Is culture a determinant of financial development?

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Abstract

The paper investigates the missing link in the literature – whether informal institutions, or what is known as culture, can affect the level of financial development for a country? Our hypothesis stresses that the cultural dimensions of a country can have an impact on its financial set up. We consider multiple dimensions of culture, identified in the literature by Tabellini, to test our hypothesis. As culture evolve in the form of greater trust, control and other traits, individuals' attitudes towards financial market change, and they engage in greater financial transactions. This, in turn, leads to better financial development. Using quantile estimation technique for a cross-section of 90 countries we find that culture significantly influences the level of financial development. To ensure the robustness of our findings we use Hofstede's cultural dimension- 'uncertainty avoidance index' as an alternative measure for culture. Our results hold for multiple measures of financial development.

1. INTRODUCTION

A broad literature has investigated the determinants of financial development for a country. There is a general consensus among the economists that the financial development of a country is positively correlated with its overall growth and other aspects of its economic development. For instance, among several impacts, financial development increases the likelihood of making foreign aid work and enables the nation to create comparative advantage in manufacturing industries (Beck, 2003). According to Beck, Demirguc-Kunt and Levine (2000), financial development indicators measure the size, activity and efficiency of financial intermediaries and markets.

Though many theories[1] have been put forward as to why countries differ in their levels of financial development, no literature has investigated whether indigenous culture, a form of informal institutions, can have an impact on the same. The working definition of culture as advocated by Guiso, Sapienza and Zingales (2006) identifies it with "those customary beliefs and values that ethnic, religious, and social groups transmit fairly unchanged from generation to generation". One of the most used approaches to test the relationship between culture and economic outcomes is to draw on survey-based evidence and to measure culture directly, based on beliefs or attitudes expressed by individuals on a series of issues. This is done, for instance, in explaining the persistence of inefficient institutions, or willingness to trust and to cooperate with others (Tabellini, 2008, 2009), and the formation of social capital (Guiso, Sapienza and Zingales,

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[1]There are many explanations as to what generates investor protection which, in turn, aids the formation of efficient financial infrastructure. La Porta et al (1998) and Beck, Demirguc-Kunt and Levine (2001) claim that legal origin is key to investor protection and, thus, to financial development. Rajan and Zingales (1998) argue that the relative merits of domestic financial intermediation are a function of the contractibility of the environment and the relative value of price signals. He also claims special interest groups have strong incentives to block the development of a transparent and competitive financial sector of a closed economy. According to Acemoglu, Johnson and Robinson (2001), colonial origins determined earlier institutional structure and are the sole factors that matter for an efficient financial system. Stulz and Williamson (2003) noted that countries' principal religion predicts the cross country differences in creditor rights.

2006. Tabellini (2008) measures culture as an aggregate index that incorporates four different components of a society: trust, self-determination, respect, and obedience[2].Trust, indicates to what extent individuals trust a broader group of people versus a narrower group. Thus, it is quite reasonable to assume that the more an individual trusts the society in general, the more she would be prone to engage in financial transactions and will have greater faith in banking sector, stock market and other financial sectors. The existing literature emphasizes that greater levels of trust are associated with a higher growth and development (Knack and Keefer, 1997; La Porta et al., 1997; Zak and Knack, 2001). The other trait, 'Control'[3], should also impact the level of financial development. As individuals gain 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. 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 aim to provide an empirical analysis of the impact of culture on financial development. In doing so, we hypothesize that a higher score of culture leads to better financial development. Our results confirm our hypothesis. We rely on cross sectional quantile regression methodology given the sticky nature of the culture variable as well as to account for the bias resulting from the presence of outliers. Also, culture will tend to have a long-term influence on economic variables. Considering yet another cultural dimension - Hofstede's uncertainty

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[2] The appendix talks in detail about the construction of the 'culture' variable
[3] As explained later, Tabellini (2008) identified four traits of culture – Trust, Respect, Control and Obedience. If the individuals feel they have the 'Control' in determining their actions they will be more likely to innovate, invest in the future, and work more diligently (Tabellini 2009; Coyne and Williamson 2009).

avoidance (UA) – our results show that a higher UA index is associated with lower scores of financial development. Section 2 provides data description. Section 3 provides our empirical methodology and discusses the results. Finally, section 4 summarizes.

2. DATA DESCRIPTION

Data used for our explanatory variable - ''Culture' comes from the integrated data set of World Values Survey and European[4] Values Survey (WVS and EVS).   These surveys capture culture in the form of individual beliefs and values reflecting local norms and customs. Tabellini[5] (2008) has identified some important traits in an attempt to capture the multiple aspects of informal institutions such as norms, conventions, grass-roots institutions and trust. These four important traits are *trust*, *respect*, *control,* and *obedience* and have been to create an aggregate index. It is constructed by summing Trust, Control, and Respect and subtracting the Obedience score. The detailed description is provided in the Appendix 2.

The primary dependent variable in this study is *Financial Development*. Data on financial development is taken from the Beck, Demirguc-Kunt and Levine (2000) database. We use several indicators of financial development to establish robustness of our findings. The measures used are liquid liabilities over GDP, private credit by deposit money banks to GDP, private credit by deposit money banks and other financial institutions to GDP and life insurance volume over GDP. Further, we also use stock market measures - Stock market total value traded to GDP and stock market turnover ratio. The controls used are GDP, GDP growth, a proxy of formal institution, polity2, trade openness, Inflation (GDP deflator) and legal origin dummies.

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[4] The WVS has been implemented in five[4] waves so far: (i) 1981-84, (ii) 1990-93, (iii) 1995-97, (iv) 1999-2002and (v) 2005-2008. The fifth wave of this value survey covers countries that together account for about 85 per cent of the world's population.
[5] In recent decades, investigating empirical links of culture with other variables has been made possible by the important variables identified by Tabellini

3. EMPIRICAL MODEL AND RESULTS

A. Benchmark Results

As stated earlier, we consider cross sectional specifications which consider long term changes and, thus, are an appropriate starting model for our hypothesis testing. Our benchmark specification is as follows

$$FD_i = \alpha_1 + \alpha_2 Culture_i + \alpha_3 X_i + \varepsilon_i$$

where the dependent variable, FD_i denotes financial development in country i. The independent variable, $Culture_i$, represents informal institutions or culture of country i. X_i denotes the matrix of control variables (in lagged form) for country i and ε_i denotes the random error term for the same. For all the proxies of financial development, we consider 2008 values for our benchmark specifications. We consider average values of all the controls over the period 1980 to 2007. This helps us to avoid any endogeneity concern to a significant extent.

We empirically test our hypothesis using quantile regression estimation technique. In the presence of outliers, ordinary least square estimates can be distorted. When there are outliers present, Koenker and Bassett (1978) suggested quantile regression methodology which considers asymmetrically weighted absolute residuals of the median rather than the mean of the distribution and generates efficient estimators. Quantile regressions are non-parametric and, thus, assume no underlying distribution. We have 90 countries in our sample.

Table 1 and 2 lists the top ten and bottom ten countries in our sample in terms of their culture score as well as on the basis of two different proxies of financial development. For Table 1, Anglo –Saxon countries and Northern European countries tend to feature in both the lists.

Similarly, in Table 2 Sub-Saharan African countries unsurprisingly feature in both the lists. Appendix 1 provides the correlation matrix for the benchmark variables along with the significance level of 1%.

Table 3 presents our benchmark results. For the several proxies of financial development, the coefficient of culture is positive and significant at 5% level. We also control for several macroeconomic indicators like trade openness, inflation, GDP at constant process, and GDP growth. In addition, we add controls for political institutions (from Polity 2) and legal origin dummies as well. Legal origin dummies have the strongest impact on financial development.

In order to ensure, the robustness of our cultural measurement we further consider an alternate proxy of culture – the Uncertainty Avoidance Index (UAI). Hofstede's "dimensions of culture" are derived mainly from his book Cultural Consequences (2001) – the scores are general comparisons of values in the countries and regions he studied and can vary greatly within each country. In present paper, we introduce one of his social dimensions: '*Uncertainty Avoidance Ind*ex'[6]. A high uncertainty avoidance ranking indicates the country has a low tolerance for uncertainty and ambiguity. This creates a rule-oriented society that institutes laws, rules, regulations, and controls in order to reduce the amount of uncertainty. Conversely, a low uncertainty avoidance ranking indicates the country has less concern about ambiguity and uncertainty and has more tolerance for a diversity of opinions. This is reflected in a society that is less rule-oriented, more readily accepts change, and takes more and greater. The index values range from 8 (Singapore) to 112 (Greece). Since uncertainty avoidance can be viewed as an obstacle to entrepreneurship and inventive activity, a negative correlation between UAI and

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[6] The UAI was calculated from three questions from the survey questionnaire: (1) the feeling that company rules should not be broken, not even when the employee thinks it would be in the company's best interests to do so; (2) the respondent's intention to stay with the company for more than five years; and (3) the respondent's feelings of stress at work.

financial development should be expected. We reported our findings in Table 4. Indeed, the coefficient of UA index is negative and significant at 10% level for column 2 and column 3 in the Table.

B. Robustness

So far, the specifications have considered normal standard errors. Both asymptotic and bootstrapping methods generate standard errors and confidence intervals of coefficient estimates of quantile regressions. Hao and Naiman (2007) establish that the bootstrapping method is more preferred and hence we check our results with bootstrapped standard errors. The results remain robust for all the different proxies of financial development. Further, we consider simultaneous quantile regressions which allow us to have the results for all the quantiles simultaneously. While the coefficient of culture is significant for all quantiles, the impact is stronger for countries with higher levels of financial development than lower levels of financial development.

In order to take care of endogeneity, we considered lagged controls. Yet, to add robustness to our findings and to be able to claim causation strongly, we run IV regressions. The results show that coefficient of culture is significant for all measures except stock market proxies. The instruments used are percentages of Catholic and Muslim population individually and lagged average ethnic diversity. The first stage results show that F (= 4.8) statistic is above conventional level. The partial R square of excluded instruments is 0.26. Sargan and Basmann tests confirm that the over identification tests are satisfied and, thus, our instruments are efficient.

4. CONCLUSION

We add to the extant literature in two ways. First, our results reveal that while economic and political factors are important for a country's financial development, culture also has a significant impact. Various traits of a society, which compositely consist of culture, influence different proxies of financial development. Second, we establish a link between Hofstede's anthropological culture study and the finance literature, suggesting an interdisciplinary explanation of the heterogeneous nature of financial systems across countries. We confirm that financial development of a country is strongly correlated with uncertainty avoidance, a dimension of national culture featured in Hofstede's analysis.

However, the related literature that connects culture with different macroeconomic indicators is still in its infancy. Many interesting analysis can be carried out - incorporate culture in an endogenous growth model and test specific relationships in a systematic empirical way, investigate the financial development-culture association with micro data and so on. Integrating culture in the research agenda of political economics is a priority. We sincerely hope this analysis will stimulate further investigation along these lines.

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Table 1: Top ten countries: Culture and Financial Development Score

Country	Culture (Aggregate)	Country	Private Credit by Deposit Money Banks / GDP	Liquid Liabilities/ GDP
Sweden	9.19	Ireland	2.097488	1.010711
Finland	7.92	Netherlands	1.931102	1.285513
New Zealand	7.86	United Kingdom	1.889618	1.527658
Switzerland	7.52	Spain	1.884944	1.4489
Canada	6.78	Switzerland	1.74539	1.417641
Australia	6.62	New Zealand	1.481596	1.020509
Netherlands	6.57	Canada	1.298429	1.146417
Germany	6.22	Hong Kong	1.266427	2.959522
United States	6.13	Sweden	1.235083	0.557046
Japan	6.03	Australia	1.210288	1.021344

Table 2: Bottom ten countries: Culture and Financial Development Score

Country	Culture (Aggregate)	Country	Private Credit by Deposit Money Banks / GDP	Liquid Liabilities/ GDP
Uganda	0.57	Burkina Faso	0.216172	0.155479
Burkina Faso	1.12	Armenia	0.220937	0.141256
Zambia	1.3	Uganda	0.228278	0.093294
Algeria	1.44	Dominican Republic	0.231021	0.193026
Pakistan	1.93	Georgia	0.236631	0.312385
Mali	1.94	Nigeria	0.24114	0.245199
Nigeria	2.02	Zambia	0.243345	0.135757
Morocco	2.05	Mexico	0.258562	0.192303
Philippines	2.06	Mali	0.269416	0.161676
El Salvador	2.07	Colombia	0.273051	0.41904

Table 3: Quantile Regressions: Impact of Culture on Financial Development

	(1)	(2)	(3)	(4)	(5)
	Liquid liabilities	Private credit by deposit money banks	Private credit by deposit money banks and other financial institutions	Stock market capitalization	Stock market total value traded
Culture	0.0751**	0.178***	0.170***	0.178***	0.270*
	(0.0307)	(0.0232)	(0.0303)	(0.0647)	(0.164)
GDP in billions (constant PPP)	0.0001***	0.0001	0.0001***	0.0001	0.0001***
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
GDP growth	0.01	0.02	0.02	0.12*	0.08
	(0.03)	(0.02)	(0.02)	(0.07)	(0.18)
Inflation	-0.0001*	-0.001***	-0.001**	0.002*	-0.0004
	(0.0004)	(0.0003)	(0.0004)	(0.001)	(0.002)
Trade	0.002**	0.001	0.001*	0.001	-0.003
	(0.001)	(0.001)	(0.0005)	(0.001)	(0.007)
Polity	0.001	0.01**	0.01*	0.01	0.07
	(0.01)	(0.01)	(0.01)	(0.02)	(0.07)
Legal Origins	Yes	Yes	Yes	Yes	Yes
Constant	-0.0171	-0.206	-0.263	-0.723*	-1.140
	(0.193)	(0.143)	(0.182)	(0.408)	(1.285)
Observations	67	70	70	60	44
Pseudo R-sq	0.23	0.42	0.44	0.18	0.32

Note: 1)Standard errors in parentheses;*** p<0.01, ** p<0.05, * p<0.1

*2) The coefficient of UA index in column (5) is weakly significant (p= 0.11)

Table 4: Quantile Regressions: With the UA Index

	(1)	(2)	(3)
	Private credit by deposit money banks*	Private credit by deposit money banks and other financial institutions	Stock market capitalization
U A index	-0.00786	-0.00819*	-0.00816*
	(0.00522)	(0.00460)	(0.00431)
GDP in billions (constant PPP)	0.0001**	0.0001***	0.0001
	(0.0001)	(0.0001)	(0.0001)
GDP growth	0.00927	-0.0158	0.149***
	(0.0591)	(0.0521)	(0.0464)
Inflation	-0.000958	-0.000796	0.00118*
	(0.000794)	(0.000693)	(0.000619)
Trade	0.000660	0.00124	0.00125
	(0.000952)	(0.00135)	(0.000782)
Polity	0.0826***	0.0738***	0.0807***
	(0.0176)	(0.0152)	(0.0139)
Legal Origins	Yes	Yes	Yes
Constant	0.771*	0.882**	0.372
	(0.413)	(0.366)	(0.318)
Observations	49	49	48

Note: 1) Standard errors in parentheses;*** $p<0.01$, ** $p<0.05$, * $p<0.1$

*2) The coefficient of UA index in column (1) is weakly significant ($p= 0.11$)

Appendix 1: Correlation Matrix

	FD1	FD2	FD3	Culture	GDP	GDP growth	Inflation	Trade	Polity
FD1	1.00	0.94*	0.67*	0.62*	0.09	0.11	-0.28	0.30*	0.53*
FD2	0.94*	1		0.62*	0.32*	0.09	-0.28	0.25	0.54*
FD3	0.67*	0.63*	1	0.33*	0.14	0.24	-0.23	0.48*	0.23
Culture	0.62*	0.62*	0.33*	1	0.247	-0.09	-0.15	0.09	0.52*
GDP	0.09	0.32*	0.14	0.247	1	-0.04	-0.09	-0.2	0.22
GDP growth	0.11	0.09	0.24	-0.09	-0.04	1	-0.28	0.1688	-0.36
Inflation	-0.28	-0.28	-0.23	-0.15	-0.09	-0.28	1	-0.05	-0.04
Trade	0.30*	0.25	0.48*	0.09	-0.2	0.1688	-0.05	1	-0.03
Polity	0.53*	0.54*	0.23	0.52*	0.22	-0.36	-0.04	-0.03	1

Note: 1) FD1 – Private Credit to Deposit Money Banks; FD2 - Private Credit to Deposit Money Banks and other institutions
   2) * implies significant at 1% level

Appendix 2: Description of Culture

Culture:

Trust, the first cultural attribute, aims to capture the level of trust among individuals. The following question from the survey is used to measure this attribute: "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 that answered "Most people can be trusted," has been used to capture the level or degree of trust in each country.

The second component which is considered from WVS and EVS is *control*. The question used to capture this trait is: "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". By averaging all the individual responses and multiplying them by 10, an aggregate control component is determined.

The third cultural trait, *respect*, proxies for the level of generalized versus limited morality. The following question is used to decide the importance of respect in a society: "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". Respect is defined as the percentage of respondents in each country that mentioned the quality "tolerance and respect for other people," as being important. *Obedience* is the fourth and final trait and the question measuring respect is also utilized in capturing the level of obedience in a society. It is measured as the percentage of respondents within a country answering that obedience is an important quality for children to learn.