

**Culture, Economic Freedom and Economic Performance:  
A Cross-Country Analysis**

by

**Yasir Khan**

09/M.Phil/Eco/PIDE/2010

Supervised By;

**Dr. Attiya Y. Javed**

Professor of Economics

Head Department of Economic & Finance

**PAKISTAN INSTITUTE OF DEVELOPMENT ECONOMICS**

---

## **Acknowledgement**

I would like to thank nature which has awarded me peace and an opportunity to feel the beauty of natural phenomena.

I must be thankful to Madam Atiya Y. Javed, my parents and friends who always supported me to complete this task.

Regards:

Yasir

---

## Table of contents

Abstract	1
Chapter 1	2
INTRODUCTION	2
1.1 Background	2
1.3 Significance of the Study	8
1.3 Objectives of the Study	9
1.4 Plan of the Study	11
Chapter 2	12
LITERATURE REVIEW	12
2.1 Defining Institutions	12
2.2 Formal Institutions and Growth	13
2.3 Empirical Evidence from Previous Literature	15
2.4 Culture and Economic Growth	21
2.5 Economic Freedom-Culture Nexus	25
2.6 Culture-Human Capital Nexus	27
2.7 Conclusion	30
Chapter 3	31
CONCEPTUAL FRAMEWORK, DATA AND METHODOLOGY	31
3.1 Conceptual Framework	31
3.2 Empirical Specification	35
3.2.1 Interaction Term	39
3.2.2 Control Variables	39
3.3 Explanatory Variables	40
3.3.1 Culture	40
3.3.2 Economic Freedom	41
3.3.3 Human Capital	43
3.3.4 Interaction Term	44

---

3.3.5 Control Variables	45
3.5 Estimation Technique	46
3.6 Data Sources	46
3.7 Data Limitations	48
<b>Chapter 4</b>	<b>48</b>
<b>Results and Discussion</b>	<b>48</b>
4.1 Summary Statistics	48
Table 4.1: Descriptive Statistics of the Data	49
4.2 Stationary Test	50
4.3 Empirical Results from Panel Regression Analysis	51
Table 4.2	54
Table 4.3: Results of Growth Model with Interaction	56
Table 4.4 Regression Results of Interaction Terms Separately	58
Table 4.5 Regression Results with each level of education independently	60
<b>Chapter 5</b>	<b>61</b>
<b>Conclusion and Implications</b>	<b>61</b>
5.1 Implications of the Study	64
5.2 Limitations of the Study	65
5.3 Future Extension of the Research	65

---

## Abstract

This study is an attempt to understand the relative contribution of culture and economic freedom to economic growth. Through applying fixed effect to the panel of fifty four developed, developing and less developed countries for the period of 1980 to 2007, study explores direct and indirect influence of culture relative to economic freedom on economic performance. The analysis shows that human capital is an appropriate transmission channel for cultural effects. It reveals that culture play fundamental role in shaping human behavior that further lead to determine the level of accumulation and productivity of human capital. In this analysis significance of the culture relative to economic freedom is confirmed after the inclusion of a transmission channel for cultural influences. Study shows that cross country differences in economic growth are fundamentally related to the differences in level of underlying cultural values like *trust*, *respect*, *self-determination* and *obedience*. To reduce differences in productivity and accumulation rate of human capital across countries this analysis advocates integration of cultural values into national education policy and investment in cultural capital.

**Key Words:** Economic Freedom, Culture, Formal Institutions, Informal Institutions, Human Capital,

# Chapter 1

## INTRODUCTION

This chapter is planned in three sections. First section provides background justification of the study and sorts out literature to discover hypothesis of the study. Overall goals and objectives of the study are discussed in next section. Third and last section outlines rest of the study.

### 1.1 Background

Since North (1981), history is viewed as one of the key determinants of cross-country differences in economic performance. Following several statistical analyses confirms that events at distant past significantly impact economic performance in current time period. Such as, Acemoglu, Johnson and Robinson (2001), while measuring mortality rate of settlers in new world and exploiting on cross-country analysis of Hall and Jones (1999), confirm that the level of current economic prosperity in a region is a reflection of its economic policies in the past. Current economic conditions across former European colonies can be trace back to the adoption of economic policies during colonial period where; policy choice was subjected to secure incentives exclusively in the favor of imperialist. Low mortality rates together with favorable disease pattern and less indigenous population attracted settlers<sup>1</sup> consequently constructive policies had been formulated to encourage growth promoting institutions. Areas, where mortality rate was high, led colonial powers to implement policies best suited for extracting maximum resources even at the welfare cost of native population, hence led to promote growth hindering institutions at later stages.

---

<sup>1</sup> Term Settlers is borrowed from the Acemoglu's et.al. "Reversal of fortune" and it refers to the European colonizers who went for settlement in new world for the Europeans.

In a similar vein, La Porta, Lopez-De-Silanes, Shleifer and Vishny (1999), while employing indicators of legal origin, show that cross country economic outcomes are significantly influenced by history of a region. Despite having similar civil laws, many former colonies reflect quite different impacts relative to their center. The way centre implanted, the contract<sup>2</sup> and property rights institutions determined the scope for growth promoting institutions at latter stages. They show that legal origin plays a critical role in defining development path for a region. It is also suggested that efficient and effective legal system at one place becomes less efficient at other place when it overlooks underlying cultural context. In literature, it is well established that “history matters” but it becomes a logical question that; what are the sources of historical influence on current economic performance?

A widely accepted interpretation is; history through shaping institutions, influence current economic outcomes. Institutions being “rules of the game” shape human behavior through structuring incentives and reducing uncertainty, hence making human behavior more predictable. Codified structures, constitutions, statues, written rules and civil laws are identified as formal institutions whereas; culture including norms, values, taboos and habits of a society are considered informal institutions (see North 1990; Boettke and Coyne 2009 and Dobbler, 2009).

Early contribution to the empirics of institutions can be found with their primary focus on link between formal institutions such as property rights, political constraints, judicial procedures, contracting institutions and economic growth for example (see Hall & Jones, 1999; Acemoglu et, al. 2001; 2002; 2005; Dollar and Kraay 2003; Esterly and Levine 2003; Subramanian and Trebi 2002;). In general this stream in literature is of view that formal institutions play key role in

---

<sup>2</sup> Contract rights are referred to the private contract between two individuals or entities whereas; property rights institutions refer to the contract between state and individual.

shaping human behavior through structuring incentives and reducing level of uncertainty in a society. Following this view, economic policy focused on establishing and developing formal institutions like; education system, democracy, governance and judiciary etc. In a society, existing power structure and motivational factors for human behavior evolves to limit the natural scope for similar economic incentives, which lead to create variations in functioning and performance of formal institutions across countries. Although, formal institutions performed incredible at few places but it is also observed that these institutions faced serious shortcomings to meet local context and to attain desired objectives at many places around the globe. Keeping this in view, the next logical question is; what are the key factors responsible for cross-country variations in performance of similar formal institutions?

Recent growth in literature establishes that cultural values such as *trust, respect, obedience* and *self-determination* are key factors to shape human behavior. While human behavior influences economic performance through its fundamental effects on accumulation and productivity of physical and human capital. Such as Tabellini (2009), identifies close association between cultural values and economic outcomes across European countries. Whereas, Williamson and Kerekes (2008) supply empirical evidence suggesting that effectiveness of property rights is fundamentally related to underlying cultural values.

Moreover, a line of thinking can be found in the literature of economic growth and development which is continuously verifying the importance of informal institutions (Knack and Keefer, 1979; Grier 1997; Wright 1997; Duffy and Stubben 1998; Barro and McCleary 2003; Guiso, et al. 2006; Leeson 2007a,b,c; Licht, et al. 2007; Williamson 2009). In addition, Bandfield (1958), Putnam (1993) and Grief 1994 suggest the importance of considering underlying informal institutions while devising strategies related to economic development. Literature attempts to



underscore that slow moving cultural values provide underlying context within which human behavior is being shaped and respond to political and economic incentives. Therefore, effectiveness of formal institutions becomes highly dependent upon the quality of underlying cultural values. These values are persistent over time and transfer from one generation to another through social archetypes and determine the quality of behavior, hence effectiveness of formal institutions. In a society quality of normative values provides certain level of certainty and determines the scope for economic exchanges. *Formal institutions, without considering the importance of informal institutions, cannot operate effectively for the development of an economy.* We can conclude that regardless to their promising policies, formal institutions are unable to modify individual behavior created through informal institutions. If this is the case then, how formal institutions can operate effectively in a world where individual behaviors are shaped through slow moving normative values?

Education is a key institution directed to accumulate skills, create conception, change perception and normalize human behavior. Literature has extensively discussed the role of education for economic development and its contribution to enhance labor productivity, technological achievement, bilateral trade of services, health conditions and income alongside reducing poverty and changing family structure. It is suggested in literature that education provides foundations for development; the groundwork upon which much of our economic and social well being is built. It is also considered a key factor to increase economic efficiency and social consistency.

Despite its key contribution towards economic and social development, formal education is not producing expected outcomes everywhere around the globe, particularly across many developing and under-developed countries. It is also considered that underlying conditions such as

competitiveness, distribution of resources, equality and family structures define educational incentives and outcomes. Similarly, one can think of evolved cultural values like level of trust, respect, obedience and self-determination which are deep rooted in individual behavior. These values play key role to define incentives and determine outcomes of human capital accumulated through formal education. Human capital cannot be accumulated in isolation but within existing cultural context. Cultural values generate certain level of trust, respect, obedience and self-control in individual behavior and provide level of certainty in a society. Hence, cultural influence cannot be avoided during the process of accumulating human capital through formal education.

However, recently an outgrowth in literature attempts to explore relative role of formal and informal institutions in economic performance of a country. Formal and informal institutions are likely to substitute if one of the institutional form replace fully or partially to other whereas these would be complement if their likely influence is in the same direction whether it is growth promoting or not. For example, Acemoglu and Johnson (2005) conclude in the favor of substitutions effect between formal and informal institutions through indicating the importance of formal institutions relative to informal institutions. Heins (2011), while exploiting on Acemoglu and Johnson (2005), indicates that formal institutions substitute for informal institutions but also warrants that these finding cannot be extended across countries without considering the development stage of an economy. Employing economic freedom and culture respectively as measures of formal and informal institutions, Williamson and Mathers (2010) investigate substitutions and complement hypothesis and lean to accept substitutions hypothesis based on their empirical evidences. Their analysis suggest that informal institutions become less important in the presence of well established formal institutions but they also suspect their

findings and indicate a possibility of an indirect channel through which culture affect economic outcomes in the presence of well established formal institutions. In short they also indicate a possibility of complementary relation between formal and informal institutions. More recently, Vitor (2012) noted that formal and informal institutions may complement each other instead of being perfect substitute in nature.

Literature has extensively discussed direct association between institutions and economic growth and establishes that secure property rights, investment friendly climate, enhanced social returns as private returns, establishment of incentive framework in favor of profit maximization instead of rent seeking and their ultimate influence on economic prosperity are fundamentally related to formal and informal institutions. On the other hand, substitutions/complement hypothesis<sup>3</sup> regarding comparative role of formal and informal institutions is relatively less explored in the literature.

Keeping in view the key role of normative values in shaping human behavior and their influence on accumulation and productivity of human capital it is logical to expect existence of an indirect channel through which culture may exerts its impact on economic performance even in the presence of well established formal institutions. It can be proposed that normative values of a culture influence economic outcomes through the channel of formal education. In spite of well organized process of accumulating human capital through formal education, one cannot exclude the influence of underlying cultural values. Therefore it can be expected that in the presence of well established formal institutions culture might influence economic outcomes through the channel of human capital.

---

<sup>3</sup> Substitution/complement hypothesis states that whether impact of formal and informal institutions are complement or substitute in influencing economic outcomes [for more details see, Williamson and Mathers (2010)]

### **1.3 Significance of the Study**

Fundamentally this study is aimed to contribute in literature that attempts to explore the relative role of formal and informal institutions in economic growth and development of an economy. This study based on understanding that culture provides background within which human capital is being accumulated, differences in effectiveness of similar formal institutions across different cultures, attempts in recent literature to analyze the relative role of formal and informal institutions and undermined role of culture in the presence of well established formal institutions in recent studies.

In literature, formal and informal institutions are independently linked to economic growth and extensively analyzed but few studies have attempted to link their relative role to economic performance. These studies overlooked the role of informal institutions in the presence of well established formal institutions in determining economic outcomes. But literature has not attempted to incorporate the likelihood of an indirect transmission channel for cultural influences yet. This study is an effort to fill existing gap in literature through analyzing direct and indirect influence of culture relative to economic freedom on economic performance. This may help to enhance our understanding that how formal and informal institutions matter for economic performance.

In order to explore indirect influence of culture on economic outcomes this study considers a transmission channel through which cultural values indirectly influence economic outcomes. In the presence of well established formal institutions, this study proposes human capital as a potential channel for the transmission of cultural influence. Study expands on testing substitution /complement hypothesis with and without controlling for indirect influence of culture to know the relative importance of culture and economic freedom in shaping economic outcomes.

Williamson and Mathers, (2010) shows that formal institutions of economic freedom replaces influence of informal institutions hence, culture becomes less important to economic growth. These findings obscure the role of culture by showing that formal institutions substitute cultural values like level of trust, respect, obedience and self-determination. Considering importance of cultural values in shaping human behavior and non-linear outcomes of similar formal institutions across countries led this study to propose an indirect channel through which culture influence human behavior. On the other hand education is considered one of the key factors to accumulate human capital absorbs cultural influence. Hence cultural influence reflects in economic performance through affecting the effectiveness of formal institutions.

### **1.3 Objectives of the Study**

Overall objectives of the study are to explore deep determinants of cross country growth differences. This study expands on the understanding that cross country growth differences are fundamentally related to deeper determinants such as culture and economic freedom and analyze the relative role of these determinants. formal and informal institutions as deeper determinants fundamentally related to cross-country growth differences.

Under the umbrella of broader objectives this study is aimed;

- To explore the role of culture relative to economic freedom with respect to their influence on economic outcomes.
- To introduce an indirect channel through which culture influence economic growth.
- To explore both direct and indirect effects of culture on economic outcomes in the presence of economic freedom.

In order to achieve these objectives this study hypothesizes that;

The level of productivity and accumulation of human capital is fundamentally influenced by the underlying cultural settings as human behavior is fundamentally shaped by existing culture of a society. Culture provides an arrangement of incentives which determines the accumulation and productivity of human capital. Variations in underlying cultural values lead to differences in productivity and accumulation of human capital through their primary influence over human behavior hence leading to cross country differences in economic growth and development.

## 1.4 Plan of the Study

Overall study is arranged in six chapters. First chapter *introduction* provides an overview of the problem with reference to worldwide existing literature in the area and also discuss the aim and objectives of the current study with reference to its uniqueness in the existing literature. Second chapter *literature review* opens up with thorough review of the literature related to cross country growth, institutions as a whole and then formal and informal institutions and their relevance as discussed in the current literature. Further chapter concludes with the recent literature particularly relevant to the central question of this study. *Data and methodology* termed as third chapter of the study and it carries thorough discussion related to variables, their origin and use in literature along with limitations and advantages of using these specific variables for the purpose of the study. This chapter also includes a discussion about theoretical and empirical framework to analyze question of the study. We turn to our main results and their interpretation in fourth chapter *Results and discussion*. Fifth and last chapter '*Summary and Conclusion*' concludes with explaining the outcomes of the study and recommendation for further research in the area. Policy measures also mentioned based on enhanced understanding through this research study.

## Chapter 2

### LITERATURE REVIEW

This chapter reviews existing literature that attempts to understand the concept of institutions particularly those formal or informal in nature. With the definition of term “institutions” in the context of existing literature this chapter moves forward to explore direct and indirect association between institutions and economic performance. Further, focus of the chapter turns towards an outgrowth of literature that has attempted to explore relative role of formal and informal institutions in determining economic outcomes. Moreover, this chapter offers a transmission channel from informal institutions to economic growth and provides sufficient evidences to hypothesize that human capital is most reasonable channel through which culture determines the economic growth of a society.

#### 2.1 Defining Institutions

In literature it is viewed, that institutions establish political, social and economic fabric of a society. In order to understand underlying complex role of institutions in cross country growth framework, we first specify what we mean by “institutions” in the context of existing literature. In general institutions can be conceived as social structure that facilitate Wells (1970) or system of social factors that regulate Grief (2006) or social factors that influences, Davis (2010), human behavior, moreover, these constraints are resilient and stable over the time Glaeser et al (2004). Institutions have been defined along a broad spectrum from the establishment of rules to “*actual organizational entities, procedural devices, and regulatory frameworks*” World Bank, (2003). Hodgson (2006) surveys literature and identifies essential ingredients of institutions, similar to, largely accepted definition of institutions from North (1981) “*a set of rules, compliance*



*procedures, moral and ethical behavioral norms designed to constrain the behavior of individuals in the interests of maximizing the wealth or utility of principals*". More simply, North (1990; p. 3), defines the concept institutions as "*rules of the game or more formally humanly devised constraints that shape human interactions, facilitate exchanges and allocation of resources*". To avoid ambiguities, institutions are classified into formal rules and informal constraints. Formal rules are defined as written rules, statutes, constitutions, civil codes, or a legal system in a society whereas; informal constraints are the outcome of human learning through time and space deeply embedded in cultural factors inclusive of traditions, norms, values, taboos, customs, habits, (North 1990, Boettke and Coyne 2009, Dobbler 2009). Distinction between institutions is heavily influenced by their enforcement mechanism Tuomela (1995), and relative influence on behavior through time and possibility to observe and measure them, Devis (2010). A distinction between formal and informal institutions can be thought as their relative role in facilitating human interactions. Such as in the absence of formal rules, a dense structure of informal institutions i.e *culture* facilitates human interaction through structuring incentives to make human interaction more predictable Bates (1989) and mostly being self organizing in nature informal institutions have significantly strong and persistent impact on human behavior [David, (1994; 1997)], but institutions are not entirely self-organizing and some of them particularly formal need third party for their enforcement[Hodgson, (2006)].

## **2.2 Formal Institutions and Growth**

In accordance with the definition advanced by North (1981), relation between well established institutions such as rule of law, property rights and political constraints and economic performance can be traced back to, if not before, since Montesquieu (1748) and Adam Smith (1776). In the history of economic thought since Adam Smith, security of property rights, and

market competitiveness i.e security and freedom to allocate resources remained central to economic growth and prosperity [De Haan and Sturn, (2000)].

Institutions play significant role to determine economic gains from trade. Both theoretical and empirical literature established positive relation between trade openness and economic performance of an economy. Trade openness boosts economic performance through enhancing economies of scale, competitiveness of markets, comparative advantage, diffusion of knowledge and transfer of technology (Dollar, 1992, Sachs and Warner, 1995, Edwards, 1998, Dollar and Kraay, 2000). But institutional quality affect level of actual gains from trade hence quality of institutions affect economic outcomes through affecting gains from trade (Borrmann et al. 2006).

Institutions affect economic performance through affecting transaction cost a key element of economic exchanges, comprised of negotiation cost, contracting cost and cost of monitoring and enforcement (Coase 1937) or cost of measuring the value of subject and cost of protecting rights, monitoring and enforcement cost North (1990, 27), or “*relative cost of planning, adapting and monitoring under alternative governance structures*” Williamson (1989, 142). In the absence of transaction cost exchange would be socially optimal Coase (1960). North (1990) also notes that high transaction cost in political markets weakens property rights that reduces incentives for establishing productive economic rules (North 1990 p. 52 ) Institutions reduce transaction cost through establishing a framework of incentives and reducing uncertainty (North 1990). In addition, level of uncertainty attached to property rights determine the level of transaction cost for example better property rights institutions reduce transaction cost through internalizing externalities arise in transaction of rights H. Demestz (1967). Better institutions result in low transaction cost which consequently enhances overall size of exchanges in an economy.

Moreover, Boettke (1994), argue that optimal fruits from division of labor cannot be captured without inclusion of institutions into economic growth analysis. Institutions get the prices right so that, in the language of North and Thomas (1973), individuals capture the social returns to their actions as private returns.

### **2.3 Empirical Evidence from Previous Literature**

Since Montesquieu (1748) and Adam Smith (1776), mainstream economic theory has been advocating security of property rights for optimal and efficient allocation of resources. Risk of expropriation by government guides individuals to choose less productive means for production. De Soto (2000) or weak property rights increase cost of protection and lead individuals to adopt predatory relative to productive behavior. Tullock (1967), Murphy, Shliefer and Vishny (1991) and Grossman and Kim (1995). Literature attempting to explore returns to factors productivity such as Knack and Keefer (1995), Sachs and Warner (1995), Barro (1996), Gallup and Sachs with Mellinger (1999), Hall and Jones (1999), Easterly and Levine (2003), Acemoglu, Johnson and Robinson (2004), and Rodrik, Subramanian and Trebbi (2004) supplied evidences of the positive association between secure property rights and economic performance.

Scully, (1988) empirically compares 115 market economies employing political, civil and economic liberty as measure for institutions and identified cross country growth variations are significantly affected by institutions. Secure property rights are not only enhance our understanding of deep determinants of growth, it also helps to understand particular arrangement of incentive which further develop particular institutions in the presence of specific property rights in a society at large. Engerman and Sokoloff (2003) and Acemoglu et al. (2004), to which, Rodrik (1999) provides empirical evidence that more democratic institutions are associated with higher wages. Quality of institutions determines transaction cost and level of security of property

rights which consequently determine overall size of exchanges in an economy hence economic performance.

Basic query of fundamental causes of cross-country growth variations has led a revival in growth literature particularly during 1980s such as Romer (1986) and Lucas (1988) have attempted to understand obscure relation between institutions and growth. This has followed by Easterly (2001a) attempt to identify growth without development in the case of Pakistan and find lag between social indicators and income level. It is found that polar distribution of political power further hinders accumulation of capital particularly human capital for majority which further hampers economic development. Similarly, Policy measures for development remain ineffective without taking institutions into consideration Easterly and Levine (2003). Emphasizing the fundamental role of institutions Acemoglu et al (2001, 2002) and Engerman and Skolof (1997, 2002, 2005) find only channel through which natural endowments have effect on income level is quality of institutions. Quality of institutions influences the choice for certain policy hence Rodrik et al. (2004) assert primacy of institutions while analyzing between policy and institutions.

On the other hand, analyzing performance of outliers in recent development history of Asian countries, Glaeser et al. (2004) consider policy adoption on disposal of dictators and assign superior and fundamental role to human capital relative to institutions. Moreover, Easterly (2006) indicates that level of education in European colonies significantly determines the development of secure property rights. In addition, La Porta et al. (2008) are also suspicious about the significance of association between institutions and economic performance.

Theoretically well established role of formal institutions for economic performance confirmed by Montesquie (1748) and Adam Smith (1776), North and Thomas (1973), Acemoglu et al. (2004,

2005) have been followed by a large body of empirical literature<sup>4</sup> exploring different dimensions of the role of property rights through employing several indicators and adopting different methodologies, studies in general, have identified security of property rights as a key determinant of economic prosperity and development such as Knack and Keefer 1995 supplied earlier empirical evidences employing International Country Risk Guide (ICRG) data and find significant direct effect of secure property rights on economic growth. In addition, Hall and Jones (1999), Acemoglu et al. (2001, 2002), Easterly and Levine (2003), Rodrik et al. (2004), La Porta et al. (2004) and Acemoglu and Johnson (2005) find positive association between formal institutions and economic growth utilizing security of property rights as an indicator of formal institutions. For instance, Knack and Keefer (1995) employing risk of expropriation and cost of contract enforcement as measure for formal institutions and found significant impact of property rights on economic performance and investment.

Similarly, Hall and Jones (1999) using risk factors found significant role for government policies and institutions in determining income level across countries. Elaborating the existence of multiple equilibrium Acemoglu et al. (1998) indicate existence of equilibrium in which concentration of wealth is in few hands and human capital accumulation below its potential level for majority of population.

In addition, Gradstein and Justman (1997) suggest that inequality in political power not only works in democracy hindering but it also hinders accumulation of human capital. On the development of particular institutions in modern economies Acemoglu et al. (2001), based on germ theory of institutions and through instrumental approach in regressions find that settlers'

---

<sup>4</sup>Prior to 1990s, Lack of availability of reliable data on security of property rights studies heavily relied on political stability (See Barro,1991).

mortality rate significantly influenced the settlers' preferences in adopting between policies<sup>5</sup> (extractive or constructive) that further influenced the development path of colonies depending on the policies adopted by settlers. Colonies where climate has been settlers' friendly and mortality rate is low settlers and colony was less dense relative to its endowment and area settler found it beneficial to adopt constructive policies and vice versa. Acemoglu and Robinson (2002) have also modeled "political replacement effect" in development of institutions and suggest that inequality in political power hampering growth through creating path dependency. Consistent with Acemoglu et al. (2001), Easterly and Levine (2003) using economic policies and rules as a measure of institutions along with other control variables find that endowments impact economic outcomes through institutions. Rodrik et al. (2004) assert primacy of institutions over geography and trade using instrumental variables for institutions and trade.

Considering civil, political, and economic freedom Hayek (1960), considers fundamental principle of liberty a necessary condition for economic prosperity. Early literature on association between economic freedom and economic growth empirically establish positive relation, through employing various measures to capture different dimensions of economic freedom.

Employing new data set to Hayek's (1960) proxies of judicial independence and review of constitution for effective judiciary La Port et al. (2004) find strong impact of judiciary on economic freedom. Barro, (1994) employs black market premium<sup>6</sup> as an indicator of distortions by government for 100 countries. Size of government using measures of consumption share by government and percentage share of subsidies and transfers from government studies such as [Barro (1991); Knack and Keefer, (1995); Gwartney et al. (1998); Barro, (1998, 1998)] find that economic freedom positively and significantly affects economic growth. Whereas, other studies

---

<sup>5</sup> Extractive and constructive policies definition

<sup>6</sup> Size of black market premium on foreign exchange market shows size of regulations, more regulations means less economic freedom which result in an increase in black market premium for further details see Barro (1994).

like, Ayal and Karras 1998; Nelson and Singh 1998; Kneller et al. (1999), although lacking robustness in their results, find positive effect of economic freedom on economic growth. Similarly other many other studies have utilized other aspects such as legal structure, monetary policies, economic structure and use of the markets, price stabilization policies, degree of openness while trading with foreigners and freedom to allocate resources in financial and capital markets have found positive [Levine and Renelt (1992); Barro (1998, 1999); Alay and Karras (1998,1999); Torstesson (1994), Knack and Keefer, (1995) and Sala-i-Martin (1997)].

Gwartney et al. (1996) following Milton Friedman<sup>7</sup> constructed an Index to measure economic freedom, index comprised of indicators previously used independently to capture the impact of economic freedom such as size of government, legal structure, freedom to trade internationally, freedom to choose among currencies, and market structure with respect to government interventions and economic rules. Index is constructed through applying principal component analysis of all these seven dimensions of economic freedom and found significant in relation with economic growth. This index<sup>8</sup> is found significant than the indicators<sup>9</sup> previously employed in literature<sup>10</sup>.

Economic freedom can be thought as protection from government and private expropriation and freedom to accumulate economic resources and utilize their resources as they see fit until their activities has no harm to others Gwartney et al. (1996). In early empirical studies employing

---

<sup>7</sup> In 1980s, Milton Friedman asserted that economic freedom exerts direct influence over economic outcomes.

<sup>8</sup> Also index constructed by Heritage Foundation is considered superior to previously used indicators of economic freedom . we prefer economic freedom index by Fraser Institute for further see Gwartney et al. (2004).

<sup>9</sup> Such as, proxies used by Knack and Keefer (1995), Hall and Jones (1999) and Easterly and Levine (2003) among others.

<sup>10</sup> Barro 1994;1998; Knack and Keefer (1995) Alesina (1998) among others.

EFW Index<sup>11</sup> confirms positive and significant association between economic growth and measure of economic freedom.

Carlsson and Landstrom, (2002), employing economic freedom index empirically find that economic freedom positively significant for economic growth. Their results confirm with previous study by Gwartney et al. (1999) that increase in economic freedom increases economic growth. Empirical studies using economic freedom index find economic freedom significant in positive relation with economic growth such as De Haan and Seirman (1998), Dawson (1998), De Haan and Sturm (2000), Cole (2003) Gwartney et al. (2004) and Weede (2006) but these studies encounter serious shortcomings of robustness of their OLS results which are biased and inconsistent in the possibility of existence due to endogenous nature of economic freedom.

Bengoa and Saez-Robles (2002), while studying FDI and economic growth relation find positive role for economic freedom in effective utilization of FDI. They have also employed economic freedom index to capture level of economic freedom in FDI host country.

Considering endogenous nature of economic freedom, Faria and Montesinos (2009) employ instrumental technique to their analysis and find significant relation between economic freedom index and economic growth.

Recently, Williamson and Mathers, (2010) empirically analyze relative importance of culture and economic freedom and also provide robustness to their results. Using economic freedom index by Gwartney et al. (1996) of Fraser Institute their results shows that economic freedom positively and significantly related to economic growth.

---

<sup>11</sup> In 1996, Gwartney et al. constructed Index of economic freedom. Index consist both policy and institutions variables.



## 2.4 Culture and Economic Growth

However, formal rules do not generate the exact same institutional outcome everywhere to similar degrees such as Rodrik et al. (2002) conclude on the question of formal institutions and development, “*desirable institutional arrangements have a large element of context specificity, arising from differences in historical trajectories, geography and political economy or other initial conditions...*” (p.24). Hence, whether or not institutions lead to better economic and investment climates, expand trade, encourage technological development, foster better governance and accountability, encourage trust, reinforce property rights, ensure competition, and avoid the exclusion of sections of the population from the fruits of development is as much a question of the incentive and enforcement mechanism of the institutions themselves as the environment it operates in.

Ptlateau (2000) observes that norms complement the impact of formal institutions whereas, Berkowitz *et al*, (2003) argue that effectiveness of formal institutions depends on their relevance with the cultural factors. In addition, Aoki (2001) also stresses that complementary informal institutions facilitate functioning of formal rules. Similarly, Hodgson (2006) notes that formal institutions to be effective it is necessary for institutions to be customary and at the disposition of human behavior. Assaad (1993) confirms the importance of informal institutions relative to formal rules in formation of labor market relations in Egypt.

North (1990) recognizes a particular set of formal and informal institutions generate path dependence in the process of institutional change. In addition, Acemoglu (2004) considers existence of multiple equilibria attached to particular set of institutions is possibly influenced by underlying cultural settings.

Boettke et al. (2008), building on comparative institutional analysis of North (1990, 2005) and Aoki (2001) identify that indigenous institutions and institutional stickiness play important role in shaping growth inhibiting or promoting institutions. Kuran, (2004) has also analyzed the contribution of *cultural bottlenecks* attached to informal institutions in development history of Middle East.

Analyzing evolutionary process of institutional change North (1990) conceives that deliberate change in formal rules usually based on bounded rationality within given cultural settings. These gradually evolving cultural settings guide changes in formal rules hence formal rules result in unintended outcomes. Recently, Kungston and Caballero (2008) also note that informal rules prevent efficient implementation of formal change in rules hence result in unexpected results because of bounded rationality. In addition, Ronald (2004) considers informal rules as main drivers of institutional change. Change in formal institutions might be efficient based on how best formal institutions are designed in the context of underlying cultural factors. Therefore institutional outcomes such as corruption, education, governance or gender equality varies with respect to underlying cultural factors instead of expected outcomes from the change in formal institutions such as country like Saudi Arabia is rich but has less tolerance towards gender equality. Bauer (1988) note that democracy (formal institutions) inherited by many developing countries could not result in governance outcomes as we often relate with democracy in developed world and it is not surprising that not everyone finds strong effects from formal institutions to development outcomes (Glaeser et al. 2004).

In addition, Bardhan (2001) finds that informal institutions substitute more frequently for formal institutions in less developed economies of the world. The effectiveness of formal law, even in rich countries, however, may depend to a large extent on how well the law corresponds with

norms, making enforcement less costly, thus norms and attitudes matter for how well even formal institutions can work (Posner 1998). On the other hand, Williamson (2000) ranks culture above all other forms of institutions based on its low tendency to change. Culture also provides background within which formal institutions take place.

There is cost associated with enforcement of formal institutions such as cost of contract compliance (North, 1990), however, informal institutions may reduce cost associated with badly functioning formal institutions and enhance effectiveness of reforms through minimization of information and enforcement problems without incurring cost of formal legal system (World Bank, 2002). Thus, the question of institutions and development may depend greatly on how informal institutions moderate formal ones as they affect outcomes (North 2005). Boettke (2009) note that *cultural influence* in economic growth cannot be underestimated through assuming culture an exogenous factor.

Weber (1904-05) has supplied earlier empirical evidence of association between culture and growth considering religious belief as an essential ingredient of culture. He argues that it depends on how belief influence society's attitude towards life. According to Weber's finding Protestantism supported growth promoting institutions while Islam did not. Whereas, Garry Becker criticized Weber's findings and argue that Weber's countries can be differentiated on the basis of education standards among masses. On the other hand, expanding on Webber's thesis, Dobbler (2009) identifies particular cultural traits were also responsible for economic outcomes other than religious belief in Weber's countries. He finds these factors in significant relation with economic growth.

Culture in its compact definition can be thought as attitudes, beliefs, norms, and values which directly influence economic exchanges through affecting individual's and organizational

behavior during economic activities Porter (2000). Similarly, Putnam (1993) and Grief (1994) also emphasize the importance of norms and values for the successful implementation of sustainable policies for development.

Tamura (2002) models fertility and human capital and suggests that high level of human stock leads to fall in mortality rate, leading demographic transition hence economic outcomes.

Tabellini, (2008, 2009) employs *trust, respect, self-determination and obedience* in order to capture cultural impact, finds strong and positive association between culture and economic growth. In addition, Williamson (2009) analyzing relative role of formal and informal institutions provide empirical evidence that regardless to formal institutions, informal constraints affect economic outcomes. North, (1990, 2005) notes that culture shape human interaction hence economic outcomes.

Foloini and Vittadini, (2010), identify that sources of human capital are not only limited to formal learning but extended back to cultural settings and family back ground. Recently, Runst (2011) taking natural experiment of East and West Germany also find informal settings important for the development of human capital.

These findings encounter conflict with the studies supplying empirical evidence pertaining to *substitution/complement* hypothesis regarding formal and informal institutions, such as Acemogluet al. (2005) empirically tested the relative role of formal and informal institutions while defining *property rights institutions* and *contracting institutions* as formal and informal institutions respectively. They find formal institutions play a fundamental role instead of informal institutions and generalize their results. Whereas, Heins(2011) expanding on Acemoglu et al. (2005) retains their findings except inclusion of development stage into analysis and argue that effectiveness of formal institutions is directly related to the development stage of a country.

More recently, Williamson and Mathers(2011) have employed measure of economic freedom and culture and empirically shed light on behavior of informal institutions in the presence of formal institutions in a cross country growth regression. They find that culture is less important relative to economic freedom and argue that once formal institutions are well established then individuals rely more on well established formal rules relative to culture. Hence concluding in the favor of substitution affect between formal and informal institutions, they argue that reliance on cultural settings becomes costly once formal institutions are well established.

In addition, Vitor (2012) noted that formal and informal institutions are not necessarily perfect substitute but they complement each other. Considering above mentioned studies we take a position where effectiveness of formal institutions such as rule of law, political institutions and civil law depends on the quality of underlying existing levels of cultural factors such as level of *trust, respect, self-determination and obedience* which shape human behavior in any shared activity particularly related to economic interactions.

Considering distinct importance of economic freedom, culture and its relation with human capital with respect to economic growth in existing literature given above the next logical question is what happens when these factors are taken together in growth regression?

## **2.5 Economic Freedom-Culture Nexus**

Literature discussed in previous sections, clearly illustrates, that both culture and economic growth independently influence economic outcomes and led me to conclude that three possible situations can arise when it comes to the relative impact of culture and economic freedom in shaping economic outcomes.

Theoretically, relationship between economic freedom and culture can possibly be anticipated in several directions, once both are taken together in a growth regression, it could be expected that

they may reflect substitution effect that one may replaces other's effect in economic outcomes. However, if culture and economic freedom remain significant in growth regression, means both complement each other. The possible causality can run in both directions, from economic freedom to culture or culture to economic freedom.

For instance, if human behavior is fundamentally driven by cultural aspects such as trust, self determination, respect and obedience. These aspects may generate behavior of self organizing and positive cooperation creating informal institutions less costly than the formal institutions of economic freedom. In this case economic freedom may become less important or insignificant in the presence of cultural effect, reflecting a possibility for substitution effect. For example, it is argued that public production of law and formal legal systems are not necessary to establish and enforce property rights (Benson, 1989a, 1989b; Ostrom, 1990; Greif, 1993; Greif et al., 1994; Leeson 2007a, 2007b, 2007c, 2008).

On the other hand, it is also reasonable that growth stimulating culture may prefer to replace informal institutions with formal institutions related to economic freedom. In this case, economic freedom dominates culture in growth regression reflecting another possibility of substitution effect.

On the other hand, it is also plausible to think that culture and economic freedom complement each other. If this is the case, than, both variables will maintain their significance in the growth regression. Theoretically, culture provides background within which formal institutions takes place and a better quality culture may stimulate better functioning of formal institutions or other way around. Many studies supplied evidence that culture facilitate economic freedom and it is also possible other way around. (see, Berggren and Jordahl 2006; Heinemann and Tanz 2008; Tabellini 2008b; Aghion et al. 2009).

More recently Williamson and Mathers (2011) have supplied empirically evidence to the substitution and complement hypothesis about relationship between culture and economic freedom while taken together in growth regression and ended up with a lead to further explore the obscure relation of economic growth and culture in the presence of well established formal institutions of economic freedom.

The substitutions and complement hypothesis carry sufficient theoretical and empirical evidence. Hence we turn to explore a possibility of indirect channel through which culture effect economic performance even in the presence of economic freedom. Human capital qualifies, to be a possible channel for culture to affect efficiency and productivity of human capital through influencing human behavior. Real world example can also be presented that similar formal institutions result in outcomes depending on their indigenous cultural settings.

## **2.6 Culture-Human Capital Nexus**

In their seminal contribution, Lucas (1988) and Mankiw, Romer-Weil (1992), theoretically establish a positive relation between economic growth and human capital. Early empirical evidence that a positive link between human capital and economic growth exist, is provided by Romer, (1989) taking human capital in growth regression as an explanatory variable while using adult literacy rate as an indicator for human capital.

Despite its theoretically strength, empirical evidence regarding human capital-growth relation encounters conflicting evidence based on data employed to the analysis, measure of human capital is being used and methodology adopted for the analysis. Methodological differences such as growth accounting approach adopted by [Benhabib and Spiegel (1994); Lindhal (2001) and Caselli (2005)], and growth regression approach adopted by [Islam (1995); Easterly and Levine (1997), Barro, 1999]. Second dispersion among empirical evidences stems out of choice of

human capital among different measures<sup>12</sup>. Finally, differences in data employed to the analysis lead to different outcomes of the analysis. Such as cross-section studies provide significant and positive relation between human capital and growth [Islam, (1995)].

Early empirical studies<sup>13</sup>, find stock of human capital and its increase, in positive relation with economic growth. Using growth regression approach Romer (1989) and Barro and Sala-i-Martin, (2004) find positive and significant association between human capital and economic growth whereas Islam (1995) find significantly negative relation between human capital and growth. On the other hand, OECD study in (2003), employing same data set as Islam to analysis and find human capital significantly positive for economic growth. Kreuger and Landhal (2001) note that positive and negative relation of human capital lies in variations in return to schooling.

Becker et al. (1994) assuming fertility endogenous and increase in rate of return with increase in stock of human capital argue that societies with limited human capital experience high returns from more children relative to human capital whereas societies with abundance of human capital experience high return of human capital relative to more children. Hence societies underlying culture further determine investment in human capital whereas stock of human capital in current period together with historical factors such as cultural factors determine return to human capital hence its investment.

Development of human capital is not only limited to formal schooling or training programs but informal settings such as self reflection, self organizing and family back ground contribute in shaping quality of human capital (OECD, 1998; 2001; Wossmann, 2003; Le *et al.*, 2006).

Keeping in view the nature of human capital it is plausible to think that human capital's accumulation do not take place in isolation but within specific cultural settings. Hence, we can

---

<sup>12</sup> Wobbman (2003), provides a detail survey on different measurement used in human capital-growth literature.

<sup>13</sup> See Romer 1989; Barro, 1991; Mankiw et al, 1992; Brunetti et al, 1998 Hanushek amd Kimko, 2000; Barro and Sala-i-Martin, 1995; 2004;



think that human capital is not only a reflection of formal learning but also underlying cultural traits prevailing in a society reflecting complementarities between human capital and culture. When considering culture and human capital interacting factors of economic development, one should keep in mind that causal sequence could run in several directions – from culture to human capital to economic development; from human capital to economic development through culture and also from economic development to human capital and culture.

Unlike traditional models<sup>14</sup> of human capital, we can have early studies emphasizing the impact of cultural traits in shaping labor markets and productivity [Coleman, (1988) and Burt, (1992)]. There is substantial evidence to confirm that family, community and state involvement in education improves outcomes by decreasing the probability that the child may drop out of school (Coleman, 1988; Israel and Beaulieu, 1995; Teachman et al., 1996, 1997). The culture extends/restricts an individual's access to human capital, the later leading to private and public return in future.

On the other hand impact of human capital on culture is less clear as human capital originates on the deeply embedded cultural values and human capital is unable to change these values frequently or radically. Anneli Kaasa, Eve Parts (2008) has shown interaction of human capital and social capital while using trust as a determining factor of social capital. They confirm several interacting effects of trust and human capital on economic growth.

Bucci and Segre (2011) analyze one possible channel through which culture may positively affect economic growth, namely the existence of complementarities between cultural and human capital investments. Using a two-sector endogenous growth model, they find that in the long run a higher growth rate of real per-capita income can be attained the more cultural and human

---

<sup>14</sup> For example Becker, 1962; Ben-Porath, 1967; Mincer, 1974. These models only focus on relation between human capital and income.

capital investments are complementary for each other in the process leading to agents' skill acquisition. They also find that an increase of the cultural capital share in total GDP can be conducive to a rise of real per-capita income.

## **2.7 Conclusion**

There are ample reasons to consider a possibility that culture may affect economic growth through an indirect channel even in the presence of economic freedom institutions. Williamson and Mathers (2011) also discussed similar possibility of indirect channel for culture. Culture as Tabellini (2008, 2009) identifies it a blend of four distinct components trust, respect, self-determination and obedience, which strongly influence economic and social interactions through primary effect on human behavior such as Bisin and Verdier (2000, 2001) emphasize that cultural values pass on from one to next generation and influence long run growth.

It is also plausible to think that human capital is fundamentally related to informal components of culture such as North (1990) writes that culture is human learning accumulated through time that influence long run growth. The distinct cultural aspects are deeply embedded in human behavior and their impact influence present time formal learning.

Therefore we may have different level of human capital accumulated through similar formal learning but within different cultural backgrounds. Such as similar formal schooling produces shape human behavior differently depending on quality of cultural factors such as level trust, respect, self determination and obedience in a society. Human behavior influence interactions hence productivity of human capital. Keeping in view this reasoning we can find different outcomes from similar formal institutions within different quality of cultural factors.

We turn to explain conceptual framework and a supporting model providing base to my empirical strategy in next chapter.

## Chapter 3

### CONCEPTUAL FRAMEWORK, DATA AND METHODOLOGY

This chapter provides conceptual framework, methodology and data set in detail. Chapter is classified into three sections, where first section 3.1 provides conceptual framework which theoretically justifies hypothesis formulated and tested in this study and also provides logical grounds to choose suitable methodology and data sources to achieve optimal objectives of the study. Next section provides outline of the variables, their data sources and develops a strategy to empirically test the hypothesis. Variables and their Data have been discussed in section three. Fourth section arranges an empirical strategy to test hypothesis of the study for the given theoretical framework, set of variables, and availability of data set across time and space.

#### 3.1 Conceptual Framework

Simply, this study can be attributed to the literature attempts to understand transmission channel of cultural effects in the presence of well established formal institutions. To analyze relative role of formal and informal institutions is a recent development in the literature of cross country growth theory. For example, Acemoglu and Johnson, (2005) distinguish between formal and informal institutions as *property right institutions* and *contracting institutions* respectively. Property rights institutions provide security from government expropriation whereas contracting institutions facilitate privately enforced contracts among individuals or firms. They analyze relative importance of each set of institutions in the process of capital accumulation and long run economic growth and suggest that property rights institutions are relatively more important than the contracting institutions. Terms of a contract between two individuals can be altered at very low cost and in the presence of weak *contracting institutions*, individuals can take measures to

reduce the risk pertaining to altering terms of the contract, however, measures against state predation are costly and difficult to change at individual level. Hence individuals assign more weight to risk pertaining to *property rights institutions* i.e. risk from state expropriation relative to *contracting institutions* i.e. expropriation risk from individual.

Heins (2010), contrary to findings of Acemoglu and Johanson (2005), suggests a nonlinear relation between property rights institutions and economic growth and suggests that property rights institutions work perform at different stages of development. Hence, generalizing the impact of property rights institutions across countries without taking into account the development stage of a country could be misleading. It is evident from his analysis that property rights institutions are more effective in developed relative to less developed economies.

Considering economic freedom and culture as measures of formal and informal institutions, Williamson and Mathers, (2010) advance empirical evidence suggesting that economic freedom is relatively more important than culture in long run economic growth. These results show that in the absence of formal institutions of economic freedom culture exerts sufficient influence on economic growth however; inclusion of economic freedom reduces cultural share in economic growth. In the light of these results, they assert that culture becomes less important once formal institutions are well established or in other words people rely less on cultural factors once they have available formal institutions.

On the other hand, we find sufficient grounds in existing literature to challenge the above mentioned findings regarding reduced cultural influence in the presence of well established formal institutions of economic freedom. Cultural components such as *trust*, *respect*, *self-determination*, and *obedience* are the primary factors shape human behavior. For example, Bisin and Verdier, (2000, 2001) show that cultural values transfer from one generation to another as a

parental transmission. Similarly, North (1990) considers that human learning through time shape cultural values and determines the quality of culture.

Based on two key cultural characters, collectivism and individualism, Gorodnichenko and Roland (2010), show that culture exerts significant impact on economic growth even in the presence of formal institutions. They suggest that culture impacts human behavior through time and their results also show that independent cultural contribution in economic growth is equal to the impact of formal institutions in terms of its magnitude. They also suggests that people make their judgments, expectations and calculate their cost benefit analysis based on underlying cultural factors such as individualism or collectivism. Williamson and Mathers, (2010) also question the authority of their results by indicating the possibility of cultural influence through indirect channels in the presence of well established formal rules.

Hence, it is plausible to think that culture as defined by Porter (2000) and also identified by Tabellini, (2008, 2009), might influence long run growth even in the presence of economic freedom contrary to the findings<sup>15</sup> that culture becomes less important once formal institutions of economic freedom are well established. It is also reasonable to consider the possibility of *indirect channel* that might transmit cultural influence regardless to economic freedom.

In the light of reviewed literature in previous sections it is logical to think that culture impacts economic outcomes through influencing productivity and accumulation of human capital. Culture influences human capital through shaping human behavior both at individual and societal level. Quality of culture determines the productivity of human capital through influencing behavior in a society regardless to existing formal institutions. This has led us to observe the differences in productivity and accumulation of human capital with similar formal institutions but within different quality of cultural backgrounds. It shows that culture exerts significant

---

<sup>15</sup> See, Williamson and Mathers (2011)

impacts on economic growth even in the presence of formal institutions. Hence differences in cultural values generate income differences across countries through their fundamental influence over perception of life people hold in a society.

Therefore, this study is in position to propose a possible channel of human capital through which culture affect long run economic growth. For example similar formal schooling in two different cultures may not generate similar level of human capital depending on underlying cultural factors. Intensity of cultural components such as *trust*, *respect*, *self-control* and *obedience* determine quality of behavior hence productivity of human capital varies depending on the existing intensity of these cultural components regardless to similar formal education in two different locations with respect to their cultural backgrounds.

To show empirically, the cultural effects on economic growth through human capital we introduce an interaction term of culture and human capital into our growth regression in the presence of economic freedom a measure of formal institutions. Previously, Kaasa and Parts (2008) used similar interaction between culture and human capital while using trust as a determining factor for culture and found several effects of trust and human capital's interaction. Whereas, Bucci & Segre, (2011) showed that culture affects long run economic growth through having a complementary relationship with human capital. Culture and human capital together determine the process of skill acquisition for an agent. They showed that culture impact long run economic growth positively through the channel of human capital. Expanding on a two-sector endogenous growth model, they have shown that high level of long run income per capita is possible from human capital depending on the underlying cultural settings in an economy.

Hence, to test our hypothesis that is, *whether culture affects economic outcomes indirectly through the channel of human capital in the presence of economic freedom or not?* This study

harness culture and human capital through an interaction term. Interaction term and measure of economic freedom are taken together to show the impact of culture together with human capital. If culture remains significant using its interaction with human capital in the presence of economic freedom would lead to validate hypothesis of this study. This may help to enhance our understanding about transmission channel of cultural effects on long run growth in the presence of economic freedom. More generally this study is an attempt, to understand cross country income differences due to differences in underlying cultural values *trust, respect, self determination and obedience* through their fundamental impact on human capital.

### **3.2 Empirical Specification**

Theoretically, empirical strategy for this study is based on Mankiw-Romer-Weil, (1992), an extension of simple neoclassical model from Solow (1956); following is the version of model with basic specifications.

$$\ln y = \alpha + \beta \ln(\text{Investment}) + \gamma \ln(\text{population growth} + g) + \epsilon$$

Where dependent variable  $y=Y/L$  GDP per capita or worker depends on investment share and growth of population. Conditional convergence of the model allows us to extend it to include potential growth determinants (see Williamson and Mthers, (2010), Barro (1998) of our interest, such as human capital, economic freedom and culture along with other control variables traditionally suggested in growth literature.

Gross domestic product (GDP) per capita is the main outcome of the models whereas culture, economic freedom, human capital and interaction term of culture and human capital are the main predictors of the model along controlling for other variables such as population growth, investment share, suggested in the growth literature [see Levine and Renelt (1992)].

This model estimates GDP per capita as dependent variable and culture, economic freedom, human capital as main predictors along with other potential independent variables follow existing literature<sup>16</sup> on economic freedom, culture and growth. Initial level of GDP (Gross domestic product) per capita (at constant of 2000) is included as conditioning control variable.

We include investment share of real GDP (at constant of 2000), as a standard control as it is confirmed by Levine and Renelt (1992) that association between investment share and growth is positive. Population growth and urban population is also included along with other potential control variables suggested in the literature of growth.

The main goal of this analysis is to estimate both direct and indirect causal effect of culture on output per capita of a panel of fifty four countries including developed, developing and less developed for the period of 1980 to 2007.

Based on linear association between dependent and independent variables our basic specification is a linear regression like:

$$y = \alpha + \beta_{it} Cul + \gamma_{it} EF + \delta_{it} X_{it} + \varepsilon_{it} \dots \dots \dots (1)$$

Expanding on basic specification provided by Williamson and Mathers, (2010)<sup>17</sup>, we initiate empirical analysis by constructing an index of culture through applying *principle component analysis* (PCA) utilizing four basic components *trust, respect, self-determination* and *obedience* and same strategy to construct index can be found with Williamson and Mathers (2010).

First three components are in positive relation with economic outcomes whereas obedience the fourth component negatively impact economic performance. Single value aggregated through

---

<sup>16</sup> For example see Barro 1998, Levine and Renelt 1992, Gwartney et al. (2004) Kaasa and Parts (2008), Wiliamson and Mathers (2010).

<sup>17</sup> As their results shows that culture becomes less important in the presence of economic freedom indicating a possibility of indirect channel for cultural impact on output.



PCA is in positive relation with economic outcomes. These components taken from World Values Survey (WVS)<sup>18</sup> are considered important in shaping human behavior particularly economic behavior and main predictors of the analysis.

Economic freedom Index<sup>19</sup> from Fraser Institute (Gwartney et al. 1996, 2008) is also controlled in basic linear regression to analyze importance of economic freedom relative to culture for economic outcomes. Economic freedom<sup>20</sup> index compiled and constructed by Fraser Institute comprised in five broad categories such size of government, monetary policy, price stability, legal structure, freedom to trade across borders and regulations pertaining to labor market, business and credit.

In addition, we also include potential standard control as suggested in growth literature<sup>21</sup> in basic specification. Investment share is included as main control variable whereas initial output enters as conditioning variable. Although, potential endogeneity is expected between economic freedom and investment share (De Haan et al. 2006) but we include it in our main measurement and dealt with econometric issues<sup>22</sup>. In addition to standard control variables we also include other variables such as legal origin, urban population and geography to control for country specific conditions as suggested indicated by literature in the area of institutions and growth.

---

<sup>18</sup> We do recognized; other sources such as heritage foundation to obtain data for culture but due to large sample size and time period covered through WVS, particularly, information provided in the data are relevant to culture used in this study.

<sup>19</sup> For details survey of construction and relation of variables included in Economic Freedom Index see, Gwartney et al. (1996, 2004)

<sup>20</sup> We recognize availability of data from Heritage Foundation and ICRG to measure risk pertaining to formal institutions but due to availability of dat for longer period and more countries we find this data more useful in this analysis.

<sup>21</sup> Selection of control is guided by previous study in the area of culture, economic freedom and growth along with human capital and growth for example Levine and Renelt (1992), Kaasa and parts (2008) and Williamson and Mathers, (2010).

<sup>22</sup> Such as endogeneity, hetroskedasticiy, auto correlation and normality assumptions along with the most common issue of multicollinearity.

Further, we introduce *interaction term* for culture and human capital in our basic specification to capture the cultural influence on economic outcomes through the channel of human capital. Motivation to include human capital is based on the rational that cultural values through providing incentive structures promote or inhibit accumulation and productivity of human capital.

Algebraically, interaction term shows two ways causality that it could be from culture to human capital and human capital to culture. But we know that individual's decision to acquire skills is primarily based on incentives provided by existing culture whereas culture with its slow changing nature is exogenous to individuals at a given point of time. Hence, we are in position to rule out the possibility of causality from human capital to culture.

Although we acknowledge that incremental changes in culture comes from human capital as culture is human learning through time and space but it takes generations to have a considerable change in culture by human capital. At a given point of time it is hard to conceive that human capital brings visible changes in cultural values such as level of *trust, respect, self-determination* and *obedience*. Previously, Kaasa and Parts (2008) also used similar interaction term considering complementarities between culture and education. To capture impact of culture through human capital an interaction term for both is introduced along with direct causal effect of economic freedom, culture and human capital on output.

After inclusion of interaction term our basic panel specifications becomes;

$$y_{it} = \alpha + \beta_{it} Cul + \gamma_{it}EF + \theta_{it}(Cul \times Ed) + \delta \cdot X_{it} + \varepsilon_{it} \text{-----}(2)$$

Where;

- $y = Y/L$  (GDP per capita)
- $Cul =$  Index of four distinct components *trust, respect, self-control, and obedience*)

- EF= Index of economic freedom comprised five distinct measure related to policy, legal and economic rules to capture the effect of formal institutions.
- CulxEd= Interaction of culture with education whereas;
- Ed= represent educational attainment at three distinct levels primary, secondary, tertiary.
- X= Vector of control variable which includes urban population, legal origin, geography, initial growth and investment share.

### 3.2.1 Interaction Term

Within interaction term we consider that causality runs from culture to from Algebraically, two multiplicative variables provide us with conditional effect of one with respect to status of other variables. In our case, culture and three distinct levels of educational attainment interact with each other and there algebraic effect looks like;

$$y = \alpha + \beta(\text{culture}) + \gamma(\text{Educational attainment}) + \delta(\text{CulXEdu}) + \varepsilon \text{-----}(3)$$

This equation gives conditional relationship between education and economic outcomes depending on the quality of culture. We assume that culture across countries falls within one of three levels of cultural quality in a society such as high, medium and low quality of culture.

### 3.2.2 Control Variables

Following are the potential control variables used in the study based on existing literature in the area of culture, economic freedom and human capital.

- Initial GDP as a conditioning control
- Gross capital formation
- Population Growth
- Urban Population ratio
- Legal origin i.e civil or common law

- Latitude to capture geographical aspects
- Natural resource rent percentage of GDP

### 3.3 Explanatory Variables

#### 3.3.1 Culture

To measure culture we rely on a methodology adopted by Tabellini (2008, 2009) and identify four distinct components that together form variable of culture to meet the objective of the study. These four components, *trust*, *respect*, *self-determination* and *obedience* play key role in shaping human behavior pertaining to economic, social, and political interaction which consequently affect economic performance of a society. Literature considers that *trust*, *respect*, *self-determination* are positively related to economic outcomes whereas obedience is considered in negative relation with economic growth.

Literature verifies that trust matters for economic growth through reducing transaction and monitoring cost (Fukuyama 1996; Knack and Keefer 1997; La Porta et al. 1997; Berggren et al. (2008); Bjonskov 2010; Kaasa and Parts 2010).

Self-determination is refers to individuals control over their lives in term of choices they prefer and decision they made they have realization that they will be sole responsible for their actions. It is positively related to economic outcomes as individuals with more self control feel themselves sole recipients of the fruits of their actions whether success or failure, hence motivated to enhance their welfare. High level of self determination cause positive impact on economic growth (Banfield 1958).

Third component of our culture variable is *respect* and it can be thought a measure of morality in a society i.e. generalized and limited. Generalized morality provides general principles to stimulates productive interaction across and within a group whereas limited morality is a narrow

concept that lack principles driving interaction across groups (Platteau 2000). Hence respect is considered an important component of culture that affect interaction within and across groups through providing general principles. Greater level of respect in a society is beneficial for economic performance.

Finally, obedience included as fourth component of culture is important due to its impact of shaping society's attitude towards individualism or collectivism. Individualism has strong and positive effect on economic development [Gorodnichenko and Roland (2010)]. Individualism enhances quality of risk-taking which is an essential character of entrepreneur [Harper (2003)]. Obedience reduce individualism hence increase risk aversion and result in reducing economic activity. Obedience negatively related to economic development and growth.

We use all four components mentioned above after converting their distinct values into a single index value through implementing *principal component analysis*(PCA). This index incorporates both positive and negative affecting components and gives us a single value for variable of culture which is in positive relation with economic growth. (Tabellini 2008; 2009)

### **3.3.2 Economic Freedom**

Economic freedom can be thought as freedom to acquire and utilize economic resources within the limits where these activities are not affecting adversely to others, whereas, on the other hand economic freedom tells us the degree of protection from government and private expropriation Gwartney et al. (1996). To measure different aspects of economic freedom two indices Heritage Foundation and economic freedom of the world Index yielding similar results are being widely used in the literature of economic freedom and growth. Both indices capture dimension such as degree of openness, corruption, security of property rights, market structure, government intervention, price stability and policies related to money.

We use economic freedom of the world index due to its more coverage of countries for longer periods. This index report values for every five years from 1970 to 2000 whereas after 2000 index reports results yearly. We convert values on year basis into average for every five years as indicated by Folster and Henrekson, (2001) that penal data on annual basis is difficult to interpret in long run analysis due to business cycle effect in long run hence five years averages becomes most suitable for our analysis.

Economic freedom index by Fraser institute incorporates twenty one variables into seven broader categories and through applying principle component an index have been constructed. Literature independently confirms the significant association between these components and economic growth such as size of the government, describing government share in total consumption, positively affect economic outcomes [Barro (1991); Knack and Keefer (1995); Barro (1999); Kneller et al (1999)]. Second broader category considers share of government in investment and transfer and subsidies both percentage of total GDP captures freedom and positively affect economic outcomes [Ayal and Karras (1998) and Kneller et al (1999)].

Ayal and Karras 1998 shows positive and significant impact for Monetary policy and price stability the third broader component of economic freedom whereas Gwartney et al. 1996 shows negative impact of this on economic growth. Fourth component of economic freedom index is freedom to choose between alternative currencies and it is also in positively relation with economic growth [Levine and Renelt (1992); Barro (1994) and Ayal and Karras (1998)]. Fifth component of economic freedom index is legal structure which determine security of property rights and is positively affecting economic growth [Barro, (1994); Levine and Renelt (1992); Knack and Keefer (1995); Sala-i-Martin (1997)]. Sixth and second last component included into economic freedom is freedom to exchange internationally and has significant association with

economic freedom [Tortenson (1994) and Sala-i-Martin (1997)]. Last component included into economic freedom index is freedom to exchange in capital markets and this impact economic growth through affecting economic freedom of an economy [Ayal and Karras (1998)].

Apart from the independent effect of each component of economic freedom, many studies have attempt to analyze association between economic growth and index of economic freedom such as Carrlsson and Lanstrom (2002) using economic freedom index constructed by Gwartney et al. (1996) shows robustness with number of other measure of economic freedom. They confirm the results from previous study from Gwartney et al. (1999) and also find that economic freedom matters for economic growth. Faria and Montesinos (2009) utilizing economic freedom index while applying instrumental variable approach shows that economic freedom matters for economic growth. Finally, Williamson and Mathers (2010) empirically tested the significance of economic freedom relative to culture and find importance of economic freedom index relative to culture.

### **3.3.3 Human Capital**

To capture the impact of human capital we use educational attainment as termed by OECD (1998) based on data set prepared by Barro and Lee, (2010). We take average value for every five years for the period of 1980-2005 to conform with the data for our main variables of culture and economic freedom.

Educational attainment capture stock of human capital that is ratio of total population completed different level of schooling. Although there are other measures to capture the impact of human capital such as average level of schooling and enrollment ratio. These all measures are being used in empirical studies depending on the nature of the analysis. Educational attainment is

superior relative to average schooling or enrollment ratio. Such as enrollment ratio does not take into account the drop outs whereas average ratio suppress the higher and primary education as different return is attached to completion of each level.

Educational attainment takes into account each three level and also can be differentiated with respect to gender differences. Still it has few shortcomings such as this measure does not take into account the quality of education. Differences in educational quality influence learning process and skill acquisition, hence lead to variation in quality of human capital Wossmann, (2003). In addition, regional, gender, racial differences are also playing an important role in determining quality of human capital [Jorgenson (1995); OECD, (1998); Wossmann, (2003)]. Finally differences in cultural settings and family background lead to differences in level and quality of human capital even in the presence of equal investment in human capital differences across different regions [OECD (1998); Le et al. (2003)].

Regarding our sample which includes countries from developing, less developed and developed countries, we use educational attainment of working age population in a country referring human capital potential at three distinct levels, *primary*, *secondary* and *tertiary* of education.

#### **3.3.4 Interaction Term**

To investigate complementary effect between human capital and culture, we introduce interaction term of culture and human capital into our regression analysis. Although causality could run in both direction but keeping in view the nature of interacting variables we consider that causality runs through culture to human capital keeping in view slow changing nature of culture relative to human capital in short run.



Hence, it is reasonable to expect effect of culture on human capital instead of other way around, as opposite effect requires relatively longer period than the period of the analysis. Possibility of reverse causality cannot be excluded completely such as human capital also alters cultural settings although these changes are incremental and can be assumed constant here.

Overall interaction tells us effectiveness of human capital or we can say productivity of human capital depending on the cultural settings in which human capital is being accumulated. Culture affects both accumulation and effectiveness of human capital, hence one unit increase in education will lead to output depending on the quality of existing culture.

### **3.3.5 Control Variables**

To substantiate results from the analysis we also include potential controls suggested in the previous literature (see Levine and Renelt 1992 and Williamson and Mathers (2010). Population growth, initial GDP and investment share are included as standard variables whereas variety of other factors has been included to substantiate our results.

Data for all control variables is utilized from International Country Risk Guide (ICRG). Yearly available data is converted into average of every five years that conform to data waves of culture. Gross fixed capital formation is included to capture the impact of investment share. To capture the impact of geography we incorporate percentage share of rent of natural resources in gross domestic product. It is included to control the impact of specific institutions due to natural resources. Legal origin is included to capture the impact of civil law in a country and it is considered that civil law or common law significantly affected the subsequent development of formal institutions. To capture this dummy is introduced which differentiate between civil or common law.

In addition urban population the percentage share of total population is also included to capture the institutional change due to urbanization. Population growth, and initial growth is also included in the data set.

### **3.5 Estimation Technique**

We implement panel analysis from 1980 to 2007 while using five year averages. We started analysis with Ordinary least square (OLS) and Hausman test led us to apply fixed effect regression model with robust standard errors. To tackle expected endogeneity among explanatory variables is controlled with inclusion of lag values of control variables. We acknowledge superiority of instrumental technique to deal with endogeneity among predictors but to find at least two suitable instrument will fulfilling all necessary conditions is hard to find hence we move to implement fixed effect after applying Hausman test. The same strategy is suggested by previous studies in the growth literature analyzing economic freedom and culture such as Williamson and Mathers (2010). Empirical analysis initiated with basic panel specification as a baseline and a point to compare with previous studies. We proceed with including variety of combinations of control variables with our main predictors to test for robust standard errors.

### **3.6 Data Sources**

To measure the impact of culture on economic growth we have employed data set from widely used World Values Survey (WVS). Data is available in five waves of the survey spanning from 1981 to 2007, where a single wave reflect average of five years for a country's economic culture's value. We have selected 54 countries for the time period of 1981-2007 for the analysis based on economic condition of a country such as developed, developing and less developed besides considering cultural differences across countries.

In order to capture impact of formal institutions we use measure of economic freedom from Fraser Institute for the period of 1981-2007. Data for economic freedom is available in waves each reflecting average value for five years. After 2000 EFW data is available on year basis but we convert it into average of years in order to conform with the data before 2000 that is accumulated for every five years.

Data for education to estimate causal effect of human capital in the analysis is taken from widely used data set on education from Barro and Lee (2010). Yearly data is available for wide range of countries around the world. We have taken data for our selected sample of countries from 1980 to 2007 and used average of every five years. In the analysis we include attainment of education in three distinct categories of primary, secondary, and tertiary level to capture impact of human capital. Using three distinct levels to capture the effect of human capital is important because it is expected that cultural impact on economic outcomes through different level of education is different.

In addition, data for standards control variables including GDP per capita, gross capital formation, population growth, urban population, legal origin and geography is taken from World Development Indicators (WDI). We convert annual data of control variables into average of every five years due to two reasons. It is to conform to data for our main variables which take a single value for every five year. Secondly, averages give better and stable results for panel data in long run relative to annual changes. To make it useful for the analysis we have converted our data into average for every five years for the study period of 1981-2007.

Our data set for the selected sample is stretched out in both directions i.e. across time (five waves) and cross section (54 countries). Sample of 54 countries along with five waves provide us

a panel of 270 observations. All results of our analysis completely based on the specification given in the panel based on 270 panel observations.

### **3.7 Data Limitations**

Although data we have used in this study is being widely used and is considered reliable but it has limitation with respect at least with respect this study.

- Selection of countries is heavily influenced by the availability of data for all five waves of a country. We have dropped all those country consisting data for less than four waves and hence we ended up with a cross section of 54 countries for the analysis.
- Data used in the analysis is taken from many sources hence data for control variables for some countries was not available hence few countries were dropped from the sample even containing data for all five waves.

## **Chapter 4**

### **Results and Discussion**

The empirical results and discussion is presented in this chapter. The analysis begins with summary statistics of the data in section 4.1. After unit root test in section 4.2 the regression results on panel data are presented in section 4.3.

#### **4.1 Summary Statistics**

Descriptive statistics of the data are used to check the reliability, sensitivity and robustness of the data. It can be analyzed through looking at measures of central tendency and dispersion in the data. It is presented below in Table 4.1.

All the variables are normally distributed around their means except investment share, initial GDP per capita. Pair-wise correlation (appendix-1) among explanatory variables shows no sign of high correlation which could lead to biases in regression analysis. By looking at data we can analyze that mean values are more or less within a similar range except investment share which might be due to an outlier in the data. Low standard deviation confirms the absence of any outlier in data series.

To know more about reliability we move to check the stationary property of the data series in next section through unit root test.

**Table 4.1: Descriptive Statistics of the Data**

<b>Variables</b>	<b>Mean</b>	<b>Std. Dev.</b>	<b>Min</b>	<b>Max</b>
<b>Economic Freedom</b>	5.9208	1.5233	1.9000	8.84
<b>Culture</b>	0.3206	0.2119	-0.2670	0.7329
<b>GDP per Capita</b>	3.8120	3.2166	-10.006	14.967
<b>Lag of GDP per Capita</b>	3.2713	3.1087	-10.006	14.967
<b>Interaction of Culture X Primary Education</b>	0.9684	0.7221	-1.0623	2.761
<b>Interaction with Secondary Education</b>	0.5008	0.5603	-1.7311	1.9956
<b>Interaction with Tertiary Level of education</b>	-0.8011	0.8841	-3.9988	1.5185
<b>Primary Level of Education</b>	1.5164	0.4397	-0.4251	2.1785
<b>Secondary Level of Education</b>	0.8059	0.5952	-1.8728	2.0117
<b>Tertiary Level of Education</b>	-1.2232	0.8917	-4.3263	0.4033
<b>Investment Share</b>	4.6595	7.9651	-21.4888	39.245
<b>Population growth</b>	1.0761	1.0749	-1.8049	4.0191

---

<b>%of Natural Resource Rent</b>	5.6588	8.3895	0.0004	37.53
----------------------------------	--------	--------	--------	-------

---

## 4.2 Stationary Test

To examine the possibility of panel regression, it is required to verify the existence of unit roots in the data set. For this analysis we have selected the Im, Pesaran and Shin (IPS, hereafter), which is based on the well-known Dickey-Fuller procedure.

IPS suggests a test for the presence of unit roots in panels that combines information across time dimension to the cross section dimension, such that fewer time observations are required for the test to have power. Since the IPS test has been found to have superior test power by researchers in economics to analyze long-run relationships in panel data, we employ this procedure in this study. IPS begins by specifying a separate ADF regression for each cross-section with individual effects and no time trend:

$$\Delta y_{it} = \alpha_i + \rho_i y_{i,t-1} + \sum_{j=1}^{p_i} \beta_{ij} \Delta y_{i,t-j} + \varepsilon_{it} \quad (3)$$

where  $i = 1, \dots, N$  and  $t = 1, \dots, T$

IPS uses separate unit root tests for the  $N$  cross-section units. Their test is based on the Augmented Dickey-fuller (ADF) statistics averaged across groups. After estimating the separate ADF regressions, the average of the  $t$ -statistics for  $p_1$  from the individual ADF regressions,  $t_{iT_i}(p_i)$ :

$$\bar{t}_{NT} = \frac{1}{N} \sum_{i=1}^N t_{iT}(p_i \beta_i) \quad (4)$$

The  $t$ -bar is then standardized and it is shown that the standardized  $t$ -bar statistic converges to the standard normal distribution as  $N$  and  $T \rightarrow \infty$ . IPS (1997) showed that  $t$ -bar test has better performance when  $N$  and  $T$  are small. They proposed a cross-sectionally demeaned version of both test to be used in the case where the errors in different regressions contain a common time-specific component. Results for Unit Roots are given in the appendix (2).

Table 2 (appendix b) presents the results of the tests at first difference for IPS test in constant and constant plus time trend. It is found that for all series null hypothesis of unit root is rejected at 95 percent critical value (1 percent level) and are stationary at levels. Hence, based on IPS test, there strong evidence that all the series are in fact integrated of orders one.

### 4.3 Empirical Results from Panel Regression Analysis

To find out direct and indirect impact of culture relative to economic freedom in determining economic outcomes, empirical analysis in this study starts with the estimation of panel benchmark specification below in (Table 4.2, Model 1). Basic specification analyze relative impact of culture and economic freedom on economic outcomes while controlling for investment share, initial GDP, population growth and natural resource rent % of real GDP. In this model 1, economic freedom and culture shows statistically significant and in positive relation with per

capita GDP, however, one unit increase in level of economic freedom brings more than one unit change in GDP per capita whereas one unit increase in quality of culture brings less than one unit increase in economic outcomes.

These results for culture and economic freedom are confirmed by previous findings of Williamson and Mathers (2010). This shows that people may rely less on informal settings once formal institutions are well established in a society or there may exist indirect channels for cultural influence in the presence of well established formal institutions.

Lag of the three distinct levels of educational attainment are included at once in model (2) as to reduce the expected endogeneity biases in results. Secondary and tertiary educational attainment affect significantly positive to economic growth as it was expected whereas primary education is in negative relation with growth. the possible explanation for negative behavior of primary level of education is that secondary and higher level of educations are most favorite channel for technology adoption contrary to primary education. these results are confirmed with Barro (1995).

To see complementary effect of culture and human capital on economic growth, this analysis introduces interaction terms of culture with educational attainment at once in main panel specification. Results in Model (3) show that complementary effect of culture and human capital is positive and significant. Main effect of primary education was negative in Model (2) but its interaction with culture turned positive that shows culture affect economic growth through primary education. This is plausible to think that at the age of primary schooling culture exerts impact through shaping human behavior. These results confirmed with the findings of Kassa and Parts (2008) regarding interaction term and also support Tabellini (2008, 2009). Theoretically,



causality could run in both directions within interaction term that is from culture to human capital and from human capital to culture. But it is reasonable to think that causality runs from culture to human capital because of slow changing nature of culture. Moreover, values of culture and human capital are taken at same point of time for the analysis which further shows that human capital absorbs impact of underlying cultural values instead of expecting that culture is being affected by human capital at least in short run. Inclusion of interaction shows that now education is in conditional relationship (i.e. depends on quality of culture) with economic growth.

Inclusion of interactions of culture with *primary*, *secondary* and *tertiary* level of educational attainment together in the presence of culture, economic freedom and other control variables shows positive and significant impact of the interaction (see Table, 4.2 Column 3). This may imply that higher the quality of culture, greater the effect of formal education on human capital productivity. Similarly, higher is the level of education, the greater the effect of culture on productivity. Inclusion of interactions into the main specification shows that effectiveness of human capital depends on the quality of underlying cultural values such as level of trust, respect, self-determination and obedience in a society. This also imply that similar formal education in different cultural settings may result in varying quality of human capital in terms of their risk taking, trusting others and in decision making behavior.

**Table 4.2****Results of Growth Model including Human Capital, Formal and Informal Institutions**

	<b>Model 1</b>		<b>Model 2</b>		<b>Model 3</b>	
	Coefficients	S.E	Coefficients	S.E	Coefficients	S.E
<b>EF</b>	1.2285***	0.1819	1.2436***	0.1795	1.2563***	0.1713
<b>Cul</b>	0.9599**	0.4390	1.1382***	0.4216	1.0724***	0.4075
<b>L_GDP</b>	-0.2146*	0.0762	-0.2937***	0.0665	-0.2717***	0.0655
<b>L_FC</b>	-0.0473***	0.0196				
<b>L_PopGr</b>	-0.9794***	0.2614	-0.0740	0.2208	-0.2562	0.1907
<b>L_NR</b>	0.0689***	0.0342	0.0353	0.0402	0.0600	0.0427
<b>L_prim</b>			-0.0640***	0.0231		
<b>L_sec</b>			0.0651***	0.0489		
<b>L_ter</b>			0.0779	0.0270		
<b>Int_1</b>					0.0102*	0.0286
<b>Int_2</b>					0.0571*	0.0327
<b>Int_3</b>					0.0841*	0.0507
<b>Constant</b>	-2.1842*	1.2993	-6.4240***	1.3956	-3.8194***	1.0555
<b>Sample size</b>			216 observations			
<b>Countries</b>			54			
<b>Adj. R<sup>2</sup></b>	0.61		0.60		0.60	

Note: \* refers to significance level at 10%, \*\* refers to significance level at 5% and \*\*\* refers to significance level at 1%.

People in a society with low level of trust are reluctant to frequent exchanges, whereas people in a society with low self-control are less likely to lead innovative activities and similarly people with higher level of obedience in a society are less likely to take risk.

On the other hand, we view that school is a place where an individual learn and shape behavior towards cooperation and exchanges within first *non-familial* context of her/his life [Offe and Fuchs (2002)] and it is also suggested that transmission of norms and values such as *trust*, *respect*, *self-determination* and *obedience* between generation is through formal and informal learning [Montgomery (1990)]. Hence, contrary to Williamson's results and interpretation, we hypothesize that culture may significantly impact economic growth through an indirect channel of human capital even in the presence of well established institutions of economic freedom.

In concluding Table 4.2 we can see that inclusion of interaction term enhanced the main effect of culture relative to economic freedom lending credence to our hypothesis that culture influence economic output through human capital. But inclusion of all three levels of education could lead biases in outcomes at next stage of the analysis.

Table (4.3) reports results with all three interactions separately in model (4, 5 and 6) besides controlling for culture and respective level of education along with economic freedom and other control variables. Interaction terms of culture with secondary and higher education show that culture complements secondary and higher education and exert positive impact on output. On the other hand primary education and its interaction with culture remained insignificant in its impact on economic output. Inclusion of main effect for primary education lead to insignificance of its interaction shows that main effect of primary education is stronger than complementary effect of primary education with culture.

**Table 4.3: Results of Growth Model with Interaction**

	Model 4		Model 5		Model 6	
	Coefficients	S.E	Coefficients	S.E	Coefficients	S.E
<b>E_F</b>	0.5111*	0.2082	0.3363**	0.1970	0.3364*	0.1970
<b>Cul</b>	0.7204	1.0032	1.3333**	0.1801	1.2305**	0.4345
<b>L_GDP</b>	0.1440*	0.0793	0.1766*	0.0815	0.1765**	0.0867
<b>L_FC</b>	-0.0191	0.0329	-0.0245	0.0329	-0.0245	0.3293
<b>L_PopGr</b>	-0.5772**	0.2876	-0.5110*	0.2870	-0.5111*	0.2871
<b>L_NR</b>	0.0317	0.0302	0.0491	0.0307	0.0492	0.0307
<b>L_prim</b>	-0.3969*	0.1854	-	-	-	-
<b>L_sec</b>	-	-	1.2242***	0.3909	-	-
<b>L_ter</b>	-	-	-	-	4.7996**	2.0370
<b>Int_1</b>	-0.0299	0.0323	-	-	-	-
<b>Int_2</b>	-	-	0.1100***	0.0358	-	-
<b>Int_3</b>	-	-	-	-	0.3181**	0.1323
<b>Constant</b>	4.3065**	1.7872	4.0883**	1.7683	4.0882**	1.7683
<b>Sample size</b>	216 observations					
<b>Countries</b>	54					
<b>Adj. R<sup>2</sup></b>	0.61		0.58		0.57	

Note: \* refers to significance level at 10%, \*\* refers to significance level at 5% and \*\*\* refers to significance level at 1%.

Models (7, 8 and 9) below in Table 4.4 shows results with all three interaction independently in separate model. Behavior of primary education remains consistent along with its interaction whereas interaction term with secondary and higher education affect economic growth significantly positive. The results indicate that behavior of interactions in separate models remain consistent with the previous results which further justify our hypothesis that culture exerts indirect impact through the channel of human capital even in the presence of economic freedom. Again these results imply that in the presence of higher quality of cultural values impact of each level of education becomes more effective towards creating productive human capital, similarly, this can be seen as in the presence of mass education, culture exerts greater impact on productivity.

These results suggest that culture influence economic growth besides its direct impact on economic growth and also show that culture impact relatively more than economic freedom. Increased effect of culture relative to economic freedom contradicts with the previous findings of Williamson and Mathers (2010). Our results for human capital are consistent with previous results from Barro (1995).

In our last specification in Table 4.5 all three levels of education are included individually along with other explanatory variables separately to see independent impact for primary, secondary and higher education. All three models provide results consistent with previous results. Results are obtained after excluding economic freedom from the models. In the presence of economic freedom results for all other variables including education were not consistent. Overall findings from the empirical analysis reveal that culture has less prominent influencing relative to economic freedom with traditional control variables in the base line model (1) of the analysis and these results confirmed previous findings by Williamson and Mathers (2010).

**Table 4.4 Regression Results of Interaction Terms Separately**

	<b>Model 7</b>		<b>Model 8</b>		<b>Model 9</b>	
	Coefficients	S.E	Coefficients	S.E	Coefficients	S.E
<b>E_F</b>	1.1456***	0.1885	1.0488***	0.1993	-	-
<b>Cul</b>	1.2362***	0.4443	1.4128***	0.4655	0.9327*	0.5217
<b>L_GDP</b>	-0.2016***	0.0767	-0.2245***	0.0754	-0.0645	0.0841
<b>L_FC</b>	-0.0472*	0.0198	-0.0387*	0.0198	-0.0671***	0.0231
<b>L_PopGr</b>	-1.1045***	0.2744	-1.0834***	0.2689	-1.8632***	0.2644
<b>L_NR</b>	0.0612***	0.0341	0.0725**	0.0364	0.0316	0.0278
<b>L_prim</b>	-	-	-	-	-	-
<b>L_sec</b>	-	-	-	-	-	-
<b>L_ter</b>	-	-	-	-	-	-
<b>Int_1</b>	-0.0363**	0.0181	-	-	-	-
<b>Int_2</b>	-	-	0.0473**	0.0186	-	-
<b>Int_3</b>	-	-	-	-	0.0825*	0.0473
<b>Constant</b>	-1.211694	1.440887	-1.865520	1.272195	5.730488***	0.456649
<b>Sample size</b>	216 observations					
<b>Countries</b>	54					
<b>Adj. R<sup>2</sup></b>	0.61		0.58		0.57	

Note: \* refers to significance level at 10%, \*\* refers to significance level at 5% and \*\*\* refers to significance level at 1%.

These results may imply that in the presence of well established economic freedom people rely less on informal institutions of culture. But these results are not supported by theoretical relation of culture with economic growth and show a possibility of an indirect impact of culture on economic growth in the presence of economic freedom.

Next analysis moves to incorporate interaction terms of culture with human capital which shows that education influence economic growth subject to quality of underlying cultural values. This shows accumulation and level of productivity of human capital is highly influenced by existing culture in a society. Hence it can be concluded that cultural variations generate differences in productivity and accumulation of human capital through shaping human behavior whether growth promoting or inhabiting that further leads to cross country growth differences.

From the analysis it can also be concluded that insignificant results for human capital in most of the cross country growth literature analyzing human capital in relation with economic growth may be due to not considering cultural aspects in same growth regression as shown in the analysis.

Rest of the analysis is to check the sensitivity of our results from Model (3). Such as inclusion of educational attainment and interaction terms separately in subsequent analysis. Results from all the models favor our hypothesis that culture is significantly and positively impact both directly and indirectly economic growth. Lags of the control variables have been used to avoid suffering from endogeneity biases although econometric technique used to deal with endogeneity biases but it lend credence to our hypothesis and also as suggested by theory of culture as well.

**Table 4.5 Regression Results with each level of education independently**

	<b>Model 10</b>		<b>Model 11</b>		<b>Model 12</b>	
	Coefficients	S.E	Coefficients	S.E	Coefficients	S.E
<b>E_F</b>	-	-	-	-	-	-
<b>Cul</b>	1.0510*	0.5062	0.8221*	0.4729	0.9082**	0.4756
<b>L_GDP</b>	-0.0992	0.0843	-0.0671	0.0835	-0.0998	0.0784
<b>L_FC</b>	-0.0690***	0.0229	-0.0672***	0.0227	-0.0691***	0.0209
<b>L_PopGr</b>	-1.8198***	0.2454	-1.9361***	0.2668	-1.6541***	0.2520
<b>L_'NR</b>	0.0360	0.0288	0.0332**	0.0259	0.0625	0.0272
<b>Prim</b>	-0.0423**	0.0168	-	-	-	-
<b>Sec</b>	-	-	0.1076***	0.0193	-	-
<b>Ter</b>	-	-	-	-	0.1582***	0.0504
<b>Int_1</b>	-	-	-	-	-	-
<b>Int_2</b>	-	-	-	-	-	-
<b>Int_3</b>	-	-	-	-	-	-
<b>Constant</b>	7.105839***	0.536838	3.673232***	0.576715	4.977231***	0.538088
<b>Sample size</b>	216 observations					
<b>Countries</b>	54					
<b>Adj. R<sup>2</sup></b>	0.59		0.54		0.57	

Note: \* refers to significance level at 10%, \*\* refers to significance level at 5% and \*\*\* refers to significance level at 1%.



## Chapter 5

### Conclusion and Implications

Cross country growth differences remains a central question to growth theory. Economic growth theory adopted number of approaches and highlighted a range of proximate as well as deep determinants of growth have been considered to explain the causes of cross country growth differences. An outgrowth of this literature considers institutions as underlying determinants responsible for cross country growth differences.

This study is directed to explore the role of informal institution i.e. culture in the presence of well established formal institutions i.e. economic freedom. Analysis incorporates fifty four countries including developed, developing and less developed, for the period of 1980 to 2007.

To analyze direct and indirect impact of culture study estimates eight specification of growth models with education, culture, economic freedom and other control variables including investment share, population growth, natural resource rent. Empirical evidence of the study confirm the previous findings that cross-country growth differences are fundamentally related to the difference in underlying normative values and also suggests that culture is an important determinant of economic growth relative to economic freedom i.e. formal institutions. Part of the findings contradicts with previous evidences regarding role of culture in the presence of well established formal institutions.

Contrary to previous findings that culture becomes less important in the presence of formal institutions this analysis proposes an indirect transmission channel for cultural influences on economic outcomes. Enhanced impact of culture shows that human capital is an appropriate transmission channel through which culture influence economic outcomes.

Independent effect of economic freedom and culture is found statistically significant without further controversies whereas relative role of the both is not so clear. In this regard a recent study of Williamson and Mathers (2010) empirically tested relative role for culture and economic freedom. Their results suggest that economic freedom is more important relative to culture. They

also indicate a possibility of an indirect channel for cultural effects in the presence of well established institutions of economic freedom.

This study hypothesizes an indirect channel of human capital for cultural effects in the presence of well established institutions of economic freedom. In order to explore indirect channel this study follows Tabellini (2008, 2009) to construct an index to capture cultural impact on economic growth. Four distinct values *trust, respect, self-determination and obedience* have been considered in cultural index to capture the impact of underlying normative values. Individually first three components *trust, respect, self-determination* are positively correlated with economic outcomes whereas obedience hinders economic growth but overall value of cultural index promotes growth. Higher value of index reflects higher levels of growth and vice versa.

To measure human capital, attainment of education at three distinct levels i.e. primary, secondary, tertiary are included. In order to capture an indirect channel for cultural effects through human capital, interaction terms of cultural index with each level of education is included into growth regressions along with controlling for economic freedom and culture in the same equation.

This study follows empirical strategy adopted by existing literature<sup>23</sup> in this area. This analysis attempts to explore the role of economic freedom and culture in cross country growth context. To test this hypothesis, study employs data spanning from 1981-2007, for the sample of fifty four countries including developed, developing and less developed countries. We implement fixed effect on our panel specification in variety of regressions to tackle econometric and statistical

---

<sup>23</sup> See Williamson and Mathers (2010), Gwartney et al. (2004) Dawson (1998)

issues pertaining to the analysis such as endogeneity, reverse causality with variety of sensitivity analysis.

As a benchmark specification of this study relative to previous studies empirical investigation in this study start with analyzing economic freedom and culture besides controlling for variety of control variables suggested by growth theory literature<sup>24</sup>. Inclusion of interaction terms of culture with three distinct level of education *primary, secondary and tertiary* into regression analysis besides controlling for economic freedom, culture and other standards controls suggest an indirect channel of human capital through which culture affects economic output even in the presence of well established formal institutions of economic freedom.

This study may contribute in the literature that attempts to explore obscure relation of culture with economic growth. Literature has extensively discussed the independent link between culture and economic growth but its indirect relation is obscure and relatively less explored. This analysis attempts to explore this obscure relation of culture and proposes an indirect channel through which culture influences economic outcomes even in the presence of well established formal institutions of economic freedom. This study based on the rationale that school age is a prime age for the development of individual character and behavior. It is widely considered that formal education and trainings are key inputs to create human capital but we are witnessed upon varying quality of human capital based on behavior and perception towards life. Underlying cultural values contribute in developing a personality. In this study we assume that human behavior is primarily related to underlying cultural values along with formal learning. Differences in underlying cultural values create differences in productivity of human capital in terms of human behavior towards economic activities.

---

<sup>24</sup> See Levine and Renelt (1992)

Empirical analysis justifies that culture exerts its impact through education, determines quality of human behavior and impact productivity of human capital. Positive relation between human capital and economic growth is theoretically as well as statistically well established in existing literature.

Interaction term of human capital and culture is introduced in the view that effects of culture concealed in the presence of well established formal institutions are actually underlie in the formation of human capital. Human capital is being accumulated in a cultural background and it takes the influence of normative values. Therefore policy aimed to accumulate human capital usually deviate from its desired objectives. Such as similar formal education in two distinct cultural backgrounds results in different quality of human capital. Our analysis provides a baseline to incorporate cultural effects influence through process of accumulating human capital. Proposed indirect channel for cultural influences suggests that variation in effectiveness of formal institutions can be regarded to cultural context.

## **5.1 Implications of the Study**

Importance of culture as shown in this study has led us to conclude as follows;

- Cultural settings are important deep determinant of economic performance.
- Culture influences economic performance both directly and indirectly.
- Analysis reveals that culture exerts its impact through the channel of human capital.
- Without considering cultural settings we might understate or overstate the productivity of human capital.
- This study shows that cross country differences in productivity and accumulation of human capital is fundamentally related to the differences in underlying cultural values.

- To reduce cross country differences in productivity of human capital this study recommends to incorporate cultural values in national educational policies in such a way that culture becomes conforming to human capital accumulation and productivity.
- It is also recommended that to understand cross country differences in output per capita research should integrate culture into proxies for measuring human capital.

## **5.2 Limitations of the Study**

This study faces limitations with respect to data availability and econometric techniques.

In order to measure informal institutions many proxies have been used in the literature but every measure suffers with serious shortcomings in the context of data availability.

Empirical analysis related to formal and informal institutions always suffers endogeneity biases and to remove endogeneity lack of availability of suitable instruments made results questionable and less reliable for policy implications.

In spite of these limitations this study opens a window to incorporate the indirect effects of culture in economic growth and development.

## **5.3 Future Extension of the Research**

This study indicates importance of culture, particularly economic culture for economic growth through human capital. Future research both empirical and theoretical is needed to integrate culture while measuring human capital.

Empirical studies in the area lack in more sophisticated econometric techniques to incorporate cultural values in cross country growth analysis. Considering culture into cross country growth analysis is a promising area to understand the deep determinants of economic performance.

Another promising area for future research could be to understand investment in cultural capital and its impact on growth. Future research demands both theoretical and empirical understanding of investment in both tangible and non-tangible cultural capital.

## References

- Acemoglu, D. (2002). Directed technical change. *The Review of Economic Studies*, 69(4), 781-809.
- Acemoglu, D., & Robinson, J. A. (2001). A theory of political transitions. *American Economic Review*, 938-963.
- Acemoglu, D., & Robinson, J. A. (2001). A theory of political transitions. *American Economic Review*, 938-963.
- Acemoglu, D., Johnson, S., & Robinson, J. (2005). The rise of Europe: Atlantic trade, institutional change, and economic growth. *The American Economic Review*, 95(3), 546-579.
- Acemoglu, D., Johnson, S., Robinson, J. A., & Yared, P. (2005). *From education to democracy?* (No. w11204). National Bureau of Economic Research.
- Aguilar Fernández, P. (2008). Políticas de la memoria y memorias de la política. *El caso español en perspectiva comparada*, Madrid, Alianza Editorial.
- Akerlof, G. A., & Kranton, R. E. (2000). Economics and identity. *The Quarterly Journal of Economics*, 115(3), 715-753.
- Bank, W. (2003). Global Economic Prospects and the Developing Countries 2003. *Washington DC: World Bank*.
- Barro, R. J. (2000). Inequality and Growth in a Panel of Countries. *Journal of economic growth*, 5(1), 5-32.
- Boettke, P. J. (1994). Privatization, Public Ownership and Regulation of Natural Monopoly. *Journal of Economic Literature*, 32(4), 1916-1918.
- Boettke, P. J., & Coyne, C. J. (2009). An entrepreneurial theory of social cultural change. *Markets and civil society: The European experience in comparative perspective*, 77-103.
- Botero, J. C., Djankov, S., La Porta, R., Lopez-de-Silanes, F., & Shleifer, A. (2004). The regulation of labor. *The Quarterly Journal of Economics*, 119(4), 1339-1382.
- Clague, C. K. (Ed.). (1997). *Institutions and economic development: Growth and governance in less-developed and post-socialist countries*. Baltimore, MD: Johns Hopkins University Press.
- De Soto, H. (2000). *The Mystery of Capital: why Capitalism triumphs in the West and fails elsewhere*.
- Demsetz, H. (1967). Toward a theory of property rights. *The American economic review*, 57(2), 347-359.
- Dobler, C. (2009). The Impact of Formal and Informal Institutions on Per Capita Income. *Hohenheimer Diskussionsbeiträge*, (319-2009).
- Dollar, D., & Kraay, A. (2004). Trade, Growth, and Poverty\*. *The Economic Journal*, 114(493), F22-F49.
- Easterly, W., & Levine, R. (2003). Tropics, germs, and crops: how endowments influence economic development. *Journal of monetary economics*, 50(1), 3-39.

- Feldstein, M. c. Horioka.(1980). Domestic savings and international capital flows. *Economic Journal*, 90, 314-329.
- Feldstein, M. c. Horioka.(1980). Domestic savings and international capital flows. *Economic Journal*, 90, 314-329.
- Fernandez, R., & Fogli, A. (2007). *Culture: an empirical investigation of beliefs, work, and Fertility*. Working Paper, New York University.
- Frankel, J. A., & Romer, D. (1999). Does trade cause growth?. *American economic review*, 379-399.
- Gallup, G. G. (1998). Self-awareness and the evolution of social intelligence. *Behavioural Processes*, 42(2), 239-247.
- Glaeser, E. L., La Porta, R., Lopez-de-Silanes, F., & Shleifer, A. (2004). Do institutions cause growth?. *Journal of economic Growth*, 9(3), 271-303.
- Hall, R. E., & Jones, C. I. (1999). Why do some countries produce so much more output per worker than others?. *The quarterly journal of economics*, 114(1), 83-116.
- Hall, R. E., & Jones, C. I. (1999). Why do some countries produce so much more output per worker than others?. *The quarterly journal of economics*, 114(1), 83-116.
- Hayek, F. A. (1960). v.(1960): The constitution of liberty.
- Keefer, P., & Knack, S. (1997). Why Don't Poor Countries Catch Up? A Cross-National Test of an Institutional Explanation. *Economic Inquiry*, 35(3), 590-602.
- Kerekes, C. B., & Williamson, C. R. (2008). Unveiling de Soto's mystery: property rights, capital formation, and development. *Journal of Institutional Economics*, 4(3), 299.
- Knowles, S., & Owen, P. D. (1997). Education and Health in an Effective-Labour Empirical Growth Model\*. *Economic Record*, 73(223), 314-328.
- Knowles, S., & Weatherston, C. R. (2006). *Informal institutions and cross-country income differences*. University of Otago, Department of Economics.
- La Porta, R., Lopez de Silanes, F., Shleifer, A., & Vishny, R. (1999). Investor protection and corporate valuation. *NBER Working Paper Series*, 7403.
- Landes, D. S. (1999). *The wealth and poverty of nations: Why some are so rich and some so poor*. WW Norton & Company.
- Leblang, D. A. (1996). Property rights, democracy and economic growth. *Political Research Quarterly*, 49(1), 5-26.
- Lijphart, A. (1984). Democracies: Patterns of majoritarian and consensus government in twenty-one countries.
- Lucas, R. E. (1990). Why doesn't capital flow from rich to poor countries?. *The American Economic Review*, 80(2), 92-96.



- Lucas, R. E. (1990). Why doesn't capital flow from rich to poor countries?. *The American Economic Review*, 92-96.
- Mankiw, N. G., Romer, D., & Weil, D. N. (1992). A contribution to the empirics of economic growth. *The quarterly journal of economics*, 107(2), 407-437.
- Montesquieu, C. D. S. (1989). The Spirit of the Laws [1748]. *Of laws in relation to the use of money*.
- Mukand, S., & Rodrik, D. (2002). *In search of the Holy Grail: policy convergence, experimentation, and economic performance* (No. w9134). National Bureau of Economic Research.
- North, D. C. (1981). Structure and change in economic history.
- North, D. C. (1990). A transaction cost theory of politics. *Journal of Theoretical Politics*, 2(4), 355-367.
- North, D. C. (1990). *Institutions, institutional change and economic performance*. Cambridge university press.
- North, D. C. (1990). *Institutions, institutional change and economic performance*. Cambridge university press.
- North, D. C. (1993). Institutions and credible commitment. *Journal of Institutional and Theoretical Economics (JITE)/Zeitschrift für die gesamte Staatswissenschaft*, 11-23.
- North, D. T., & Thomas, R. R., 1973: The Rise of the Western World: A New Economic History.
- Olson, G. (1982). *Literature as recreation in the later Middle Ages* (p. 77). Cornell University Press.
- Persson, T. och G. Tabellini (2009), II Democratic Capital: The nexus of Political and Economic Change. *American Economic Journal: Macroeconomics*, 182, 88-126.
- Persson, T., & Tabellini, G. (2006). *Democracy and development: The devil in the details* (No. w11993). National Bureau of Economic Research.
- Persson, T., & Tabellini, G. (2008). The Growth Effect of Democracy: Is it Heterogenous and How Can it Be Estimated.
- Persson, T., & Tabellini, G. E. (2003). *The economic effects of constitutions*. MIT press.
- Porta, P. L., & Scazzieri, R. (1997). Towards an economic theory of international civil society: Trust, trade and open government. *Structural Change and Economic Dynamics*, 8(1), 5-28.
- Powell, G. B. (2000). *Elections as instruments of democracy: Majoritarian and proportional visions*. Yale University Press.
- Przeworski, A. (2004). Institutions Matter? 1. *Government and Opposition*, 39(4), 527-540.
- Przeworski, M., Charlesworth, B., & Wall, J. D. (1999). Genealogies and weak purifying selection. *Molecular biology and evolution*, 16(2), 246-252.
- Rodrik, D. (Ed.). (2003). *In search of prosperity: Analytic narratives on economic growth*. Princeton University Press.

- Rodrik, D., & Subramanian, A. (2004). *From "Hindu growth" to productivity surge: the mystery of the Indian growth transition* (No. w10376). National Bureau of Economic Research.
- Rodrik, D., Subramanian, A., & Trebbi, F. (2004). Institutions rule: the primacy of institutions over geography and integration in economic development. *Journal of economic growth*, 9(2), 131-165.
- Rodrik, D., Subramanian, A., & Trebbi, F. (2004). Institutions Rule: The Primacy of.
- Sachs, J. D. (2003). *Institutions don't rule: direct effects of geography on per capita income* (No. w9490). National Bureau of Economic Research.
- Sachs, J. D., Warner, A., Åslund, A., & Fischer, S. (1995). Economic reform and the process of global integration. *Brookings papers on economic activity*, 1995(1), 1-118.
- Sapienza, P., Zingales, L., & Guiso, L. (2006). *Does culture affect economic outcomes?* (No. w11999). National Bureau of Economic Research.
- Scully, G. W. (1988). The institutional framework and economic development. *The Journal of Political Economy*, 652-662.
- Smith, A. (1937). *The Wealth of Nations (1776)*. New York: Modern Library, 740.
- Solow, R. M. (1956). A contribution to the theory of economic growth. *The quarterly journal of economics*, 70(1), 65-94.
- Tabellini, G. (2005). Culture and institutions: economic development in the regions of Europe.
- Tabellini, G. (2007). *Culture and institutions in European regions*. Università Bocconi, mimeo.
- Tabellini, G. (2008). The scope of cooperation: Values and incentives. *The Quarterly Journal of Economics*, 123(3), 905-950.
- Williamson, C. R., & Kerekes, C. B. (2011). Securing private property: formal versus informal institutions. *Journal of Law and Economics*, 54(3), 537-572.
- Williamson, J. (2009). *Why SDRs could rival the dollar* (No. PB09-20). Peterson Institute for International Economics.