Impact of Culture on Sovereign Credit Ratings:

Evidence from Developed and Developing Countries

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CI	Cultural index
DP	Default probability
ED	External debt
GCF	Gross capital formation
GDP	Gross domestic product
GDPPC	GDP per capita
IGDP	Investment Share of GDP
IMF	International monetary fund
INF	Inflation
PSE	Primary school enrollment
S&P	Standards and Poor's
WB	World Bank
WDI	World development indicators
X	Controlled variables
Y	Output

ABSTRACT

The study seeks to find the impact of culture on sovereign credit rating through the channel of growth, utilizing panel data of 30 countries which were later classified into highly developed, developed and developing countries for the sake of comparison of cultural impact on these three categories of countries. Separate estimations were carried out to find determinants of sovereign default probability in case of highly developed, developed and developing countries other than the whole sample of countries. Twenty year data was gathered for sake of this study from 1994 till 2013. Random effect method or fixed effect method was used for estimations in all cases, selection of the better one was done by utilizing Hausman test for random effect vs fixed effect method. When cultural effects analyzed on sovereign default probability, the study finds cultural values to be negatively impacting and highly significant in determining sovereign risk for a sample of whole countries, developed countries and developing countries. In case of highly developed countries culture came out to be highly significant only if GDP per capita is dropped from the model. Moreover it was observed that the impact of culture diminishes as sample of countries with a higher and higher level of development is taken which means that culture being a social capital is more effective in reducing default probability of developing sovereigns than those which are having a relatively higher level of development and already have lower probability of default. Culture acts as a social capital and enhances economic performance of sovereigns which leads to higher credit ratings or lower sovereign default probabilities.

CHAPTER 1

INTRODUCTION

1.1 Background

Culture, primarily in economic literature is overlooked or presumed away as perpetual and exogenous. However Boettke (1997) pertinently states, "We cannot ignore cultural impacts, as economists have repeatedly done." The insertion of culture in economic literature is a fresh development, with both theoretical and empirical studies lending credence to this hypothesis. Culture historically has been found out to be a strong determinant of differences in economic development across different societies (Tabellini, 2010). Societies gifted with generalized trust enjoy kind of social capital that is complementary to customary factor endowments like labor and capital (Alesina, 2013) which ultimately enhances economic growth in modern economic competition thus becoming a cause of growth rate differentials among sovereigns. Human actions in a society are guided by attitude and values prevailing in a particular society. From above discussion it can easily be inferred that being a subject matter culture is very hard to tackle. Many resemblances can be detected among definitions of culture contributed by different writers (Guiso et al., 2010).

Earlier resources were raised by countries either by taxing their inhabitants or by waging war and pillaging new areas so as to have hands on precious metals and others precious items for trade purposes which was a very limiting practice. However, as the international financial markets have gradually developed and matured, new methods of generating capital have evolved. Now sovereigns issue bonds in order to finance their expenses (Lu, 2013). To price these bonds precisely, risk affiliated with these sovereigns is needed to be quantified. Moreover now we have

financial institutions like International Monetary Funds (IMF) for providing short term financial assistance and World Bank for providing long term financial assistance to countries worldwide. Other than this loans are also provided by one government to another.

Like an individual lender who is concerned with the willingness and ability of repayment of loan by an individual borrower, financial institutions at international level are also interested to know the ability and willingness of any sovereign regarding repayment of its loan. As level of risk related with any individual or company vary, risk related with repayment of loan also vary from one government to another. Just like an individual borrower desires to have an easy access to affordable credit, governments also want to have an easy access to both domestic and international capital markets. On the other hand borrowers at times also need to have neutral external assistance to analyze their own repaying capability as they may overlook certain factors when analyzing their own repaying ability.

Credit worthiness of sovereigns is analyzed by credit rating agencies. Some of the most renowned credit rating agencies are Moody's, Standard and Poor's (S&P), and Fitch. A positive relationship exists between the level of risk associated with any sovereign and its borrowing cost. Credit rating agencies attempt to quantify risk associated with any government's financial matters by incorporating broad range of economic indicators. These credit rating agencies according to the findings of Jaramillo (2011) indirectly control country's access to international financial institutions. Credit rating agencies were found out to be a key determinant by Bennell et al., (2006) when it comes to access of a country to international capital market and also the terms of conditions for that access.

The practice of rating countries is not that old and only took off during 1980's. Some hundred countries sovereign risk was rated by 2010. Approaches to determine sovereign risk by

credit rating agencies are opaque Lu (2013) due to which they are heavily criticized as well. Though credit rating agencies claim to use identical economic indicators while quantifying risk affiliated with countries, but Eijffinger (2012) explained that the differences between ratings from these three agencies came out to be statistically significant. In addition to economic indicators alone rating agencies claim to use some qualitative variables as well. Previous studies tried to identify explanatory variables for sovereign risk or sovereign rating for any particular country. Per capita income, GDP growth rate, external debt and inflation were found to be significant determinants of variations in sovereign credit ratings.

Recent studies have found various cultural dimensions as an important determinant of economic growth. Culture was found to be vital for initiation of growth by Stulz et al., (2003) and its significance lessens only once institutions of economic freedom are formulated. Role of culture was also found out to be significant by PapaMarcos et al., (2006) when it comes to determination of economic performance of countries. In an effort to fill the gap between culture and growth, Johnson et al., (1998) found economic freedom as the missing link between culture and economic growth. One can think of social traits like trust, control, respect and obedience to be significantly impacting the way people conduct transactions. These social traits were empirically analyzed by Tabellini (2010) and their impact was found to be significant on growth.

1.2 Sovereign Risk and Culture

Sovereign risk is the risk that any country's government will either illustrate its incapability or reluctance to honor its debt compulsions within maturity dates and in accordance with the terms and conditions which were settled with the creditor at the time of initiation of loan (Canuto at al., 2012). Any state is a sovereign unit so any risk of nonpayment of loan from such a unit is termed

as sovereign risk. Sovereign risk also refers to transfer risk that any government can become short of foreign exchange reserves because of worsening balance of payments situation. Sovereign credit risk ratings refer only to the capacity and willingness of a central government to honor its debts with private creditors (Bhatia, 2002).

Culture has been defined in numerous ways. Culture is defined as, "those customary beliefs and values that ethnic, religious, and social groups transmit fairly unchanged from one generation to the other" (Guiso et al., 2010). Culture can be understood as the product of some erstwhile knowledge, some customs or traditions also as Gorodnichenko et al., (2010) stated that "the complex whole of knowledge, belief arts, moral laws, custom and habits, attained by humans as members of a society.

1.3 Objectives of the Study

Objectives of the present study are as follows;

1. To analyze the impact of culture on sovereign credit rating in various developed and developing countries; and

2. To estimate the impact of culture on economic growth in various developed and developing countries.

1.4 Contribution of the Study

The rating agencies were unable to anticipate recent global financial crisis due to which they were heavily criticized. The market failure not only shocked general public but also credit rating agencies who rate sovereign default risk in addition to corporate issuers working within their borders. It raised serious flaws or something lacking in the methodology adopted by these rating agencies. This study is an attempt to fill the gap or something which is missing in the methodology

opted by credit rating agencies. Abundant literature exists when it comes to culture as a determinant of economic growth and also economic growth as a determinant of sovereign credit risk or sovereign credit ratings. However not that much work is done regarding the impact of culture on sovereign credit rating.

The study is unique in the sense that it analyzes impact of culture on both economic growth and sovereign default probability simultaneously. It tries to explain the linkages between culture and sovereign default probability through the channel of growth. Though no direct relationship exists between culture and sovereign credit risk but literature supports the argument that there is an indirect relation between culture and sovereign credit risk. This study argues that the missing link between culture and sovereign credit risk seems to be economic growth.

Further this study tries to explain cultural differences across highly developed, developed and developing countries. This study tries to identify those cultural traits which play a vital role in determining differences in development level across the countries under observation. Further five waves data from world value survey was analyzed in previous studies. This study incorporates the sixth wave data as well which is from 2010 to 2014 in addition to third, fourth and fifth periods as well. First two periods were not incorporated because number of countries whose survey was conducted in those waves was very small. Moreover earlier studies took average of entire values of culture traits for the period under observation while this study captures values of cultural traits from each wave separately.

1.5 Scheme of the Study

Remaining part of the study is organized as follows. Chapter 2 highlights special characteristics of sovereign credit risk, its quantification process, importance, and the process through which credit ratings are assigned to sovereigns. Chapter 3 presents the literature which

was reviewed for the sake of this study. Chapter 4 presents the methodology opted for estimations in this study, further quantification of culture and sovereign ratings is discussed in this chapter. How independent variables are quantified and which proxies are used in this study along with the references of previous studies in which these proxies were utilized earlier is discussed. Results derived from fixed effect method, random effect method and Hausman test are displayed chapter 5. Lastly chapter 6 concludes the findings of this study along with presenting implications of this study and finally possible future extensions which can be carried out from this study.

CHAPTER 2

THEORETICAL CONSIDERATIONS OF CULTURE

AND SOVEREIGN CREDIT RISK

This chapter is divided into six sections. Initially concept of sovereign risk is discussed, then importance of sovereign credit ratings and their impact on borrowing costs of countries is discussed. Section three describes the procedure adopted by credit rating agencies to assess sovereign risk while fourth section discusses the failures of credit rating agencies especially in context of recent financial crisis. Fifth section provides definition and concept of culture. Lastly sixth section creates theoretical link between culture and sovereign risk via economic growth.

2.1 Concept of Sovereign Risk

The probability that actual return from an investment will be different than expected is termed as risk. The possibility of losing a part or in whole the total investment is called risk. Large portion of resources in the form of money and time are allocated by companies to develop risk management strategies to handle risk linked with their investment dealings and businesses. Relationship between risk and return is the key idea in finance. Positive relationship occurs between the two. Lending at an interest rate or return is also an investment. Higher return for investors means higher cost of borrowing for borrower.

Pricing sovereign debt is basically different then pricing other forms of debt like secured debt, unsecured debt, revolving debt or installment debts etc. First, while providing loan to any sovereign no claim on any of that sovereign's assets is traded. Resultantly, there is no market price for the asset value to be measured. Even if such a measure is constructed by discounting expected

future cash inflows, asset value remains an irrelevant measure to price sovereign debt. Sovereigns are not taken over in case of default (Kalliomaki, 2012). Therefore country's wealth become an irrelevant measure to quantify sovereign default probability.

Unlike an individual or a company, a sovereign default may occur even if sovereign's wealth surpasses its liabilities. Sovereigns risk is difficult to measure relative to individual companies. Any sovereign's top priorities are towards its citizens rather than generating equity for shareholders (Bhatia, 2002). Moreover, governments have to face other qualitative factors like political conflicts, international relationships and social unrest which can affect their repaying capability. Especially political factor can exert a conclusive influence on repaying willingness of sovereign's debt.

Repayment capacity and willingness to repay is determined by macroeconomic variables such as stock of foreign exchange reserves, situation of balance of payments, economic growth expectations, and revenue generating capacity etc. Sovereigns are not subject to normal bankruptcy laws like an individual or a company. Sovereigns have potential to escape their repayments but the consequences of this will be severe. Other than political implications, defaulting sovereign will also have to face a sudden rise in interest rates and a decline in its access to capital markets and cheap loans (Canuto et al., 2012). Most sovereigns have to fulfil financial obligations during period of budget deficits and other government's spending.

2.2 Sovereign Credit Risk Rating Importance and Impact on Sovereign's Borrowing Cost

Importance of sovereign credit ratings not only stems from the fact that in international capital markets largest issuers are national governments but these ratings also impact borrowers holding same nationality Cantor & Packer, (1996). Importance of credit ratings has increased

despite of criticism and shortcomings. Decision making in both developed and developing countries is effected by these credit ratings.

Information asymmetry is being condensed between lenders and investors by the credit rating agencies on one side and among issuers of sovereign bonds on the other side. With financial globalization, role of credit rating agencies has expanded and Basel II has given these ratings an additional boost by incorporating these ratings while setting weights for credit risk. Credit rating agencies stress that aim of ratings is not to recommend to hold, sell or buy a security nor it is aimed at giving a verdict that a particular investment is profitable for an investor or not rather ratings are aimed at constituting opinions only.

A sovereign credit rating downgrade for borrowing country, negatively impacts it access to credit and also enhances its borrowing cost (Cantor & Packer, 1996). Information regarding the way macroeconomic policies are considered by credit rating agencies is not available. Thus it can be reasonably assumed that credit rating agencies favor orthodox macroeconomic policies which focus on GDP growth, GDP per capita, inflation control, unemployment, budget deficit control etc. as a consequence of this there is a possibility that borrowing countries target short term concerns so as to avoid grading downgrades. Even if they are inconsistent with their long term development requirements.

2.3 Sovereign Credit Rating Process

The rating process is normally composed of three stages

i. Economic situation assessment.

ii. Making use of "points system" to quantify qualitative variables in addition to factors already available in quantitative form.

iii. Committee formed on basis of fist two steps, finally takes decision on the rating through voting process.

2.3.1 Economic Situation Assessment

Aggregate analysis of economic situation of a sovereign state initiates with a visit to the targeted sovereign state by at least two analysts of sovereign credit rating agency. The analysts on visit meet government officials, private sector analysts, university researchers, political opposition members and journalists. Official figures are gathered with the help of government officials which helps to understand monetary and fiscal policies. Clarity and uniformity of fiscal and monetary policies are given much importance. After the visit a report is formulated, copies of which are handed over to committee members. The report comprises of data of macroeconomic variables, future predictions regarding behavior of economy and finally rating recommendations.

2.3.2 Use of Points System and Rating Allotment through Voting Process

The cornerstone of the whole rating process is committee while "points system" serves as the basis of the meetings held by the committee. "Points system" serve as a guide for committee's discussion and lastly ratings establishment. In the meetings each factor is openly assessed and discussed by committee members and finally by voting, points are awarded. A main characteristic of these discussions is that to avoid inconsistencies among ratings, countries with identical ratings irrespective of region of origin are compared. That's the reason for which committee's composition is relatively heterogeneous. In addition to experts on country under inspection, committee comprises of specialists in sovereign debt of different areas and from pertinent private sectors.

The Fitch point's model contains fourteen categories while S & P model comprise of ten categories (information regarding Moody's point model was unavailable). Both can be merged into five common categories institutional, civil and political risk, real sector, monetary and financial sector external sector and fiscal sector. S & P's credit rating gives a mark range of one to six for each category. Where one corresponds to best while six for worst. Weights are assigned to each category and later to obtain a final rating score of each category is added. Qualitative factors assessment relies on expertise and past experience of the members of committee. As ratings are an opinion as far as future probability of default is considered, forecasts of numerous macroeconomic indicators carry noteworthy weight in the model. Some commonly utilized macroeconomic forecasts are that of nominal GDP/capita, consolidated debt/GDP, growth of real GDP per capita, gross receipts, consumer price index as measure of inflation, net external debt of the non-financial private sector/ balance of payments current account receipts (Bhatia, 2002).

Forecast resulting from point system's results are influenced by existing data. Additionally results from point system may not be a reflection of intangible considerations like that of social factors, religion etc. During assessment process committee members also consider that how economic problems were tackled by the authorities in the past, how potentially stress situations are expected to be handled in future and if there exists any instruments to deal with these or not. Some other key factors of this assessment process are public debt default, institutional architecture (independent central bank existence), nature of relationship between government and IMF or other international credit institutions and government's capacity to gain enough political backing to confront any future crisis. Independent political analyst experts from private consultancy firms, banking sector and other rating agencies are also invited for opinions for balancing sovereign risk assessment process.

Through a voting process, rating is decided after considering all these points. A report is then formulated and circulated which incorporates view of majority in the committee. The report contains an explanation of the factors supporting the awarded rating and representing primary concerns of the agency e-g what are the reasons of low or high rating?, (Moody's, 2002a). In addition to this, report also contains a selection of macroeconomic indicators and forecasts looking ahead for a maximum of next two years. A rating has been periodically reviewed once it is established. Review procedures are similar to those which were undertaken while first rating exercise was carried out. Depending on the country, the span of review visit is after every 6th or 24th month.

2.4 Credit Rating Agencies Drawbacks and Failures

Sovereign credit rating agencies have caught the attention of wide group of observers worldwide because of the importance which their work has gained in emerging financial markets. At the same time these credit rating agencies have to face criticism as well which is not new. Downgrading actions of credit rating agencies have been termed as procyclical rather than being timely.

During the recent financial crisis in Europe, the criticism regarding credit rating agencies was focused on sovereign risk. All three Moody, Fitch and S&P credit rating were accused by EU governments for being unnecessarily aggressive while rating credit worthiness of euro zone countries and thus intensifying the financial crisis. It was argued that because of unduly negative evaluations sovereign debt crisis which accelerated in Europe and Spain, Ireland, Greece and Portugal were the victims of it and they were forced to receive EU-IMF bailouts. Downgrading of Greek to status of junk by S&P's in April 2010 lowered investor confidence causing an increase in its cost of borrowing and Greece had to have a financial package in May 2010.

Higher rating categories or investment grade categories are considered relatively more stable than those of lowering categories of ratings (S&P ratings manual, 2015). More fluctuations are observed in ratings of countries having lower ratings. The recent financial crisis contradicted this and it was noted that credit rating are not that responsive to any changes which occur drastically. Credit ratings were slow to adjust, moreover risk is something related to future and can't be measured precisely especially in case of any drastic changes. Big downgrades of three notches or in excess of three notches which took place in higher grade categories during 2008 to 2010 financial crisis which were supposed to be more stable then lower ratings by design are shown in table 1.

Table 1: Big Downgrades during 2008-2010 Financial Crisis

	Moody's			S&P		
	Start	**End**	**Notches**	**Start**	**End**	**Notches**
Greece	A1	Ba1	-6	A-	BB+	-4
Iceland	Aaa	Baa1	-7	A+	BBB-	-5
Iceland	A1	Baa3	-5			
Latvia	A2	Baa3	-4	BBB+	BB	-4

Source: Moody's and S&P

Table1 depicts successive upgrades or downgrades which are equal to three notches or in excess of three notches. Which occurred within a period of 12 rolling months.

The failures of credit rating agencies suggest incorporation of several other factors such as resilience of obligor to face such stress scenarios. The evidence further supports reform initiatives regarding reduction of the impact of credit rating agencies services of certification, more strict requirements of validation for ratings if they are to be utilized in capital regulation, and higher degree of transparency regarding parameters utilized in sovereign credit rating process.

2.5 Concept of Culture

Culture is a set of shared values civic responsibilities. It is defined as "the norms, values, networks and informal sanctions which contour the quantity as well as cooperative quality of social interactions which take place in a society". Culture being a social capital influences both social and political environment which consequently shapes norms which are with respect to government, civil and political liberties, and the rule of law in a society.

2.6 Culture as Social Capital and Conceptual Link to Sovereign Credit Rating

It has been shown in recent research that many economic outcomes are determined by culture (Alesina, 2013). Even differentials in pace of growth and wealth of nations are effected by cultural variables. Traditionally physical capital, natural capital and human capital have remained the focus point of economists. But a key factor which has often been overlooked by economists while analyzing differentials in growth and which is the main source of interaction between the other three forms of capital is that of social capital which can either be good or bad.

Trust is a vital component among cultural traits and could be regarded as both input and output. Further the conditions to be termed as capital are met by this trait. Any individual in order to build trust can invest in relationships which requires maintenance. There is an opportunity cost (time spent) involved when building (investing in) trust. Like physical capital, trust also decays eventually if not maintained. Economic transactions are facilitated by trust. Knack et al., (1997) found that nations with higher levels of income and lower level of income inequalities possess stronger civic norms and trust.

Information asymmetries and transaction costs are reduced by high levels of trust ultimately increasing economic efficiency. Reduction in costs of gathering and information asymmetry broaden the scope of interactions and ultimately enhances number of transactions. Lack

or absence of this form of social capital or cultural trait leads to requirements for external controls like monitoring, enforcement and security systems which raise costs and thus results in economic inefficiency (Hayes et al.,, 1998).

Supply of public goods is also effected by social capital. Presence of good social capital internalizes the externalities which eliminate free rider problem and thus reduces misuse of public goods. Further it enhances investments in public goods Freshwater et al., (2000). Positive relationship between social capital and GDP per capita was found by Alesina et al., (2006) in case of Spain. Thus it can be inferred that social capital plays a key role in determination of economic outcomes like growth.

Economic growth and especially GDP per capita has been found out to be a main determinant of sovereign credit risk (Canter & Packer, 1996). High GDP growth is indicative of rapidly increasing ability of a country to fulfil its debt obligations. Nations which possess high living standards and higher levels of income are in a better position to withstand sudden political and economic shocks relative to economies which have lower growth rates and lower standards of living.

Highest levels of growth is observed in case of countries having mid-level credit ratings. Developed countries don't have that high growth rate. The reason for higher growth rates in case of developing countries is that of flexibility in policies and growth prospects because the resources are there but only needed to be utilized in these countries at their optimal level. Even small steps in right direction can flourish growth in case of developing countries. On the other hand developed countries are already utilizing their resources in their best possible way (Lu, 2013).

As growth is one of the key determinants of sovereign credit rating (Afonso et al., 2011) which is a proxy for sovereign risk so in line with this thought sovereign credit risk is also effected

by social capital or culture indirectly. Trust, control, obedience and respect are some of the key cultural traits which are incorporated for this study to analyze the impact of culture both on growth and sovereign credit rating.

CHAPTER 3

LITERATURE REVIEW

Existing literature regarding cultural impact on growth and culture is reviewed in this chapter. This chapter is divided into three sections. Initially literature regarding culture as a determinant of growth is discussed. Second provides a transmission channel by providing literature linking economic growth with sovereign credit rating which ultimately effects sovereign bonds yield. Third and last section of this chapter deals with literature which analyze the impact and reliability of sovereign credit rating agencies.

3.1 Culture as a Determinant of Growth

The impact of Hofstede cultural variables on the 6 runner up economies of 3G which are the top three fastest growing economies were analyzed by Borker (2013). Methodology adopted by the paper was to analyze comparative analysis of the six runner up economies. These economies were not analyzed on Hofstede six dimensions but also compared with each other and finally compared with that of 3G. He found out that cultural values complement econometric data in evaluating sustained growth.

Gorodnichenko et al., (2013) studied effect of cultural dimensions individualism vs collectivism on long-run growth. Neutral genetic markers were utilized to analyze effect of individualism on income per worker. Strong effect of individualism on long term growth was found. Evidence of two way causality between long term growth and individualism was also provided in the paper. Further any cultural dimensions unrelated to individualism was found out to be insignificant in determining growth.

Noland (2003) analyzed the relationship between religion, culture, and economic performance. He found that cultural measures do not effect economic performance, Islam do not appear to be drag on growth or an anchor on development as alleged. Voros et al., (2012) studied the role of culture when considering the acceptance of Information and Communication Technologies in emerging economies. His results indicated that emerging economies usually have a higher level of uncertainty avoidance as compared to other countries.

Cox et al., (2011) analyzed the relationship between national culture and GDP per capita. Model proposed by Friedman et al., (2011) was utilized which encompass both national income and environmental needs at a time. The author found out that power distance index was negatively related to weighted GDP per capita while individualism was positively related to weighted GDP per capita. The paper also suggested to have future research regarding relationship between culture and economic freedom.

Kaasa & Vadi (2008) investigated impact of cultural dimensions on different innovation indicators. Correlation, regression, graphical and cluster analyses were used. The paper found out power distance index, uncertainty avoidance index, and Masculinity to be negatively related to innovation performance while individualism positively related to innovation performance. The idea underlying is that innovation is a key to progress. Progress means better economic indicators which consequently effect sovereign risk of any country.

Any countries economic conditions depend on the performance of its institutions and the performance of its institutions further depend on the behavior of its employees. Sapienza et al., (2006) analyzed the impact of culture on economic outcomes using the channel that culture impacts expectations and preferences of individuals which ultimately effect economic outcomes.

He found out that better cultural values do have a high economic payoff. It was also analyzed that whether role of credit rating agencies is employed by economic agents or not.

Alesina et al., (2013) tried to asses two way causal effect between culture and institutions. Alberto found out that culture and institutions interact and evolve in a complementary way with mutual feedback effects. Watson et al., (1993) examined impact of culture regarding economic performance of countries at country level. In addition to four of the cultural dimensions which were introduced in the initial version of Hofstede, the role of economic freedom in fostering economic growth was also checked and their joint effect on economic growth was analyzed. Economic freedom leads to right political decisions. He found cultural values cultural factors along with political factors impact economic growth mutually.

Forson et al., (2013) analyzed the two school of thoughts, one who propagate culture as an explanatory variable for economic growth and other school of thought which is against this view. Input-output growth model was utilized in the paper. Cultural values were aggregated using four rationality indices: instrumental, effective, value and traditional rationality. Data of twenty nine countries extracted from world value survey (1981-2009) was assessed. Forson et al., (2013) found that when impact of cultural variables along with economic variables on economic growth is checked, the explanation level of model increases. Moreover two of the four cultural indices, instrumental and affective rationality showed a positive impact on growth.

Williamson & Mathers, (2011) argued that culture along with economic freedom play a vital role in economic development. Both culture and economic freedom impact economic development independently but their impact can be better gauged when effect of both are simultaneously analyzed. The results of study suggested economic freedom to be more important

than culture in determining growth. However channels through which growth is effected by culture, warrant more investigation.

3.2 Economic Growth, Sovereign Credit Rating and Sovereign Bonds Yield

Van et al., (2006) quantitatively analyzed the linkages between the credit risk associated with sovereigns and macroeconomic fundamentals. Eurozone was studied which comprises of Belgium, France, Italy, Germany, Portugal and Spain. Auto regressive distributive lag approach was utilized. The study finds that macroeconomic fundamentals have a significant Impact on credit worthiness of selected sovereigns e-g rise in debt negatively effects sovereign credit risk.

Chee et al., (2015) tried to identify the determinants of sovereign credit rating. It covered 53 sovereigns and data under analysis was from 2000 to 2011. Three qualitative variables in addition to nine quantitative macroeconomic variables were incorporated in the study to study effect on sovereign credit rating. Growth rate of GDP per capita was found out to be a significant factor in determining sovereign credit risk. In addition to this economic freedom was also found out to be significantly effecting credit ratings.

Lu (2013) analyzed the role of culture in sovereign credit risk perception. Hofstede's 5 dimensional model was utilized. Methodology adopted by sovereign credit rating agencies like S&P was discussed. Culture values were regressed against S&P ratings and bond yield. Individualism and uncertainty avoidance equivalence were found out to be significant in determining the sovereign risk of a country.

Lee et al., (2012) discussed circumstances which pave way to sovereign default, costs linked with sovereign defaults and how better understanding of sovereign defaults may assist to account for distinctive economic features of emerging economies. Two types of costs are signaling costs and sanctions imposed by lenders. The paper identified low government resources,

fluctuations of term of trade, wars or civil conflicts and political instability as key variables effecting probability of default.

Reinhart (2002) introduced a new approach of assessment of sovereign risk by analyzing the cumulative default risk of private sector of any sovereign. Z-Metrics approach was adopted by paper to assess default. More than fifty financial statement variables were utilized to form z-metrics. In addition to this macroeconomic variables like unemployment, inflation, credit spreads and GDP growth were also incorporated. Default probabilities of ten enlisted corporate identities across European countries and the U.S was assessed. Time span covered was that of recent financial crisis and the resulting European crisis. The paper suggests to reduce deficit as percentage of GDP and improve sovereign foreign debt repaying capability through an improvising in balance of payments situation.

Gray et al., (2007) introduced practice of modern contingent claims to measure sovereign credit risk. The framework provided by the paper guides in valuation, investment, and trade of sovereign securities. The paper finds three causes of sovereign defaults which are worth of assets of sovereigns, fluctuation in sovereign assets and the distress barrier. Where distress barrier refer to net present value of promised repayments in response to foreign currency debt.

Dumicic (2010) analyzed the impact of changes in macroeconomic fundamentals and investors risk aversion on variations in sovereign yield spreads. The study incorporated quarterly data of eight Central and Eastern European Countries (CEECs) countries for the time period 2004 to 2009. The paper finds investor risk appetite significantly affect sovereign bond yield spreads. Macroeconomic fundamentals such as growth rate and share of government debt in GDP were also found out to be significantly effecting sovereign bond yield spreads.

De Backer (2015) analyzed the impact of fiscal and financial situations of sovereigns on sovereign yield spread in Eurozone. Data was quarterly and its time period span was from 2000 to 2009. Variables incorporated in the study were foreign public debt, banking exposure to foreign and domestic debtors, net borrowing of different sectors of the economy, share of short-term public debt, asset structure of the banking sector, and public debt. The paper found short-term debt-to-GDP ratio, growth perspectives maturity of outstanding debt, and the structure of banking assets by borrowing sector to be significantly impacting sovereign bond yield spreads.

Roy et al., (2010) extended the model of Alesina & Tabellini (1990) and incorporated the impact of political risk on sovereign default. Data of 68 sovereigns for the period 1970 till 2010 was utilized for the study. Both developed and developing countries were incorporated in the study. The paper finds that higher political instability leads to higher government debt which ultimately increases the probability of sovereign default.

Mellios & Paget-Blanc, (2006) studied the determinants of sovereign credit ratings by three credit rating agencies standards and poor's, Fitch and Moody's. In order to identify common factors effecting these ratings, principal component analysis was carried out. Later ordered logistic model was employed to check impact of correlated variables on sovereign credit ratings. Per capita income, real exchange rate, default history, government income, and inflation rate were found to be significantly effecting sovereign credit rating.

3.3 Impact and Reliability of Sovereign Credit Ratings

Reliability of the two credit rating agencies Moody's and Fitch was analyzed by Poon (2003). Some commonly used indicators by rating agencies were regressed on ratings assigned by the two companies. Statistically significant differences were observed in ratings assigned by these two agencies. Moreover both ratings do not effect each other. In case of both ratings when ratings

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were regressed over there explanatory variables, all explanatory variables except external debt were found out to be common in determining both ratings. The major cause of differences among ratings came out to be the differences in weights which are assigned to their explanatory variables while assigning the ratings.

Kiff et al., (2012) found a reasonably well performance of ratings assigned by the credit rating agencies and countries borrowing costs are practically effected by these ratings. During the recent global financial crisis, the only failure of these ratings were observed as they failed to predict the crisis. Improvement in transparency regarding weights assigned to quantitative explanatory variables was suggested in the paper.

Canuto et al., (2012) analyzed the concept and determinants of sovereign risk and role of credit rating agencies as main reference employed by economic agents. Economic indicators utilized by private credit rating agencies were found out to be significant in impacting risk preemie of a country. Thus ratings by private credit rating agencies came out as a useful tool of measuring sovereign risk of any country.

Elkhoury (2009) analyzed the response time of credit rating agencies to economic changes. Sluggish response and adjustment only once any major event had occurred was found. At times over reaction to changes and exaggeration of economic conditions is also depicted by these ratings. The paper states that this overreaction of ratings could have aggravated the recent financial crisis. Papers suggests improvement in methodology of credit ratings. A boost was given to these credit ratings by Basel-II by incorporating these ratings.

Cantor & Park, (1996) analyzed the factors effecting the sovereign credit ratings given by two leading US agencies. Moody's and S&P, and also checked if these ratings play role in market pricing for non-investment grade issues. Cantor found out that both ratings, Moody's and S&P

are explained on the basis of well-defined criteria secondly these ratings have an immediate impact on market pricing in case of non-investment grade issues.

Reinhart (2002) analyzed if the credit ratings of the agencies, Moody's and S&P are good enough to explain real defaults and not only effect the alleged credit worthiness of sovereigns. He came up with the results that three of the four macroeconomic variables that determine perceived credit worthiness through credit ratings also alter actual defaults.

Wang et al., (2013) analyzed the causes of differences in the cost of external borrowing faced by emerging market economies which holds for both across sovereigns and over time. A default threshold model was proposed by thee paper. Investors were assumed to be risk neutral in the model which implies that actual discount rate. Proxy of leverage for sovereigns was depicted by forming an index which is constructed by incorporating tax to GDP ratio, terms of trade, government primary balance, country size and wealth and 10 year US treasury rate. It is assumed that whenever this index comprising of macroeconomic fundamentals falls short of default occurs. Thirty two emerging economies were studied and their data from 1994-2002 was utilized for the study. The study came up with the result that cross country variation in spread is not significantly explained by debt to GDP. Secondly countries default history has a significant impact on spreads.

Zoli et al., (2009) analyzed the causes of differentials and driving forces of euro area sovereign risk premiums. Time period of data for study was from January 2003 till March 2009 and its frequency was monthly. Estimations of the study show that variations in sovereign default risk premiums are a reflection of global risk factors. Higher level of fiscal discipline was observed during crisis period than that of normal situation. Lastly traded volumes which was taken as a proxy for sovereign bond markets continued to remain a significant factor in determining spread behavior.

CHAPTER 4

DATA AND METHODOLOGY

To fulfill the objectives of this study which were to analyze the impact of culture on economic growth and sovereign default risk as discussed in section 1.3, methodological framework and econometric models have been specified. First section discuses methodological framework while second section discusses econometric technique applied for the sake of this study. Third section is that of data description and data sources.

4.1 Methodological Framework

Culture is positively and significantly linked with economic growth (Williamson et al, 2011) and economic growth is also significantly and negatively linked with sovereign risk (Kalliomaki, 2012). In general, human capital which is a product of education and plays a key role in enhancing economic growth (Grossman & Helpman, 1991) which is one of the key determinants of sovereign credit risk. Further high level of investment is necessary for achieving higher level of output which determines gross domestic product of a country (Mahmood & Sattar, 2013) thus reducing its default probability.

Urbanization also impacts economic growth process because agglomeration in cities results in enhanced sharing of ideas and knowledge (Williamson et al, 2011) ultimately reducing chances that a country will fail to fulfill its debt obligations. Geography is also found out to be a possible factor in determining economic growth and development (Gallup et al., 1999). Another important determinant of economic growth is that of population growth rate which plays its part by adding labor force (Mahmood & Sattar, 2013). Factors which have a positive impact on economic growth

of a country ultimately enhances its capacity to repay its debt while factors adversely impacting growth of a country decreases its repayment capability.

In case of developed economies GDP growth rate is not high but GDP per capita is high. Higher GDP per capita means higher the ability to repay loan and thus a negative relationship exists between GDP per capita and sovereign default probability (Cantor & Packer, 1996). Other than economic growth, it is suggested from the previous brief review of literature that external debt, inflation, investment share of GDP and per capita GDP growth rate also effect the probability of default. Relationship between external debt and loan repayment capability depends on the fact that how and where loan is utilized. However in most cases higher external debt depicts higher level of sovereign risk associated with a country (Lu, 2013).

Another important factor affecting sovereign default probability is that of inflation which determines the stability of a country (Mahmood & Sattar, 2013). Countries following inflationary monetary finances are linked with reluctance to repay loan. Sound monetary policies and relatively low interest rates are observed in transparent and developed economies. Countries having weak financial sectors and immature capital markets generally face higher rates of inflation. Thus inflation rates are negatively related to sovereign credit ratings (Cantor & Packer, 1996).

In order to meet the objectives of this study which are to investigate the relationship between culture and sovereign credit risk through the channel of economic growth, the study has been conducted on panel dataset. In this regard, because of data limitations, a total of 30 countries have been taken and a total of four panels are estimated for both growth model and sovereign default risk model. To fulfill the requirements of this study, these 30 countries are further divided into three groups highly developed, developed, and developing as per division done by Human Development Index (HDI) which is derived from data on life expectancy (a proxy for health),

education, and income. The value of human development indicator theoretically lie in between 0 to 1. The countries scoring greater than 0.9 on HDI are considered highly developed, 0.75 to 0.89 as developed and from 0.5 to 0.74 as developing. While countries scoring less than 0.5 are considered under developed. Complete list of countries classified on the basis of HDI is shown in table 2.

Table 2: List of Countries

	Highly Developed		Developed		Developing
1	Australia	1	Argentina	1	China
2	Germany	2	Chile	2	Colombia
3	Japan	3	Mexico	3	Egypt
4	Korea rep.	4	Romania	4	Georgia
5	New Zealand	5	Uruguay	5	India
6	Poland			6	Jordan
7	Slovenia			7	Moldova
8	Spain			8	Morocco
9	Sweden			9	Nigeria
10	United States			10	Pakistan
				11	Peru
				12	Philippines
				13	Russia
				14	South Africa
				15	Turkey

Source: List of Countries, classification based on HDI 2010

The dependent variables of this study are growth rate ($d\log Y_{it}$) and sovereign default probability (DP).

$$d\log Y_{it} = \alpha_{it} + \alpha_1 CI_{it} + \alpha_2 X_{it} + u_{it} \tag{1}$$

$$DP_{it} = \beta_0 + \beta_1 CI_{it} + \beta_2 \ln GDPPC + \beta_3 ED_{it} + \beta_4 INF_{it} + \beta_5 IGDP_{it} + u_{it} \tag{2}$$

Where i in the subscript is for countries selected for the study while t represents the time period. In the first model, Y_{it} is the real output, X_{it} is a vector consisting of the time varying controlled explanatory variables. CI represents cultural index which comprises of four cultural attributes trust, self-determination, respect and obedience. CI is incorporated in both models to check the impact of culture on both sovereign default probability and economic growth. The controlled variables in the first model are gross capital formation (proxy for investment share of GDP), urban population, geography, external debt and primary school enrollment.

In the second model, DP represents probability of sovereign default. Moody's sovereign credit ratings is utilized in the study. ED represents external debt. INF stands for inflation, IGDP represents investment share of GDP or gross capital formation while lnGDPPC represents natural log of real GDP per capita. All the variables utilized in this study and their definitions are shown in table 3. Both equations under consideration for checking impact of culture on economic growth and sovereign default probability are estimated using random effect method or fixed effect method where the selection of method to be opted in each case was dependent on the results of Hausman test.

Table 3: Variables Description

Variable	Variable Definition
Culture (CI)	Measured by adding percentage of those respondents who gave answers in favor of four cultural traits trust, respect, obedience and self-control which were chosen to form cultural index. All the cultural traits were given equal value while formulating cultural index.
Credit Rating (DP)	Moody's sovereign credit ratings utilized. Assigned discrete numbers from 1 to 25 in descending order of sovereign default risk for estimation purposes and then scaled from 0 to 1 as continuous variable.
GDP growth rate	Growth of GDP per capita, PPP basis, constant 2000 International dollars.
Investment share of GDP	Gross capital formation proxy used
Urban population	Percentage of total population residing in urban areas
Primary school enrollment	Adjusted net enrollment rate, primary (% of primary school age children)
Geography	Percentage share of rent of natural resources in GDP as a proxy for geography
External Debt	Total government debt as a percentage of GDP
Inflation	Annual percentage change in prices

4.2 Econometric Technique

4.2.1 Fixed Effect Method

Unobserved individual effects are allowed by fixed effect. These unobserved fixed effects are correlated with incorporated variables. Formulation of this model assumes that variations across groups can be dealt with by variations in constant terms. Each cross section's constant is treated as unidentified parameter to be estimated. Constants are country specific in fixed effects method. So each country can have a different value of constant in fixed effect model.

4.2.2 Random Effect Method

Random effect method is an alternative estimation technique of fixed effect method. Difference between fixed effect and random effect method is that in latter each country's constants are not taken as fixed parameters rather as random parameters. Modelling individual specific terms as randomly distributed across countries is more appropriate if strictly uncorrelated individual effects are there. If strictly non-correlation exists between individual effects then modelling of individual specific constant terms as randomly distributed among countries seems more appropriate. Variability of each country's constant can be articulated as

$$\alpha = \alpha + \eta_i$$

Where η_i stands for standard random variable having zero mean. In this case form taken by random effect model is as follows

$$Y = \alpha + \alpha_1 A_{it} + \alpha_2 D_{it} + \alpha_3 G_{it} + \alpha_4 Z_{it} + (\nu_{it} + \eta_i)$$

4.2.3 Hausman Test

In order to decide that which of the two random effect method or fixed effect method are consistent with growth model and sovereign default probability model for cases of all sampled countries, highly developed countries, developed countries and developing countries, this study has applied Hausman test. The null and alternative hypothesis of this test are as follows

Ho: Random effects are consistent and efficient.

Ha: Random effects are inconsistent and inefficient

Chi square distribution is followed by Hausman test and test statistics are estimated by utilizing the formula

$$H = (\Omega_{FE} - \Omega_{RE})'[\text{Var}(\Omega_{FE}) - \text{Var}(\Omega_{RE})]\text{-}1(\Omega_{FE} + \Omega_{RE}) \sim \chi2$$

Where Ω represents a slope coefficients vector. Value of statistics of Hausman test will be significant if large differences exists between parameters estimated by fixed effect model and random effect model. In cases where Hausman test statistics is large (greater than 0.05) it implies rejection of null hypothesis alternatively lower value (less than 0.05) implies rejection of alternative hypothesis.

As mentioned earlier that this study is based on panel data. The results of the Hausman test applied for estimation of equations of growth model and sovereign default model estimated separately by incorporating all controlled variables in addition to main variable culture for cases of all sampled highly developed, developed, and developing countries are shown in table 4. The value (Prob>chi2) > 0.05 accepts Ho and favors random effect method while (Prob>chi2) < 0.05 accepts Ha and favors fixed effect method.

Table 4: Hausman Test Results

Sample	Growth Model (Prob>chi2)	Remarks	Sovereign Default Probability	Remarks
All selected Countries	0.190	Random effect method	0.005	Fixed effect method
Highly Developed	0.867	Random effect method	0.000	Fixed effect method
Developed	0.016	Fixed effect method	0.000	Fixed effect method
Developing	0.572	Random effect method	0.399	Random effect method

Hausman test favors random effect method for estimating economic growth model in case of all sampled countries by accepting H_o, highly developed countries, and developing countries. Fixed effect method is favored in case of growth model estimation for developed countries. Fixed effect method is also favored by Hausman test for sovereign default probability model in case of all sampled countries, highly developed countries, and developed countries by accepting H_a while random effect method is favored for estimating sovereign default probability model in case of developing countries.

4.3 Data Description and Sources

The proxies utilized for variables utilized in this study along with references to the studies in which these proxies were used earlier and data sources in provided in this section.

4.3.1 Economic Growth

Two proxies usually used for economic growth are GDP per capita growth rates or GDP growth. Both GDP growth and GDP per capita growth rates were used as proxies of economic

growth by Canuto et al., (2012) while analyzing determinants of all three Moody's, Fitch and S&P sovereign credit ratings while GDP per capita growth was used as a proxy of economic growth by Khan et al., (2010) and GDP growth was used as a proxy by Mather at al., (2010) while checking the effect of economic freedom and culture on growth. This study utilizes GDP per capita as a proxy for economic growth while analyzing determinants of probability of sovereign default and GDP growth rate as proxy of economic growth while analyzing culture as an explanatory variable for growth differentials.

4.3.2 Credit Rating (CR)

Moody's sovereign credit rating is utilized as a proxy for sovereign risk in this study. Moody's credit rating was utilized by Canuto et al., (2004) and Cantor et al., (1996) while analyzing determinants of sovereign risk. Moody's credit ratings range from Aaa to C3. Where Aaa corresponds to minimum risk of default or extremely strong ability to repay loan while C3 refer to default situation and high vulnerability of nonpayment. These ratings for the sake of estimations were first assigned numbers from 1 to 25 since there were twenty five different ratings in order from lowest to highest risk. Scaling of Moody's credit rating along with interpretation of credit rating and comment regarding ability to meet financial commitments is shown in table 5.

Later the discrete values from one to twenty five were scaled from 0 to 1. 1 refers to default while 0 refer to no chances of default at all. This variable is named as default probability and for every 0.04 increase in its value the grading of a specific sovereign downgrades by one unit rating. Thus values from 0 to 1 are continuous.

Table 5: Scaling of Moody's Credit Rating

No.	Moody's	Interpretation		
		Grading	Credit Risk	Capacity to Meet Financial Commitments
1	Aaa	Highest quality	minimal	extremely strong
2	Aa1	High quality	very low	very strong
3	Aa2	High quality	very low	very strong
4	Aa3	High quality	very low	very strong
5	A1	Upper-Medium	low	still strong
6	A2	Upper-Medium	low	still strong
7	A3	Upper-Medium	low	still strong
		Speculative Grade		
8	Baa1	Medium	moderate	weakened
9	Baa2	Medium	moderate	weakened
10	Baa3	Medium	moderate	weakened
11	Ba1	Lower-medium	substantial	inadequate
12	Ba2	Lower-medium	substantial	inadequate
13	Ba3	Lower-medium	substantial	inadequate
14	B1	Low	high	impaired
15	B2	Low	high	impaired
16	B3	Low	high	impaired
17	Caa1	Poor	very high	not likely
18	Caa2	Poor	very high	not likely
19	Caa3	Poor	very high	not likely
20	Ca1	Very low	very near default	vulnerable to nonpayment
21	Ca2	Very low	very near default	vulnerable to nonpayment
22	Ca3	Very low	very near default	vulnerable to nonpayment
23	C1	Lowest	in default	highly vulnerable to nonpayment
24	C2	Lowest	in default	highly vulnerable to nonpayment
25	C3	Lowest	in default	highly vulnerable to non-payment

Source: Sovereign Default and Recovery Rates, 1994 – 2013

4.3.3 Culture (CI)

Cultural index is used as proxy for culture. In this study culture is measured by utilizing data of four cultural norms obedience, self-determination, trust and trust. The data is available in wave form each of five years. Single available value of five years was utilized over all five years so a total of four values were there for twenty years[1]. Each of the cultural traits was given equal weight while forming the index.

Trust was quantified by utilizing data of percentage of total respondents who answered that "most people can be trusted" in response to question of survey "generally speaking, would you say that most people can be trusted?" To measure self-determination data of percentage of those respondents was taken who answered that they have completely free choice and control in life over what happens to them". Respondents were basically provided with a scale of 1 to 10 where 1 implies not all while 10 means up to a great deal. So data was basically taken for the percentage of only those respondents who answered 10.

To quantify respect, peoples response to the question "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?" was considered. Data of percentage values of those who chose "tolerance and respect for other people" was taken. Same question was reutilized for quantifying obedience but this time percentage of those who selected obedience as being necessary characteristic of children taught at home was taken. As equal weighs were given to all four traits so percentages of all four traits required answers

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[1] The time periods of the surveys are from 1981-84, 1989-1993, 1994-1999, 2000-2004, 2005-2009, and 2009 to 2014. While study incorporates last four waves.

were added and their average was found out to determine the cultural index. These four cultural traits were utilized for forming culture index by Williamson et al., (2011) and Khan et al., (2010) while checking the impact of culture and economic freedom on growth rate.

4.3.4 Primary School Enrollment (PSE)

Primary school enrollment was used as a proxy for education by Williamson et al., (2011) while studying impact of culture and economic freedom on growth. This study also utilizes the same proxy for education while analyzing its impact on growth. Data of primary school enrollment is taken from World Development Indicators.

4.3.5 Urban Population (UP)

Williamson et al., (2011) and Noland (2003) utilized urban population (as a percentage of total population) as a control while analyzing the impact of religion and culture on economic performance. This study also considers the same proxy while analyzing impact of urbanization on economic growth. Data of urban population as a percent of total is taken from World Development Indicators.

4.3.6 Geography (G)

Impact of geography is captured by making use of the proxy, share of rent of natural resources in gross domestic product in percentage form. The same proxy was used by Tribunella (2010) while analyzing relationship between culture, gross domestic product and environmental sustainability and by Williamson et al., (2011) while analyzing determinants of growth. This proxy is of geography is also utilized in this study to check geographical impact on growth. Data of percentage share of rent of natural resources in GDP is taken from World Development Indicators.

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4.3.7 Gross Capital Formation (GCF)/Investment Share of GDP

Gross capital formation is used as a proxy for investment share of GDP in the first model. The same proxy was used by Williamson et al., (2011) while checking impact of economic freedom and culture, and impact of external debt, foreign aid and governance on economic growth respectively. Schreyer et al., (2002) used this proxy for investment while analyzing relationship between economic growth and investment. Gross capital formation data is acquired from World Development Indicators.

4.3.8 External Debt (ED)

External debt as a percentage of total GDP is used as a measure for external debt while checking impact of external deficit on sovereign credit rating. External debt represents total debt whether it is public or private debt held by government. External debt as a percentage of total GDP proxy was utilized by Canuto et al., (2004), Packer et al., (1996), and Kalliomaki (2012 while analyzing determinants of sovereign credit risk. This study also utilizes the same proxy while analyzing determinants of sovereign default probability. Data of external debt is taken from World Development Indicators.

4.3.9 Inflation (INF)

Inflation rate in percentage change form was taken as a proxy to check for monetary policy in the sovereigns. This proxy was analyzed as an explanatory variable for sovereign credit rating by Kalliomaki (2012), Packer et al., (1996) while analyzing the determinants and impact of sovereign credit ratings and as a controlled variable by Lu (2013) while checking impact of cultural dimensions on sovereign credit rating. Data of inflation in percentage form was obtained from

from International Financial Statistics. Sources of all variables utilized in this study are provided in table 6.

Table 6: Variables Data Sources

Variable	Data Source
Culture	World Values Surveys,1994–2013
Credit Rating	Sovereign Default and Recovery Rates, 1994-2013
GDP growth rate	WDI
Investment share of GDP	WDI
Urban population	WDI
Primary school enrollment	WDI
Geography	WDI
External Debt	WDI
Inflation	IFS

4.4 Data Limitations

Data utilized in this study has already been extensively used and accepted. However as far as this study is concerned the data has got some limitations.

- Countries selection for sake of this study was greatly affected by data availability. Initially all 60 countries from the 6th wave were taken but later the number of countries was dropped to 30 because those countries whose data was not present in any of the four cultural waves selected for this study were dropped.

- Selection of waves was also effected by data availability. The first two cultural waves 1981-84 and 1990-1994 were dropped because they were having data of only nine and seventeen countries respectively. Moreover most of these countries were developed so data of these waves was not enough to cater requirements of this study.

- The data of culture is not annual rather averages of five years. But as culture is not something which changes suddenly and it really takes long time for culture to change so the average of five years can be and is utilized in this study for five years.

- Regarding sovereign credit risk data of Moody's rating was only available for the years chosen for study.

CHAPTER 5

EMPIRICAL FINDINGS AND DISCUSSION

Based on the empirical specifications discussed in preceding chapter, empirical results are explained in this chapter. This chapter is further subdivided into five sections, first section is of descriptive statistics of data, and second section discusses results regarding impact of culture on sovereign credit risk by altering economic growth for a sample all 30 countries selected for this study. The same thing is done for highly developed, developed and developing countries in fourth, fifth and sixth sections of this chapter respectively. The results of growth model and sovereign default probability model encompassing culture as the main explanatory variable are discussed in each of these four sections. The selection of method of estimation opted relied upon the results derived from Hausman test.

5.1 Descriptive Statistics

5.1.1 Descriptive Statistics of All Sampled Countries

Summary statistics are described in table 7 for all variables incorporated in both growth and sovereign default risk model. The statistics show that average growth rate is 3.8 for the sample of selected countries for given time period while it varies from -30.9 percent to 33.7 percent. Mean value of gross capital formation is 22.0 while it ranges for the sample from 2.6 to 47.3. Average primary school enrollment is 91.5 while minimum percentage of primary school enrollment observed is 48.1 percent and maximum value observed is 100 percent. Mean urban population as a percent of total population is 65.8 for selected sample of countries while its value ranges from

26.3 percent to 94.9 percent. Percentage of part of natural resources in total GDP lies in between from 0 to 68.8 with an average value of 5.2.

Table 7: Summary Statistics of All Sampled Countries

Variable	Observations	Mean	Std. Dev.	Minimum	Maximum
Growth	600	3.8	4.1	-30.9	33.7
Gross Capital Formation	600	22.0	5.9	2.6	47.3
Primary School Enrollment	600	91.5	9.6	48.1	100.0
Urban Population	600	65.8	18.5	26.3	94.9
Geography	600	5.2	8.4	0.2	60.8
Population Growth Rate	600	0.9	0.9	-2.6	3.8
Cultural Index	600	0.5	0.2	0.01	0.9
Default Probability	600	0.6	0.2	0.0	1.0
GDP Per Capita (log form)	600	8.5	1.3	6.1	10.7
External Debt	600	52.2	33.9	3.9	224.2
Inflation	600	9.7	21.7	-2.0	307.6
Investment Share of GDP	600	22.2	9.2	0.8	53.5

Panel data 1994 to 2013

Population growth rate averaged 0.9 for the selected sample of countries and have a minimum observed value of -2.6 and maximum value of 3.8. Value of cultural index range in between 0 to 1 with a mean value of 0 to 0.8. Value of default probability range in between 0.2 up to a max of 1.00. GDP per capita in log form ranged in between 6.1 to 10.7 with average value of 8.5. External debt averaged 52.2 with its value lying in the range of 3.9 to 224.2. For the selected

sample inflation averaged 9.7 with its value ranging from -2.0 percent to 307.6 percent. Investment share of GDP remained between extreme low values of 0.8 percent to a maximum of 53.5 percent.

5.1.2 Descriptive Statistics of Highly Developed Countries

Summary statistics are described in table 8 for all variables incorporated in both growth and sovereign default risk model for case of highly developed countries. The statistics show that average growth rate is 2.7 for the sample of selected highly developed countries and it varies from -7.7 percent to 10.7 percent with a standard deviation of 2.5. Mean value of gross capital formation is 23.6 while it ranges for the sample of highly developed countries from 17.4 to 34.6 with a standard deviation of 3.8. Average primary school enrollment is 97.5 while minimum percentage of primary school enrollment observed in case of highly developed countries is 90.4 and maximum is 100 with a standard deviation of 2.2.

Mean urban population as a percent of total population is 76.4 for selected sample of highly developed countries while its value ranges from 49.7 percent to 92.4 percent with a standard deviation of 11.4. Percentage rent of natural resources as percentage of total GDP lies in between from 0.01 to 10.8 with an average value of 1.1 and standard deviation of 1.8. Population growth rate averaged 0.5 in case of highly developed countries and has a minimum observed value of -1.6 and maximum value of 2.0 with a standard deviation of only 0.5. Value of cultural index ranges in between 0.1 and 0.7 with a mean value of 0.1 and standard deviation of 0.1.

Table 8: Summary Statistics of Sampled Highly Developed Countries

Variable	Observations	Mean	Std. Dev.	Minimum	Maximum
Growth	200	2.7	2.5	-7.7	10.7
Gross Capital Formation	200	23.6	3.8	17.4	34.6
Primary School Enrollment	200	97.5	2.2	90.4	100
Urban Population	200	76.4	11.4	49.7	92.4
Geography	200	1.1	1.8	0.01	10.8
Population Growth Rate	200	0.5	0.5	-1.6	2.0
Cultural Index	200	0.19	0.19	0.1	0.7
Default Probability	200	0.09	0.11	0.00	0.41
GDP Per Capita (log form)	200	10.0	0.5	8.3	10.7
External Debt	200	54.8	41.2	7.9	224.2
Inflation	200	3.0	4.0	-1.3	33.2
Investment Share of GDP	200	30.1	7.6	17.4	53.5

Panel data 1994 to 2013

Value of sovereign default probability ranges in between 0 to 0.41. GDP per capita in log form ranged in between 8.3 to 10.7 while GDP per capita averaged 10.0 in this case. External debt as percentage of total GDP averaged 54.8 with its value lay in the range of 7.9 to 224.2. For the selected sample of highly developed countries inflation averaged 3.08 with its value range from -1.3 percent to 33.2 percent. Investment share of GDP remained between 17.4 percent to a maximum of 53.5 percent.

5.1.3 Descriptive Statistics of Developed Countries

Summary statistics are described in table 9 for all variables incorporated in both growth and sovereign default risk model for developed countries. The statistics show that average growth rate is 3.3 for the sample of selected developed countries for given time period while it varies from -10.8 percent to 10.6 percent with a standard deviation of 4.2. Mean value of gross capital formation is 20.0 while it ranges for the sample from 11.6 to 31.0 with a standard deviation of 3.7. Average primary school enrollment is 94.8 while minimum percentage of primary school enrollment observed is 52.7 percent and maximum value observed is 100 percent while its standard deviation came out to be 3.8.

Mean urban population as a percent of total population is 79.7 for selected sample of developed countries while its value ranges from 52.7 percent to 94.9 percent and have a standard deviation of 14.4. Part of natural resources rent in total GDP a proxy of geography lies in between 0.4 to 23.0 percent with an average value of 6.1 and standard deviation of 4.9. Population growth rate averaged low value of 0.6 for the selected sample of developed countries and have a minimum observed value of -1.8 and maximum value of 2.0 with standard deviation of 0.8. Value of cultural index range in between 0.2 to 0.8 with a mean value of 0.5 and standard deviation of 0.1.

Value of sovereign default probability range in between 0.1 to a max of 0.7. GDP per capita in log form ranged in between 8.8 to 9.3 with an average value of 8.7 and standard deviation of 0.14. External debt averaged 34.6 with its value lying in the range of 3.9 to 166 and has standard deviation of 27.7. For the selected sample inflation averaged 13.4 with its value ranging from -0.3 percent to 154.7 percent and standard deviation of 22.3. Investment share of GDP averaged 22.2 and remained between 11.1 percent to a maximum of 33.1 percent with a standard deviation of 4.9

Table 9: Summary Statistics of All Sampled Developed Countries

Variable	Observations	Mean	Std. Dev.	Minimum	Maximum
Growth	100	3.3	4.2	-10.8	10.6
Gross Capital Formation	100	20.0	3.7	11.9	31.9
Primary School Enrollment	100	94.8	3.8	84.3	100.0
Urban Population	100	79.7	14.4	52.7	94.9
Geography	100	6.1	4.9	0.4	23.0
Population Growth Rate	100	0.6	0.8	-1.8	2.0
Cultural Index	100	0.5	0.1	0.2	0.8
Default Probability	100	0.4	0.1	0.1	0.7
GDP Per Capita (log form)	100	8.7	0.3	8.0	9.3
External Debt	100	34.6	27.7	3.9	166.0
Inflation	100	13.4	22.3	-0.3	154.7
Investment Share of GDP	100	22.2	4.9	11.1	33.1

 Panel data 1994 to 2013

5.1.4 Descriptive Statistics of Developing Countries

Summary statistics are described in table 10 for all variables incorporated in both growth and sovereign default risk model. The statistics show that average economic growth rate is 4.6 for the sample of selected developing countries for given time period while it varies from -30.9 percent to 33.7 percent with standard deviation of 4.6. Mean value of gross capital formation is 21.7 while it ranges for the sample from 2.6 to 47.3 with a standard deviation of 7.2. Average primary school enrollment is 86.5 while minimum percentage of primary school enrollment observed is 48.1 percent and maximum value observed is 99.8 percent while standard deviation is 11.2.

Mean urban population as a percent of total population is 54.1 for selected sample of developing countries while its value ranges from 26.3 percent to 83.2 percent with a standard deviation of 16.0. Percentage share of natural as part of total GDP lies in between from 0.2 to 60.8 with an average value of 7.6 and standard deviation of 10.7. Population growth rate averaged 1.2 for the selected sample of developing countries and have a minimum observed value of -2.6 to a maximum value of 3.8. The standard deviation in case of population growth in developing countries is 0.98. Value of cultural index range in between 0.01 to 0.7 with a mean value of 0.5 with a standard deviation of 0.2.

Value of default probability range in between 0.1 up to a max of 0.7. GDP per capita in log form ranged in between 6.1 to 0.07 with an average value of 7.4 and a standard deviation of 0.2. External debt averaged 56.4 with its value lying in the range of 6.1 to 159.4 with a standard deviation of 28.1. For the selected sample inflation averaged 12.0 with its value ranging from -2.0 percent to 307.6 percent with a standard deviation of 26.8. Investment share of GDP in case of developing countries remained between 0.8 percent to a maximum of 53.5 percent with mean value of 16.8 and standard deviation of 7.3.

Table 10: Summary Statistics of All Sampled Developing Countries

Variable	Observations	Mean	Std. Dev.	Minimum	Maximum
Growth	300	4.6	4.6	-30.9	33.7
Gross Capital Formation	300	21.7	7.2	2.6	47.3
Primary School Enrollment	300	86.5	11.2	48.1	99.8
Urban Population	300	54.1	16.0	26.3	83.2
Geography	300	7.6	10.7	0.2	60.8
Population Growth Rate	300	1.2	0.9	-2.6	3.8
Cultural Index	300	0.5	0.2	0.01	0.7
Default Probability	300	0.4	0.2	0.1	0.7
GDP Per Capita (log form)	300	7.4	0.7	6.1	9.0
External Debt	300	56.4	28.1	6.1	159.4
Inflation	300	12.9	26.8	-2.0	307.6
Investment Share of GDP	300	16.8	7.3	0.8	38.2

Panel data 1994 to 2013

5.1.5 Comparison of Descriptive Analysis

Minimum value of cultural index was observed to be 0.01 in the case of developing countries while highest value of cultural index was found out to be 0.8 in case of developed countries. Developed countries were also having the highest average cultural index value of 0.5 in all categories of countries sampled for the study. Highest average economic growth rate was observed to be 4.6 in case of developing countries as expected while minimum value of -30.9 percent and maximum value of 33.7 percent growth rate was also observed in case of developing countries. Highest average default probability of 0.4 was observed in case of developing countries. Minimum default probability value of 0 was observed in the case of highly developed countries and maximum default probability value was observed to be 0.7 in case of developing countries.

Both highest and lowest gross capital formation of 47.3 percent and 2.6 percent was observed in the case of developing countries while highest mean gross capital formation of 23.6 was observed in the case of highly developed countries for the time period under observation. Primary school enrollment was observed to be 100 percent in case of both highly developed and developed countries however mean primary school enrollment was lesser in case of developed countries with a value of 94.8 as compared to average primary school enrollment of 97.5 in case of highly developed countries. Minimum value of primary school enrollment was observed to be 48.1 in case of developing across all countries of different categories selected for the study.

Highest mean urban population as percent of total population was observed to be 79.7 in the case developed countries while lowest mean urban population as percent of total population was observed to be 54.1 in case of developing countries for the time period under consideration. Mean percent share of natural resources in GDP was observed to be 7.6 in case of developing countries while maximum and minimum values of percent share of natural resources in GDP was

observed to be 60.8 and 0.01 respectively in case of developing and highly developed countries respectively.

Highest mean population growth was observed to be 1.2 in case of developing countries. while lowest population growth and highest growth was observed to be -2.6 and 3.8 respectively both in case of developing countries for the time period under consideration. Maximum GDP per capita in log form was observed to be 10.0 in case of highly developed countries while lowest GDP per capita in log form was observed to be 6.1 in case of developing countries. Highest mean value of external debt as percent of total GDP was observed to be 56.4 in case of developing countries. Highest value of external debt as percent of total GDP was observed in case of highly developed countries and it value is 10.7 percent while minimum was observed to be 3.9 in case of developed countries.

Highest mean inflation rate was observed to be 13.4 in case of developed countries for the time period under analysis for study. Minimum inflation rate of -2.0 was observed in case of developing countries and maximum inflation rate of 307.6 was also observed in case of developing countries. Highest mean investment share of GDP 30.1 in case of highly developed countries while maximum investment share of GDP was also observed highly developed countries and its value is 53.5 while minimum investment share of GDP was observed to be 0.8 in case of developing countries.

5.2 Impact of Culture on Economic Growth and Sovereign Default Probability of All Sampled Countries

This section is further subdivided into two sections. First section discusses results obtained from a series of estimations regarding impact of culture on economic growth of all sampled

countries while second section discusses impact of culture on sovereign default probability of all sampled countries for this study again by estimating a series of specifications.

5.2.1 Impact of Culture on Economic Growth of All Sampled Countries

In order to estimate the impact of our main variable on economic growth in case of all countries selected for this study, random effect method is applied after consultation with the results of Hausman test. The results of estimations carried out in this regard are shown in table 11. In the first specification, only culture was used as an explanatory variable along with constant term. In the second specification, gross capital formation as a control variable along with main variable of the study "culture". In the third specification primary school enrollment and urban population are added along with already incorporated variables in previous estimations. In the fourth and final estimation geography and population growth rate are added.

Culture has been found out to be positively and significantly impacting economic growth in all specifications and these results are consistent with the theory of economic growth. The results imply that higher the level of cultural index or better the social norms like level of trust, respect, obedience and self-determination, higher will be the economic growth of an economy. The results conform to the theory that good culture will act as a social capital and will help in boosting economic growth.

Other than culture, impact of gross capital formation and geography was also found out to be positive, highly significant and consistent with the economic theory. While primary school enrollment, urban population, and population growth were found out to be insignificant in impacting growth for while analyzing impact of culture on economic growth for the case of all sampled countries.

Table 11

RE Method Estimates: Impact of Culture on Economic Growth of all Sampled Countries

Explanatory Variables	(1)	(2)	(3)	(4)
CI	0.916 *	2.546 **	3.184 ***	3.114**
	(0.559)	(1.145)	(0.921)	(1.917)
GCF	-	0.243 ***	0.261 ***	0.277 ***
		(0.050)	(0.034)	(0.036)
PSE	-	-	-0.041	-0.035
			(0.035)	(0.029)
UP	-	-	0.027	0.025
			(0.019)	(0.017)
GEO	-	-	-	0.109 ***
				(0.027)
PGR	-	-	-	0.145
				(0.257)
CONSTANT	3.357 ***	-2.836 **	4.759 *	0.929
	(0.867)	(1.282)	(2.497)	(2.434)
R-squared	0.101	0.167	0.194	0.236
Observations	600	600	600	600
Standard errors are in parentheses.				
*, **, and *** depicts 10 percent, 5 percent and 1 percent level of significance respectively				

5.2.2 Impact of Culture on Sovereign Default Probability of All Sampled Countries

The impact of main variable of this study culture on sovereign default probability in case of all sampled countries is carried out by conducting a series of estimations using fixed effect method which was favored by Hausman test results in this case. A total of four estimations were carried out to investigate the impact of culture of sovereign default probability. In the first specification only culture was taken as an explanatory variable for sovereign default probability. In the second specification GDP per capita in log form was inducted. Third specification included

external debt in addition to already added explanatory variables. Fourth specification included

inflation and investment share of GDP. The results of the estimations are presented in table 12.

Table 12
FE Method Estimates: Impact of Culture on Sovereign Default Probability of all Sampled Countries

Explanatory Variables	(1)	(2)	(3)	(4)
CI	-0.170*	-0.187*	-0.213*	-0.230 **
	(0.103)	(0.117)	(0.132)	(0.131)
lnGDPPC	-	-0.127 ***	-0.115***	-0.105***
		(0.011)	(0.011)	(0.012)
ED	-	-	0.008 ***	0.006 ***
			(0.001)	(0.001)
INF	-	-	-	-0.001
				(0.003)
IGDP	-	-	-	-0.003***
				(0.001)
Constant	-0.647***	0.444***	0.313***	0.287***
	(0.014)	(0.099)	(0.098)	(0.103)
R-squared	0.118	0.194	0.233	0.252
Observations	600	600	600	600
Standard errors are in parentheses.				
*, **, and *** depicts 10 percent, 5 percent and 1 percent level of significance respectively				

Impact of culture on sovereign default probability was found out to be significant and negative in

all specifications. The results indicate that improvement in culture leads to sovereign's default probability

to fall. Culture reduces sovereign risk by altering macroeconomic indicators of a sovereign. The result

regarding impact of culture on sovereign default probability is robust as impact of culture on sovereign

default probability remained negative and significant regardless of introduction of new variables on the

specification.

In addition to culture, GDP per capita, external debt and investment share of GDP also came out to be highly significant in determining sovereign default probability of all sampled countries. GDP per capita and investment share of GDP negatively impacts sovereign default probability while external debt positively impacts sovereign default probability as expected. Inflation was the only variable found out to be insignificant in explaining sovereign default probability associated with a country.

5.3 Impact of Culture on Economic Growth and Sovereign Default Probability of Highly Developed Countries

This section is further subdivided into two sections. First section discusses results obtained from a series of estimations regarding impact of culture on economic growth of all sampled highly developed countries while second section discusses impact of culture on sovereign default probability of all sampled highly developed countries for this study again by estimating a series of specifications.

5.3.1 Impact of Culture on Economic Growth of Highly Developed Countries

In order to estimate the impact of our main variable on economic growth in case of highly developed countries, random effect method is applied after consultation with the results of Hausman test. The results of estimations carried out in this regard are shown in table 13. In the first specification, only culture was used as an explanatory variable along with constant term. In the second specification, gross capital formation as a control variable along with main variable of the study "culture". In the third specification primary school enrollment and urban population are added along with already incorporated variables in previous estimations. In the fourth and final estimation geography and population growth rate are added.

Results regarding impact of culture on economic growth in case of highly developed countries came out to be inconsistent as culture has been found to be significant only once all other variables which are incorporated as controlled variables are included in the model. This study finds that impact of culture on economic growth of highly developed countries is not robust and we cannot conclude that culture impacts economic growth of highly developed countries.

Gross capital formation and geography were also found out to be significant and positively impacting economic growth of highly developed sovereigns. Results regarding impact of primary school enrollment on economic growth were inconsistent. While urban population and population growth rate were found out to be insignificant in explaining economic growth of highly developed sovereigns.

Table 13:
RE Method Estimates: Impact of Culture on Economic Growth of Sampled Highly Developed Countries

Explanatory Variables	(1)	(2)	(3)	(4)
CI	1.440	2.187	2.746	3.288 *
	(1.731)	(1.787)	(1.939)	(2.062)
GCF	-	0.304 ***	0.318 ***	0.405 ***
		(0.070)	(0.079)	(0.076)
PSE	-	-	-0.211	-0.251 *
			(0.146)	(0.137)
UP	-	-	0.011	0.022
			(0.039)	(0.042)
GEO	-	-	-	0.307 **
				(0.148)
PGR	-	-	-	-0.632
				(0.487)
Constant	2.072 **	-5.719 ***	15.780	14.860
	(0.931)	(1.617)	(12.360)	(12.520)
R-squared	0.05	0.147	0.164	0.197
Observations	200	200	200	200
Standard errors are in parentheses.				
*, **, and *** depicts 10 percent, 5 percent and 1 percent level of significance respectively				

5.3.2 Impact of Culture on Sovereign Default Probability of Highly Developed Countries

The impact of main variable of this study culture on sovereign default probability in case of all sampled countries is carried out by conducting a series of estimations using fixed effect method which was favored by Hausman test results in this case. A total of four estimations were carried out to investigate the impact of culture of sovereign default probability. In the first specification only culture was taken as an explanatory variable for sovereign default probability. In the second specification GDP per capita in log form was inducted. Third specification included

external debt in addition to already added explanatory variables. Fourth specification included inflation and investment share of GDP. The results of the estimations are presented in table 14.

Table 14
FE Method Estimates: Impact of Culture on Sovereign Default Probability of Sampled Highly Developed Countries

Explanatory Variables	(1)	(2)	(3)	(4)
CI	-0.240***	-0.220***	-0.195***	-0.203***
	(0.069)	(0.065)	(0.063)	(0.061)
lnGDPPC	-	-0.104***	-0.114***	-0.154***
		(0.019)	(0.019)	(0.019)
ED	-	-	0.0008***	0.0009***
			(0.0002)	(0.0002)
INF	-	-	-	0.005 ***
				(0.002)
IGDP	-	-	-	4.95e-05
				(0.001)
Constant	0.209***	1.252***	1.289***	0.970***
	(0.0345)	(0.197)	(0.191)	(0.196)
R-squared	0.122	0.191	0.243	0.277
Observations	200	200	200	200
Standard errors are in parentheses.				
*, **, and *** depicts 10 percent, 5 percent and 1 percent level of significance respectively				

Culture, the main variable under consideration of this analysis came out to be highly significant and negatively impacting sovereign default probability in case of highly developed countries as expected. The results indicate the importance of culture in determining sovereign risk even in presence of well-functioning institutions.

GDP per capita, external debt and inflation also came out to be highly significant in determination of sampled highly developed sovereigns. As expected GDP per capita reduces the

probability of highly developed sovereigns to default while higher levels of inflation and external debt increases the probability of highly developed sovereigns to default.

5.4 Impact of Culture on Economic Growth and Sovereign Default Probability of Developed Countries

In order to meet the objectives of this study and analyze the impact of culture on both sovereign default and economic growth this section is further subdivided into two sections. First section discusses results obtained from a series of estimations regarding impact of culture on economic growth of all sampled developed countries while second section discusses impact of culture on sovereign default probability of all sampled highly developed countries for this study again by estimating a series of specifications.

5.4.1 Impact of Culture on Economic Growth of Developed Countries

In order to estimate the impact of our main variable on economic growth in case of developed countries, fixed effect method is applied after consultation with the results of Hausman test. The results of estimations carried out in this regard are shown in table 15. In the first specification, only culture was used as an explanatory variable along with constant term. In the second specification, gross capital formation as a control variable along with main variable of the study "culture". In the third specification primary school enrollment and urban population are added along with already incorporated variables in previous estimations. In the fourth and final estimation geography and population growth rate are added.

Culture has been found out to be positively and significantly impacting economic growth of developed countries in all specifications and these results are consistent with the theory of economic growth. The results imply that higher the level of cultural index or better the social

norms like level of trust, respect, obedience and self-determination, higher will be the economic growth of developed countries. The results conform to the theory that good culture will act as a social capital and will help in boosting economic growth.

Table 15
FE Method Estimates: Impact of Culture on Economic Growth of Sampled Developed Countries

Explanatory Variables	(1)	(2)	(3)	(4)
CI	2.0566 *	3.144 *	3.907 **	4.018 **
	(1.273)	(1.871)	(1.889)	(2.364)
GCF	-	0.381 ***	0.540 ***	0.461 ***
		(0.101)	(0.139)	(0.133)
PSE	-	-	0.291*	0.361 **
			(0.159)	(0.149)
UP	-	-	0.062	0.064
			(0.041)	(0.046)
GEO	-	-	-	0.151 **
				(0.093)
PGR	-	-	-	-0.288
				(0.686)
Constant	3.310***	-4.214 **	-38.42 ***	-42.76 ***
	(0.654)	(1.707)	(11.07)	(12.51)
R-squared	0.108	0.194	0.237	0.254
Observations	100	100	100	100
Standard errors are in parentheses.				
*, **, and *** depicts 10 percent, 5 percent and 1 percent level of significance respectively				

Results regarding impact of Gross capital formation on economic growth were found be consistent, and depict a positive relationship between gross capital formation and economic growth of sampled developed countries in line with the economic theory. Primary school enrollment and geography also came out to be positively and significantly altering economic growth of developed

countries. Urban population and population growth rate came out t be insignificant in impacting economic growth of developed countries.

5.4.2 Impact of Culture on Sovereign Default Probability of Sampled Developed Countries

The impact of main variable of this study culture on sovereign default probability in case of all sampled countries is carried out by conducting a series of estimations using fixed effect method which was favored by Hausman test results in this case. A total of four estimations were carried out to investigate the impact of culture of sovereign default probability. The results of the estimations are presented in table 16.

Table 16

Fixed Effect Method Estimates: Cultural Impact on Sovereign Default Probability of Sampled Developed Countries

Explanatory Variables	(1)	(2)	(3)	(4)
CI	-0.139 *	-0.088 *	-0.077 *	-0.140 *
	(0.080)	(0.054)	(0.045)	(0.081)
lnGDPPC	-	-0.194 ***	-0.178***	-0.235 ***
		(0.0489)	(0.0492)	(0.0701)
ED	-	-	0.0006 *	0.0006 *
			(0.0003)	(0.0003)
INF	-	-	-	3.66e-05
				(0.000437)
IGDP	-	-	-	-0.0108 ***
				(0.00397)
Constant	0.515***	2.157***	2.010 ***	1.124 **
	(0.0468)	(0.417)	(0.421)	(0.546)
R-squared	0.097	0.182	0.237	0.252
Observations	100	100	100	100
Standard errors are in parentheses.				
*, **, and *** depicts 10 percent, 5 percent and 1 percent level of significance respectively				

In the first specification only culture was taken as an explanatory variable for sovereign default probability. In the second specification GDP per capita in log form was inducted. Third specification included external debt in addition to already added explanatory variables. Fourth specification included inflation and investment share of GDP.

Impact of culture on sovereign default probability of sampled developed was found out to be significant and negative in all specifications. The results indicate that improvement in culture leads to sovereign's default probability to fall. Culture reduces sovereign risk by altering macroeconomic indicators of a sovereign. The result regarding impact of culture on sovereign default probability is robust as impact of culture on sovereign default probability remained negative and significant regardless of introduction of new variables on the specification.

Results indicate that GDP per capita, external debt and investment share of GDP significantly impact sovereign default probability of developed sovereigns. GDP per capita and investment share of GDP reduces sovereign default probability of sampled developed countries while increase in external debt increases probability of a sovereign to default. Inflation again was the only variable which came out to be insignificant in explaining sovereign default probability of developed countries.

5.5 Impact of Culture on Economic Growth and Sovereign Default Probability of Developing Countries

In order to meet the objectives of this study and analyze the impact of culture on both sovereign default and economic growth this section is further subdivided into two sections. First section discusses results obtained from a series of estimations regarding impact of culture on economic growth of all sampled developed countries while second section discusses impact of

culture on sovereign default probability of all sampled highly developed countries for this study again by estimating a series of specifications.

5.5.1 Impact of Culture on Economic Growth of Developing Countries

In order to estimate the impact of our main variable on economic growth in case of developing countries, random effect method is applied after consultation with the results of Hausman test. The results of estimations carried out in this regard are shown in table 17. In the first specification, only culture was used as an explanatory variable along with constant term. In the second specification, gross capital formation as a control variable along with main variable of the study "culture". In the third specification primary school enrollment and urban population are added along with already incorporated variables in previous estimations. In the fourth and final estimation geography and population growth rate are added.

Culture has been found out to be positively and significantly impacting economic growth of developing countries in all specifications and these results are consistent with the theory of economic growth. The results imply that higher the level of cultural index or better the social norms like level of trust, respect, obedience and self-determination, higher will be the economic growth of developed countries. The results conform to the theory that good culture will act as a social capital and will help in boosting economic growth.

Gross capital formation and geography are also found to be highly significant in determination of economic growth of developing countries. Results show that both Gross capital formation and geography are positively related to economic growth of developing countries and help boosting economic growth. Primary school enrollment, urban population and population growth rate were found insignificant in determining economic growth.

Table 17
RE Method Estimates: Impact of Culture on Economic Growth of Sampled Developing Countries

Explanatory Variables	(1)	(2)	(3)	(4)
CI	1.026 *	3.109 **	3.862**	3.586 **
	(0.641)	(1.273)	(1.727)	(1.741)
GCF	-	0.218 ***	0.254 ***	0.279 ***
		(0.0593)	(0.0425)	(0.049)
PSE	-	-	0.059	0.039
			(0.038)	(0.036)
UP	-	-	-0.037	-0.038
			(0.024)	(0.027)
GEO	-	-	-	0.094 ***
				(0.034)
PGR	-	-	-	0.026
				(0.389)
Constant	4.163 ***	-1.623	4.537 *	1.638
	(1.187)	(1.496)	(2.389)	(3.066)
R-squared	0.100	0.184	0.233	0.257
Observations	300	300	300	300
Standard errors are in parentheses.				
*, **, and *** depicts 10 percent, 5 percent and 1 percent level of significance respectively				

5.5.2 Impact of Culture on Sovereign Default Probability of Developing Countries

The impact of main variable of this study culture on sovereign default probability in case of sampled developing countries is carried out by conducting a series of estimations using random effect method which was favored by Hausman test results in this case. A total of four estimations were carried out to investigate the impact of culture of sovereign default probability. In the first specification only culture was taken as an explanatory variable for sovereign default probability. In the second specification GDP per capita in log form was inducted. Third specification included

external debt in addition to already added explanatory variables. Fourth specification included inflation and investment share of GDP. The results of the estimations are presented in table 18.

Table 18

RE Method Estimates: Impact of Culture on Sovereign Default Probability of Sampled Developing Countries

Explanatory Variables	(1)	(2)	(3)	(4)
CI	-0.61 **	-0.52 *	-0.47 *	-0.53 **
	(0.34)	(0.31)	(0.28)	(0.26)
lnGDPPC	-	-0.126 ***	-0.103 ***	-0.092 ***
		(0.0145)	(0.0147)	(0.016)
ED	-	-	0.0008 ***	0.0008***
			(0.0001)	(0.0001)
INF	-	-	-	-8.20e-05
				(0.0001)
IGDP	-	-	-	-0.003 ***
				(0.001)
Constant	0.459***	1.410 ***	1.207 ***	1.186 ***
	(0.0168)	(0.110)	(0.114)	(0.120)
R-squared	0.119	0.196	0.213	0.247
Observations	300	300	300	300
Standard errors are in parentheses.				
*, **, and *** depicts 10 percent, 5 percent and 1 percent level of significance				

Impact of culture on sovereign default probability of sampled developed as expected was found out to be significant and negative in all specifications. The results indicate that improvement in culture leads to sovereign's default probability to fall. Culture reduces sovereign risk by altering macroeconomic indicators of a sovereign. The result regarding impact of culture on sovereign default probability is robust as impact of culture on sovereign default probability remained negative and significant regardless of introduction of new variables on the specification.

Gross capital formation, external debt and investment share of GDP as expected also came out to be highly significant in determining sovereign default probability of developing sovereigns. Once again inflation came out to be only insignificant variables in explaining sovereign default probability.

5.6 Comparison of Cultural Impact on Sovereign Default Probability across Highly Developed, Developed and Developing Countries

This study found culture's impact on sovereign risk in all samples i-e highly developed, developed and developing to be negatively and significantly impacting sovereign default probability. However impact of cultural on decreasing the probability of a sovereign to default has been found to be stronger in case of developing countries as compared to that of highly developed and developed countries. These findings supports the argument that social capital is necessary for other forms of capital to emerge like human capital and ultimately physical capital which plays a key role in boosting growth and lead the countries to higher and higher levels of development.

The study found in section 5.3.2 that a 1 percent improvement in cultural index will lead to .20 fall in default probability of highly developed sovereigns. In section 5.4.2 it was found that a 1 percent improvement in cultural index will lead to 0.14 percent decrease in probability of developed sovereigns to fall while section found a 0.53 percent decline in probability of developing sovereigns to default as a result of 1 percent improvement in cultural index. Comparative results for cultural impact on sovereign default probability of highly developed, developed and developing are shown in table 27.

Table 19

Cultural Impact on Sovereign Default Probability for Different Levels of Development

Independent Variable	Highly Developed	Developed	Developing
Culture	-0.203***	-0.140 *	-0.53 **
	(0.061)	(0.081)	(0.26)
*, **, and *** depicts 10 percent, 5 percent and 1 percent level of significance			

As sovereign default probability is calculated in this study by utilizing credit ratings whose impact on borrowing costs of sovereigns has been found out to be significant in previous studies which is already discussed in section 2.2 of this study. In line with this thought on the basis of the findings of this study I can infer that improvement in culture will reduce borrowing costs of sovereigns. Especially culture will be very helpful for developing sovereigns by improving their sovereign credit ratings through improvement in their macroeconomic condition as discussed in section 2.3.1 and ultimately reducing their borrowings costs. The reduction in borrowing costs combined with emerging social capital will help developing sovereigns to enhance their growth rates resulting in an improvement of living standards in these sovereigns.

In case of highly developed and developed sovereigns cultural impact on sovereign default probability was also found to be significant and negative though impact of culture on sovereign default probability of these two categories was less when compared to developing sovereigns. This may be due to existence of well working institutions however if culture deteriorates it will badly impact the working of these institutions resulting in adverse effects on macroeconomic situation. Moreover these societies have already gone through the process of social capital formation to reach high levels of development and now the need of social capital has decreased but not vanished and is necessary to maintain level of development they have reached.

CHAPTER 6

CONCLUSION AND IMPLICATIONS OF THE STUDY

6.1 Conclusion

The study is aimed at investigating culture both as a determinant of economic growth and sovereign credit risk across highly developed, developed and developing countries. The study is based on the idea that good culture acts as a social capital which give rise to other forms of capitals like human capital which later helps in formation of physical capital and all these forms combine together and play a key role in determination of growth rate which consequently effect level of development and determines sovereign risk associated with a particular country. Abundant studies were found relating culture as social capital to economic growth and also linking economic growth with sovereign credit risk. The literature regarding impact of culture on sovereign risk is found out to be scarce and this study is an attempt to fill this gap. There were a total of four panels and a sum of 8 estimations have been carried out. Four of the estimations link culture with economic growth while four link culture with sovereign default probability. The selection of method to be adopted for estimations either fixed effect or random effect method was based on the outcomes of Hausman test.

The main variable of this study "culture" whose impact was to be checked on economic growth and sovereign default probability came out to be significant in all cases except the case of highly developed countries when it comes to explanation of economic growth differentials. Sovereign default risk was significantly explained by culture in all cases i-e full sample of countries selected for study, highly developed countries, developed countries and developing

countries. Moreover this study finds that impact of culture on sovereign default probability is highest in case of developing countries when compared to highly developed and developed countries.

Growth rate of GDP per capita has been found to be highly significantly in impacting sovereign default risk in all cases. External debt is found to be significantly and positively impacting default probability in all cases i-e highly developed, developed, and developing countries. Inflation is found out to be insignificant in determining sovereign default probability for full sample of sovereigns, developed countries, and developing countries however it is only found to be significant in explaining sovereign default probability of highly developed countries. Investment share of GDP significantly explains sovereign default probability of full sample of countries, developed and developing countries.

Gross capital formation and geography (% share of rent of natural resources in GDP) positively and significantly impacts economic growth in all cases i-e full sample of countries, highly developed countries, developed countries and developing countries. Primary school enrollment is found to be significant in explaining economic growth for the case highly developed countries and developed countries but surprisingly in case of developing counties primary school enrollment came out to be insignificant in determining economic growth. Primary school enrollment was also insignificant in determining economic growth for all sampled countries. Percentage of urban population and population growth rate came out to be insignificant in explaining economic growth in all cases i-e in case of full sample of countries, highly developed countries, developed countries and developing countries.

6.2 Implications of the Study

It has been shown in the study that how sovereign defaults risk and economic growth of a particular country is influenced by culture of that particular country. Based on the results of this study which indicate higher cultural index for countries having lower sovereign default probability, following points are suggested for countries bearing different levels of development.

- As cultural impact in case of developing or less developed countries was found out to be more as compared with those having higher level of development, so less developed countries should take steps for improvement of cultural traits. This will not only help them in reducing transaction costs but also monitoring and regulatory costs therefore improving efficiency.

- Especially in case of developing countries it is important for them to take measures to boost level of trust, emphasize on adaptation of good cultural values like obedience, promote respect for each other and most importantly create environment for people where they can be more self-motivated and self-determined. This will help them to enhance growth rate through increased number of transactions and achieve the goal of development in lesser period which will consequently lower sovereign risk associated with them.

- In case of highly developed countries, they should preserve higher levels of social capital because it is necessary for them to maintain the higher level of development which they have achieved. Deterioration in cultural traits may not affect their sovereign default probability directly but culture can alter GDP growth rate which ultimately alter their sovereign risk as well.

- In case of highly developed and developed countries though the impact of culture is significant but not that much when compared with developing countries in explaining

economic growth and sovereign risk, but this study suggests that they should maintain good culture or social capital so as to be achieve even more higher levels of development else they can face adverse effects of culture's deterioration on their level of development.

6.3 Possible Future Extensions of the Research

Since quantification of culture is not a very old phenomena, the data available regarding culture to date is not enough to cater the needs of this study. World value survey seven is also under process of formulation and will hopefully be completed by 2019. Moreover sovereign credit rating process itself started during 1980's. As the time progress more data of culture will be available and also that of sovereign credit risk which will prove to be helpful in deriving more reliable results. So in future more countries and more number of years can be incorporated in the study. On the empirical side, there is currently lack of highly sophisticated techniques which can encompass cultural values for sake of panel data analysis. Another promising area as far as analysis of impact of culture on macroeconomic variables and sovereign default risk is concerned is that of carrying out investments in cultural or social capital. Empirical and theoretical understanding of investment in both non-tangible and tangible cultural capital is demanded by future research to be carried out to explain differences in growth rates and sovereign default risk.

References

Abdullah, A. (2012). Economic growth and its determinants: a longitudinal and a cross-regional Analysis. Journal of Economics and Sustainable Development, 3(1), 20-31.

Afonso, A., Gomes, P., & Rother, P. (2011). Short-and long-run determinants of sovereign debt credit ratings. International Journal of Finance & Economics, 16(1), 1-15.

Alesina, A., & Giuliano, P. (2013). Culture and institutions (No. w19750). National Bureau of Economic Research.

Alsakka, R., & ap Gwilym, O. (2010). Leads and lags in sovereign credit ratings. Journal of Banking & Finance, 34(11), 2614-2626.

Ang, A., & Longstaff, F. A. (2013). Systemic sovereign credit risk: Lessons from the US and Europe. Journal of Monetary Economics, 60(5), 493-510.

Bennell, J. A., Crabbe, D., Thomas, S., & Ap Gwilym, O. (2006). Modelling sovereign credit ratings: Neural networks versus ordered probit. Expert Systems with Applications, 30(3), 415-425.

Beugelsdijk, S., de Groot, H. L., & van Schaik, A. B. (2004). Trust and economic growth: A robustness analysis. Oxford Economic Papers, 56(1), 118-134.

Bhatia, A. V. (2002). Sovereign credit ratings methodology: An evaluation. International Monetary Fund.

Bissoondoyal-Bheenick, E. (2005). An analysis of determinants of sovereign ratings. Global Finance Journal, 15, 251−280.

Boettke, P. J. (1997). Where did economics go wrong? Modern economics as a flight from reality. Critical Review, 11(1), 11-64.

Borker, D. R. (2013). Economic growth and cultural value analysis in six emerging economies. World, 3(6).

Campos, N. F., & Horváth, R. (2012). Reform redux: Measurement, determinants and growth implications. European Journal of Political Economy, 28(2), 227-237.

Cantor, R., & Packer, F. (1996). Determinants and impact of sovereign credit ratings. Economic Policy Review, 2(2).

Canuto, O., Dos Santos, P. F. P., & de Sa Porto, P. C. (2012). Macroeconomics and sovereign risk ratings. Journal of International Commerce, Economics and Policy, 3(02).

Chee, S. W., Fah, C. F., & Nassir, A. M. (2015). Macroeconomics Determinants of Sovereign Credit Ratings. International Business Research, 8(2), p42.

Cohen, D., & Sachs, J. (1986). Growth and external debt under risk of debt repudiation. European Economic Review, 30(3), 529-560.

Colecchia, A., & Schreyer, P. (2002). ICT investment and economic growth in the 1990s: is the United States a unique case? A comparative study of nine OECD countries. Review of Economic Dynamics, 5(2), 408-442.

Cox, P. L., Friedman, B. A., & Tribunella, T. (2011). Relationships among cultural dimensions, national gross domestic product, and environmental sustainability. Journal of Applied Business and Economics, 12(6), 46-56.

Cuaresma, J. C., Doppelhofer, G., & Feldkircher, M. (2014). The determinants of economic growth in European regions. Regional Studies, 48(1), 44-67.

Davies, M. R. L., & Ng, T. (2011). The rise of sovereign credit risk: implications for financial stability. BIS Quarterly Review, September.

De Backer, B. (2015). Decomposition of the dynamics of sovereign yield spreads in the euro area. Economic Review, (i), 54-75.

De Santis, R. A. (2012). The Euro area sovereign debt crisis: safe haven, credit rating agencies and the spread of the fever from Greece, Ireland and Portugal.

Dinda, S. (2008). Social Capital in the Creation of Human Capital and Economic Growth: a productive consumption approach. The Journal of Socio-Economics, 37(5), 2020-2033.

Dumicic, M., & Rizdak, T. (2011). Determinants of sovereign risk premia for European emerging markets. Financial Theory and Practice, 35(3), 277-299.

Eijffinger, S. C. (2012). Rating Agencies: Role and influence of their sovereign credit risk assessment in the Eurozone*. JCMS: Journal of Common Market Studies, 50(6), 912-921.

Elkhoury, M. (2009). Credit rating agencies and their potential impact on developing countries. Compendium on Debt Sustainability and Development.

Forson, J. A., Janrattanagul, J., & Carsamer, E. (2013). Culture Matters: A test of rationality on economic growth. Asian Social Science, 9(9).

Freshwater, D. (2000). Crosscurrents: Against cultural narration in nursing. Journal of Advanced Nursing, 32(2), 481-484.

Friedman, B. A., Cox, P. L., & Tribunella, T. (2011). Relationships among world governance indictors and national per capital income weighted by environmental sustainability. The BRC Journal of Advances in Business, 1(2), 37-54.

Fukuyama, F. (1995). Social capital and the global economy: A redrawn map of the world. Foreign affairs, 74(5), 89-103.

Gaillard, N. (2012). Fitch, Moody's, and S&P Sovereign ratings and EMBI global spreads: lessons from 1993–2007. In A Century of Sovereign Ratings (pp. 149-170). Springer New York.

Gallup, J. L., Sachs, J. D., & Mellinger, A. D. (1999). Geography and economic development. International regional science review, 22(2), 179-232.

Gorodnichenko, Y., & Roland, G. (2011). Which dimensions of culture matter for long-run growth? The American Economic Review, 101(3).

Granato, J., Inglehart, R., & Leblang, D. (1996). The effect of cultural values on economic development: theory, hypotheses, and some empirical tests. American journal of political science.

Gray, D. F., Merton, R. C., & Bodie, Z. (2007). Contingent claims approach to measuring and managing sovereign credit risk. Journal of Investment Management, 5(4), 5.NBER Working Paper 15845, Cambridge Massachussetts.

Grossman, G. M., & Helpman, E. (1993). Endogenous innovation in the theory of growth (No. w4527). National Bureau of Economic Research.

Guiso, Luigi, Paola Sapienza, and Luigi Zingales. 2010. "Civic Capital as the Missing Link."

Haidar, J. I. (2012). Sovereign credit risk in the euro zone. World Economics, 13(1).

Hayes, A. M., Flora, J. R., & Khan, J. (1998). Electrolytic stimulation of denitrification in sand columns. Water research, 32(9), 2830-2834.

Hilscher, J., & Nosbusch, Y. (2010). Determinants of sovereign risk: Macroeconomic fundamentals and the pricing of sovereign debt*. Review of Finance, rfq005.

Iqbal, N., & Nawaz, S. (2010). Fiscal decentralization and macroeconomic stability: Theory and evidence from Pakistan.

Iyoha, M. A. (1999). External debt and economic growth in sub-Saharan African countries: An econometric study (No. RP_090).

Jaramillo, L., & Tejada, M. (2011). Sovereign credit ratings and spreads in emerging markets: does investment grade matter? IMF Working Papers, 1-17.

Jeanneret, A. (2013). The dynamics of sovereign credit risk. Journal of Financial and Quantitative Analysis (JFQA), Forthcoming.

Johnson, J. P., & Lenartowicz, T. (1998). Culture, freedom and economic growth: do cultural values explain economic growth? Journal of World Business, 33(4). Journal of Legal Studies 30, no. 2: 305–25.

Kaasa, A., & Vadi, M. (2008). How does culture contribute to innovation? Evidence from European countries. (September, 15 2008). The University of Tartu Faculty of Economics and Business Administration Working Paper, (63-2008).

Kalliomäki, M. (2012). Determinants of sovereign defaults (Doctoral dissertation, University of Lund).

Khan, M. M., Zhang, J., Hashmi, M. S., & Bashir, M. (2010). Cultural values and economic growth in Asia: an empirical analysis. International Journal of Business and Social Science, 1(2), 15-27.

Kiff, J., Nowak, S. B., & Schumacher, L. (2012). Are rating agencies powerful? An investigation into the impact and accuracy of sovereign ratings. International Monetary Fund

Knack, S., & Keefer, P. (1997). Does social capital have an economic payoff? A cross-country investigation. The Quarterly journal of economics, 1251-1288.

Lee, K. H., Sapriza, H., & Suarez, G. (2012). Sovereign credit risk, banks' government support, and bank stock returns around the world.

Lu, S. (2013). The Influence of Culture on Sovereign Credit Risk Perception (Doctoral dissertation, Stern School of Business New York).

Iyengar, S. (2012). The credit rating agencies–are they reliable? A study of sovereign ratings. Vikalpa, 17, 69.

Meldrum, D. (2000). Country risk and foreign direct investment. Business Economics, 35(1).

Mellios, C., & Paget-Blanc, E. (2006). Which factors determine sovereign credit ratings? The European Journal of Finance, 12(4), 361-377.

Noland, M. (2003). Religion, culture, and economic performance. Institute for International Economics Working Paper, (03-8) of state bonds, Journal of Money, Credit and Banking, Vol. 16, pp. 344–51.

Ozler, Sule. 1991. Evolution of credit terms: An empirical examination of commercial bank lending to developing countries. Journal of Development Economics 38: 79-97.

Papamarcos, S. D., & Watson, G. W. (2006). Culture's consequences for economic development: an empirical examination of culture, freedom, and national market performance. Journal of Global Business and Technology, 2(1).

Poon, W. P. (2003). Are unsolicited credit ratings biased downward? Journal of Banking & Finance, 27(4), 593-614.

Putnam, R. D. (1995). Bowling alone: America's declining social capital. Journal of democracy, 6(1), 65-78.

Reinhart, C. M. (2002). Sovereign credit ratings before and after financial crises. In Ratings, Rating Agencies and the Global Financial System (pp. 251-268). Springer US.

Roy Choudhury, S., & Lawson, R. A. (2010). Economic freedom and sovereign credit ratings and default risk. Journal of Financial Economic Policy, 2(2), 149-162.

Sapienza, P., Zingales, L., & Guise, L. (2006). Does culture affect economic outcomes? (No. w11999). National Bureau of Economic Research.

Sattar, A., & Mahmood, T. (2011). Intellectual property rights and economic growth: evidences from high, middle and low income countries. Pakistan Economic and Social Review, 163-186.

Schreyer, P. (2014). Sti Working Paper 200/2. The contribution of information and communication technology to output growth: A Study of The G7 Countries.

Sidrauski, M. (1967). Inflation and economic growth. The Journal of Political Economy, 796-810.

Sobel, J. (2002). Can we trust social capital?. Journal of economic literature, 139-154.

Stulz, R. M., & Williamson, R. (2003). Culture, openness, and finance. Journal of financial Economics, 70(3), 313-349.

Tabellini, G. (2010). Culture and institutions: economic development in the regions of Europe. Journal of the European Economic Association, 8(4).

Van Gestel, T., Baesens, B., Van Dijcke, P., Garcia, J., Suykens, J. A., & Vanthienen, J. (2006). A process model to develop an internal rating system: sovereign credit ratings. Decision Support Systems, 42(2), 1131-1151.

Vörös, T., & Choudrie, J. (2011). Uncertainty avoidance and technology acceptance in emerging economies: A comparative study. In Proceedings of the 4th Annual SIG GlobDev Workshop.

Wang, A. T., Yang, S. Y., & Yang, N. T. (2013). Information transmission between sovereign debt CDS and other financial factors. The case of Latin America. The North American Journal of Economics and Finance, 26, 586-601.

Watson, W. E., Kumar, K., & Michaelsen, L. K. (1993). Cultural diversity's impact on interaction process and performance: Comparing homogeneous and diverse task groups. Academy of Management Journal, 36(3), 590-602.

Whitely, P. F. (2000). Economic growth and social capital. Political Studies, 48(3), 443-466.

Williamson, C. R., & Mathers, R. L. (2011). Economic freedom, culture, and growth. Public Choice, 148 (3-4).

Zoli, E. (2013). Italian sovereign spreads: Their determinants and pass-through to bank funding

costs and lending conditions. IMF Working Paper No. 13/84