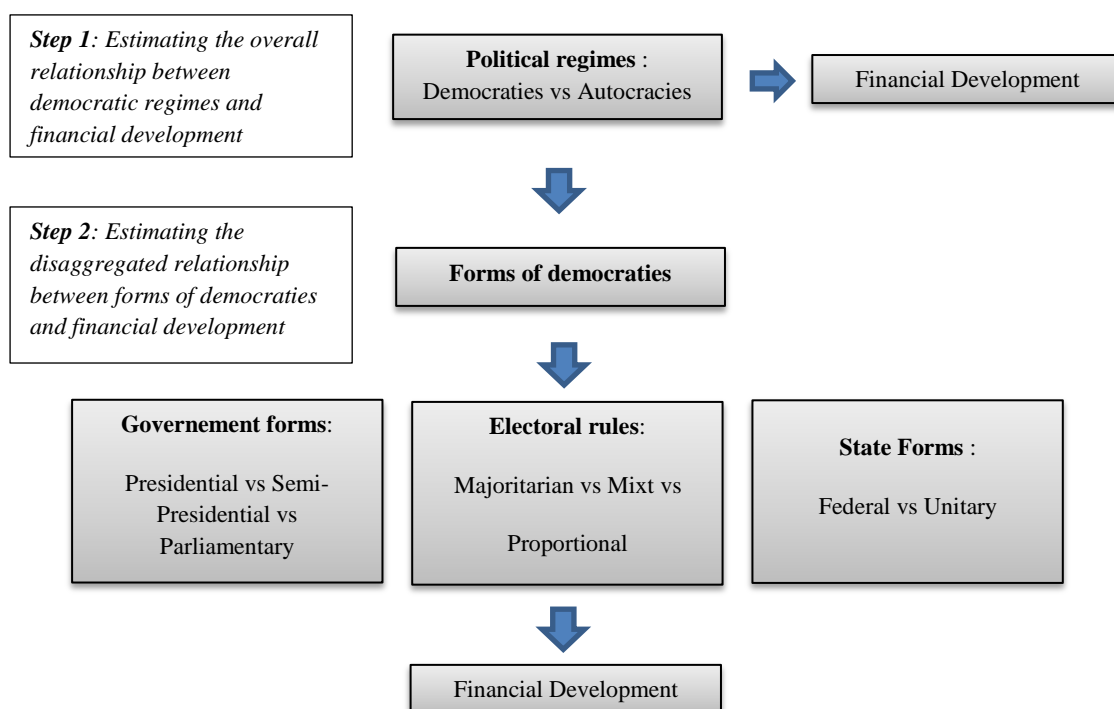
Section II: Econometric methodology

a. Disaggregating the overall effect of democratic regimes on financial development :

Our goal, in this paper, is to disaggregate the overall effect of democratic regimes on financial development so as to identify what precise types of constitutional arrangements within democracies account for the observed positive correlation between democratic regimes and financial development highlighted for now in the literature (Girma and Shortland, 2004; Acemoglu and Johnson, 2005; Huang, 2010; Voghouei et al., 2011b; Yang, 2011). In order to do this, we rely on a two steps analytical process. In a first step, we estimate the effect of democratic regimes on financial development using a dummy variable taking the value 1 if the polity2 index of Marshall et al. (2010) is at least equal to 1 for each sup-period of three years, 0 otherwise.¹² Then in a second step, we open the institutional black-box associated to democracies by estimating the disaggregated relationship between each of the three democratic political institutions considered in this paper (government forms, electoral rules and state forms) and financial development. Our institutional dummies take the value 1 if (i) the country has the considered modality of political institutions in place at time t, and (ii) a polity2 index at least equal to 1 at time t, 0 otherwise. Figure A below summarizes the estimation procedure.

¹² This classification is inspired by Persson and Tabellini (2003), Persson (2005), Giavazzi and Tabellini (2005) and Przeworski et al. (2000). Although we adopt a relatively restrictive definition of democratic regimes which could lead to overstate the effect of our political institutions variables on financial development, our results are robust if instead of using this three years threshold we use the fraction of years by three years sub-periods a country is democratic, i.e. 1/3, 2/3 or 3/3 (see Tables c and d in Appendix).

Figure A: Political regimes, democratic political institutions and financial development



After estimating the disaggregated relationship between forms of democracies and financial development, we deal with two additional issues related to the effects resulting from the interaction between democratic political institutions. Firstly, as Persson and Tabellini (2003) show, some specific types of democratic political institutions are strongly correlated to each other (such as for instance presidential government forms and proportional electoral rules in Latin America). Therefore, it turns out to be necessary to ensure that the previously identified positive effect on financial development of one specific democratic political institution do not come from a systematic association with others one also having a strong positive effect on financial development. To this end, we decide to introduce in a same econometric specification democratic political institutions variables having the most important effect on financial development in term of magnitude relative to the overall effect of democratic regimes on financial development. This means that we keep only significant democratic political institutions whose estimated coefficients are at least equal to the one associated to democratic regimes.¹³ Secondly, we test for interaction effect between forms of democracies by constructing a political system variable aiming at assessing the effect on financial development resulting from the simultaneous presence in a given democratic system of the most finance enhancing democratic political institutions (see section II. c. for more details).

Regarding the choice of our econometric estimator, in order to take into account the impact on national banking sector depth of alternative highly inertial democratic political institutions characterized by a non-random selection problem, we apply the FEVD estimator (Plümerer-Troege, 2007, 2011). This

¹³ Political regimes are used as reference to capture the global impact of democracies on financial development compared to autocracies. This benchmark variable enables us to capture democratic political institutions having the largest impact on financial depth. So, when we implement our econometric analysis, we compare each democratic political institution with the democratic reference, and we keep institutions with an estimated coefficient higher than the estimated *democratic regime benchmark* coefficient. Thereby, we identify institutional modalities of a democratic regime which enhance most financial development.

commonly used estimator in comparative politics is based on a three-stages procedure, which is a fixed-effect vector decomposition (FEVD), dedicated to the estimation of time-invariant and rarely changing variables in panel data models with individual fixed effects.¹⁴

b. Model specification:

In order to disaggregate the overall effect of democratic regimes on national banking sector depth in a context of political institutions variables characterized by a non-random selection pattern and high inertia, we estimate the following model on three years periodic panel data of 140 countries over 1984-2007 using Pooled Ordinary Least Squares (POLS) and the FEVD estimator (Plümper-Troeger, 2007, 2011).

$$Y_{it} = \alpha + \sum_{k=1}^K \beta_k X_{kit} + \gamma W_{it} + \nu_t + \varepsilon_{it} \quad (1)$$

Y_{it} is the dependent variable, banking sector depth, a composite index measured by applying a principal component analysis to the following three variables: bank assets/GDP, liquid liabilities/GDP and private credit/GDP.¹⁵ It is a commonly used proxy of financial depth in the recent literature and this also ensures comparability of our results with Huang (2010) and Voghouei et al. (2011b).¹⁶ α is a constant term, $\sum_{k=1}^K X_{kit}$ are alternatives modalities of each form of democracy tested and W_{it} is a vector of six control variables including traditional determinants of financial development, namely: logarithm of GDP per capita, economic growth rate, logarithm of inflation rate and its volatility, a *de jure* measure of financial openness and the logarithm of commercial openness.¹⁷ i , t and k indicate respectively the individual dimension ($i = 1, \dots, 140$), the time periodic dimension ($t=1, \dots, 8$) and the number of modalities for each democratic political institution tested with $k \in [1; 3]$. ν_t refers to time dummies in the case of the POLS estimator and temporal trend when using the FEVD estimator, while ε_{it} is a stochastic disturbance term. In addition, the FEVD estimator allows us to introduce in our model specification country fixed effects in order to deal with country specific constant source of unobservable heterogeneity in our sample. Thus, our econometric specification, by accounting for potential sources of both observable and unobservable heterogeneity, enables us to deal with the non-random selection problem of political institutions in a relevant way.

Finally, three key points are needed to be mentioned. Firstly, we consider political institutions as exogenous. This seems to be a reasonable assumption given the relatively limited time horizon of our study and the high inertia of political institutions over 1984-2007. Moreover, in this paper we have to analyse the effects of ten kinds of political institutions on financial development.¹⁸ Therefore, if we want to make democratic political institutions endogenous and analyzed their effects on financial development in a relevant way, we would need two specific instruments for each of these political institutions. This is clearly out of reach and is not the purpose of this paper. Moreover, Voigt (2011) recall that “endogenous constitutions” is a field of research in its infancy for now.

¹⁴ See Caldeira (2012), Caldeira et al. (2012) and Heinemann et al. (2014). All details on FEVD estimator are presented in Supplementary Materials. We also provide in Supplementary Material an in-depth discussion regarding the choice of a relevant econometric estimator when assessing the effects of political institutions variables characterised by high inertia and non-random selection problems.

¹⁵ All this variables come from Cihak et al. (2012).

¹⁶ Table H in Appendix displays an average bilateral correlation of 92% between each sub-component. Our index accounts for 94% of the total variance of the three sub-components. The weighting adopted in the principal component analysis is 0.98 (credit/GDP) 0.97 (liquidities/GDP) and 0.96(bank assets/GDP).

¹⁷ The sources of all these variables are given in the Appendix.

¹⁸ Regime types (democracies vs autocracies), government forms (parliamentary vs semi-presidential vs presidential), electoral rules (majoritarian vs mixt vs proportional) and state forms (unitary vs federal).

Secondly, given the complexity of the empirical implementation of our study, because of the non-random and high inertia problems associated to the econometric assessment of the effects of political institutions, we limit our econometric analysis to the estimation of the reduced relationship between political institutions and financial development. An econometric analysis relative to a structural approach of the effects of political institutions on financial development, accounting for potential transmission channels governing the relationship between these two variables, is not the aim of this paper.

Thirdly, we do not take into account explicitly the notion of *de facto* political power of Acemoglu et al. (2004) in order to remain relatively parsimonious in our econometric specification. On this point, Voghouei et al. (2011b) approximate the concept of *de facto* political power with a Gini coefficient capturing income inequality. Here, income inequalities represent a highly inertial feature of countries that can be adequately captured by the introduction of country fixed effects in our different models.

Section III: Empirical Evidences

a. Descriptive statistics:

Preliminary descriptive statistics point out that democratic regimes have a banking sector depth 70% higher than autocratic regimes. This result holds if we look in more details at each specific component of our aggregate index of financial development with democratic regimes having a private credit/GDP ratio two times larger than autocratic regimes, but also bank assets/GDP and liquid liabilities/GDP ratio respectively 90% and 43% higher than autocratic regimes.

Table 1: Political regimes, democratic political institutions and financial development

Variables	Financial depth	Private credit/GDP	Bank assets/GDP	Liquid liabilities/GDP
Political Regimes				
Autocracy	-0.47	22.22	28.99	35.99
Democracy	0.24	45.12	55.22	51.47
Forms of Democracies				
Government Forms				
Presidential	0.03	35.49	41.44	43.01
Semi-presidential	0.08	44.18	52.51	44.40
Parliamentary	0.60	57.66	73.14	63.61
Electoral Rules				
Majoritarian	0.19	42.01	51.77	51.07
Mixt	0.39	51.23	63.17	60.23
Proportional	0.30	47.32	57.74	50.68
State Forms				
Unitary	0.12	39.95	48.55	47.66
Federal	0.50	58.00	72.40	60.71

Constitutional modalities are measured for democratic countries only.

If we disaggregate this overall effect of democratic regimes along government forms, electoral rules and state forms, we can notice, as we suspected, that the relationship between political regimes and financial development is clearly heterogeneous, since parliamentary form of government, complex electoral rules (mixt rules and proportional rules) and federal state form are associated to a deeper banking sector than democratic regimes taken as a whole. Overall, parliamentary form of government seems to be the institutional modality within a democratic regime promoting most financial development, following by federal state form and finally by mixt and proportional electoral rules. However, because of the non-random selection problem associated to political institutions, these preliminary results need to be interpreted with caution. Therefore, in order to have more convincing evidences regarding the effect on financial development of democratic regimes and democratic political institutions, we need to carry out an econometric analysis accounting for potential sources of both observable and unobservable heterogeneity related to our political institutions variables.

b. The overall effect of democratic regimes on financial development:

In the first step of our econometric analysis, we estimate the effect of democratic regimes, relative to autocratic regimes, on financial development. Irrespective to the specification estimated, democracies foster financial depth. In line with first assessments, table 2 (below) shows that democratic regimes improve financial depth by 70% (see column 1), and then by 60% when we use the FEVD estimator and introduce our set of control variables (see columns 2-3).

In accordance with a flourished empirical literature on the relationship between political regimes and financial development (Acemoglu and Johnson, 2005; Girma and Shortland, 2008; Huang, 2010; Voghouei et al., 2011b; Yang, 2011), we find a significant positive effect of democracies on financial development. Recall that compared to autocratic regimes, democracies strengthen the participation of citizens in political life and constrain decisions made by political leaders. These characteristics act in favor of laws promoting access of people to formal financial systems, and ensure a deeper and sounder competition regarding financial activities (Haber and Perotti, 2008).

As Persson and Tabellini (2003) and Gerring et al. (2005, 2009) show, constitutional arrangements in democratic regimes involve different levels of citizen's participation to political life and different levels of constraints on the discretion of political power. This is why, we need to identify what precise democratic political institutions within a given democratic system matter most for promoting financial development with respect to dictatorships. To do this, the next step of our econometric analysis will consist in disaggregating the overall positive effect of democratic regimes on financial development along three institutional dimensions namely government forms, electoral rules and state forms so as to stress the heterogeneous effects of democracies on financial development, depending on specific constitutional arrangements.

c. Disaggregating the effect of democratic regimes on financial development:

In the second step of our econometric analysis, we open the institutional black-box associated to democratic regimes and estimate the effects of government forms, electoral rules and state forms on financial development. In reference to what we have said in section II.a, we will focus on political institutions which have an estimated coefficient *statistically higher* to the estimated coefficient of the democratic regimes *benchmark* variable. In other words, we focus on democratic political institutions which have a stronger impact on financial development than democratic regimes.

Regarding firstly government forms, parliamentary system has an estimated coefficient *statistically higher* to the estimated coefficient of the democratic regimes *benchmark* variable. Indeed,

parliamentary system expands by 86% to 107% banking sector depth compared to autocratic regimes and by 30 to 39% relative to the overall effect of democracies (see columns 4-6). In reference to theories of political governance, parliamentary system is a flexible government form which induces a strong leadership and which is able to defeat any significant conflicts of interests in the political decision-making process (Gerring et al. 2005, 2009). Therefore, parliamentary system is effective to boost financial development due to its adaptation capacity, since it has less veto players than other government forms (Tsebelis, 1995, 1999, 2002). Moreover, parliamentary system promotes a deeper and sounder competition of financial activities due to a stronger political governance and limitation of lobby's potency (Gerring et al., 2009).

As for electoral rules, complex electoral systems (mixt rules and proportional rules) have an estimated coefficient *statistically higher* to the estimated coefficient of the democratic regimes *benchmark* variable. However, these results are not robust when we add our set of controls variables (see columns 7-9). Thus, contrary to Bordo and Rousseau (2006), we do not find that electoral rules are a crucial constitutional component to explain the heterogeneous effect of democratic regimes on financial development. Indeed, we presume that voting procedures in place in a given democratic system are useful to understand the nature of pork barrel in place (Persico and Lizzeri, 2001; Persson and Tabellini, 2003) rather than financial depth induced by constitutional arrangements.

Concerning state forms, federal state form has an estimated coefficient *statistically higher* to the estimated coefficient of the democratic regimes *benchmark* variable. Federal state form fosters financial depth by 87% to 99% compared to autocracies and by 29% to 33% relative to the overall effect of democratic regimes (see columns 10-12). If we refer once again to theories of political governance, federal state form induces a strong vertical separation of power and involves a broad inclusion of people's preferences at local level (Gerring et al., 2005). A strong vertical separation of power is favorable to a deeper and sounder competition of financial sector through *foot voting* effect (Tiebout, 1956; Brennan and Buchanan, 1980; Ribstein and Kobayashi, 2006) and through *laboratory* effect (Hayek, 1939; Oates, 1999). In our case, the *foot voting* effect reflects citizen's and entrepreneur's capacity to introduce competition between local banks and thus encouraging local banks to adopt attracting policies, whereas the *laboratory* effect reflects disclosure and dissemination of the most efficient methods regarding the ways of conducting financial activities between local jurisdictions.

Our empirical results provide strong evidences of an heterogeneous effect of democratic regimes on financial development relative to autocratic regimes. Indeed, parliamentary system and federal state form represent two constitutional arrangements particularly effective in boosting financial sector depth. Moreover, these results exceed traditional theories of political governance since the promotion of financial development is related to a political system inducing a flexible horizontal separation of power and a strong vertical separation of power. In other words, financial development is all the more important in a given democratic system if the Executive face low constraints in the political decision-making process (horizontal dimension of political power) and if there is a broad inclusion of people's preferences at local level (vertical dimension of political power). Empirically, this political system reflects for instance the constitutional configuration of Australia, Belgium, Canada, Germany, India, Pakistan and Spain.

d. Competing forms of democracies, political systems and financial development:

In the final step of our econometric analysis, we characterize the effect on financial development resulting from the interaction between parliamentary system and federal state form. In other word, we

are testing the interaction effect between the two constitutional arrangements which have a stronger effect on banking sector depth than the overall effect democratic regimes. In Table 3, we adopt two strategies to take into account these interactions.

On the one hand, we test a “synergistic effect” between parliamentary system and federal state form. To this end, we create an ordered variable equal to 0 if country is a dictatorship, equal to 1 if country is a democracy, equal to 2 if country is a democracy with a parliamentary government form or federal state form, and equal to 3 if combining the two. Opting for an ordered variable is necessary, (i) since we do not have enough observations to precisely estimate standard errors associated with a binary variable of such a political system; and (ii) to have more detailed information on complementarities between democratic political institutions. On the other hand, we introduce, in a same econometric specification, parliamentary system and federal state form to check if the positive effect of one just comes from a systematic association with the other.

Table 2: Forms of Democracies and Financial Development

VARIABLES	(1) ols fi_depth	(2) pt fi_depth	(3) Pt fi_depth	(4) ols fi_depth	(5) pt fi_depth	(6) pt fi_depth	(7) ols fi_depth	(8) pt fi_depth	(9) pt fi_depth	(10) ols fi_depth	(11) pt fi_depth	(12) pt fi_depth
democracy	0.701*** [0.144]	0.596*** [0.122]	0.633*** [0.201]									
presidentialism				0.491*** [0.179]	0.361 [0.268]	0.369 [0.294]						
semi_pres				0.521** [0.241]	0.362 [0.309]	0.321 [0.351]						
parliamentarism				1.070*** [0.170]	0.979*** [0.233]	0.864** [0.393]						
majoritarian							0.632*** [0.182]	0.487*** [0.185]	0.512** [0.220]			
mixt							0.818*** [0.239]	0.629*** [0.215]	0.610** [0.249]			
proportional							0.731*** [0.168]	0.615*** [0.225]	0.521 [0.353]			
unitarism										0.615*** [0.146]	0.522*** [0.129]	0.550*** [0.191]
federalism										0.987*** [0.211]	0.866** [0.384]	0.948* [0.514]
Controls	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes
Democracy				0.701*** [0.144]	0.596*** [0.122]	0.633*** [0.201]	0.701*** [0.144]	0.596*** [0.122]	0.633*** [0.201]	0.701*** [0.144]	0.596*** [0.122]	0.633*** [0.201]
Observations	894	688	606	817	621	543	818	622	544	894	688	606
R-squared	0.124	0.674	0.738	0.206	0.680	0.762	0.143	0.677	0.762	0.140	0.676	0.739

Robust standard errors in brackets. Estimated coefficients in red are significantly higher to the *democratic regime benchmark*. Estimated coefficients in blue are significantly lower to the *democratic regime benchmark*. Time dummies or time trends are included for each regression.

*** p<0.01, ** p<0.05, * p<0.1

Table 3: Complementarity and Competition Between Forms of Democracies

VARIABLES	Synergistic effect			Competition		
	(1)	(2)	(3)	(4)	(5)	(6)
	ols	pt	pt	ols	pt	pt
	fi_depth	fi_depth	fi_depth	fi_depth	fi_depth	fi_depth
synergy	0.450*** [0.0717]	0.402*** [0.0963]	0.364** [0.162]			
parliamentarism				0.781*** [0.142]	0.754*** [0.254]	0.635* [0.369]
federalism				0.408** [0.197]	0.333 [0.419]	0.303 [0.512]
Controls	No	No	Yes	No	No	Yes
Observations	817	621	543	817	621	543
R-squared	0.207	0.681	0.763	0.178	0.681	0.763

Robust standard errors in brackets. Time dummies or time trends are included for each regression.

*** p<0.01, ** p<0.05, * p<0.1

Regarding the "synergistic effect", we provide evidences that the interaction between parliamentary system and federal state form improves financial depth by 154% to 205% relative to autocracies, but also by 86% to 110% relative to democracies associated with other constitutional arrangements, and by 36% to 45% compared to parliamentary non-federal systems or federal non-parliamentary states (see columns 1-3).¹⁹ Again, these results stress the important ability of a *flexible federalism* to promote financial activities, through more adaptation capacities (Tsebelis, 1995, 1999, 2002), stronger political governance, the limitation of lobby's potency (Gerring et al., 2005, 2009) and a broad inclusion of people's preferences at local level (Gerring et al., 2005).

Moreover, when we test for competition between our two constitutional arrangements, parliamentary system has systematically an estimated coefficient *statistically higher* to the estimated coefficient of federal state form (see columns 4-6). Furthermore, federal state form does not survive to the competition, when we introduce specific effects (column 5) and when we add our set of control variables (column 6).²⁰ This means that political institutions seems to boost financial development process mainly through the *top-down* effect of parliamentary system, which ensures low constraints on the political decision-making process (Gerring et al., 2005, 2009) rather through the *bottom-up* effect of federal state form, which ensures a broad inclusion of citizen's preferences at local level (Gerring et al., 2005).

To summarize, in line with the empirical literature on the relationship between political regimes and financial development (Acemoglu and Johnson, 2005; Girma and Shortland, 2008; Huang, 2010; Voghouei et al., 2011b; Yang, 2011), our results displays a positive and significant impact of democratic regimes on financial development. Furthermore, the effect of democracies on financial development is highly heterogeneous and depends on very specific kinds of democratic political institutions. Indeed, parliamentary system seems to foster financial development through low constrains on the political decision-making process (Gerring et al., 2005, 2009), while federal state

¹⁹ For example in column 3, the estimated coefficient of the synergy ordered variable is 0.364. In other words, when synergy is equal to 1 there is an improvement of 36.4% of financial depth. When synergy is equal to 2 there is an improvement of $(1.364) \times 0.364 = 86.05\%$ of financial depth. Finally, when synergy is equal to 3 there is an improvement of $(1.8605) \times 0.364 = 153.77\%$ of financial depth.

²⁰ Our results are qualitatively similar when we introduce proportional or mixt electoral systems. Proportional electoral rules (or mixt electoral rules) estimated coefficients are never significant when they are introduced with parliamentary system and federal state form.

form is favorable to a deeper and sounder competition of financial sector through a broad inclusion of people's preference at local level (see table 4, below). Moreover, we provide evidence of an interaction effect between parliamentary system and federal state form on financial development. Furthermore, parliamentary system seems to be the key constitutional arrangement to ensure a deeper and sounder competition in financial activities.

Our results are robust to (i) dependent variable specification, (ii) interest variable specification, (iii) outliers, and (iv) test for simultaneous relationship between financial development and political institutions. All this robustness checks are presented in the appendix of this article.

Table 4: Constitutional Arrangements promoting most financial development

		State Forms	
		(I) Unitary States	(II) Federal States
Forms of Governments	(A1)Presidentialism	(A1) Strong or (A2) moderate constraints on the political decision making process	(A1) Strong or (A2) moderate constraints on the political decision making process
	(A2)Semi-Presidentialism	(I) Weak inclusion of people's preference at local level	(II) Broad inclusion of people's preference at local level
	(B)Parliamentarism	(B) Low constraints on the political decision making process (I) Weak inclusion of people's preference at local level	(B) Low constraints on the political decision making process (II) Broad inclusion of people's preference at local level

Note: In red, constitutional characteristics which are boosting financial activities.

Section IV: Conclusion

In this article, we show that although democratic regimes appear to significantly and positively promote financial development, the simple opposition between democracies and dictatorships is not sufficient to account for differentials in financial development between countries from a political point of view. Indeed, by disaggregating the overall effect of democracies on financial development, our econometric results highlight a significant and highly heterogeneous relationship between democratic regimes and financial development. Therefore, the positive effect induces by democracies on financial development is explained by the presence of very specific democratic political institutions, namely: parliamentary form of government and to a lesser extent federal state form. In reference to political governance theories, these democratic political institutions characterize a complementary relationship between a low horizontal separation of powers (centralist paradigm) and a strong vertical separation of powers (federalist paradigm). Thus, the promotion of financial development seems to be all the more important that political institutions associated with democratic regimes allow horizontal flexibility and vertical stability in the political decision-making process. Therefore, in terms of development policies implications, this article stresses the fact that advocating the implementation of democratic regimes in developing countries in order to promote economic and financial development is not enough. Policymakers must have to remind that constitutional modalities may have a fundamental importance to achieve macroeconomic objectives and promote well-being, through an improved efficiency in the political decision-making process. Recall that the promotion of a developed banking sector is a precondition for sustainable economic growth but also for inequality and poverty reduction.

As a result, it turns out to be necessary to deepen the study of the institutional determinants of financial development in light of the analyses carried out in constitutional economics and comparative

politics. This is precisely the objective of this article although many potential developments are possible in order to ensure the validity of our results. On this point, our article could be subject to several potential developments. Firstly, it would be interesting to envision the study of the precise political institutions explaining differentials in financial development between democratic regimes only. On this point, it would be relevant to introduce of new set of political institutions such as direct democracy and procedural rules. Secondly, given the multidimensional nature of financial development, it would be essential to extend our study to the analysis of the relationship between forms of democracies and the depth of financial markets, and also to the access, efficiency and stability of financial systems. Thirdly, it seems important to consider an econometric modeling that allow us to estimate more accurately the structural relationship between forms of democracies and financial development so as to characterize as precisely as possible all the transmission channels governing the relationship between these two variables.

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Appendix

List of variables

Financial development: financial depth index based on principal components extracted from private credit/GDP, bank assets/GDP and liquid liabilities/GDP, based on Global Financial Development Database (Cihak et al., 2012).

Political regimes: dummy variable =1 if polity2 index >0, =0 otherwise, author's construction based on Polity IV database from Marshall and Jaggers, 2010.

Gouvernement forms: dummy variables =1 if Presidential/Semi-Presidential/Parliamentary forms of governments & polity2 index >0, =0 otherwise, author's construction based on Cheibub et al., 2009.

Electoral rules: dummy variables =1 if Majoritarian/Mixt/Proportional electoral rules & polity2 index >0, =0 otherwise, author's construction based on Bormann and Golder, 2013.

State forms : dummy variables =1 if Unitary/Federal state & polity2 index >0, =0 otherwise, author's construction based on CIA The World Factbook, 2013 & Perspective Monde from Sherbrook University.

Synergy: ordered variable equals to 0 if country is an autocracy, equals to 1 if country is a democracy, equals to 2 if country is a democracy with a parliamentary government form or federal state form, and equals to 3 if combining the two, author's construction.

Log GDP per capita: logarithm of GDP per capita, at 2005 US\$, based on World Development Indicators, 2013.

Economic growth rate: growth of GDP per capita, author's construction, based on World Development Indicators, 2013.

Log (1 + inflation): logarithm of 1 + annual percentage change in Consumer Price Index, author's construction, based on World Development Indicators, 2013.

Log trade openness: logarithm of openness at 2005 constant price (%), based on Penn World Table 7.1, 2013.

Financial Openness: KOAPEN index based on principal components extracted from disaggregated capital and current account restriction from Chinn and Ito (2006).

Inflation volatility: standard deviations of Log (1 + inflation) variable by three years sub periods, author's construction, based on World Development Indicators, 2013.

Table A: Political repartition of the 140 countries belonging to our sample

Permanent Dictatorships	Permanent Democracies	Political Transitions
37 countries	48 countries	55 countries
Afghanistan	Argentina	Albania
Angola	Australia	Burundi
United Arab Emirates	Austria	Benin
Burkina Faso	Belgium	Bangladesh
Bahrain	Bolivia	Bulgaria
Bhutan	Botswana	Brazil
China	Canada	Central African Republic
Cote d'Ivoire	Switzerland	Chile
Cameroon	Colombia	Congo Brazzaville
Cuba	Costa Rica	Comoros
Egypt	Cyprus	Djibouti
Gabon	Czech Republic	Algeria
Guinea	Germany	Ethiopia
Equatorial Guinea	Denmark	Fiji
Iraq	Dominican Republic	Ghana
Jordan	Ecuador	Gambia
Kuwait	Spain	Guinea Bissau
Laos	Estonia	Guatemala
Libya	Finland	Guyana
Morocco	France	Croatia
Mauritania	United Kingdom	Haiti
Oman	Greece	Hungary
Qatar	Honduras	Indonesia
Rwanda	India	Iran
Saudi Arabia	Ireland	Kenya
Sudan	Israel	Cambodia
Singapore	Italy	Korea South
Somalia	Jamaica	Lebanon
Swaziland	Japan	Liberia
Syria	Sri Lanka	Lesotho
Chad	Moldova	Madagascar
Togo	Macedonia	Mexico
Tunisia	Mauritius	Mali
Tanzania	Malaysia	Mongolia
Uganda	Netherlands	Mozambique
Vietnam	Norway	Malawi
Yemen	New Zealand	Niger
	Papua New Guinea	Nigeria
	Portugal	Nicaragua
	Russia	Nepal
	El Salvador	Pakistan
	Slovenia	Panama
	Sweden	Peru
	Trinidad	Philippines
	Turkey	Poland
	United States	Paraguay
	Venezuela	Romania
	South Africa	Senegal
		Solomon Islands
		Sierra Leone
		Thailand
		Uruguay
		Congo Kinshasa
		Zambia
		Zimbabwe

Table B: Constitutional arrangements in the 48 permanent democracies in our sample

Country	Gvt form	Electoral rule	State form	Const reforms
Argentina	Pres	Prop	Fed	
Australia	Parl	Maj	Fed	
Austria	Semi pres	Prop	Fed	
Belgium	Parl	Prop	Fed	
Bolivia	Pres	Prop	Uni	1984-1996
	Pres	Mixt	Uni	1997-2007
Botswana	N-A	N-A	Uni	
Canada	Parl	Maj	Fed	
Switzerland	Pres	Prop	Fed	
Colombia	Pres	Prop	Uni	
Costa-Rica	Pres	Prop	Uni	
Cyprus	Pres	Prop	Uni	
Czech Rep (obs : 1993-2007)	Parl	Prop	Uni	
Germany	Parl	Mixt	Fed	
Denmark	Parl	Prop	Uni	
Dominican Rep	Pres	Prop	Uni	
Ecuador	Pres	Prop	Uni	1984-1997
	Pres	Mixt	Uni	1998-2001
	Pres	Prop	Uni	2002-2007
Spain	Parl	Prop	Fed	
Estonia (obs : 1991-2007)	Parl	Prop	Uni	
Finland	Semi pres	Prop	Uni	
France	Semi pres	Maj	Uni	1984-1985
	Semi pres	Prop	Uni	1986-1987
	Semi pres	Maj	Uni	1988-2007
United Kingdom	Parl	Maj	Uni	
Greece	Parl	Prop	Uni	
Honduras	Pres	Prop	Uni	
India	Parl	Maj	Fed	
Ireland	Semi pres	Prop	Uni	
Israel	Parl	Prop	Uni	
Italy	Parl	Prop	Uni	1984-1993
	Parl	Mixt	Uni	1994-2005
	Parl	Prop	Uni	2006-2007
Jamaica	Parl	Maj	Uni	
Japan	Parl	Maj	Uni	1984-1995
	Parl	Mixt	Uni	1996-2007
Sri Lanka	Pres	Maj	Uni	1984-1988
	Pres	Prop	Uni	1989-2007
Moldova (obs : 1991-2007)	Parl	Prop	Uni	1991-1996
	Semi pres	Prop	Uni	1997-1999
	Parl	Prop	Uni	2000-2007
Macedonia (obs : 1991-2007)	Semi pres	Maj	Uni	1991-1997
	Semi pres	Prop	Uni	1998-2007
Mauritius	Parl	Maj	Uni	
Malaysia	N-A	N-A	Fed	
Netherlands	Parl	Prop	Uni	
Norway	Parl	Prop	Uni	
New Zealand	Parl	Maj	Uni	1984-1995
	Parl	Mixt	Uni	1996-2007
Papua New Guinea	Parl	Maj	Uni	
Portugal	Semi pres	Prop	Uni	
Russia (obs : 1992-2007)	N-A	N-A	Fed	
El Salvador	Pres	Prop	Uni	
Slovenia (obs : 1991-2007)	Semi pres	Prop	Uni	1991-2002
	Parl	Prop	Uni	2003-2007
Sweden	Parl	Prop	Uni	
Trinidad and Tobago	Parl	Maj	Uni	
Turquey	Parl	Prop	Uni	1984-1986
	Parl	Mixt	Uni	1987-1994
	Parl	Prop	Uni	1995-2007
United States	Pres	Maj	Fed	
Venezuela	Pres	Prop	Fed	1984-1992
	Pres	Mixt	Fed	1993-2007
South Africa	N-A	N-A	Fed	

Table C: Constitutional arrangements in the 55 countries with political transitions in our sample

Country	Gvt form	Electoral rule	State form	Democratic periods
Albania	Parl	Mixt	Uni	1990-1995
	Parl	Mixt	Uni	1997-2007
Burundi	Pres	Prop	Uni	2002-2007
Benin	Pres	Prop	Uni	1991-2007
Bangladesh	Parl	Maj	Uni	1991-2006
Bulgaria	Semi pres	Prop	Uni	1990-2007
Brazil	Pres	Prop	Fed	1985-2007
Central Africa Rep	Semi pres	Maj	Uni	1993-2002
Chile	Pres	Prop	Uni	1989-2007
Congo Brazzaville	Semi pres	Maj	Uni	1992-1996
Comoros	Semi pres	Maj	Fed	1990-1994
	N-A	Maj	Fed	1996-1998
	Pres	Maj	Fed	2002-2007
Djibouti	N-A	N-A	Uni	1999-2007
Algeria	N-A	N-A	Uni	2004-2007
Ethiopia	N-A	N-A	Fed	1993-2007
Fiji	N-A	N-A	Uni	1984-1986
	Parl	Maj	Uni	1990-2005
Ghana	Pres	Maj	Uni	1996-2007
Gambia	N-A	N-A	Uni	1984-1993
Guinea Bissau	N-A	N-A	Uni	1994-1997
	Semi pres	Prop	Uni	1999-2002
	Semi pres	Prop	Uni	2005-2007
Guatemala	Pres	Prop	Uni	1986-2007
Guyana	N-A	N-A	Uni	1992-2007
Croatia	Semi pres	Mixt	Uni	1999
	Semi pres	Prop	Uni	2000-2007
Haiti	N-A	N-A	Uni	1990
	N-A	N-A	Uni	1994-1999
	N-A	N-A	Uni	2005-2007
Hungary	Parl	Mixt	Uni	1989-2007
Indonesia	Pres	Prop	Uni	1999-2007
Iran	N-A	N-A	Uni	1997-2003
Kenya	Pres	Maj	Uni	2002-2007
Cambodia	N-A	N-A	Uni	1990-1996
	N-A	N-A	Uni	1998-2007
Korea South	Pres	Mixt	Uni	1987-2007
Lebanon (obs : 1984-1989; 2005-2007)	N-A	N-A	Uni	2005-2007
Liberia	Pres	Maj	Uni	2003-2007
Lesotho	N-A	N-A	Uni	1993-2007
	N-A	N-A	Uni	1999-2007
Madagascar	Semi pres	Prop	Uni	1991-1997
	Semi pres	Mixt	Uni	1998-2006
	Semi pres	Maj	Uni	2007
Mexico	Pres	Mixt	Fed	1994-2007
Mali	Semi pres	Maj	Uni	1992-2007
Mongolia	Parl	Maj	Uni	1990-1991
	Semi pres	Maj	Uni	1992-2007
Mozambique	N-A	N-A	Uni	1994-2007
Malawi	Pres	Maj	Uni	1994-2007
Niger	Semi pres	Mixt	Uni	1991-1995
	Semi pres	Mixt	Uni	1999-2007
Nigeria	Pres	Maj	Fed	1999-2007
Nicaragua	Pres	Prop	Uni	1990-2007
Nepal	Parl	Maj	Uni	1990-2001
	N-A	Maj	Uni	2006-2007
Pakistan	Parl	Maj	Fed	1988-1998
	N-A	Maj	Fed	2007
Panama	Pres	Mixt	Uni	1989-2007
Peru	Pres	Prop	Uni	1984-1991
	Pres	Prop	Uni	1993-2007
Philippines	Pres	Maj	Uni	1986-1997
	Pres	Mixt	Uni	1998-2007
Poland	Semi pres	Prop	Uni	1989-2007
Paraguay	Pres	Mixt	Uni	1989-1992
	Pres	Prop	Uni	1993-2007
Romania	Semi pres	Prop	Uni	1990-2007
Senegal	Semi pres	Mixt	Uni	2000-2007
Solomon Islands	Parl	Maj	Uni	1984-1999
	Parl	Maj	Uni	2004-2007
Sierra Leone	Pres	Prop	Uni	1996
	Pres	Prop	Uni	2001
	Pres	Maj	Uni	2002-2007
Thailand	Parl	Maj	Uni	1984-1990
	Parl	Maj	Uni	1992-2000
	Parl	Mixt	Uni	2001-2005
Uruguay	Pres	Prop	Uni	1985-2007
Congo Kinshasa	N-A	N-A	Uni	2003-2007
Zambia	N-A	N-A	Uni	1991-2007
Zimbabwe	N-A	N-A	Uni	1984-1986

Table D: Within and between variability of political institutions variables

	Democracy	Presidential	Semi-presidential	Parliamentary	Majoritarian	Mixt	Proportional	Federal	Unitary
Within Std. Dev.	0.28	0.17	0.15	0.12	0.20	0.17	0.19	0.10	0.26
Between Std. Dev.	0.42	0.35	0.26	0.39	0.29	0.19	0.41	0.32	0.42

Table E: Mapping of Political Institutions

Variables	Demo	Pres	Semi-pres	Parl	Maj	Mixt	Prop	Uni	Fed
Regions									
World	0.58	0.38	0.19	0.43	0.30	0.15	0.55	0.78	0.22
East Asia & Pacific	0.66	0.23	0.07	0.70	0.69	0.27	0.04	0.82	0.18
Eastern Europe & Central Asia	0.86	0.00	0.52	0.48	0.04	0.20	0.76	0.93	0.07
Latin America	0.85	0.89	0.00	0.11	0.11	0.15	0.74	0.81	0.19
Middle-East & North Africa	0.14	0.00	0.00	1.00	0.00	0.17	0.83	1.00	0.00
North America	1.00	0.50	0.00	0.50	1.00	0.00	0.00	0.00	1.00
South Asia	0.58	0.27	0.00	0.73	0.80	0.00	0.20	0.61	0.39
Sub-saharan Africa	0.33	0.44	0.42	0.14	0.64	0.17	0.19	0.81	0.19
Western Europe	1.00	0.12	0.29	0.59	0.11	0.09	0.80	0.71	0.29
Income									
Low-income	0.36	0.40	0.29	0.31	0.59	0.10	0.31	0.83	0.17
Lower-middle income	0.61	0.62	0.13	0.25	0.26	0.12	0.62	0.92	0.08
Higher-middle incom	0.69	0.53	0.08	0.39	0.15	0.30	0.55	0.70	0.30
High-income non OECD	0.41	0.36	0.20	0.44	0.00	0.00	1.00	1.00	0.00
High-income OECD	1.00	0.09	0.24	0.67	0.28	0.12	0.60	0.62	0.38
Period									
1984-1986	0.39	0.37	0.11	0.52	0.34	0.02	0.64	0.72	0.28
1987-1989	0.41	0.39	0.10	0.51	0.35	0.06	0.59	0.70	0.30
1990-1992	0.54	0.35	0.19	0.46	0.32	0.12	0.56	0.79	0.21
1993-1995	0.61	0.34	0.23	0.43	0.35	0.12	0.53	0.78	0.22
1996-1998	0.62	0.37	0.20	0.43	0.31	0.16	0.53	0.78	0.22
1999-2001	0.65	0.38	0.23	0.39	0.26	0.22	0.53	0.80	0.20
2002-2004	0.68	0.43	0.19	0.38	0.27	0.20	0.53	0.79	0.21
2005-2007	0.69	0.43	0.20	0.37	0.28	0.18	0.54	0.80	0.20
Colonial Origin									
Spain	0.91	1.00	0.00	0.00	0.00	0.18	0.82	0.83	0.17
English	0.44	0.39	0.00	0.61	0.83	0.00	0.17	0.78	0.22
French	0.23	0.24	0.76	0.00	0.42	0.32	0.25	0.88	0.12
Portuguese	0.50	0.80	0.20	0.00	0.00	0.00	1.00	0.53	0.47
Legal Origin									
English	0.59	0.27	0.05	0.68	0.77	0.03	0.20	0.72	0.28
German	0.98	0.38	0.21	0.41	0.10	0.49	0.41	0.38	0.62
French	0.52	0.61	0.17	0.22	0.13	0.17	0.70	0.80	0.20
Socialist	0.55	0.00	0.78	0.22	0.20	0.20	0.60	1.00	0.00

First column: % of democratic observation on global sample. Other columns: constitutional modalities are measured for democratic countries sample, only.

Table F: Mapping of Financial Development

Variables	Financial_depth	Private credit/GDP	Bank assets/GDP	Liquid liabilities/GDP
Regions				
World	-0.02	36.60	45.49	45.69
East Asia & Pacific	0.46	58.14	69.27	67.26
Eastern Europe & Central Asia	-0.01	25.52	36.78	36.83
Latin America	-0.06	26.78	32.63	33.91
Middle-East & North Africa	0.38	35.66	51.71	60.88
North America	0.91	68.83	77.41	77.48
South Asia	-0.09	20.36	28.56	39.88
Sub-saharan Africa	-0.87	13.10	16.94	23.26
Western Europe	1.03	84.70	101.01	80.86
Income				
Low-income	-0.75	14.66	19.02	26.17
Lower-middle income	0.02	29.08	37.53	43.26
Higher-middle income	0.16	35.23	43.88	44.23
High-income non OECD	1.09	75.34	95.84	99.98
High-income OECD	1.02	83.87	100.40	81.17
Period				
1984-1986	-0.10	31.64	40.49	42.45
1987-1989	-0.08	33.57	42.23	43.00
1990-1992	-0.14	32.79	40.72	42.13
1993-1995	-0.11	33.79	43.26	42.69
1996-1998	-0.07	35.80	45.18	44.12
1999-2001	0.02	38.77	47.53	47.39
2002-2004	0.06	39.62	49.05	49.34
2005-2007	0.15	43.95	52.40	51.55

Constitutional modalities are measured for democratic countries only.

Table G: Mapping of Controls

Variables	GDP/cap	Growth	Trade openness	Financial openness	Inflation	Economic volatility
Regions						
World	5800.76	1.81	68.68	0.10	45.31	48.90
East Asia & Pacific	6688.58	3.34	87.81	0.33	7.43	4.59
Eastern Europe & Central Asia	3346.88	1.68	75.67	-0.09	59.23	55.46
Latin America	3012.93	1.59	61.30	0.26	112.72	128.81
Middle-East & North Africa	7650.35	1.50	85.41	0.43	16.13	6.67
North America	26387.97	2.05	40.61	2.46	2.93	0.67
South Asia	468.09	3.73	45.34	-1.09	7.89	2.61
Sub-saharan Africa	725.45	1.04	61.69	-0.70	69.56	74.85
Western Europe	20737.14	2.19	68.13	1.60	3.63	0.96
Income						
Low-income	418.41	1.31	56.19	-0.74	60.08	63.16
Lower-middle income	1762.83	1.94	76.38	-0.29	55.38	62.47
Higher-middle income	5527.38	2.50	79.71	0.53	63.07	58.75
High-income non OECD	20188.92	1.86	123.75	1.43	9.75	5.41
High-income OECD	21987.46	2.10	59.35	1.87	3.48	1.00
Political Regimes						
Autocracy	2784.41	1.29	69.05	-0.41	65.07	71.08
Democracy	8153.14	2.19	68.53	0.50	34.31	32.65
Forms of Democracies						
Government Forms						
Presidential	5317.79	2.08	60.36	0.19	90.05	102.98
Semi-presidential	7967.50	1.62	69.16	0.38	20.81	17.51
Parliamentary	12508.53	2.41	69.20	0.90	9.32	3.34
Electoral Rules						
Majoritarian	7594.81	2.16	64.16	0.40	9.26	4.82
Mixt	8465.08	1.99	64.91	0.83	8.53	3.84
Proportional	9608.91	2.12	67.12	0.51	68.39	75.22
State Forms						
Unitary	6604.77	2.17	71.17	0.38	33.17	34.22
Federal	11952.84	2.02	54.83	0.63	58.78	55.52

Constitutional modalities are measured for democratic countries only.

Table H: Bilateral correlation relationship between the most finance enhancing democratic political institutions

	Parliamentary	Mixt	Federal
Parliamentary	1.0000		
Mixt	0.1615***	1.0000	
Federal	0.2095***	0.1166***	1.0000

*** p<0.01

Table I: Bilateral correlation between measures of banking sector depth

	Financial depth	Private credit/GDP	Bank assets/GDP	Liquid Liabilities
Financial depth	1.0000			
Private credit/GDP	0.7871***	1.0000		
Bank assets/GDP	0.8081***	0.9713***	1.0000	
Liquid Liabilities	0.7915***	0.8698***	0.9056***	1.0000

*** p<0.01

Robustness checks

Alternative Measure of Financial Development

Table a: Financial Development and Forms of Democracy (Financial depth: PCA of credit/GDP;M3/GDP; bank asset/central bank asset)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	ols	pt	pt	ols	pt	pt	ols	pt	pt	ols	pt	pt
VARIABLES	fi_depth	fi_depth	fi_depth	fi_depth	fi_depth	fi_depth	fi_depth	fi_depth	fi_depth	fi_depth	fi_depth	fi_depth
democracy	0.783*** [0.142]	0.704*** [0.128]	0.777*** [0.268]									
presidentialism				0.574*** [0.171]	0.493** [0.241]	0.504* [0.288]						
semi_pres				0.572** [0.224]	0.416 [0.298]	0.404 [0.357]						
parliamentarism				1.133*** [0.167]	1.098*** [0.219]	1.075*** [0.412]						
majoritarian							0.711*** [0.173]	0.607*** [0.191]	0.645*** [0.246]			
mixt							0.908*** [0.230]	0.781*** [0.217]	0.779*** [0.275]			
proportional							0.780*** [0.166]	0.698*** [0.211]	0.659* [0.368]			
unitarism										0.694*** [0.143]	0.621*** [0.133]	0.682*** [0.245]
federalism										1.074*** [0.205]	0.994*** [0.340]	1.147** [0.550]
Controls	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes
Observations	832	613	543	761	553	487	762	554	488	832	613	543
R-squared	0.156	0.785	0.821	0.234	0.792	0.829	0.169	0.792	0.831	0.173	0.787	0.824

Robust standard errors in brackets. Estimated coefficients in red are significantly higher to the *democratic regime benchmark*. Estimated coefficients in blue are significantly lower to the *democratic regime benchmark*. Time dummies or time trends are included for each regression.

*** p<0.01, ** p<0.05, * p<0.1

Table b: Complementarity and Competition (Financial depth: PCA of credit/GDP;M3/GDP; bank asset/central bank asset)

	Synergistic effect			Competition		
	(1)	(2)	(3)	(4)	(5)	(6)
	ols	pt	pt	ols	pt	pt
VARIABLES	fi_depth	fi_depth	fi_depth	fi_depth	fi_depth	fi_depth
synergy	0.479*** [0.0700]	0.455*** [0.0936]	0.450** [0.176]			
parliamentarism				0.793*** [0.140]	0.791*** [0.237]	0.745** [0.371]
federalism				0.442** [0.192]	0.398 [0.384]	0.385 [0.481]
Controls	No	No	Yes	No	No	Yes
Observations	761	553	487	761	553	487
R-squared	0.237	0.795	0.833	0.200	0.793	0.832

Robust standard errors in brackets. Time dummies or time trends are included for each regression..

*** p<0.01, ** p<0.05, * p<0.1

Alternative Measures of Political Institutions

Table c: Financial Development and Forms of Democracy (Institution variables equaling 0.33, 0.67 and 1, if country is democratic respectively one year, two years or three years, for each period of three years)

VARIABLES	(1)			(2)			(3)			(4)			(5)			(6)			(7)			(8)			(9)		
	ols1			pt2			pt3			ols4			pt5			pt6			ols7			pt8			pt9		
	fi_depth	fi_depth	fi_depth	fi_depth	fi_depth	fi_depth	fi_depth	fi_depth	fi_depth	fi_depth	fi_depth	fi_depth	fi_depth	fi_depth	fi_depth	fi_depth	fi_depth	fi_depth	fi_depth	fi_depth	fi_depth	fi_depth	fi_depth	fi_depth	fi_depth	fi_depth	
democracy	0.698***	0.611***	0.655**																								
	[0.158]	[0.160]	[0.276]																								
presidentialism	0.489**	0.375	0.391																								
	[0.188]	[0.318]	[0.377]																								
semi_pres	0.502**	0.351	0.310																								
	[0.250]	[0.345]	[0.411]																								
parliamentarism	1.076***	1.016***	0.902*																								
	[0.180]	[0.297]	[0.501]																								
majoritarian							0.677***	0.571**	0.603**																		
							[0.197]	[0.235]	[0.304]																		
mixt							0.869***	0.703**	0.666																		
							[0.249]	[0.316]	[0.422]																		
proportional							0.775***	0.684**	0.579																		
							[0.181]	[0.306]	[0.500]																		
unitarism																				0.608***	0.528***	0.566**					
																				[0.160]	[0.174]	[0.265]					
federalism																				0.991***	0.905**	1.007*					
																				[0.218]	[0.395]	[0.568]					
Controls	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes
Observations	894	688	606	817	621	543	818	622	544	894	688	606	894	688	606	894	688	606	894	688	606	894	688	606	894	688	606
R-squared	0.114	0.675	0.738	0.202	0.681	0.764	0.150	0.679	0.762	0.131	0.679	0.740	0.131	0.679	0.740	0.131	0.679	0.740	0.131	0.679	0.740	0.131	0.679	0.740	0.131	0.679	0.740

Robust standard errors in brackets. Estimated coefficients in red are significantly higher to the *democratic regime benchmark*. Estimated coefficients in blue are significantly lower to the *democratic regime benchmark*. Time dummies or time trends are included for each regression.

*** p<0.01, ** p<0.05, * p<0.1

Table d: Complementarity and Competition (Institution variables equaling 0.33, 0.67 and 1, if country is democratic respectively one year, two years or three years, for each period of three years)

VARIABLES	Synergistic effect			Competition		
	(1)	(2)	(3)	(4)	(5)	(6)
	ols	pt	pt	ols	pt	pt
fi_depth	fi_depth	fi_depth	fi_depth	fi_depth	fi_depth	
synergy	0.450***	0.402***	0.364**			
	[0.0717]	[0.0963]	[0.162]			
parliamentarism				0.779***	0.773**	0.653
				[0.145]	[0.323]	[0.460]
federalism				0.400**	0.358	0.341
				[0.194]	[0.437]	[0.547]
Controls	No	No	Yes	No	No	Yes
Observations	817	621	543	817	621	543
R-squared	0.207	0.681	0.763	0.180	0.681	0.762

Robust standard errors in brackets. Time dummies or time trends are included for each regression.

*** p<0.01, ** p<0.05, * p<0.1

Accounting for Outliers with Robust Regressions

Table e: Financial Development and Forms of Democracy

VARIABLES	(1) wls fi_depth	(2) wls fi_depth	(3) wls fi_depth	(4) wls fi_depth	(5) wls fi_depth	(6) wls fi_depth
democracy	0.178*** [0.0438]					
presidentialism		0.143*** [0.0537]				
semi_pres		0.0410 [0.0714]				
parliamentarism		0.247*** [0.0564]			0.166*** [0.0482]	
majoritarian			0.199*** [0.0561]			
mixt			0.202** [0.0783]			
proportional			0.0644 [0.0521]			
unitarism				0.149*** [0.0443]		
federalism				0.356*** [0.0656]	0.0908 [0.0658]	
synergy						0.112*** [0.0244]
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	821	749	750	821	749	749
R-squared	0.621	0.638	0.635	0.628	0.634	0.639

Robust standard errors in brackets. Estimated coefficients in red are significantly higher to the *democratic regime benchmark*. Estimated coefficients in blue are significantly lower to the *democratic regime benchmark*. Time dummies or time trends are included for each regression. Robust regressions are ruling by using "rreg" command on STATA.

*** p<0.01, ** p<0.05, * p<0.1

Reverse Causality

Table f: Testing for reverse causality between financial development and political institution

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(11) Ordered
	Random_probit	Random_probit	Random_probit	Random_probit	Random_probit	Random_probit	Random_probit	Random_probit	Random_probit	Random_probit
	democracy	presidentialism	semi_pres	parliamentarism	majoritarian	mixt	proportional	unitarism	federalism	synergy
fi_depth	-0.103	0.323	0.306	0.931	0.253	-0.349	-0.164	-0.391	0.625	-0.048
	[0.187]	[0.795]	[0.685]	[0.790]	[0.355]	[0.372]	[0.281]	[0.303]	[0.970]	[0.178]
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	888	811	811	811	812	812	812	888	888	811
Number of id	132	124	124	124	124	124	124	132	132	124

Standard errors in brackets. *** p<0.01, ** p<0.05, * p<0.1 Each of this model controls for logarithm of GDP per capita, logarithm of (1+age of democracies), the proportion of neighboring countries (in our case, countries belonging to the same region) having the political institutions we seek to explain. In the case of the *synergy* variable, we introduce simultaneously the proportion of neighboring countries having parliamentary form of government and federal state form. All these models also include a time trend.

Supplementary material

Estimating the effect of highly-inertial and non-randomly selected political institutions:

The non-random selection of political institutions:

Table E (in appendix) clearly show that the observed pattern of political institutions in our sample depend on long-run geographic, historical and economic development factors (for instance colonial and legal origins, income per capita and also large waves of democratization associated with the adoption of specific forms of democracies), which is in line with Persson and Tabellini (2003). Moreover, these same long-run factors are also potentially correlated with financial development (especially legal origins), which induces an endogeneity risk of our political institutions variables if we do not account for these factors when estimating the effect of forms of democracies on financial development.

Here, insofar as the main determinants of political institutions are long-run geographic, historical and development economic factors, a panel data models accounting for both observable heterogeneity with the introduction of control variables and unobservable individual and temporal heterogeneity with individual effects and time dummies, allows us to control in a fairly relevant way for the random selection problem of political institutions.

Furthermore, in a short-term perspective, table G (in appendix) highlights that political institutions differ substantially along several economic variables representing first order determinants of financial development such as: trade and financial openness, inflation and inflation volatility and economic growth rate. Therefore, if we want to avoid any misleading correlation when assessing the effect of democratic political institutions on financial development, we need to account for these short-terms economic factors in our econometric specification.

The high inertia of political institutions:

Because of the high inertia of political institutions, very few panel data estimator turn out to be appropriated for assessing the relationship between forms of democracies and financial development. Table A (in appendix) shows that among the 140 countries in our sample, only 55 countries knew at least one political transition from autocratic to democratic regime (and vice-versa) over 1984-2007. The remaining 85 countries are divided into 48 permanent democracies and 37 permanent autocracies. Moreover, we observed only 17 constitutional reforms in permanent democracies (mostly related to electoral rules reforms, accounting for 14 of the 17 constitutional reforms) and only 9 constitutional reforms in countries with political transitions (also mostly related to electoral rules reforms, accounting for 7 of the 9 constitutional reforms). Therefore, as table D (in Appendix) shows, our political institutions variables, either political regimes or democratic political institutions, are characterized by a small within variability with respect to their between variability.

Therefore, fixed effects models are not relevant for our study. Indeed, using a within transformation of our data results in assessing the relationship between forms of democracies and financial development only on the subset of the 55 countries which have experienced at least one political transition over 1984-2007 and therefore to a sensible loss of precision of our estimates, leading to important difficulties to obtain evidences of a significant impact of our political institutions variables on financial development. Moreover, using a Least Square Dummy Variable (LSDV) estimator, with the

introduction of country's specific constants, risks to absorb most of the effects of our highly inertial political institutions variables and thus make them insignificant to explain financial development.

In this case, random effects model could be a solution. However, even though it has the advantage of estimating relatively precisely the effects of highly inertial variables, it requires respecting the challenging orthogonality hypothesis between political institutions and random effects. This hypothesis is all the more likely to be respected if the variance proportion of our dependent variable explained by the random effects is relatively small, which is not the case in our study context as preliminary estimates have showed.²¹ A natural alternative could be to resort to the Hausman-Taylor estimator (Hausman and Taylor, 1981) for correlated random effects. Nevertheless, this estimator is not suited for estimating the effects of highly inertial variables since it accounts for the correlation between explanatory variables and random effects by defining internal instruments including the within transformation of endogenous variables. Like a fixed effect model using a within transformation, the Hausman-Taylor estimator enables us to instrument our political institutions variables only for countries which have experienced at least one political transition over 1975-2007. This leads once again to a sensible loss of precision of our estimates and at the end to important difficulty to obtain evidences of a significant impact of our political institutions variables on financial development.²²

Another solution would consist in using a Propensity Score Matching estimator like Persson and Tabellini (2003, 2007) do. Recall that we seek to disaggregate the overall effect of democratic regimes on financial development with respect to dictatorships along eight types of democratic political institutions²³, i.e. eight "treatments" in the impact evaluation literature. As a result, it would require dividing our sub-sample of 37 permanent dictatorships in eight categories in order to find a proper autocratic counterpart for each democratic political institution we seek to assess the effect on financial development. Clearly, this would sensibly reduce the amount of available observations for each estimation, resulting in a dramatic increase in standard deviations associated to democratic political institution's estimates and at the end to important difficulties to identify the effects of our forms of democracies variables on financial development.

Finally, Huang (2010) and Yang (2011) use the System-GMM estimator of Blundell and Bond (1998) to assess the relationship between democracies and financial development. Once again, because of the highly inertial nature of our political institutions variables, resorting to a first difference to remove individual unobserved heterogeneity in the difference equation and to instrument endogenous variables in the level equation, leads to evaluate the effects of our political institutions variables on financial development only for countries and periods characterized by at least one political transition. This reduces considerably the amount of available observations, resulting in a dramatic increase in standard deviations associated to political institution's estimates and at the end to important difficulties to identify the effects of our political institutions variables on financial development.

²¹ When estimating the effects of political regimes and democratic political institutions on financial development, we systematically obtained a variance proportion of our dependent variable explained by the random effects above 70%. Results are available upon request.

²² Moreover, the Mundlak's (1978) correlated random effects model, consisting in the introduction of country specific average of endogenous variables in our econometric specification, is not appropriate for our study either. Like the Least Square Dummy Variable estimator, because of the highly inertial nature of our political institutions variables, the introduction of this new set of time invariant variables risk to absorb much of the explanatory power of our political institutions variables and thus make them insignificant to explain macroeconomic volatility.

²³ Parliamentary, semi-presidential and presidential government forms, majoritarian, mixt and proportional electoral rules and federal and unitary state forms.

As a result, due to strong limitations imposed by our highly inertial political institutions variables, we think that the FEVD (Plümer and Troeger, 2007, 2011) represents the best (if not the only) solution for estimating the relationship between forms of democracies and financial development. This estimator is based on a three-stages procedure, dedicated to the estimation of time-invariant and rarely changing variables in panel data models with individual fixed effects. Moreover, Plümer and Troeger (2011), by answering to Greene (2011) and Breush et al. (2011), demonstrate that the FEVD procedure outperforms any other estimator in estimating models that suffer from the presence of time-varying variables correlated with unobserved individual effects and rarely changing variables, which corresponds to our situation.

The Fixed Effects Vector Decomposition (FEVD) estimator of Plümer and Troeger (2007, 2011):

In order to summarize the logic behind the FEVD estimator, we start with the following model:

$$Y_{it} = \alpha + \beta X_{it} + \gamma W_{it} + \mu_i + \varepsilon_{it} \quad (1)$$

Y_{it} , X_{it} and W_{it} respectively represent the dependent variable (i.e. financial development index), a highly inertial variable (i.e. a political institution variable) and a vector of control variables not characterized by high inertia. α is a constant term and μ_i represent individual fixed effects.

In a first step, model (1) excluding the highly inertial variable X_{it} is estimated by OLS with a within transformation in order to extract the individual fixed effects ($\mu_i = \bar{Y}_i - \gamma \bar{W}_i - \bar{\varepsilon}_i$):

$$(Y_{it} - \bar{Y}_i) = \gamma(W_{it} - \bar{W}_i) + (\varepsilon_{it} - \bar{\varepsilon}_i) \quad (2)$$

In a second step, the predicted fixed effects of step 1 are regressed on the observed inertial variable so as to obtain the unexplained part h_i of the individual fixed effects. Therefore, the following equation is estimated by OLS:

$$\mu_i = \beta X_{it} + h_i \quad (3)$$

In a third step, the predicted unexplained part of the fixed effects h_i obtained in step 2 are introduced in the initial model (1) which is again estimated by OLS :

$$Y_{it} = \alpha + \beta X_{it} + \gamma W_{it} + \delta h_i + \varepsilon_{it} \quad (4)$$