Deepraj Mukherjee* and Nabamita Dutta

Do Political Institutions and Culture Jointly Matter for Financial Development? A Cross-Country Panel Investigation

Abstract: This article investigates the role of political institutions and culture in creating an efficient financial infrastructure for a country. It further delves into this relationship and addresses the question: do both types of institutions mentioned above affect financial development of a country, jointly? Our findings support the established notion in the literature that institutions matter for financial development. We show both these types of institutions – political institutions and culture – jointly promote financial development. Further, our result stresses that these two types of institutions behave as complements – the presence of efficient political institutions augment the effectiveness of culture and, thus, financial development is enhanced. Our results are robust to various proxies of institutions and alternate estimation models.

Keywords: financial development, political institutions, culture, panel data

***Corresponding author: Deepraj Mukherjee**, Kent State University at Stark, North Canton, OH 44720, USA, E-mail: dmukherj@kent.edu
Nabamita Dutta, University of Wisconsin La Crosse, La Crosse, WI 54601, USA, E-mail: ndutta@uwlax.edu

1 Introduction

In recent years, there have been extensive cross-country studies on the economic–institution relationship (see Alonso 2011; Rodrik, Subramanian, and Trebbi 2004; Acemoglu, Johnson, and Robinson 2001, 2002; de Soto 2000; North 1990). Yet, there are important gaps in our understanding of the role of this relationship in explaining cross-country differences in growth and development. In this article, we focus on the joint role of political institutions and culture in promoting a strong financial set-up for a country. The article attempts to bridge interdisciplinary research gaps in investigating the present issue.

The literature provides many different concepts of institutions. For example, North (1990) defines institutions as "the rules of the game in a society or, more formally, are the humanly devised constraints that shape human interaction." Then, the pertinent question for this article is to question whether political institutions can be termed as "humanly devised constraints that shape human interaction?" Of course, political institutions are "constraints". In fact, political decisions are among the most constrained. In no other institutional framework, we would observe so many rules, laws, and provisions to bind the self-interest of decision-makers. The reason for this lies exactly in the characteristics of politics. The coercive power of the state gives political decision-makers the power to inflict gains or losses on the citizens. Therefore, political institutions have to be designed in order to constrain political power.

Given the complex nature of political institutions, we have to be cautious in the way we are defining them in our article. We follow a broad definition as mentioned in Wittman (1995): political institutions arise in order to mitigate potential "political market failures", such as principal–agent problems between voters and politicians or among political bodies. In our view, this is a broadly defined delineation of the political realm.

The importance of embedded culture, an example of informal institutions, gained momentum as one of the main determinants of economic development since the seminal work by North (1991). The working definition of culture identifies it with "those customary beliefs and values that ethnic, religious and social groups transmit fairly unchanged from generation to generation" (Guiso et al. 2006). Boettke, Coyne, and Leeson (2008) use the Greek term "metis"[1] to convey culture: "local knowledge resulting from practical experience". Since culture can be broadly defined, measuring national culture in a cross-country setting is an important step. There are three major cross-cultural research endeavors that can be a starting point to explain variations in cross-country macroeconomic indicators. First, there is the pioneering work of Greet Hofstead among IBM employees in 50 countries. Second, there is the Survey of Values, designed and orchestrated by the Israeli psychologist Shalom H. Schwartz. Finally, there is the World Values Survey (WVS), expanded from a European Values Survey (EVS) in the 1980s. We capture culture through the WVS and EVS database. This database aims at understanding values and cultural changes in societies all over the world in all aspects, ranging from religion to politics to

1 "Metis is characterized by local knowledge resulting from practical experience. It includes skills, culture, norms, and conventions, which are shaped by the experiences of the individual. This concept applies to both interactions between people (e.g., interpreting the gestures and actions of others) and the physical environment (e.g., learning to ride a bike)" (2008, 338).

economic and social life. The WVS[2] was administered in five waves between 1981 and 2008 to over 250,000 respondents across 80 countries (Zak and Knack 2001; Knack and Keefer 1997).

In this article, we explore the joint role of political institutions and different traits of culture in affecting a particular aspect of economic development, namely financial development. We hypothesize that better political institutions enhance the effect of cultural traits on financial development and vice versa. Our results support our hypothesis. Considering a panel of 121 countries over a period of almost three decades, we find that these two types of institutions do have a joint impact on financial development. Further, they act as complement to each other. In the presence of efficient levels of political institutions, culture enhances financial development. Additionally, our results show that the relative importance of political institutions is greater than that of the cultural traits considered in our article.

In the following section, we present a review of the relevant literature. Section 3 describes the data used in the article. Section 4 presents the empirical model and the benchmark results. In Section 5, we talk about some robustness tests, and Section 6 concludes the article.

2 Review and background theory

An extensive strand of literature has examined the institution–economics relationship through the lens of formal institutions and treated the informal institutions to be largely exogenous forces that simply change the benefits to using alternative formal structures. For instance, Williamson (1991) considers the presence of social networks as a "shift parameter" that favors non-hierarchical form of governance. The converse is also true. The study of informal institutions has also lacked in their analysis, often viewing them as mere functional substitutes for their formal counterparts.

In the present context, the interaction between the political institutions and culture can be of two types: complements and substitutes. Substitution arguments are based on two claims. A weak form of substitution is based on the

2 The survey is conducted by social science researchers from each country using an identical set of questions, translated in the local language. Stratified samples are drawn, ensuring proper regional representation. In rural and remote areas of some countries, a sample of towns is first drawn and then sampling within the town and households is done. In most countries, the survey is administered in-person.

arguments that culture, namely trust and social norms, can support cooperation without the costs and complexity that formal agreements bring to the table (Uzzi 1996; Gulati 1995; Ellickson 1991; Powell 1990). For instance, *reciprocity*, a form of social norm, functions as enforcement as it "leads naturally to property rights" (Hoffman, McCabe, and Smith 1998, 338). Therefore, weak substitution implies values, norms, and folkways embedded in an indigenous culture that reduces the benefits of formal institutions to some extent. A stronger form of the substitution theory (Macaulay 1963) argues that, "not only are contract and contract law not needed in many situations, their use may have, or may be thought to have, undesirable consequences. Detailed negotiated contracts can get in the way of creating good exchange relationships between business units." Along the same line, Sitkin and Roth (1993) assert that "legalistic remedies can erode the interpersonal foundations of a relationship they are intended to bolster because they replace reliance on an individual's 'good will' with objective, formal requirements."

An alternative argument is that political institutions and culture act as complements. The literature finds supportive empirical evidence (Poppo and Zenger 2002; Rindfleisch and Heide 1997). Lazzarini, Miller, and Zenger (2004) provide support for the complementary relationship between these two institutional mechanisms. To elaborate the concept of complementarity further, suppose a newly formed state decides to adopt better anti-corruption laws. The content of the specific laws may matter very little, if inherent cultural values and norms already form informal checks and balances on public officials. In this scenario, to ensure that appropriate formal legal structure has been put in order, understanding the cultural fabric of that country, particularly people's perception towards what count as malpractice is crucial. Both might reinforce the check on corruption, with the informal norms making the formal law enactment better. Yet again, the formal legal binding implemented by the policymakers may be even a better check than the cultural norms, since the latter might have evolved only as a suboptimal solution in the absence of binding legal institutions. Studies in the financial market reflect the complementarity between formal finance provided by the banking sector and informal finance. Informal sources like the moneylenders and rural traders provide the necessary funding that facilitates bank access by the farmers (Wittlinger and Tuesta 2006; Campion 2006; Glover and Kusterer 1990). Recent studies like Dearmon and Grier (forthcoming) and Bjørnskov (2012) also echo the concept of complementarity. These studies show that social trust, a form of culture, plays a pivotal role in promoting economic growth and development.

Finally, studies like Fehr and Gachter (2000) and Lazzarini, Miller, and Zenger (2004) provide mixed evidence. They can be competing against each

Table 1: 2 × 2 Matrix presenting the institutional relationship.

Functional relationship	Effective	Ineffective
Competition	Strong substitution	Weak substitution
Cooperation	Complementary	Accommodating

other (degree of effectiveness of substitution is determined by the degree of competition between these two institutions), or they can be cooperative (degree of complementarity depends on the nature of cooperation between the two). In the interest of the readers, we present a 2 × 2 matrix that explores the nature of the functional relationship between the political institutions and culture that prevail in the existing literature (Table 1).

Following this trend of literature, our article investigates the substitution and complementary effects between political institutions, a critical subset of formal institutions, and culture, an important subset of informal institutions. As can be imagined, the economic–institution relationship involving such interactive impact can form a voluminous literature, and it will be an impossible exercise to explore all the dynamics in a single article. In this article, we focus on the impact of these two types of institutions on financial development.

Next, we want to highlight the importance of a strong financial set-up in a country. The nature of financial intermediaries across the globe is still heterogeneous. The period 1990–1999 saw a rapid increase in total capitalization of stock markets, particularly in countries like Hong Kong or Luxembourg where total capitalization exceeded 100% of gross domestic product (GDP). Yet many developing countries in the same period still did not provide firms the possibility of gaining access to equity finance by selling shares. Even with the OECD countries, heterogeneity in financial development among the member countries is evident. The last decade of the twentieth century saw credit markets from member countries, such as those of Japan or Switzerland, granting about ten times more funds to their private sector than the least financially developed member countries like Hungary, Poland, or Czech Republic. What can possibly explain such heterogeneity?

Previous studies have stressed the need for good political institutions for financial development of a nation (Huang 2010; Clague et al. 1996; Olson 1993). Recent studies have shown that while political institutions are necessary, cultural traits captured by aspects like social trust are also important for financial development (see, for instance, Dutta and Mukherjee 2011). We examine the following questions in the article:

(i) Do political institutions and culture affect financial development of country jointly?
(ii) Do they act as complements or as substitutes?

3 Data

The data for this article are taken from several sources. The dependent variables are different proxies of financial development. The data on financial development are taken from the Beck, Demirguc-Kunt, and Levine (2000) database. Among the various measures of financial development listed in the database, we use the ratio of private credit by deposit money bank to GDP as our benchmark measure. This is one of the most widely used measures of financial development (Beck, Levine, and Loayza 2000; Beck, Levine, and Loayza 1999; Levine and Zervos 1998). This measure captures one of the main functions of financial intermediaries, namely, channelizing savings to investors. It only considers credit issued to the private sector and not to governments and public enterprises. As part of robustness analysis, we have considered other measures of financial development – private credit by deposit money banks and other financial institutions to GDP and deposit money bank assets to GDP. The first measure is almost similar to our benchmark measure – it includes claims by both deposit money banks and other financial institutions. The second measure is indicative of the size of financial intermediaries of a country – the assets "include claims on the whole nonfinancial real sector, including government, public enterprises and the private sector" (Beck, Demirguc-Kunt, and Levine 2000).

Our independent variables of interest are proxies of political institutions and culture. Culture is difficult to define in concrete terms (Tabellini 2009). Literature has defined culture in many different ways. It can be defined either in terms of the Nash Equilibria sustained through social norms and individual beliefs (Greif 1994; Myerson 1991; Schotter 1981) or as something that influences individual behavior through values and preferences (see Akerlof and Kranton (2000), Rabin (1993)). As mentioned in Section 1, our measurement of culture is based on several indicators from the WVS and the EVS. These surveys are mainly opinion polls on various topics that are subjective measures of cross-country values and beliefs. We follow Tabellini (2009) and use an aggregate index of culture based on the first principal component of four important traits namely TRUST, RESPECT, CONTROL, and OBEDIENCE.

Trust is considered to be an important component of social capital. Studies positively relate trust with economic growth and development. Economic

welfare thrives when in a community there is a high level of trust or when there is a high level of trustworthiness (Degli Antoni 2009). Keneth Arrow stresses, "Virtually every commercial transaction has within itself an element of trust, certainly any transaction conducted over a period of time. It can be plausibly argued that much of the economic backwardness in the world can be explained by the lack of mutual confidence."

To measure TRUST, the question asked in the WVS survey is "Generally speaking, would you say that most people can be trusted or that you can't be too careful in dealing with people?" The percentage of respondents who answer that "Most people can be trusted" gives the level of trust in each country. The variable CONTROL is defined by the average response (multiplied by 10) of the following question: "Some people feel they have completely free choice and control over their lives, while other people feel that what we do has no real effect on what happens to them. Please use this scale (from 1 to 10) where 1 means 'none at all' and 10 means 'a great deal' to indicate how much freedom of choice and control in life you have over the way your life turns out". The third trait, RESPECT, is based on the distinction between generalized[3] and limited morality. It captures the value associated with respecting other people. The variable is constructed by the percentage of people for various countries that has responded that the quality "tolerance and respect for other people" as being important. The specific question asked in the survey is "Here is a list of qualities that children can be encouraged to learn at home. Which, if any, do you consider to be especially important? Please choose up to five". The final trait "OBEDIENCE" is defined as the percentage of respondents who believe that that obedience is an important quality for children.

The existing literature emphasizes that greater levels of trust are associated with a higher growth and development (Zak and Knack 2001; Knack and Keefer 1997; La Porta et al. 1997). Similarly, "Respect", an indicator of generalized morality, is explicitly based on a question seeking to elicit individual values. As "respect" implies implicit trust in the system, it adds on to trust and promotes financial development. The other trait, "Control", should also impact the level of financial intermediaries of a country. As individuals perceive that they have more control of their life, they will strive to gain more control of their financial situation as well and will be willing to channelize savings and investment accordingly. Finally, "Obedience" has been identified as a negative trait.

3 Generalized morality include a set of rules that govern interactions across social groups that in turn lead to less opportunistic behavior outside the primary social group of an individual. The idea of limited morality implies the absence of general rules and the presence of "in-group" rules (Platteau 2000).

Increased "Obedience" implies less risk-taking behavior (Harper 2003), which, in turn implies investment in risk-averse transactions. Consequently, greater obedience may have a negative and detrimental impact on financial development.

We consider several proxies of political institutions. One of the main measures, polity2, comes from the Polity IV database. This variable is constructed by subtracting the Autocracy[4] score from the Democracy score ranging over − 10 (perfect autocracy) to +10 (perfect democracy). Both the Autocracy (AUTOC) and the Democracy (DEMOC) variables range over a scale of 0–10 and incorporate factors such as the extent to which citizens are allowed to express preferences about the political system, the extent of constraints on the powers of the chief executive, and the extent to which populace enjoy civil liberties. This is a very popular indicator of the quality of formal institution of a country and has been used extensively in the literature (Dromel, Kolakez, and Lehmann 2009; Honohan 2004). Further, we also use the individual components of polity − constraints on chief executive and competitiveness of elections, as alternate proxies. One of the other measures of political institutions considered in our analysis is TENSYS from Database of Political Institutions (DPI) constructed by Beck et al. (2001). This measure captures regime stability that measures how long the country has been either autocratic[5] or democratic. While countries receiving a score of 6 or higher are considered democracies, those that receive a score of less than 6 are considered autocracies. Finally, we also consider the extent of political rights and civil liberties of a nation, as alternate proxies of political institutions. These measures are taken from Freedom House (2010) database.

The Literature has identified many time invariant factors as important determinants of financial development. Legal origin, such as common law or civil law, has been identified as key to investor protection and, thus, to financial development (see Demirguc-Kunt and Levine 2001; La Porta et al. 1998, 1997). Further, according to Acemoglu, Johnson, and Robinson (2001), the current institutional set-up of ex-colonies and, thus, their economic performance, has been very much shaped by the type of early institutions designed by the colonizers. Also, as suggested by Stulz and Williamson (2003), "monotheistic religions" like Catholicism, Islam, and Protestantism affect the efficiency of capital markets. For our benchmark model, we consider fixed effect specifications that take into account time invariant country characteristics.

4 Scores like − 66, − 77, and − 88 have been converted to conventional polity scores.

5 An autocratic country receives a score equal to the number of years its current executive has been in power. A democracy receives an additional point on its score for every additional year it remains democratic.

We control for other time variant controls that have been identified as important determinants in the literature. A significant number of studies have tested the association between financial development and growth[6] (see, for example, Honohan (2004), Demetriades and Andrianova (2004), Levine, Loayza, and Beck (2000), Rajan and Zingales (1998), Demirgüç-Kunt and Maksimovic (1998), and King and Levine (1993) to mention a few). We consider growth as a potential determinant of financial development. Though our financial development proxies are expressed as a percentage of GDP, we consider GDP as a separate proxy. Inflation is yet another determinant of FD considered in the article. These control variables have been taken from World Development Indicators (WDI), 2010, online Database. Literature has established that inflation has a significant impact on financial development. (See Andrianaivo and Yartey (2009), Zoli (2007), Dehesa, Druck, and Plekhanov (2007), Boyd, Levine, and Smith (2001), Haslag and Koo (1999), Azariadis and Sha hmith (1996), Choi, Smith, and Boyd (1996), Moore (1986), to mention a few.)

The figures plot some of our data characteristics. Figure 1 provides the Histogram and Kernel density plots of the financial development proxies. Both the plots are positively skewed, indicating that a significant number of countries have financial development below the average level (mean of our sample approximately around 0.5). In Figure 2, we present a series of charts comparing the relative quality of political institutions and culture for the different regional[7] classifications. In Figure 2A, as we can see, the mean for the cultural index is the highest for EAC group of countries and is almost comparable to the upper middle income and developed countries (group of countries under the group "no classification"). The quality of culture, as represented by the score, is relatively low for SSA countries. Comparing Polity and TENSYS scores, we can see that for SSA, both the scores are quite low (see Figure 2B and 2C). Though countries in the EAP group have relatively good culture scores, the quality of political institutions is quite low

6 The relationship between financial development and growth in terms of causation is inconclusive. While many studies assert that the causation runs from financial development to growth, others have established the opposite. Thus, growth as a control has the potential of being endogenous. Though the fixed effect specifications do not take this into control, the dynamic panel estimators that we consider as part of robustness analysis take this into consideration. Further, all our control variables are in lagged form compared to financial development.

7 We follow the regional classification of the World Bank. The developing regions considered are Sub-Saharan Africa (SSA), Latin America and the Caribbean (LAC), Middle East and North Africa (MENA), East Asia and Pacific (EAP), Europe and Central Asia (EAC), and South Asia (SA). Countries which do not fall in any group are the developed nations.

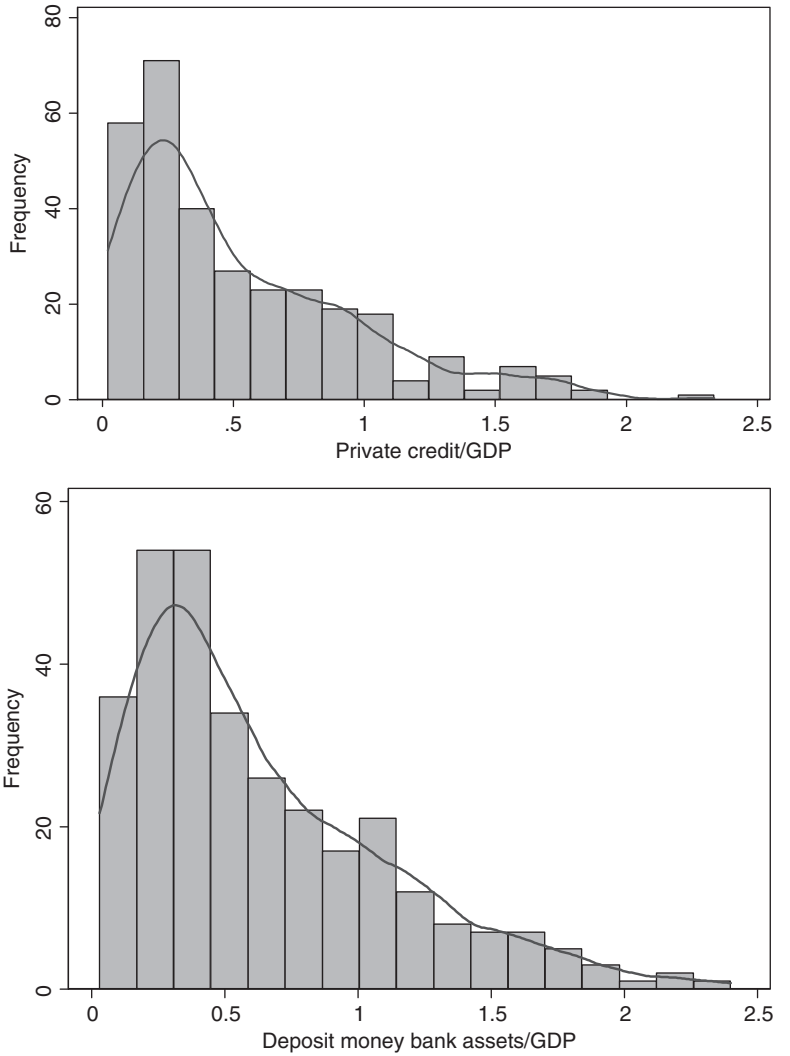

Figure 1: Histogram and Kernel density plots of the financial development measures.

for this group. Finally, in Figure 2D, we present the distribution of countries in our sample. About 70% of countries in the sample have some regional classification and thus fall under the developing category. So, we can conclude that only 30% of countries in the sample are in the upper middle income or developed group. Appendix 3 provides the list of countries used in the article. In Appendix 4, the data along with their sources are listed.

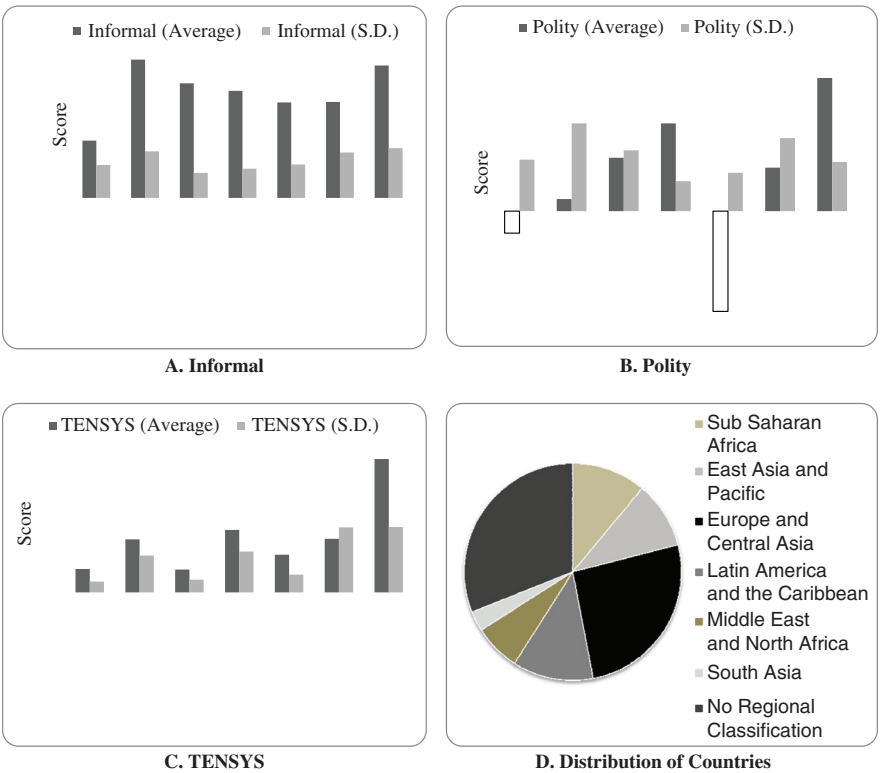

Figure 2: Region-wise figures for informal and formal institutions. (A) informal; (B) polity; (C) TENSYS, and (D) distribution of countries.

4 Empirical analysis

4.1 The empirical model

In this article, we test the interactive impact of political institutions and culture on financial development of a country. We start with fixed effect specifications that take into account the unobservable country characteristics, factors that affect financial development of a country strongly. We consider dynamic panel estimators later. Our benchmark specification is as follows:

$$\mathrm{FD}_{it} = \alpha_1 + \alpha_2 \mathrm{CUL}_{it} + \alpha_3 \mathrm{POL}_{it} + \alpha_4 (\mathrm{CUL} * \mathrm{POL})_{it} + \alpha_5 X_{it} + \alpha_6 \varphi_i + \alpha_7 \rho_t + \varepsilon_{it} \quad [1]$$

where the dependent variable, FD_i, denotes financial development in country i at time t. The independent variable CUL_{it} represents the score for culture in country i at time t. POL_{it} represents political institutions in country i at time t. X_{it} denotes the matrix for control variables for country i at time t, which are time variant or, in other words, are variables that vary over time. φ_i is the vector for fixed country characteristics such as legal origin of a country, colonial origin of a country, and religious affiliations of a country. Since we consider fixed effect specifications, such time invariant controls or country fixed effects are accounted for in the model. We do not need to control for them separately in the specifications. Finally, ε_{it} is the random error term. One way fixed effect model assumes that the errors are not contemporaneously correlated across panels. While for Table 2 we consider one way fixed effect model as a baseline model, for our benchmark specification in Table 3, we consider a two-way fixed effect model where both country and time fixed effects are included. Our variable of interest is $(CUL * POL)_{it}$, the interaction term between cultural traits and political institution of country i for time period t. We are interested in the sign of α_4. The implication of our findings will change based on the signs of α_2, α_3, and α_4. For example,

(i) If $\alpha_2 > 0$, $\alpha_3 > 0$, and $\alpha_4 > 0$, then it would imply that both culture and political institutions help enhance financial development and their interaction helps even further. It is possible that for the high-income countries, this result holds true. Such groups of countries usually have good levels of both political institutions and culture. For our sample, the group of high income countries has very efficient levels of both cultural traits and political institutions (culture mean = 4.4 and political (polity2) mean = 8.9), and the countries also have a very high level of financial development (FD (proxied by private credit) = 0.89), much higher than the sample average. Thus, here political institutions and culture would behave as complements.

(ii) If $\alpha_2 > 0$, $\alpha_3 > 0$, and $\alpha_4 < 0$, then it would imply that while both culture and political institutions help better financial development, their interactive effect does not help. This would support the argument in the literature who claims that informal and formal institutions behave as substitutes (see Section 1).

(iii) If $\alpha_2 < 0$, $\alpha_3 < 0$, and $\alpha_4 < 0$, then it would imply that institutions in general are bad for economic development. This would again not be a plausible result, as the literature unanimously agrees that institutions do matter for financial development.

(iv) If $\alpha_2 < 0$, $\alpha_3 > 0$, and $\alpha_4 > 0$, then it would imply that while culture has a negative impact, political institutions have a positive impact on financial development, and the interactive impact of the two institutions helps as well. Overall, this result would imply that while political institutions help always, the impact of culture depends on the state of the political institutions. For our

sample of countries (the sample mostly including middle-income and low-income countries), this is a plausible result. Literature has stressed the importance of efficient formal or political institutions and how they enhance financial development (Huang 2010, Clague et al. 1996, Olson 1993). This would also support the complementary relationship between the two types of institutions.

(v) If $\alpha_2 > 0$, $\alpha_3 < 0$, and $\alpha_4 > 0$, it would be very similar to (iii), but with the signs of culture and political institutions reversed. Though this is possible too statistically, it is difficult to imagine such a result. Though we claim that both types of institutions have the potential to better financial development, it is very difficult to imagine that in the presence of inefficient formal set-up, culture would enhance financial development. If a country lacks efficient legal, political, and economic institution to support better financial development, then even higher TRUST and CONTROL (components of culture) would not ensure greater channelization of savings and investment, as the populace would not necessarily trust the financial sectors. Here, again, formal and informal institutions would behave as complements.

(vi) Finally, we can have $\alpha_2 < 0$, $\alpha_3 < 0$, and $\alpha_4 > 0$. This implies that while inefficient levels of culture and political institutions do not help financial development, as their state improves, both institutions work towards creating a better financial infrastructure. This is a very plausible result and would support the complement relationship again.

To avoid endogeneity concern to some extent, we consider all our independent variables in lagged form. Further, to control for endogeneity, we have considered dynamic panel estimators (system GMM estimators) as part of robustness analysis. The construction of our panel is based on 4 and 8 year averages. Based on the waves from the WVS and EVS surveys, the periods[8] considered for measures of culture are 1985–1984, 1989–1993, 1994–1999, and 2000–2004. Accordingly, the periods considered for formal institutions are 1981–1984, 1985–1993, 1994–1999, and 2000–2004. The controls are considered for the periods 1981–1988, 1989–1993, 1994–1999, and 2000–2004. The dependent variable, measures of financial development, is considered for periods such that all the explanatory variables are reflected in lagged periods. These periods are 1985–1993, 1994–1999, 2000–2004, and 2005–2008. Appendix 1 provides the summary statistics of our variables. Appendix 2 provides the correlation matrix.

8 Kennedy (2003) points out that using 5-year or 10-year period averages for panel data is a common technique in order to avoid business cycle fluctuations and measurement error. This method has been used in papers like Kasuga (2004), Isaksson (2001), and others.

Table 2: Fixed effect specifications: the interactive role of political institutions and culture on financial development.

Independent variables	Dependent variable: private domestic credit over GDP				Deposit money bank assets over GDP			
	(1) TENSYS	(2) Polity2	(3) Constraints on executive	(4) XOPEN	(1) TENSYS	(2) Polity2	(3) Constraints on executive	(4) XOPEN
Informal	−0.0367	−0.00942	−0.142**	−0.160*	−0.0264	−0.000693	−0.111	−0.142**
	(0.0248)	(0.0423)	(0.0656)	(0.0826)	(0.0287)	(0.0391)	(0.0771)	(0.0597)
Formal	0.00695	−0.0320*	−0.0866*	−0.252**	0.00890	−0.0242	−0.0676	−0.225**
	(0.00472)	(0.0185)	(0.0490)	(0.120)	(0.00802)	(0.0194)	(0.0630)	(0.0922)
Interaction	0.00263***	0.0118**	0.0352***	0.0884***	0.00209*	0.00959*	0.0290*	0.0789***
	(0.000872)	(0.00499)	(0.0134)	(0.0334)	(0.00113)	(0.00504)	(0.0167)	(0.0246)
Constant	0.133	0.419**	0.729***	0.859***	0.240	0.527***	0.774***	0.951***
	(0.153)	(0.171)	(0.206)	(0.281)	(0.247)	(0.143)	(0.246)	(0.238)
					−0.0264	−0.000693	−0.111	−0.142**
Observations	153	151	151	151	153	151	151	151
R-squared	0.431	0.149	0.134	0.159	0.401	0.125	0.111	0.133
Number of id	69	67	67	67	69	67	67	67
POL^{*}_{it}	13.5	1	3.67	1.79	13.2	0.1	3.79	1.80

Notes: Boot-strapped standard errors in parentheses; ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$.

Table 3: Fixed effect specifications: the interactive role of political institutions and culture on financial development.

Independent variables	Dependent variable: private domestic credit over GDP			
	(1) TENSYS	(2) Polity2	(3) Constraints on executive	(4) XOPEN
Informal	−0.0457	0.0132	−0.117	−0.0699
	(0.0388)	(0.0536)	(0.0916)	(0.0945)
Formal	0.00229	−0.0412	−0.112*	−0.184
	(0.00945)	(0.0295)	(0.0654)	(0.119)
Interaction	0.00281**	0.0121*	0.0354**	0.0648**
	(0.00119)	(0.00661)	(0.0176)	(0.0323)
GDP (constant US, in 1000 billion $)	−0.000001	−0.000001	−0.000003	−0.00001
	(0.000002)	(0.000001)	(0.000002)	(0.000001)
GDP growth	0.0110	0.0157*	0.0157**	0.0155
	(0.00769)	(0.00857)	(0.00768)	(0.0103)
Inflation	0.000406	0.000170	0.000143	0.000122
	(0.000339)	(0.000240)	(0.000131)	(0.000335)
Period Dummies	Yes	Yes	Yes	Yes
Constant	0.244	0.390*	0.787**	0.583*
	(0.203)	(0.210)	(0.357)	(0.341)
Observations	152	150	150	150
R-squared	0.542	0.304	0.295	0.303
Number of countries	68	66	66	66
FORM^{*}_{it}	15	1.1	3.14	1.08

Notes: Boot-strapped standard errors in parentheses; ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$.

We should mention here that we have an unbalanced panel across time period because of missing values. Overall, we have 89 countries in our sample and approximately 67–69 countries are included in the specifications. Based on 4- and 8-year averages over the sample period, we should have four observations for each country. Yet, due to missing values, we have ~2.2 observations for each country. For the sub-sample of developing countries, we have ~2.05 observations for each country. We agree that this is a limitation of the study that our results are based on less than desired number of observations. Yet, this problem is faced by many studies considering a macro-development type empirical analysis.

4.2 Baseline results

Table 2 presents the results from the fixed effect specifications. As part of the baseline specifications, our intention here is to measure only the joint impact of

formal institutions and culture on financial development. Thus, we present the results for the different proxies of political institutions for two alternate measures of financial development in Table 2. Columns (1)–(4) consider private credit to deposit money banks over GDP as the dependent variable. This is one of the most popular measures of financial development used in the literature. As mentioned before, we consider several proxies of formal institutions. We start with TENSYS[9] in Column (1) that measures the durability of a political system. The other proxies considered are polity, constraints on the chief executive,[10] and openness of the electoral process in Columns (2)–(4), respectively. All these proxies measure the characteristics of political institutions in place. Columns (5)–(8) consider the alternate measure of financial development – deposit money bank asset to GDP. As can be seen from the table, the interaction term is positive and significant for all the specifications, while the coefficients of political institutions and culture are mostly negative. Thus, we have a situation similar to (v).

To elaborate, further, the impact of culture on financial development, we consider the partial derivative of eq. [1] with respect to culture.

$$\frac{\delta \mathrm{FD}_{it}}{\delta \mathrm{CUL}_{it}} = \alpha_2 + \alpha_4 \mathrm{POL}_{it} \qquad [2]$$

Thus, depending on the value of POL, α_2, and α_4, CUL will have a positive or negative impact on FD. We can set the partial derivative[11] $\left(\frac{\delta \mathrm{FD}_{it}}{\delta \mathrm{CUL}_{it}} = 0\right)$ zero to determine the threshold value of formal institutions, POL^*_{it}, at which CUL has no impact on the dependent variable. At the threshold value, $\mathrm{POL}^*_{it} = -\frac{\alpha_2}{\alpha_4}$. We have provided the various thresholds of political institution, POL^*_{it}, in the table. For example, for TENSYS (see Columns (1) and (5)), POL^*_{it} is approximately equal to 13. Thus, for countries that have had a durable democratic regime for a while,

9 The data section provides detailed description of the variables.

10 Constraints on the Chief Executive and openness of the electoral process are factors that have been used to construct the polity score.

11 Though, not the focus of our analysis, we can also consider the impact of political institutions on financial development. The partial derivative will be given as $\frac{\delta \mathrm{FD}_{it}}{\delta \mathrm{POL}_{it}} = \alpha_3 + \alpha_4 \mathrm{CUL}_{it}$ and $\mathrm{CUL}^*_{it} = -\frac{\alpha_3}{\alpha_4}$. For example, for estimates in Column (1) of Table (1), CUL^*_{it} is not defined, as it is a value less than 0. But for the estimates in Column (2), $\mathrm{CUL}^*_{it} = 2.5$, which is a very low threshold. For our sample of countries, only 15% of the data points have culture score below this particular threshold. Thus, this implies that though both types of institutions are necessary for an efficient financial system, political institutions have a greater need. In the presence of decent levels of political institution, the marginal impact of political on FD will be positive, even though a country may have lower than average levels of culture score. But, the opposite is not true, a result that is stressed throughout the article.

the impact of culture on FD is positive. Otherwise, it is negative. Countries with an autocratic regime will have the dominant power of special interest and rent seeking groups and, thus, the development of a competitive financial sector will be blocked (Rajan and Zingales 2003). Under such circumstances, cultural traits such as trust will not be able to help as people will have less faith in the banking sector or the working of the financial system in general. But as a country gains the democratic status and individuals experience the durability of the system, culture enhances the financial infrastructure.

In the case of polity2 (see Columns (2) and (6)), $POL^{*}_{it} \approx 1$. Though the threshold value is relatively low compared to TENSYS, the conclusion is the same. Durability of a system and polity are different things, since a country might remain in a marginally democratic status for a long time. For example, Malaysia is a country that has remained in a "semi-democratic" or "quasi-democratic" status for a long time. Accordingly, though it has high TENSYS scores, the average Polity scores are lower. And, the country has more than sample average levels of financial development. The implication of these results is, as a country moves towards democratic institutions, the effect of *culture* can become significantly important in shaping the financial structure of that country. The threshold values in the case of the other two measures, Constraints on Executive and XOPEN, also provide similar conclusions (see Columns (3), (4), (7), and (8)). Thus, better constraints on the powers of the chief executive and competitive elections (characteristics of a democratic set-up) can reap the beneficial effects of culture on the financial development of a country. These characteristics of a political system help to achieve the much-needed trust of the populace in the financial system of a country and, thus, higher levels of culture (like Trust and Control) enhances the level of financial development.

4.3 Benchmark results

Table 3 reports our benchmark specification, where we consider the two-way fixed effect model with time variant controls. Thus, both country and time fixed effects are included. The controls added are GDP in constant 2,000 dollars, GDP growth and inflation (in terms of CPI). As mentioned before, all these controls are considered in lagged forms. We consider the private credit to deposit money banks measure as the dependent variable. In the robustness section, the results with controls are reported for the alternate measures.

As can be seen from the Table 3, the threshold values of POL^{*}_{it} for the different measures of political institutions remain almost same compared to

Table 2. Among the controls, GDP growth has a positive and significant impact for the specifications in Columns (2) and (3). Period dummies are mostly significant. For all our specifications, our results show that efficient levels of political institutions can help reap the benefits of the traits of culture better, in terms of its impact on financial development. Thus, as long as we do not have an environment where there are almost no controls on the powers of the chief executive, absence of competitive elections, cultural traits will enhance the level of financial development of a country.

We consider the examples of two countries from our data that would help explain the economic significance of our results. We consider Nigeria, with an average culture score of 1.80 and an average TENSYS score of 3.75. Based on the estimates of Column (1) in Table 3, one sample standard deviation increase in culture score will actually lower financial development by $\left[\left\{\frac{\delta \mathrm{FD}_{it}}{\delta \mathrm{CUL}_{it}} = -0.05 + 0.003 * 3.75\right\} * 1.80\right] = 0.09$ percentage points. Thus, due to poor formal institutions, an improvement in cultural traits fails to enhance financial development. If Nigeria's TENSYS score becomes comparable to that of Brazil (a country with almost similar average culture score of 2.34), then 1 SD rise in culture score will actually raise financial development by $\left[\left\{\frac{\delta \mathrm{FD}_{it}}{\delta \mathrm{CUL}_{it}} = -0.05 + 0.003 * 19.5\right\} * 1.80\right] = 0.02$ percentage points. For similar levels of cultural traits, Brazil could benefit much more from a standard deviation rise in its cultural score, due to its better political institution set-up. Considering the estimates from Column (4), at the mean level of XOPEN = 3.6 (mean of the sample), a standard deviation rise in culture score will raise financial development as much as 2.6 percentage points.

5 Robustness

We consider a series of robustness tests to establish the strength of our findings. The robustness measures are considered in terms of checking the results with alternate measures of political institutions, inclusion of more controls, alternate measures of financial development, alternate model specifications, and testing the results with sub-sample of countries. We start with the inclusion of additional controls. Trade as a percentage of GDP has been shown to be an important determinant of financial development in previous studies (Huang and Temple 2005; Rajan and Zingales 2003). The results remain robust to the inclusion of this additional control. We check the results for the different proxies of political institutions, and the conclusion remains the same. The results also remain unaltered when we consider deposit money bank asset measure, to the inclusion of controls. We then check our results with alternate measures of political institutions: political rights and civil liberties.

Studies have stressed the importance of efficient political rights and civil liberties (see, for instance, Isham, Kaufmann, and Pritchett 1997; Dasgupta 1993). On the other hand, while the literature has unanimously agreed about the importance of democracy, they have debated about its positive impact on growth and development of a country (see, Grier and Tullock 1989; Barro 1994; Tavares and Wacziarg 1996; Clague et al. 1997, to mention a few).

Table 4 presents the results for political rights and civil liberties. Columns (1) and (2) present the result with the benchmark controls for political rights and civil liberties, respectively. In Columns (3) and (4), we control for trade openness as well. Similar to our findings in the previous tables, the interaction term is positive and significant for all the alternate specifications. As we can see from the table, the sign of α_4 is positive, and the coefficient is significant for all the specifications. The threshold value of political institutions varies between 3 and

Table 4: Fixed effect specifications: the interactive role of political institutions and culture on financial development.

Dependent variable: private domestic credit over GDP				
Independent variables	**(1) Political rights**	**(2) Civil liberties**	**(3) Political rights**	**(4) Civil liberties**
Informal	−0.3157*	−0.2407*	−0.2660	−0.2368*
	(0.1827)	(0.1294)	(0.1834)	(0.1291)
Formal	−0.2292**	−0.2365***	−0.2182**	−0.2232**
	(0.1115)	(0.0912)	(0.1106)	(0.0916)
Interaction	0.0732**	0.0571**	0.0634**	0.0552**
	(0.0326)	(0.0257)	(0.0328)	(0.0257)
GDP (constant US, in 1000 billion $)	−0.000001	−0.000002	−0.000001	−0.000001*
	(0.000002)	(0.000002)	(0.000001)	(0.000001)
GDP growth	0.0171	0.0075	0.0149	0.0076
	(0.0109)	(0.0096)	(0.0108)	(0.0095)
Inflation	−0.00009	0.00004	−0.0001	0.0004
	(0.00032)	(0.0003)	(0.0003)	(0.0003)
Trade Openness	–	–	0.0046	−0.0036
			(0.0028)	(0.0029)
Period Dummies	Yes	Yes	Yes	Yes
Constant	1.453	1.3869	1.0656	1.5853
	(0.629)	(0.4557)	(0.6662)	(0.4837)
Observations	157	157	157	157
R-squared	0.29	0.48	0.31	0.31
Number of countries	69	69	69	69
POL_{it}^{*}	3.2	4.0	3.0	4.0

Notes: Boot-strapped standard errors in parentheses;***$p < 0.01$, **$p < 0.05$, *$p < 0.1$.

4 for all the specifications. Thus, efficient levels of political rights and civil liberties, which are critical components of a political system, enhance the impact of cultural traits on financial development. In order to explain the economic significance of our results, we again consider the case of two countries with almost similar culture score. The countries considered are Mexico with average culture score of 3.91 and Spain with culture score of 4.4. A standard deviation rise in the culture score for Mexico will lower financial development by 0.1[12] percentage point. But for Spain, a similar rise in culture score will raise financial development by 0.21 points. The difference stems from that fact that while Mexico has below average quality of political rights (PR = 3.9 compared to the sample average of 4.1), Spain has efficient levels of political rights (PR = 6).

We also check our results for the alternate proxy of financial development – domestic credit to deposit money banks over GDP, with the inclusion of controls. The conclusion remains unaffected. While the coefficient of the interaction term, POL^{*}_{it}, is strongly significant for the specification with political rights, civil liberties and TENSYS, it is not significant for the other proxies of political institutions. The threshold values remain unchanged.

While the panel structure of our specification takes into account any possible endogeneity issues, we also consider dynamic panel estimators to ensure that our estimates do not suffer from any possible bias. As mentioned by Roodman (2009), the difference GMM and System GMM dynamic panel estimators are particularly suited for small "T" (fewer time periods) and large "N" (many individuals or countries, in our case) panels, a linear functional relationship – our empirical model is linear, dependent variable that is dynamic, depending on its own past realizations – the level of financial development in period is dependent on past realizations, independent variables that are not strictly exogenous and are correlated with present as well as past realizations of the error – our independent variables, proxies of political institutions and culture, as well as GDP, growth, and inflation are correlated with the error term models with fixed country effects and finally presence of heteroskedasticity and autocorrelation within countries. We run System GMM[13] estimations for the

12 We consider estimates from Column (1) in Table 3.

13 For the System GMM estimators, the model is transformed into first differences and sequential moment conditions are used. Further, lagged levels of the variables are used as instruments for the endogenous differences and the parameters (Arellano and Bond 1991). As suggested by Blundell and Bond (1998), the first differenced GMM estimator can have very poor finite sample properties in terms of bias and precision when the series are persistent, as the instruments are then weak predictors of the endogenous changes (Bun and Windmeijer 2010). Blundell and Bond (1998) suggested the system GMM estimator which uses extra moment conditions that "rely on certain stationary conditions of the initial observation".

Table 5: System GMM specifications: the interactive role of political institutions and culture on financial development.

Dependent variable: private domestic credit over GDP				
Independent variables	**(1) TENSYS**	**(2) Polity2**	**(3) Constraints on executive**	**(4) XOPEN**
Lagged FD	0.831***	1.160***	1.217***	1.319***
	(0.137)	(0.0763)	(0.0830)	(0.0815)
Informal	−0.0301*	−0.0483	−0.148*	−0.0657**
	(0.0172)	(0.0422)	(0.0855)	(0.0328)
Formal	−0.00948	−0.0172	−0.0535	−0.0482**
	(0.00949)	(0.0170)	(0.0515)	(0.0228)
Interaction	0.00250**	0.00685*	0.0225*	0.0128
	(0.00106)	(0.00403)	(0.0128)	(0.00950)
Year dummies	Yes	Yes	Yes	Yes
Constant	0.264	0.193	0.307	0.145
	(0.168)	(0.162)	(0.338)	(0.0988)
Observations	128	128	128	128
Number of countries	69	67	67	67
Sargan test	$p = 0.33$	$p = 0.41$	$p = 0.45$	$p = 0.23$

Notes: Standard errors in parentheses;***$p < 0.01$, **$p < 0.05$, *$p < 0.1$.

private domestic measure of financial development. We consider the proxies of political institutions specified in Table 2. The results are presented in Table 5. The interaction term is positive and significant for all the alternate specifications.

The pie chart (Figure 2D) shows the distribution of countries in our sample. Almost 70% of the countries are categorized in one of the six regional[14] classifications (SSA, EAP, ECA, MENA, LAC, and SA), implying that they have been categorized by the World Bank as countries in the developing group. So, while there is less chance that our results are driven by the high-income sample, we still run our results separately for the developing sample (countries which are classified under the six regional classifications). In terms of development and policy implication, the result is more important for developing countries. Table 6 presents the results from fixed effect and System GMM specifications. Additionally, we control for Trade Openness, which has been shown to be an important determinant of FD (Huang 2010). We consider polity, political rights and civil liberties as proxies of political institution and private domestic credit over GDP is the considered measure for financial development. The results

14 We follow World Bank's Regional Classification

Table 6: Sample of developing countries: fixed effect and system GMM specifications.

Independent variables	Fixed effect			System GMM		
	(1) Polity	(2) PR	(3) CL	(4) Polity	(5) PR	(6) CL
Lagged FD	–	–	–	1.179***	1.221***	1.141***
				(0.0830)	(0.0845)	(0.109)
Informal	−0.0370	−0.232	−0.277**	−0.0605	−0.173***	−0.109
	(0.0561)	(0.142)	(0.130)	(0.0449)	(0.0662)	(0.0838)
Formal	0.00338	−0.0881	−0.137	−0.0279	−0.111***	−0.0750
	(0.0241)	(0.0924)	(0.114)	(0.0194)	(0.0395)	(0.0623)
Informal*Formal	0.00234	0.0417	0.0600*	0.0107**	0.0436***	0.0367*
	(0.00544)	(0.0289)	(0.0315)	(0.00494)	(0.0116)	(0.0197)
GDP (Constant	−0.0001	−0.0003	−0.0004	−0.0001***	−0.0004***	0.0969
US $, PPP)	(0.0002)	(0.0002)	(0.0001)	(0.0002)	(0.0003)	(0.0004)
GDP growth	0.0173**	0.0145*	0.0143**	0.0115	0.0116	0.0140*
	(0.00768)	(0.00742)	(0.00700)	(0.00743)	(0.00771)	(0.00742)
Inflation	0.000169	−8.22e-05	−0.000105	8.53e-05	−3.29e-06	−2.31e-05
	(0.000227)	(0.000260)	(0.000236)	(7.39e-05)	(7.31e-05)	(0.000150)
Trade openness	−0.00249	−0.00199	−0.00160	−9.43e-05	0.00134	0.00171
	(0.00255)	(0.00247)	−0.277**	(0.00161)	(0.00156)	(0.00142)
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Constant	0.683**	1.145**	1.145**	0.277	0.388	0.0969
	(0.336)	(0.500)	(0.500)	(0.286)	(0.301)	(0.277)
Observations	90	90	90	81	81	81
R-squared	0.390	0.406	0.406	–	–	–
Number of countries	44	44	44	44	44	44
Sargan Test	–	–	–	$p = 0.70$	$p = 0.63$	$p = 0.62$

Notes: Standard errors in parentheses; ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$; The coefficient is significant at the 12% level of confidence.

remain robust to the alternate sample of countries. While the interaction term (CUL $*$ POL) is weakly significant for the fixed effect specifications, it is strongly significant for the System GMM specifications. For the specifications in Columns (4)–(6), POL^{*}_{it} is approximately equal to 3, in case of polity2, and ranges between 3 and 4 for the proxies of political institutions. We have checked our results for the other proxies of political institutions (not reported), and though the interaction terms are positive, the coefficients are not statistically significant.

6 Conclusions

It is our goal in this article to demonstrate how the joint assessment of the role of political institutions and culture govern exchanges in the financial market and provides new insights and expand the explanatory power of existing institutional theories of financial development. Our results show that both political institutions and culture affect the financial development of a country strongly, and they behave as complements. The presence of efficient political institutions augments the effectiveness of culture and, thus, financial development is enhanced. Thus, if a country has efficient democratic institutions that show promise of competitive elections as well as stability of the system, provide constraints on the powers of the chief executive, and guarantee good political rights and civil liberties, then traits of culture like Trust, Respect, and Control work efficiently in enhancing financial development. Under such circumstances, the populace generally has faith in the overall political institutions of the country and, thus, they trust the financial sector of the country as well and involve in greater financial transactions. Reasonably institutions, of both types, work towards greater mobilization of resources, channelization of savings into investment and financial development is enhanced. Our results are robust to various proxies of institutions and alternate estimation models.

Hence, the main finding of this article is that political institutions and culture should be viewed not as substitutable ideals but as complementary ideals. This finding needs to be stressed. Culture "fills in gaps" by addressing contingencies not dealt within the rules by the political institutional framework. Embedded norms and values ease decision making and coordination within bureaucracies and judicial norms and hence improve the effectiveness of these political institutions.

However, we are aware that there is still much research needed in understanding the interaction between formal and informal institutions and exploring how this articulation can potentially deliver superior performance in terms of developing the financial market. One important addition would be to note the effect of informal finance (lending and borrowing via the local moneylenders) and its interaction with the political institutions. We recommend extensive collaboration among disciplines that have traditionally focused on each type of institution as a necessary step in further expanding this stream of research.

Appendix 1 Summary statistics

Variable	Obs.	Mean	S.D.	Min	Max
FD1	309	0.52	0.44	0.02	2.34
FD2	310	0.64	0.48	0.03	2.40
Culture (overall index)	172	4.54	1.80	0.00	9.79
Polity	318	3.71	6.72	–10.00	10.00
TENSYS	321	24.03	22.41	1.00	72.00
Const. on executive	318	5.06	2.06	1.00	7.00
Openness of system (XOPEN)	318	3.61	1.10	0.00	7.00
Political rights	353	4.11	2.12	0.00	7.00
Civil liberties	353	3.91	1.92	0.00	7.00
GDP (in billions)	335	296.00	992.00	6.49.00	10300.00
Growth	333	2.85	4.56	–20.77	33.87
Inflation	331	57.99	189.97	–4.16	1872.01

Notes: FD1: Private Credit to Deposit Money Banks over GDP; FD2: Deposit Money Bank Assets over GDP.

Appendix 2 Correlation matrix

	FD1	FD2	Culture	Polity	TENSYS	Const. on Executive	Openness of System	PR	CL
FD1	1.00	0.97*	0.50*	0.44*	0.60*	0.45*	0.27*	0.50*	0.54*
FD2	0.97*	1.00	0.44*	0.43*	0.57*	0.44*	0.28*	0.49*	0.51*
Culture	0.50*	0.44*	1.00	0.33*	0.63*	0.36*	0.24*	0.42*	0.51*
Polity	0.44*	0.43*	0.33*	1.00	0.47*	0.96*	0.48*	0.89*	0.84*
TENSYS	0.60*	0.57*	0.63*	0.47*	1.00	0.46*	0.23*	0.53*	0.60*
Const. on Executive	0.45*	0.44*	0.36*	0.96*	0.46*	1.00	0.55*	0.86*	0.82*
Openness of System	0.27*	0.28*	0.24*	0.48*	0.23*	0.55*	1.00	0.45*	0.36*
PR	0.50*	0.49*	0.42*	0.89*	0.53*	0.86*	0.45*	1.00	0.95*
CL	0.54*	0.51*	0.51*	0.84*	0.60*	0.82*	0.36*	0.95*	1.00

Notes: *Significance at 0.05 level.

Appendix 3 List of countries in the sample

Albania	Georgia	Pakistan
Algeria	Germany	Peru
Andorra	Ghana	Philippines
Argentina	Greece	Poland
Armenia	Hungary	Portugal
Australia	Iceland	Romania
Austria	India	Russia
Azerbaijan	Indonesia	Rwanda
Bangladesh	Iran	Saudi Arabia
Belarus	Iraq	Serbia and Montenegro
Belgium	Ireland	Singapore
Bosnia Herzegovenia	Italy	Slovak Republic
Brazil	Japan	Slovenia
Bulgaria	Jordan	South Africa
Burkina Faso	Korea, Republic of	Spain
Canada	Kyrgyz Republic	Sweden
Chile	Latvia	Switzerland
China	Lithuania	Thailand
Colombia	Luxembourg	Trinidad and Tobago
Croatia	Macedonia	Turkey
Cyprus	Malaysia	Uganda
Czech Republic	Mali	Ukraine
Denmark	Malta	United Kingdom
Dominican Republic	Mexico	United States of America
Egypt	Moldova	Uruguay
El Salvador	Morocco	Venezuela
Estonia	Netherlands	Vietnam
Ethiopia	New Zealand	Zambia
Finland	Nigeria	Zimbabwe
France	Norway	

Appendix 4 Data description and the sources

Variable	Source	Description
Polity2	Polity IV project database	It is a non-linear summation of sub-indices intended to capture aspects of regimetype. The index ranges from – 10 to +10. It includes political characteristics of a nation like Competitiveness of Executive Recruitment, Openness of Executive Recruitment, Constraint on Chief Executive, and Competiveness of Political Participation.
TENSYS	DPI	An autocratic country receives a score equal to the number of years its current executive has been in power. A democracy receives an additional – point‖ on its score for every additional year it remains democratic.
Constraints on chief executive	Polity IV project database	Constraints on the powers of the chief executive. The variable ranges from 1 to 7 with higher numbers denoting better situation.
Competitiveness of elections	Polity IV project database	Competitiveness of Executive Recruitment and ranges between 1 and 3, with higher numbers representing better situation
Informal Institution	Tabellini (2009); original source: EVS and WVS survey databases.	An aggregate index constructed by Tabellini (2009) which includes the traits TRUST, CONTROL, RESPECT, and OBIDIENCE
Inflation	World Development Indicator database, 2010	"Inflation as measured by the annual growth rate of the GDP implicit deflator shows the rate of price change in the economy as a whole"
GDP	World Development Indicator database, 2010	"GDP at purchaser's prices is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products"
GDP growth	World Development Indicator database, 2010	It is the annual percentage growth rate of GDP at constant local currency.
Trade Openness	World Development Indicator database, 2010	(Exports + Imports) as a percentage of GDP

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