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**Msc in Financial Analysis For Executives**

**“Determinants of Gambling Activity”**

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Athens, March 2016

## **ABSTRACT**

The purpose of this Study is to comprehensively identify the main factors of gambling activity among 30 different nations around the world, from a macro angle and in a macroeconomics perspective. The Paper also evaluates their impact upon the functioning and development of gambling services that could restrict or evolve the economic and employment growth of associated (e.g. media, sports, charity, tourism) services and thus, the industry as a whole. The variables examined, represent all institutional spectrums of a country; economic welfare-as expressed through GDP per capita, legal system, regulations, corruption, polity, religion and inequality. The paper presents empirical results which show that the legal origins of a regulatory framework of a country are indeed correlated with subsequent economic growth of the gambling industry.

**Key Words:** Gambling, Institutions, Economic Growth, Polity, Inequality, Corruption, Legal System, Religion

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## ABSTRACT

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## 1.0 INTRODUCTION

Gambling is a controversial activity and has become one of the fastest growing entertainment industries around the world. Despite the economic development potential, there are social implications that have attracted a barrage of criticisms from consumer wellfarists, while policy-makers take the economic development argument to push for the spread of gambling industry.

The Paper examines the institutional variables that affect the size of the gambling industry in 30 countries, within and beyond EU countries, in 2006 and 2007, just before the most recent economic crisis of 2008. All countries are subject to the dimensions which describe a country in basic terms of institutions. The data, that also represent the independent variables in the empirical study, are selected from the year 2006, so as to define any predictive properties, if any.

- GDP per capita
- Corruption Perception [CPI ]
- Rule Of Law
- Legal Origins
- Index of Democracy [Polity IV]
- Social Inequality [GINI coefficient]
- Ascendant Religion

Current bibliography and research on gambling industry is related mostly to the economic and social impact of legalized gambling, the impact on specific economic industries such as tourism and to the reasons explaining the rapid expansions of casinos, the most popular version of legal gambling in most developed gambling markets. The Paper extends current bibliography and examines simultaneously its size in connection to social, economic and political institutions, in the light of the modern reality. For the past century in most parts of the world gambling demand is expanding rapidly, causing gambling industry to evolve through new channels that telecommunications technologies as well as internet and computers have permitted. As mentioned above, the data are supplied for years 2006 and 2007, when the global financial crisis started to show its effects.

The Study is interesting, since the institutional framework is a dynamic one with political and economic institutions affecting each other and change over time. The main reason behind this relationship is the fact that prevailing economic institutions, which encourage economic growth, emerge when political institutions create the least possible restrictive environment for legalized gambling industry and thus impact substantially consumer spending patterns and competing, as well as complementary, industries.

In view of the points above, the results would be intriguing, since they will reflect the differences in the gambling industry's size touching on the economic political and social institutions, before the crisis time period in countries and markets that differ in so many aspects and characteristics (economic welfare, legal origins, social inequality, polity and religion). The data used, would thus by default, create a different outcome pending on the time period they are examined. This makes the results of this research, unique and hard to be predicted by any existing research or bibliography.

Gambling services should, for the purpose of this Study, be considered to cover any legalized service, including any information society service, which involves wagering a stake with monetary value in games of chance, including lotteries and betting transactions. Promotional games should, for the purpose of this study, be considered to cover the offer to participate in a game, in which the winner is designated

by any element of chance and the exclusive purpose of which is to encourage the sales of goods or services.

This report is divided into five main parts. The First Part refers to institutional framework, in a macro level, and gambling industry. The Second Part consists of the literature review concerning institutions and their effects on countries on a macro level. This sector includes a brief chapter describing the impacts of gambling in a society. The third section describes the empirical study of the main determinants of gambling and the data used in this study. The fourth section contains an analysis and explanation of the results. The last section provides the concluding remarks. In the end of all sections there is a list of the tables and charts used as references as well as the analytical bibliography.

## **1.1 Gambling Industry and Institutions**

Gambling is a diverse concept that incorporates a range of activities undertaken in a variety of settings and giving rise to differing sets of behaviors and perceptions among participants and observers (Abbott & Volberg, 1999). Predominantly, gambling has an economic meaning and usually refers to risking (or wagering) money or valuables on the outcome of a game, contest, or other event in the hope of winning additional money or material goods.

The activity varies on several dimensions, including what is being wagered, how much is being wagered, the expected outcome, and the predictability of the event. For some cases such as lotteries, most slot machines and bingo, the results are random and unpredictable.

For other cases, such as sports betting and horse racing, there is some predictability to the outcome and the use of skills and knowledge (recent form, environmental factors, etc.) that can give a person an advantage over other gamblers.

Gambling is commonly engaged at a variety of environments including those dedicated primarily to gambling including those dedicated primarily to gambling (e.g., betting shops, casinos, bingo halls, amusement arcades), those where gambling is peripheral to other activities (e.g., social clubs, pubs, sports venues), and those environments where gambling is just one of many things that can be done (e.g., supermarkets, post offices, petrol stations, etc.). Furthermore, most types of gambling can now be engaged in remotely via the Internet, interactive television and/or mobile phone. This includes playing roulette or slot machines at an online casino, the buying of lottery tickets using a mobile phone or the betting on a horse race using interactive television. In these remote types of gambling, players use either their credit cards, debit cards or other electronic forms of money to deposit funds in order to gamble.

The study covers the following on-line and off-line market sectors:

- Betting services (including horse and dog racing, event betting and pool competitions)
- Bingo services
- Casino services
- Gambling services operated by and for the benefit of recognized charities and non-profit making organizations.
- Services related to gambling machines that can be placed in locations other than in licensed casino services
- Lottery services
- Online gaming (i.e. gambling services via the internet, through mobile phone services, and through interactive television wagering)

Gambling size is, according to this research's findings highly affected by the legal origins of the law system of a country, which basically creates the framework, with the marginal operational space that

permits any economic development for this industry. The legal system is connected with the political system of a country as well as with the corruption and thus the economic welfare.

There is a wide set of institutional variables that exerts a great impact on the gambling industry. Based on the above, an amount of research that deals with the determinants factors of this industry's size is reviewed. The objective of this review was to allow the generation of specific sets of institutional variables that mostly impact the size of this industry, like any other industry, in both qualitative and quantitative terms, in 30 gambling industries around the world, with different characteristics.

By “institutions” we mean rules of structural social interaction (both formal and informal), that structure incentives in human exchange (be it economic, political or social).

Formal institutions, such as property rights, legal system, rule of law, constitution.

Informal institutions that practically represent how to behave in everyday life (linked to religion, history, social acceptability). Institutions affect economic outcomes but society will choose those institutions that maximise social surplus (North and Thomas, Demsetz). Institutions are not always chosen by the majority in a society; but instead, by the few, thus not efficient. Coase Theorem does not apply, i.e. the winners do not fully compensate the losers. North (1981) argues that institutions act to constrain the individual in order to enhance the welfare of the ‘principals.

The market frameworks for gambling around the world are very much heterogeneous. Commercial and government owned gaming industries of the 30 countries under study, are organized under a wide variety of ownership regimes and market structures. Ownership and market structures are affected by numerous factors, including state laws and regulations; restrictions on product types, characteristics, points of sale, availability, and marketing effort; economies of scale; network effects; and impacts of new technologies.

Generally speaking, most commercial gaming industries are significantly constrained by law and regulation, as well as by ownership structures and statutory objectives. As a result, they operate in ways that - in comparison to what unrestricted free markets in gambling services with reasonable allocations of property rights and provision of legal protections would bring about - adversely affect the quality, quantity, price, and availability of gambling services. It is accordingly necessary to highlight the impact of the particular economic characteristics of each market sector in each country, as these can have important welfare implications.

This report takes specific account of the following characteristics:

- Economic Welfare
- Legal Origins
- Economic Welfare
- Polity
- Corruption
- Religion
- Social Inequality
- Geographic characteristics

Institutions can and will likely result in elite forming who will attempt to retain their position of power. There may be successful or may not be, but they can be replaced by alternative elite. For the basis of this research we assume that institutions can be both developmental and predatory. By “Developmental Institutions” we refer to institutions that encourage investment, growth and productivity, though “Predatory Institutions” are the extractive institutions that favour the few.

There are 3 types of institutions:

- a. Institutions that protect individual property rights e.g. defend against expropriation of resources.
- b. Institutions related to democratic political rights (Sen) and
- c. Institutions correcting co-ordination failure - efficiency of government for example in implementing policy (e.g. South Korea).

Countries can have good and bad institutions. For instance South Korea has one party political system. The fundamental causes of growth, besides economics institutions are culture, geography, trade and integration (Figure 1).

Economic institutions encourage investment through incentives, human capital, entrepreneurship, innovation, occupational choice, land ownership and culture shapes the values, beliefs, religions. Geography has a rather crucial role in growth; pending on the climate, productivity and worker effort is affected. Agricultural (technological) productivity is higher in temperate zones than in tropics, considering the burden of infectious diseases, natural endowments and transport costs. Trade and Integration affects productivity changes, by expanding trade with the global economy, and assisting efforts of isolated, smaller markets to integrate with larger markets.

## 2.0 Literature Review

### 2.1 Institutions and Economic Performance

#### *Definition-economic growth- property rights- income distribution*

To understand the impact of the institutional variables on the gambling industry, it may be useful to first consider the characteristics of these variables as well as their effect on an economic and social level in a society, country, and nation over time.

North (1990), states that “institutions are the rules of the game in a society or, more formally, are the humanly devised constraints that shape human interaction.” He examined the nature of institutions and their manifestations for economic performance. He outlines the theory of institutional change and how it explains how past behaviors influence present and future behaviors. North also explores the impact of incremental changes within institutions and its effect on the nature of path dependence. However the author’s primary objective is to understand the differential performances of various economies through time.

According to the author there is a distinction between institutions and organizations. Both are components of the structural framework that support human interaction but they are not the same. Institutions can be considered the rules of the game and organizations can be considered the players. The purpose of the rules is to define the way that the game is played. Organizations are groups of individuals who work toward a common goal or objective and have common interests. Political parties, churches, schools, unions, or government agencies are some examples of organizations. The author considers organizations primarily as the agent for institutional change with emphasis on the interaction between the rules (institutions) and the players (organizations). North contends that any theory on institutions must be based on human behaviors since all institutions are created and changed by humans. Understanding that the major role of institutions in a society is to reduce uncertainty by establishing a stable structure to human interaction this study attempts to answer the following questions:

- A. Why wouldn’t competitive pressure lead to the elimination of inefficient institutions?
- B. Wouldn’t political entrepreneurs in stagnant economies quickly emulate the policies of more successful institutions?
- C. How can we explain the radically different performance of economies over long periods of time?

The answers, according to North, lay in the differences between the rules and the players and the interactions between them that shape and change institutions. Interaction is all about choices. Actors make choices based on costs and benefits with many of the benefits based on subjective perceptions. Actors frequently make choices based on imperfect information and the resultant institutional changes often have unintended consequences that are not always the optimal choice for improving the economic welfare of the organization. North uses U.S. economic history as an example of institutional changes that have occurred over time and have, for the most part, persistently reinforced the incentives for organizations to engage in productive activity. Realizing of course, that beside the positive changes,



there have also been some negative changes too. North highlights many Third World nations economic history as being the obverse of the U.S. model where institutional changes encourage organizations to engage in redistributive activity, to create monopolies and stifle competition and to restrict opportunities.

The point of the comparison is not the welfare of the organizations but the fact that as organizations develop and change within an institutional framework they will become more efficient in both cases, however, Third World examples will make their societies even more unproductive and the basic institutional structure even less favorable for revenue production.

What has not been well researched is the understanding of the nature of coordination and cooperation among humans as it relates to economic development. One of the unanswered questions is under what conditions can cooperation across organizations exist without the imposition of institutional coercion to create cooperative solutions? North addresses the use of the game theoretic in researching this question and disagrees with any game results that predict players will choose wealth maximization whenever possible. The problem according to North is that the game never considers transactional costs and how these costs are altered by the institutional structure. Therefore, North states the researcher must use the Coase Theorem to bring more fidelity to the solution as it states that competition eliminates incomplete information and tends to bring transactional costs to nearly zero.

Rational choice theory is another approach to view human decision-making and economic performance. In this case North does not support the theory because he believes humans make choices based on subjective perceptions of incomplete or imperfect information and therefore there is no pattern convergence and thus no possibility of credible behavior predictions. North does allow the rational choice theory does work under certain controlled conditions like the study of finance where actors operate under a strongly structured institutional framework that allows for continuous observation of behaviors. Economies conduct exchanges (choices) through organizations and modern economic growth is based on impersonal exchange. The key to impersonal exchange is the existence of third-party enforcement to reduce the risk of opportunism, cheating, and defection that occurs in complex societies. This is the coercive party needed to insure coordination and cooperation across the interactive environment.

However, enforcement requires formal rules and North elucidates on the small percentage of human interaction that is governed by formal rules. He delves into the informal rules derived from culture that regulate societal behavior. Some of these informal rules are self-regulating and some are not, the critical aspect of the argument is the apparent paucity of research on the impact of informal rules on economic performance. What is certain is that cultural traits have survived globally over time and cannot be discounted when processing information with the intention of making choices. North details the importance of formal rules and how they, in many cases, are complementary to informal rules. In some cases they actually superseded the informal rules in order to increase efficiencies of the institution and they will actually define behavioral constraints. Their function, generally, is to facilitate political or economic exchange in the face of uncertainty. Formal rules are particularly important for exchanges with numerous actors or variables where the risk of defection is highest. North further states that the combination of formal and informal rules that define the institution and provide the basis for continual incremental changes occurring within every institution. These changes will alter the framework such that it will present a different set of choices than it began with.

North reexamines the interaction between organizations and institution but this time he focuses on economic performance over time and how “the systematic investment in skills and knowledge and their application to an economy suggests a dynamic evolution of that economy that entails a specific set of institutional characteristics.” He refers to this as adaptive efficiency and suggests that the institutional framework directs the process of human learning and the development of tacit knowledge that leads to the decision-making process.

North focuses on the gradual institutional change that occurs through marginal adjustments. This type of change, according to author, is deliberate and is the dominant way by which societies and economies have evolved. However, conquest and revolution have caused radical change within economies over time yet have not generally destroyed the institutional framework within the society.

North is especially interested in economic theory and economic performance. He writes how ideas and ideologies do make a difference and that institutions play a major role in determining how much they matter. These concepts shape the mental roadmaps that people use to interpret the world and to make choices. This structuring of the environment in certain ways cause institutions to affect the price we pay for our actions. They provide the freedom to incorporate ideas and ideologies into the choices they make.

Incremental change comes from organizational gains after acquiring skills that enhance their objectives. It follows then that path dependence comes from mechanisms that support increasing gains for the members and tend to reinforce the direction of the organization on a certain path.

The problem with North (1990) is the fact that his questions have not been answered. He believes the analytical framework that was laid out in his research offers the promise of answering still unresolved questions. Finlay, he suggests that incentives are the underlying determinants of economic performance. They are implicit in every theory employed in his book. But to understand economic performance over time one has to realize that incentives change with time and therefore the rules change with them.

North’s research is a serious attempt at defining a new way to consider the structure of institutions and their impact on the organizations that abide by them. He has chosen to use a number of iterated case studies to illuminate his concepts and he also consolidates several theories to express his views that do make the appropriate linkages to the theories he is applying.

From a broad theoretical aspect, Stefan’s Voigt (2009) approach regarding institutions differs from North’s. According to him the statement “institutions matter” implies that due to the existence of institutions, actors behave different than they would in the absence of institutions- or the existence of different ones. This statement makes sense under two conditions: (1) That the Universe does not only exist of institutions, otherwise the statement becomes trivial, and (2) that institutions can be empirically ascertained, otherwise it is impossible to show their relevance and thus the statement “institutions matter” could not be an empirical statement. Voigt focuses merely on how to measure institutions rather than trying to “prove” that institutions matter – or that they do not.

Institutions can be treated as empirical statements only when they can be measured with a minimum degree of confidence. Author’s main point of contribution in the institutions definition are: (1) Measure of institutions should refer to specific institutions otherwise aggregate measures such as “the rule of law” are too broad and fuzzy to contain meaningful information, (2) objective measures are generally preferably over subjective ones, (3) one should always aim at measuring the institution as formally

specified in legislation (de jure) and as factually implemented (de facto) and (4) the ability to measure institutions does not imply the ability to create and modify institutions at will.

Voigt refers to Glaeser et al. (2004) who attacked on the New Institutional Economics, reproaching that most of the empirical work was measuring policies, instead of measuring the effects of the institutions. The authors presented and assessed two competitive views on economic growth; the institutional view and its competing one. According to the institutional view democracy serves as mechanism to secure property rights, which would boost investment and eventually income and growth. The competing view upholds that increased human capital would lead to more benign politics, less violence and more political stability, which would, in turn, lead to more secure property rights. Better institutions are, according to this view, not a prerequisite to economic growth but its consequence. The authors end up endorsing the second view but in a cautious way so as not to break entirely with the first one.

Glaeser et al, stressed two main characteristics of institutions, namely (1) that they constrain behavior and (2) that they are permanent or stable. Some of the frequently used measures (they cite the International Country Risk Guide, the Governance Indicators of the World Bank (Kaufmann et al. 2003) and the Polity IV measures) would neither measure policy constraints nor would they be stable. They would rather measure outcomes, i.e. policy choices.

Moreover, the subjectivity of these measures would make it very likely that they “increase” when income increases. But if their ascertainment is influenced by income levels, they are not an adequate measure explaining changes in income levels. Their critique concerning the measurement problems of institutions is well taken. Yet, some of their reasoning appears no less flawed than the measures they criticize. If the indicators used to proxy for institutions are inadequate, then these proxies are, as Glaeser et al. argue, inadequate to support the hypothesis that institutions are a prerequisite for economic growth. However, if the indicators are no good proxies for institutions, they are equally inadequate to support the hypothesis that good institutions are the consequence, rather than the prerequisite of economic development. Unfortunately, their paper contains some general observations, but no concrete proposals. Two important messages are worth repeating: institutional measures should explicitly take the factual enforcement of the respective institution into account and they should be as objective as possible. Unfortunately, the four constitutional constraints relied upon by Glaeser et al. turn a blind eye on factual enforcement.

Whereas North emphasizes the difference between formal and informal rules, Voigt emphasizes the difference between internal and external sanctioning of rule-breakers, and the distinction between economic and political institutions use the kind of interaction as a classification criterion. Although the distinction between the political and the economic sphere is not very precise in many cases (e.g., how to classify institutions constraining state owned enterprises?), it is closely related with a standard classification often used by legal scholars: economic institutions structure interactions in which all involved parties act as private actors. In case of a conflict, the state could come in as a neutral arbiter (judges). These are interactions based on private law. But interactions between private parties can also be non-voluntary, car accidents or theft e.g. Here, the state usually acts on behalf of the victim. These interactions are not based on but rather adjudicated according to criminal law (which is part of public law). Finally, there are interactions between any government representative and private actors: the state taxing or regulating citizens but may be also protecting them. These interactions are based on public law as are interactions between representatives of the state. Interpreted like this, economic institutions are largely congruent with private law and political institutions with public law.

Voigt also hypothesized that the factual enforcement of formal institutions is likely to be heavily influenced by a number of informal institutions. When trying to estimate the (economic) effects of institutions, this possibility should be reflected by incorporating a number of covariates proxying for these informal institutions. He proposed taxonomy of institutions along with a number of conjectures on the factors that might determine whether and to what degree formal constraints – such as constitutional rules setting up checks and balances – will be factually enforced. However, if taken literally, they would seem to make the measurement of institutions extremely messy – if not outright impossible. Therefore Voigt showed that pragmatic ways of measuring institutions do exist. Measuring institutions in combination with econometric findings showing their significance for explaining variation in dependent variables is no way sufficient to assume that it is possible to modify institutions at will. If their factual enforcement is, as hypothesized, indeed dependent on informal institutions, then these could be hard constraints preventing the factual enforcement of “better” or “more modern” institutions. Whether this is empirically correct, can only be known after having estimated appropriate models. To do so, Voigt claims that data are needed, many of the currently available institutional measure are not sufficient to rebut the hypothesis that institutions do (not) matter.

The potential link of institutions and economic growth can be captured by the impact of property rights on economic growth. Stephen Knack and Philip Keefer (1995) studied this impact by using indicators provided by country risk evaluators to potential foreign investors. Indicators include evaluations of contract enforceability and risk of expropriation. Using these variables, property rights are found to have a greater impact on investment and growth than has previously been found for proxies such as the Gastil indices of liberties (which measures the degree of democracy in terms of democratic rights and civil liberties), and frequencies of revolutions, coups and political assassinations. Rates of convergence to US level incomes increase notably when these property rights variables are included in growth regressions. These results are robust to the inclusion of measures of factor accumulation and of economic policy.

In other words institutions that protect property rights are crucial to economic growth and to investment and even rival those of education. Moreover, the effect of institutions on growth persists even after controlling for investment. This suggests that the security of property rights affects not only the magnitude of investment, but also the efficiency with which inputs are allocated.

Rodrik (2007) demonstrated that economic institutions (such as property rights, regulatory institutions, institutions for macroeconomic stabilization, institutions for social insurance, institutions for conflict management, etc.) are the major source of economic growth across countries. Acemoglu, Johnson and Robinson (2001) have shown that economic institutions do matter in particular for a set of 69 developing countries that are distinguished by their colonial history. The recent institutions literature has begun to draw a clear distinction between political and economic institutions. While economic institutions determine economic performance, they are themselves influenced both directly and indirectly by political institutions. The direct effect of political institutions stems, for example, from the concentration of political power in the hands of a malevolent dictator, who dismantles the economic institutions which ensure property rights and equal opportunity. Political institutions affect economic institutions indirectly, since they determine the distribution of de jure political power, which, in turn assigns the power to alter economic institutions.

While political institutions may not affect output directly, constitutions are not written in stone. They change slowly but exhibit great persistence over time, for example, as countries evolves from dictatorships to democracy (and vice versa).

Economic institutions, and institutions more broadly, are endogenous; they are, at least in part, determined by society, or a segment of it. Consequently, the question of why some societies are much poorer than others is closely related to the question of why some societies have much "worse economic institutions" than others

Acemoglu, Johnson and Robinson (2005) argue that political institutions are collective choices; hence the distribution of political power in society is the key determinant of their evolution. Persistence is introduced by those holding political power, who find it in their interest to maintain the status quo even at significant economic cost for society as a whole. Persson (2004) and Eicher and Schreiber (2005) report empirical evidence for the hierarchy of constitutions, by employing specific constitutional variables as instruments for economic institutions. These instruments perform well because they are slow moving and because their direct impact on output is negligible. As a practical matter Glaeser et al (2004) also argue forcefully against a direct link between output and political institutions established.

Cross-country differences in output per worker can be explained only partially by cross-country variation in stock of physical and human capital, and these stocks fail to converge over time (Lucas, 1990). Example: 1988 US output per worker was 35 times that of Niger. US have more physical capital per worker and more human capital: differences in endowments of physical and human capital suggest US output should be 1.5 and 3.1 times higher than Niger's, respectively. The remainder, factor of 7.7, is unexplained. Hall and Jones (1999) decompose differences in output per worker into contributions of differences in capital intensity, human capital per worker and productivity. They carry out this analysis with 1988 data for 127 countries.

Output per worker is correlated with productivity, meaning that richer countries tend to be more productive and vice versa. Productivity is also correlated with human capital, in the sense that much of the differences between output in the US and in LDCs (Less Developed Countries) is due to differences in productivity rather than due to factor endowments. Capital intensity, human capital and productivity explain differences in output per worker between five richest and five poorest countries; Hall and Jones attribute these differences to social infrastructure: institutions and redistributive policies. These can be thought as including: (1) Redistributive policy: marginal tax rates on labor and capital income. (2) Formal institutions: rule of law, protection of private property, enforcement of contracts, economic freedom; note that formal institutions may offer different protection against predation by other private actors and by the government. (3) Informal institutions: culture, corruption, social capital. Hall and Jones construct an index of social infrastructure as the average of : (a) Index of government anti diversion policies (GADP) which combines five institutional measures: law and order, bureaucratic quality, corruption, risk of expropriation, and government repudiation of contracts (as published by the International Country Risk Guide) (b) Sachs-Warner index of openness: Social infrastructure can affect growth in two ways: (1) Investment: The return on investment in physical or human capital can be subject to predation by the government (taxation, corruption, expropriation) or by other individuals (crime). The return on investment can also be affected by externalities caused by the actions of others. Predation and externalities lower the expected return on investment and therefore reduce the incentive to invest. (2) Production vs Rent Seeking: Individuals can spend their endowments of labor and capital either to produce or to seek to expropriate the output of others. The former increases the overall output of the economy, the latter redistributes it. Therefore, production is socially desirable while rent seeking is not, although engaging in rent seeking may be individually optimal. Rent seeking can take the form of theft, taxation and tariffs, tax loopholes and subsidies, tax evasion, monopoly, etc.

Institutions can be endogenous in output per worker and therefore they use instruments to remove the potential endogeneity bias: distance from equator, fraction of population speaking English and Western European languages as mother tongues (both proxy for colonial influence), and predicted trade based on a gravity model. Output per worker is closely correlated with social infrastructure. In their regression analysis, social infrastructure has a positive effect and is strongly significant (and accounting for the potential endogeneity of institutions increases the effect further). The country with the best institutions is predicted to higher output per worker than the country with the worst institutions. Differences in social infrastructure rather than differences in factor endowments therefore account for most of the observed variation in output per worker.

Other studies (Dawson, 1998, *Economic Inquiry*; Adkins, Moomaw and Savvides, 2002, *Southern Econ Journal*; Méon and Weill, 2005, *Economics of Governance*) find that economic freedom and good governance foster growth directly and also indirectly by increasing investment. Dawson finds that political freedom also increases investment while it does not affect growth directly. Analysis of historical examples (North 1990, 1993; Olson, 1982; Landes, 1999) – Western Europe vs Spain and Portugal, China, India, the Otoman Empire – also suggest that good institutions are very crucial for economic growth and development. North (1993, *The Paradox of the West*): economic and political freedoms are preconditions for sustained economic growth. Economic and political freedoms reduce uncertainty and ensure secure property rights to assets and profits. In Great Britain and the Netherlands, institutional constraints on the monarch's power to tax and expropriate created incentives for productive activity. In China, Otoman Empire and Spain, centralization and absolute power of the monarch caused uncertainty about government actions and in turn created a disincentive to invest and produce.

It is clear why economic freedom, rule of law and secure property rights foster economic growth. The role of political freedom (democracy) is less clear. Essentially all developed economies are democracies. Only a single poor country (India) has sustained democracy in the long term. Autocracies tend to democratize once they become affluent (e.g. Chile, South Korea, Taiwan) but poor countries that democratize tend to experience regime reversals. Przeworski (2005, *Public Choice*) argues that no country with GDP per capita higher than Argentina in 1975 (6K in 1988 \$s) has reverted to dictatorship, and that probability of survival of democracy increases linearly in per capita income. Democracy is an important safeguard of property rights: in autocracies, private property can be expropriated by the government at will without the government having to fear to lose power. Therefore, there is little incentive to accumulate property and invest. Yet, democracy also makes the government vulnerable against political backlash in case it implements policies that are costly in the short-term, even if they would deliver higher growth in the long run. Therefore, democratic governments tend to avoid costly reforms and display a status-quo bias (Fernandez and Rodrik, *AER* 1991; Alesina and Drazen, *AER* 1991).

Democracies also tend to submit to various interests groups and therefore engage in more redistribution (and therefore have higher taxes). Most empirical studies yield inconclusive findings about the impact of democracy on growth (Przeworski and Limongi, 1993; Helliwell, 1994; Barro, 1996). Tavares and Wacziarg (2001) find that democracy encourages accumulation of human capital and reduces income inequality, but it also discourages accumulation of physical capital and leads to larger government size. As a result, the overall effect of democracy on growth is moderately negative. Tabellini and Giavazzi (2004, *CEPR DP*) investigate the impact of economic and political liberalizations on growth in a broad cross-section of 140 countries over 1960-00. They find that liberalization tends to be followed by

improvements in growth and that countries that implement economic liberalization first and only then political liberalization tend to do better than those that start with political liberalization. They also find evidence of feedback effects between economic and political liberalization but do not test for the direction of causality. Fidrmuc (2003, EJPE) considers economic and political liberations in a sample of 25 post-communist countries. He finds that the direct effect of democratization on growth is ambiguous. However, democratization causes economic liberalization which is in turn associated with better growth performance. When accounting for this indirect effect of political liberalization, its impact on growth is found to be positive.

The choice of institutions reflects the initial distribution of political power and resources. Interest groups may succeed in pushing through institutions that are favorable to them at the expense of the society as a whole. The findings on the relationship between growth and institutions can be interpreted as suggesting that developing countries, especially Sub-Saharan Africa and Latin America, owe much of their low level of economic development to choosing poor institutions. The choice of institutions reflects the initial distribution of political power and resources. Interest groups may succeed in pushing through institutions that are favorable to them at the expense of the society as a whole. The results can be biased because institutions may be endogenous in the level of development: only relatively well-off countries can afford to implement and sustain good institutions.

A possible solution is to consider natural experiments (Olson, JEP 1996): i.e. divided countries such as Germany (East vs West), Korea (North vs South) and China (PRC vs Taiwan and Hong Kong). Divided countries shared the same initial conditions in terms of formal institutions, culture, climate, history and economy but subsequently implemented very different political and economic institutions. Another solution is to find suitable instruments for institutions to account for the endogeneity bias. Historical Legacies Per-capita incomes are strongly correlated with distance from the equator. Similarly, quality of institutions tends to improve with distance from the equator. The pattern for income can be due to climate and prevalence of tropical diseases. However, it is more difficult to attribute institutional quality to climate, disease environment or even low level of economic development (European countries embraced growth-enhancing institutions when they also were relatively poor).

Acemoglu, Johnson and Robinson (2001) relate quality of institutions in the developing countries to the nature of their colonial experience. They argue that imperial powers treated different colonies differently, reflecting their suitability for settlement by Europeans. Colonies in temperate climates (North America, Southern South America, South Africa, Australia, New Zealand) were suitable for agriculture and many Europeans settled there. As a result, they brought with them, or demanded, similar institutions as those in their home countries. In contrast, colonies with adverse climatic conditions and rampant diseases received few European settlers and were seen mainly as source of revenue. The imperial powers therefore put in place extractive institutions, i.e. institutions whose main purpose was to facilitate extraction of resources and their transfer to the imperial power, with little regard for private property rights for the indigenous population (e.g.: Belgian Congo). After the end of the colonial era, these institutions then largely remained in place: colonial rule was replaced by home-grown dictators who continued to use the extractive institutions for their personal benefit.

Acemoglu et al. use data on mortality of European settlers, soldiers and missionaries to explain institutions in developing countries. They find a strong negative correlation between Europeans' mortality and quality of institutions. They argue that mortality of Europeans is a valid instrument and not a proxy for climate and geography because tropical countries were often among the richest countries

prior to colonization (e.g. Mughal Empire in India, Aztecs in Mexico and Incas in Peru), and because the native populations have developed (partial) immunity to tropical diseases. When using institutions instrumented by the mortality figures to explain differences in per-capita incomes across countries, they find that institutions account for up to three quarters of the variation in incomes across countries. Berkowitz and Clay (2003) find evidence of a similar impact of the initial disease environment, along with the identity of the colonial power (Great Britain, France, Spain, Mexico, and the Netherlands), on present-day institutions in a cross section of US states. Nunn (2007, 2009) considers the impact of slavery on African countries: present-day institutions can be explained by the volume of slave exports from the various countries, so that differences in current economic development can in turn be ascribed to differences in institutions.

Acemoglu, Johnson and Robinson (2002) develop a different though related argument. They point out that, throughout history, population density and urbanization has been positively correlated with contemporaneous income per capita. Yet, among former colonies, population density and urbanization in 1500s is inversely related with present-day income per capita. They argue that densely inhabited colonies were more attractive for exploitation and less attractive for settlement. Therefore, Europeans again put in place extractive institutions, or maintained existing extractive institutions already in place, so as to facilitate exploitation of resources, collect tax revenue, build plantations etc. with little regard for the protection of property rights of the indigenous majority. Sparsely inhabited colonies, in contrast, were more likely to become destination of European migrants, and therefore received better institutions. Acemoglu et al. use population density and urbanization in 1500s as instruments for present-day institutions in the former colonies and show that institutions are robustly related to present-day differences in per capita incomes.

Acemoglu et al. have a very restrictive interpretation of colonization and only consider former colonies in the New World, disregarding Old-World colonies, e.g. Ireland (former British colony) Netherlands (former Spanish colony), Poland (former Russian colony), etc. They presented through their work fairly convincing evidence that it is institutional differences, not geographic factors, which are at the root of the very large differences in economic prosperity we observe today. In specific, the authors focused on two main popular candidates for the fundamental causes of cross-country differences in prosperity: geography and institutions.

The geography hypothesis, which has a large following both in the popular imagination and in academia, maintains that the geography, climate, and ecology of a society's location shape both its technology and the incentives of its inhabitants. While the geography hypothesis emphasizes on "forces of nature" as a primary factor in the poverty of nations, the institutions hypothesis is about "man-made" influences. According to this view, some societies are organized in a way that upholds the rule of law, encourages investment in machinery, in human capital, and in better technologies, facilitates broad-based participation in economic and political life by the citizens, and supports market transactions. The authors referred to these societies as possessing (or as having developed) "good institutions".

According to the authors, there are three crucial elements of these good institutions : first, enforcement of property rights for a broad cross-section of society, so that a variety of individuals have incentives to invest and take part in economic life; second, constraints on the actions of elites, politicians and other powerful groups so that these people cannot expropriate the incomes and investments of others in the society or create a highly uneven playing field; and finally, some degree of equal opportunity for broad segments of the society, so that they can make investments, especially in human capital, and participate



in productive economic activities. These good institutions – or institutions of private property, a term emphasizing the importance of the enforcement of rule of law and property rights – contrast with conditions in many societies of the world throughout history and today, where the rule of law is selectively applied and property rights are nonexistent for the vast majority of the population. In these societies the political and economic power of elites is without bounds, and only a small fraction of citizens have access to education, investment, and production opportunities.

Like the geography hypothesis, the institutions hypothesis has a lot of progenitor scholars. It goes back at least to John Locke, Adam Smith and John Stuart Mill. John Locke, for example, stressed the importance of property rights, writing: "...there must of necessity be a means to appropriate them some way or other, before they can be of any use or at all beneficial to any particular man" ([1690], 1980, p. 10). He further argued that the main purpose of government was "the preservation of the property of ... members of the society" (p. 47). Institutions not only affect economic prospects of nations, but are also central to the distribution of income among various individuals and groups in society – in other words, institutions not only affect the size of the social pie, but also how it is distributed. This perspective may imply that a potential change from dysfunctional and bad institutions towards better ones, which will increase the size of the social pie, but may be blocked when such a change significantly reduces the size of the slice that powerful groups receive from the pie and when they cannot be credibly compensated for this loss after the change in institutions. Similarly, powerful groups will often opt for institutions that do not provide any rights to the majority of the population so that they can extract resources or labor from them, or monopolize the most lucrative businesses.

Motivated by this reasoning, the authors referred to bad and dysfunctional institutions as extractive institutions, emphasizing the fact that they are there, or were introduced in the first place, as a means of supporting the extraction of resources by one group at the expense of the rest of the society. The authors developed the importance of institutions. To build this case, they went back to the history of European colonization, which provides with a natural laboratory where, while geography remained constant, European colonialism made Europeans the politically powerful group with the capability to influence institutions more than any indigenous group was able to at the time. In places where Europeans did not settle and thus did not care much about aggregate output or welfare, in places where there was a large population to be coerced and employed for cheap in mines or in agriculture, or simply taxed, in places where there was a lot to be extracted, Europeans pursued the strategy of setting up extractive institutions. In those colonies, there were no constraints on the power of the elites, i.e Europeans themselves and their allies and no civil or property rights for the majority of the population; in fact, many of them were forced laborers or slaves.

Contrast to this pattern, in other colonies where Europeans settled in large numbers, they developed the laws and institutions of the society to ensure that they themselves were protected, both in their political and economic lives. In these settler colonies, the institutions were therefore much more conducive to investment and economic growth. This discussion also suggests that Europeans were more likely to invest in the development of institutions of private property in areas that were sparsely settled and previously relatively poor. The relatively densely settled and highly urbanized colonies ended up with extractive institutions, while sparsely settled and non-urbanized areas received an influx of European migrants and developed institutions protecting property rights and constraining elites. European colonialism therefore led to an institutional reversal, in the sense that the richer places ended up with worse institutions.

To be fair, it is possible the Europeans did not actively introduce extractive institutions in many of these places. The structure of the Mughal, Aztec and Inca empires were already very hierarchical, non-democratic and with power concentrated in the hands of rulers. Perhaps the Europeans simply took over these institutions. The institutional reversal combined with the institutions hypothesis predicts the Reversal of Fortune: relatively rich places got worse institutions, and if these institutions are really important, they should become relatively poor over time. This is exactly what the authors realized with the Reversal of Fortune. The authors pointed towards the reversal in relative incomes, as the outcome of the institutional reversal. They claim that the scale of the reversal and the subsequent divergence in incomes are due to the emergence of the opportunity to industrialize during the 19<sup>th</sup> century. While societies with extractive institutions or those with high hierarchical structures could exploit available agricultural technologies relatively effectively, the spread of industrial technology required the participation of a broad cross section of the society, meaning the middle class and entrepreneurs. Hence, the age of industry created a considerable advantage for societies with institutions of private property. These societies were the ones according to the authors, who took much better advantage of the opportunity to industrialize.

By emphasizing the importance of the institutions, AJR, do not intent to underestimate geography's unimportance. There is no evidence that geography plays a major direct role in the very large differences in income per capita and growth potential of countries today. But this does not mean that geography is unimportant. It is important in at least four major ways: First, geography and diseases almost surely matter for economic outcomes. There can be no agriculture at the poles, and it is a truism that healthy individuals will be more productive and motivated in their work, in school and in their lives. Second, that geography is not at the root of the tremendous differences in economic prosperity today does not mean that it was unimportant in history. It is quite possible that geographic differences shaped why some areas were richer than others more than 500 years ago. This must be the primary candidate for explaining why tropical areas among the colonies were more prosperous than in temperate ones in 1500. Going even further back, geographic characteristics must have been important in determining where settled agriculture developed and where humans migrated. Third, geography could have an effect through institutions, especially during a particular historical juncture. After all, the disease environment is a geographic characteristic of many tropical areas.

However, the major effect of disease environments was not direct, but indirect: during European colonization, they determined whether Europeans could settle and therefore, which types of institutions developed. Finally, and most importantly, even if geography has no effect on income per capita, it does have significant effects on "social welfare", properly measured. Many parts of the world, especially many parts in the tropics, suffer from poorer health and higher mortality and morbidity than North America and Western Europe, partly because of their geographic characteristics (and partly because the corresponding diseases in North America and Europe have been eradicated as a result of the economic development of these societies).

David S. Landes (1998) elucidates the reasons why some countries and regions of the world experienced near miraculous periods of explosive growth while the rest of the world stagnated. He does this by comparing the long-term economic history from a geographic perspective, including different regions of the world, giving priority to Europe and the United States, as well as Japan, China, the Arab world, and Latin America. In addition to analyzing economic and cliometric figures, he gives substantial credit to such intangible assets as culture and enterprise in the different societies he examines in order to

explain economic success or failure. David Landes argued on the causes of the (so far) divergent destinies and relative prosperity levels of different national economies. The title of his book, echoes Adam Smith, but Landes is interested in both the wealth and poverty of nations: Adam Smith lays out what went wrong as the background for his picture of how things can go right, while Landes is as interested in the roots of relative—and absolute—economic failure as of success. His explanation of the wealth and poverty of nations is quite simple: rich nations are once-poor nations that developed market economies; poor nations are once- and still-poor nations that did not. Market economies require governments that do not interfere with people's economic affairs except to protect property rights.

The writer builds his case by recounting the history of world economic development. He claims that western European, and especially British, culture is superior to others at promoting people's well-being. He makes the same case for the virtues of Protestantism. The Roman church found truths about nature in the scripture, so new ideas were potentially subversive. Protestant culture gave individuals more freedom to think for the practitioners themselves, to innovate, and to keep the rewards of their successes. The notion that one culture is as good as another is wrong, according to the writer, at least if one judges a culture by its ability to enhance the well-being of its practitioners.

Landes notes that geographical factors played a large role in the patterns of development, and that some areas had advantages due to climate and natural resources that enabled them to develop sooner than others. But he also argues that geographical advantages, in the long run, can be disadvantages, because if wealth comes too easily, people do not have as much incentive to work hard and to use their wealth productively. When the Europeans began settling the Americas, for example, the Spanish and Portuguese gained easy wealth through territory rich in gold and silver, whereas the British territory required more work and investment. That investment, however, produced a much greater long-run payoff. Similarly, the oil-rich countries in the Middle East today are squandering their wealth because they came by it too easily. The same argument applies to the industrialization of Britain, which had some natural advantages, such as coal deposits, but lacked others and in any event could capitalize on its advantages only by hard work and innovation. Before the Industrial Revolution, many areas of the world were at least as wealthy as Britain and had developed at least as much scientific and technical knowledge. China, in particular, was far ahead of Britain in many respects, but the British had one crucial advantage over the Chinese—a culture that encouraged commerce, risk-taking, and innovation. The British culture produced the Industrial Revolution, and Landes argues that no place in the world was able to industrialize without British influence.

The author's argument is generally convincing, but not entirely. For example, he notes that the Japanese culture once lacked the work ethic of Western Europe and was hampered by an institutional rigidity and isolationism similar to China's. But Japanese culture changed, permitting industrialization, economic growth, and wealth. Thus, culture is not unchangeable. Moreover, "religious" aspects of culture are not tied to particular religions. The Japanese adopted the Protestant work ethic without adopting the religion. The writer's view of culture appears to be the same as that of religion; the culture he refers to, amounts to any one that leads to the adoption of market capitalism. Europe was characterized by many governmental jurisdictions that were creating an environment of intergovernmental competition, whereas China and Russia were vast regions without that competition. Although the writer highlights this fact, he fails to see its importance. It is most plausible that industrialization developed first in Europe because governments faced the prospect of losing people and capital to rival governments, thus

tempering the rulers' interference with freedom. Culture has some explanatory power, but it shouldn't be regarded as the only factor determining the extent to which the market is free to work.

Landes's conclusion that the ultimate path to wealth is the adoption of a market economy is unassailable. The vast economic growth of the Industrial Revolution was no accident but instead resulted from several qualities of Europe, including its climate, political competition, and attitude towards science and religion, more specifically from certain countries in Europe, primarily England. Despite his questionable assertion that culture is the key determinant in the choice between the market and government domination, his research has much to offer in its recounting of the history of world economic development and its insights on the differences among nations and cultures.

## **2.2 Institutions, Culture, Religion, and Economic Growth**

The classical economists regarded culture as instrumental in shaping economic outcomes. At the turn of the 20th century, Max Weber expounded upon these ideas, insisting on religion's importance in developing capitalism in his famous book *The Protestant Ethic and the Spirit of Capitalism*. However, around the mid-20th century, many economists began to shy away from using culture as an explanatory variable. In part, it seemed like too nebulous of a concept — one that was hard to identify and isolate. So as statistical sophistication and technical tools advanced, culture gradually began to fade from discussion. This same sophistication in modeling, however, has spurred resurgence in cultural economics.

In a recent paper (2006), Luigi Guiso, Paola Sapienza, and Luigi Zingales of the University of Rome Tor Vergata, the University of Chicago, and Northwestern University, respectively, provide an overview of recent work on culture's effect on the economy. The authors narrowly confine their definition of culture to "those customary beliefs and values that ethnic, religious, and social groups transmit fairly unchanged from generation to generation." They take a three-step approach: Show a direct effect of culture on beliefs and preferences, causally link those beliefs and preferences to economic outcomes, and prove this causality moves from culture to economics and not from economics to culture. Within this framework, Guiso et al. focus on three mechanisms by which culture can affect economics. First, culture can affect political preferences, which, in turn, impact economic outcomes. Controlling for numerous variables, religion, and ethnic background significantly varied respondents' political preferences for income redistribution. Catholic and Protestant respondents, for example, had significantly more negative attitudes toward redistribution than those with no religion. Also, ancestors' country of origin mattered in preferences for redistribution. African-Americans and Americans with known African ancestors are 20 percent more in favor of redistribution than the average American. The authors show that a significant positive relationship exists between respondents' preferences for income redistribution (revealed in a survey) and their states' efforts of redistributing income (as measured by

taking the ratio of the share of state government revenues coming from progressive income taxes and the share coming from regressive sale taxes along with other indirect taxes). The positive causal relationship is actually strengthened after testing for reverse causality, indicating that the respondents' culture is impacting state redistributive policies and not vice versa.

As a second mechanism, culture can affect economic preferences, which, in turn, affect economic outcomes. The authors conclude that religion and ethnic origin influence saving decision preferences. Catholics and Protestants are significantly more likely than nonreligious people to view teaching thriftiness to their children as an important value. Furthermore, the thriftiness measure affects national saving rates. The authors argue that "a 10 percent increase in the share of people who think thriftiness is a value that should be taught to children is linked to a 1.3 percentage point increase in the national saving rate". They acknowledge, however, that disproving reverse causality in this case is based on a "tentative" estimate; in other words, they were unable to fully conclude that culture-inspired preferences are leading to national saving rate outcomes and not the other way around.

The third mechanism provided by Guiso et al. is the effect of culture on prior beliefs, which, in turn, affect economic outcomes. For instance, the authors find that culture, as defined by religion and ethnicity, affects beliefs about trust. Being raised religiously increases the level of trust, as measured by survey response, by 2 percent and regularly attending religious services by another 20 percent. Also, there is a strong positive correlation between the average trust level in an immigrant's country of origin and trust in his new environment that holds over generations. And trust has a positive and statistically significant impact on the probability of becoming an entrepreneur. Experiments able to take theories of culture's influence and subject them to rigid statistical analysis are valuable in deducing culture's economic impact. It is essential for economists, nonetheless, not to assume a significant causality between all forms of culture and economic activities. Rather, they should mimic the Guiso et al. methodology: Test the impact of narrowly defined cultural dimensions on specific preferences and beliefs, and then test the impact of those preferences and beliefs on particular economic outcomes. If done properly, as Guiso et al. contend, "Importing cultural elements will make economic discourse richer, better able to capture the nuances of the real world, and ultimately more useful."

The idea that culture is a central ingredient of economic development goes back to at least Max Weber who, in his classical work "The Protestant Ethic and the Spirit of Capitalism" (1930), argued that the protestant ethic of Calvinism was a very powerful force behind The genesis of capitalism has had implications over time. Weber adds, "Capitalism's relationship to the religious powers could have been exactly parallel—namely, a coalition between capitalism and religious belief tended to burst asunder the old economic traditionalism". This stemmed from Weber's observation that 10 northern Europe and America experienced a significant level of economic prosperity a century ago primarily because of the work ethic of those that were followers of Protestantism. Weber first observes a correlation between being Protestant and being involved in business, and declares his intent to explore religion as a potential cause of the modern economic conditions. He argues that the modern spirit of capitalism sees profit as an end in itself, and pursuing profit as virtuous. Weber's goal is to understand the source of this spirit. He turns to Protestantism for a potential explanation. Protestantism offers a concept of the worldly "calling," and gives worldly activity a religious character.

The Protestant ethic is defined in sociological theory as: "the value attached to hard work, thrift, and efficiency in one's worldly calling. While important, this alone cannot explain the need to pursue profit. One branch of Protestantism, Calvinism, does provide this explanation. Calvinists believe in

predestination--which God has already determined who is saved and damned. As Calvinism developed, a deep psychological need for clues about whether one was actually saved arose, and Calvinists looked to their success in worldly activity for those clues. Thus, they came to value profit and material success as signs of God's favor. Other religious groups, such as the Pietists, Methodists, and the Baptist sects had similar attitudes to a lesser degree. Weber argues that this new attitude broke down the traditional economic system, paving the way for modern capitalism. However, once capitalism emerged, the Protestant values were no longer necessary, and their ethic took on a life of its own. We are now locked into the spirit of capitalism because it is so useful for modern economic activity. Weber emphasizes that his work is incomplete. He is not arguing that Protestantism caused the capitalistic spirit, but rather that it was one contributing factor. He also acknowledges that capitalism itself had an impact on the development of the religious ideas. The full story is much more complex than Weber's partial account, and Weber himself constantly reminds his readers about his own limitations.

Barro and McCleary (2003) argued that a more successful explanation of economic growth would include broader social and cultural dimensions. Following their observation that economic growth has usually been explained by a narrow set of economic variables, they note that religion (as a significant factor of culture), influences character traits such as honesty and willingness to work. Thus, their purpose was to analyze religion as it relates to rates of economic growth. More specifically, the authors quantified this relationship using two main measures of religiosity: religious beliefs, represented by beliefs in heaven and in hell, and religious belonging, measured by monthly attendance at church services. Barro and McCleary studied a dataset on a broad panel of countries that contained an array of economic, political, and social indicators. They also gathered data on measures of religiosity primarily from the World Values Survey. As for their empirical framework, the dependent variable in their regression model was the growth rate of GDP per capita over three separate four- to five-year time periods, while the independent variables included numerous social, economic, and political indicators, in addition to their measures of religiosity.

Focusing on a sample of 41 countries, the authors found that while religious beliefs affect economic growth positively, church attendance produces the opposite effect. According to Barro and McCleary, "Growth depends on the extent of believing relative to belonging". In accordance with their original hypothesis, they see that because greater religious beliefs instill productivity-enhancing aspects of individual behavior in a person, growth is stimulated. According to the authors, since religious beliefs in general tend to influence personal traits, such as honesty and willingness to work, economic performance is enhanced. Barro and McCleary's second finding, that economic growth reacts negatively to monthly church attendance.

In theory, as church attendance increases, economic growth decreases, and vice versa. The authors reason that growth is depressed by increased church attendance because of their fundamental view of the market for religion. While beliefs can be considered the output of the religion sector, higher church attendance signifies a larger use of religious resources, as attendance measures the inputs in this sector. Their theory for church attendance's net negative effect on economic growth is largely dependent how this variable affects religious beliefs. Therefore, a plausible, direct inference for the negative relationship between attendance and growth could involve the importance of organized religion in society. However, there arises an unresolved issue in thinking about the religion sector this way. Religious individuals could argue that beliefs are the input in the religion sector, while church attendance acts as the output—the reverse of what Barro and McCleary believe. More specifically, an

individual could self-develop certain religious beliefs and then wish to foster them through attendance at church. There are many purposes of religious services, especially depending on culture and religious denomination, but certainly one basic, common objective is to help grow one's beliefs and values.

McCleary and Barro (2006) is an extension of their previous work in the sectors of religion and economics. The importance of this paper lays its examination of religion as both a dependent and an independent variable. When considering religion as a dependent variable, McCleary and Barro noted: "a central question is how economic development and political institutions affect religious participation and beliefs". Thus, the theories are divided into demand-side and supply-side models. The secularization hypothesis is the historically popular demand-side view, arguing that economic growth negatively affects religion by reducing religious beliefs as well as participation in religious services. Regarding the supply-side, the religion market model explains that the nature of the religion product is affected by government regulation and competition among religion providers. Therefore, a greater degree of religiosity could encourage economic growth.

Barro and McCleary explain religious pluralism as the degree of diversity within the religion market, or a measurement of "the diversity of adherence among major religions". They note two key indicators of religious pluralism in their study: the presence of a state religion and regulation of the religion market. Barro and McCleary use Scandinavia as an example because this country has an established state church and therefore a low degree of religious pluralism. The authors created measures of pluralism based on Herfindal indices for shares of religion. They explain that this type of index "can be interpreted as the probability that two randomly selected persons in a country (among those adhering to some religion) may belong to the same religion". Barro and McCleary's pluralism index, which is equal one minus the Herfindal index, is an indicator of religious diversity because it represents the probability that two people belong to different religions.

Robert J. Barro and Rachel M. McCleary (2003) use an international survey's data on religiosity for a broad panel of countries in order to investigate the effects of church attendance and religious beliefs on economic growth. To their empirical research they used instrumental variables suggested by the analysis of their system in which church attendance and beliefs are the dependent variables. In their current work they refer to the religion market, and at its regulations. For their variables to input, beliefs might refer to heaven, hell, an after-life, God and so on for the usage of their model. Those are tendencies indicators of the people in order to characterize themselves as religious. At their empirical study they examine how church attendance and the aforementioned beliefs might correlate with per capita GDP, education, urbanization and so on. This link between religion and economic performance displays the influence of the former towards the latter. Subsequently, the authors refer to the state religion, the state regulations and they also refer to communism as an example into their empirical testing. Especially in the latter, the communist regime has been shown to have a substantial negative relation with church attendance and religious beliefs implying a net reduction of church attendance. Moreover, the authors focus on the religious pluralism and the composition of religions by examining the church attendance per religion. Also, they suggest that religion affects economic outcomes (as a determinant) by fostering religious beliefs that influence individual traits such as thrift, work ethic, honesty, and openness to strangers.

In simple words, the authors view religious beliefs as the principal output of the religion sector, and we view church attendance as one of the inputs to this sector. Thus, as we see church attendance increase it also signifies that the religion sector is less productive. The authors concluded that economic growth responds positively to the extent of religious beliefs, notably those in hell and heaven, but negatively to

church attendance. The results accord with the perspective that religious beliefs influence individual traits that enhance economic performance. Hence, more church attendance signifies more resources used up by the religion sector.

R. H Tawney (1922) addresses the question of how religion has affected social and economic practices. He tracks the influence of religious thought on capitalist economy and ideology since the Middle Ages, shedding light on the question of why Christianity continues to exert a unique role in the marketplace. In so doing, R. H Tawney shifted and extended the emphasis of the earlier work of Max Weber. R. H Tawney practically argued that it was the individualism and the ethic of hard work and thrift of Calvinist Protestantism that had fostered industrial organization and an efficient workforce in northern Europe. Tawney begins by discussing the role of religion in the pre-capitalist, feudal world. But religion in the medieval era was also a justification of the status quo. That everyone had their station in life and was expected to work in that role for the benefit of a whole. Thus religious figures tried to interpret and understand the Bible to both guide people, and back up their world outlook.

In terms of economics, the key question for the church was usury - the idea that interest could be charged on loans, or profits made from lending. Tawney traces the way that the Church's attitude to usury changed through time, banning clerics from profiting like this, then refusing usurer's communion or Christian burial. But as capitalist relations developed within Medieval society, as wage labor grew and money came to dominate economic relations the old conservative approaches to economic relations no longer fitted the reality. The changes that the rise of capitalism brought meant that religion had to adjust. This didn't simply mean changing the approach to questions like the charging of interest on loans. It also means a complete re-write of the moral code that formed the basis of Christianity. Tawney traces the changes that took place within religion as different interpretations of Christianity struggled to adapt and understand the new world order. In particular he focuses on Puritanism, which "became a potent force in preparing the way for the commercial civilization which finally triumphed at the Revolution". For the Puritans, "religion must be active, not merely contemplative....'God hath commanded you some way or other to labor for your daily bread'." In other words, this was a religion that justified trade, commercialism and ultimately profit. As Tawney writes,

*"a creed which transformed the acquisition of wealth from drudgery or a temptation into a moral duty was the milk of lions. It was not that religion was expelled from practical life, but that religion itself gave it a foundation of granite... The good Christian was not wholly dissimilar from the economic man."*

The transformation was so great, that as Tawney points out, and those who held to the old texts were persecuted. While Tawney's thesis may not be one hundred percent accurate for the Marxist trying to understand the rise of capitalism (perhaps it is better described as incomplete) there is plenty of food for thought here that those trying to understand the modern economic system (and the role of the Church within it) can engage with. His work showed there is a dividing line between the spheres of religion and secular business that results in blending ethical considerations with the motivations of the marketplace. By examining the period that saw the transition from medieval to modern theories of social organization, Tawney clarifies the most pressing problems of the end of the century.



### 2.3 Institutions, Social Capital, Politics and Economic Growth

A narrow view of social capital regards it as a set of horizontal associations between people, consisting of social networks and associated norms that have an effect on community productivity and well-being. Social networks can increase productivity by reducing the costs of doing business. Social capital facilitates coordination and cooperation.

Social capital also has an important "downside" (Portes and Landholt 1996): communities, groups or networks which are isolated, parochial, or working at cross-purposes to society's collective interests (e.g. drug cartels, corruption rackets) can actually hinder economic and social development.

A broader understanding of social capital accounts for both the positive and negative aspects by including vertical as well as horizontal associations between people, and includes behavior within and among organizations, such as firms. This view recognizes that horizontal ties are needed to give communities a sense of identity and common purpose, but also stresses that without "bridging" ties that transcend various social divides (e.g. religion, ethnicity, socio-economic status), horizontal ties can become a basis for the pursuit of narrow interests, and can actively preclude access to information and material resources that would otherwise be of great assistance to the community (e.g. tips about job vacancies, access to credit).

The broadest and most encompassing view of social capital includes the social and political environment that shapes social structure and enables norms to develop. This analysis extends the importance of social capital to the most formalized institutional relationships and structures, such as government, the political regime, the rule of law, the court system, and civil and political liberties. This view not only accounts for the virtues and vices of social capital, and the importance of forging ties within and across communities, but recognizes that the capacity of various social groups to act in their interest depends crucially on the support (or lack thereof) that they receive from the state as well as the private sector. Similarly, the state depends on social stability and widespread popular support. In short, economic and social development thrives when representatives of the state, the corporate sector, and civil society create forums in and through which they can identify and pursue common goals. Measuring social capital may be difficult, but it is not impossible, and several excellent studies have identified useful proxies for social capital, using different types and combinations of qualitative, comparative and quantitative research methodologies.

Knack and Keefer used indicators of trust and civic norms from the World Values Survey for a sample of 29 market economies. They use these measures as proxies for the strength of civic associations in order to test two conflicting propositions on the effects of social capital on economic growth, the "Olson effects" (associations hurt growth through rent-seeking) and "Putnam effects" (associations facilitate growth by increasing trust).

Mancur Lloyd Olson, Jr argues that groups such as cotton-farmers, steel-producers, and labor unions have an incentive to form lobby groups and influence policies in their favor. These policies will tend to be so very protectionist that will hurt economic growth; but because the benefits of such policies are concentrated, and their costs are diffused throughout the whole population, there will be little public resistance to them. As distributional coalitions accumulate, nations burdened by them will fall into economic decline

Putnam (1993) in his research compared north and south Italy, so as to examine social capital in terms of the degree of civic involvement, as measured by voter turnout, newspaper readership, membership in choral societies and football clubs, and confidence in public institutions. Northern Italy, where all these indicators are higher, shows significantly improved rates of governance, institutional performance, and development when other orthodox factors were controlled for. His recent work on the United States (Putnam 1995, 1998) uses a similar approach, combining data from both academic and commercial sources to show a persistent long-term decline in America's stock of social capital. Putnam validates data from various sources against the findings of the General Social Survey, widely recognized as one of the most reliable surveys of American social life.

Knack and Keefer supported the idea that trust and norms of civic cooperation are essential to well-functioning societies and to economic progress of those societies. The underlying idea in is that societies characterized by higher levels of social capital--commonly defined as norms of trust or cooperation that improve economic productivity--experience more rapid economic development, and better institutional performance as well. According to the authors, individuals in higher trust societies spend less to protect themselves from being exploited in economic transactions and are likely to divert fewer resources to protecting themselves from criminal violations of their property rights. Written contracts are less needed and do not specify every possible contingency. Societies with high trust levels are less dependent on formal institutions to enforce agreements. Interpersonal trust provides a substitute for government made property rights when governments are unable to provide them. The government officials of these high trust societies are thought to be more trustworthy and credible. Trust therefore attracts greater investment and other economic activity, since the societies where trust levels are developed have stronger incentives to innovate and to offer greater returns to the accumulated physical capital. In societies where trust and civic involvement are linked to better performance of government institutions they include publicly provided education and specialized education is increased. Cooperative norms act as constraints on narrow and self-interest leading individuals to contribute to the provision of public goods of various kinds.

Trust and civic norms may improve economic outcomes through political channels. Governmental performance as well as the quality of economic policies can be improved, by affecting the level and character of political participation. Civic norms help voters overcome the collective action problem in monitoring officials. Norms of civic cooperation have the same link with economic outcome as trust.

Low trust and weaker norms on the other hand is associated with societies with inequalities in income, health, ethnic tensions and low social polarization. Social polarization by definition implies greater distance between preferences of individuals in a society. In polarized societies individuals are less likely to share common backgrounds and mutual expectations about behavior; therefore it is more difficult to make self-enforcing agreements. These societies that usually display low social cohesiveness have high inflation and government debt. Furthermore polarization can increase rent seeking activities that undermine trust. Polarization can thus erode trust and weaken cooperative norms.

The findings of the research support that trust's relationship to growth is especially large in poorer countries which may be due to their less well developed financial sectors, insecure property rights and unreliable enforceability of contracts. In cases where interpersonal trust is low and unlikely to improve, institutional reforms provide better formal mechanisms so as to offer better credible enforcement of contracts. As far as group memberships are concerned, the authors, through their findings, reject

Putman's findings and suggest that memberships are not correlated with trust or improved economic performance. We are mostly interested in the findings that arrive to the following conclusions:

Countries with formal institutions, that effectively protect property and contract rights- and are less polarized along classes or ethnicity, present higher levels of trust and norms of civic cooperation. Formal institutional rules that constrain the government from arbitrarily are associated with development of cooperative norms and trust.

E.Miguel (2003) challenged the importance of social capital, claiming that it has too often been treated as a timeless, almost mysterious societal characteristic in the recent academic literature. Through his research in the country of Indonesia, he found that rapidly industrializing districts in Indonesia, had increasing community associational activity and together with the result that initial social capital did not foster industrialization, he run against recent studies which claim social capital promotes income growth ( Knack and Keefer, 1997; Putnam, 1993). In contrast, his results suggest that the positive cross-sectional relationship between social capital and income in Indonesian districts is likely to have been driven by the impact of industrial development on social capital—rather than the other way around.

Donald Wittman (1989) attempted to prove that economic markets are well as effectively as the democratic political markets. In his paper, Wittman developed the a theory of institutional response so as to demonstrate how various political institutions such as political parties, candidate reputation and government structure are developed so as to reduce any the potential effects of the principal-agent problem in democratic systems. The dominant characteristics of efficient markets are the informed and rational participants in a matrix of competition with well-defined and easily transferred property rights. The political markets that seem to be missing these characteristics are perceived to be political market failure.

The author shows that democratic markets do have the properties of efficient markets. In addition he proves that competition for political office does indeed reduce the potential for opportunism by politicians. He posits that electoral competition ought to reduce opportunism by politicians because of political actors' reputational concerns even through intra-party competition. Wittman argues that candidates need to develop reputations in order to get elected. However, it is exactly the need to develop personal reputations under open-list PR systems that encourages legislators to seek illegal resources. In addition, while Wittman argues that parties may have incentives to maintain reputations and discipline legislators against corruption, the brand name of party does not help candidates get elected under open-list PR systems, since it is exactly his co-partisans against whom a legislator must compete.

Behind every model of government failure is an assumption of extreme voter stupidity, serious lack of competition, or excessively high negotiation/transfer costs. Economists are very suspicious of similar assumptions regarding economic markets. This skepticism should be carried over to models of government behavior. Wittman does not assert that economists who emphasize government failure explicitly declare that voters are extremely stupid, or politicians collude, or political transactions costs are unnaturally large. He insists only that they need at least one of the three to impugn the efficiency of government and assumes that voters are ignorant. Wittman claims that there is a difference between being ignorant and being gullible. If you are so ignorant that you cannot tell honest news from lies, the rational strategy is to ignore the talking heads and suspend judgment. Representative democracy is a much cheaper way for a quarter billion people to make group decisions than one big unanimous contract. Yet Wittman's democratic optimism has an Achilles heel: the assumption of voter rationality.

Bear in mind that he uses "rationality" in the empirically falsifiable sense of rational expectations. If voters make systematic mistakes, then they are ipso facto irrational. Several different empirical approaches confirm that they do. Not only are voters systematically biased, they have large biases on questions of direct policy relevance. Wittman adds that voters know a lot more than economists give them credit for. Voters have little incentive to gather political information, but this in no way proves that voters possess little information. Other political actors—like politicians, journalists, and interest groups—have an incentive to take up the slack, to collect information for the voters and send it to them as a free gift. Moreover, the voters' problem is easier than it appears. They do not have to master the details of politics; they can rely on name brands (like partisan labels and interest group endorsements) as well as candidate reputation. Wittman points out that if voters realize that political insiders know more than they do about which policies are socially beneficial, it reduces the demand for government programs. Asymmetric information in politics, like asymmetric information in markets, makes equilibrium quantity go down, not up. Wittman therefore suggests that rational voter response decreases the problem of "rational voter ignorance".

What is of our great interest is the author's illustration of how political institutions reduce transaction costs, and therefore encourage the efficient of political rights. For Wittman, democracy is all about slashing transactions costs. Public choice economists have often complained that governments fund thousands of inefficient programs. Individually, none is worth the transactions costs of abolition, but taken together, they are a large deadweight cost. The solution, according to Wittman, is an omnibus repeal bill. You can economize on transactions costs by bundling a lot of small inefficient programs together, and asking legislators to abolish the whole bundle. To his credit, Wittman emphasized this possibility years before post-Cold-War base closing legislation made it a reality.

Wittman managed to show how efforts to gain a majority push the government towards efficient outcomes. Pressure groups, legislative failure, median voter inefficient outcome choice and multidimensional problems are four models that though demonstrate political market failure; they lead to political market efficiency if altered. Pressure groups are perceived as the source of political market failure by all political parties. Pressure groups compete for their policies to be adopted. Competition may mitigate any losses that might arise from service to pressure groups and there might be a very close link between the preferences of the voters and the pressure group support of the incumbent. As far as legislative failure is concerned, a well-functioning system of control would rarely reject the decision made by lower levels: when designing legislation is costly, the lower levels should anticipate the ruling of the superior level. Furthermore, assignment to committees is ultimately the responsibility of the political parties. The majority would not make assignments that would result in negative sum legislation.

The median voter model reflects the preferred position for governmental policies, such as tax policies. According to Wittman, the median voter does seem to provide the efficient result for a political market, because we have no technology to for determining the truth (assuming such a technology puts us out of the feasible set) and the expected value of the median is the mean.

Furthermore the author demonstrates the reason why zoning is efficient for political markets, though perceived as a method for the minority to take advantage of the majority. In fact it is as efficient as the common law. Zoning boards can create implicit trading of property rights, and therefore encourage efficient outcomes. Zoning board members choose efficient zoning regulations so as to be reappointed and to avoid having their decisions overridden by city councils and courts.

Most rich countries are democratic and most dictatorships are poor according to Robert J Barro, (1996). In the U.S., democracy goes hand in hand with political institutions that promote economic freedom—an environment characterized by the protection of private property and the ability of individuals to engage in voluntary exchange of goods and services. However, democratic governments, even in rich countries, often enact redistributive policies that encumber economic freedom and are detrimental to growth. Therefore, although most economists agree that economic freedom promotes growth, it is not clear that more political freedom (that is, more democracy or political rights) improves economic performance as well.

Economic growth is primarily a consequence of the accumulation of both physical and human capital. The accumulation of capital is sensitive to the choice of public policies, which, in turn, depend on the political institutions in place. R. Barro explained that democratic institutions provide checks on government power that impose limits on politicians' ability to amass wealth and enact unpopular policies. These constraints, he noted, help improve economic freedom. However, authoritarian governments may also improve economic freedom as a matter of policy without the need of institutional constraints; an example is the rule of Gen. Augusto Pinochet in Chile. In Barro's study of about 100 countries over the period 1960 to 1990, he found that, at low levels of political freedom, an increase in political rights might enhance economic growth by imposing limits on the government. But he noted that in countries that have already achieved medium levels of democracy, further increases in political rights might retard growth because of growing concerns about income redistribution. After controlling for the presence of free markets, maintenance of the rule of law, education and initial level of income per capita, he concluded that the overall effect of democracy on growth is slightly negative.

Although Barro's study was not the first, his findings spurred a debate among economists that has continued in more recent studies. One view establishes that the adoption of democracy—or, more generally, of political institutions that impose checks and balances on the government—promotes investment in physical and human capital, and, therefore, growth. In contrast, a second view establishes that reaching a certain level of economic development is what allows countries to adopt better institutions.

As commented on this paper, economists Daron Acemoglu, Simon Johnson and James Robinson espouse the view that political institutions promote economic performance, finding a strong correlation between a measure of protection against government expropriation (to proxy for political institutions) and economic performance (measured by real income per capita) across a large sample of countries. A strong correlation, however, does not necessarily imply that better institutions cause better economic performance, as richer countries may prefer better institutions. The authors argued that current economic performance in these countries depends on existing political institutions that were shaped from the institutions established by European settlers.

On the corresponding article, Edward Glaeser, Rafael La Porta, Florencio Lopez-de-Silanes and Andrei Shleifer (2004) defend the view that economic growth stimulates democracy or the adoption of better institutions, and not the opposite. They further make the point that the accumulation of human capital is a more important determinant of economic growth than political institutions. They studied a large set of countries in the period 1960 to 2000, classifying them into four categories: autocracies, imperfect autocracies, imperfect democracies and stable (or perfect) democracies. Their measure of democracy captures basic government practices in a combination of institutional and behavioral indicators, such as

competitiveness of political participation, openness and competitiveness of executive recruitment, and constraints on the executive.

Glaeser and his co-authors noticed that in 2000 nearly all countries with high levels of education were classified as stable democracies, and nearly all stable democracies were highly educated. In contrast, the economists saw that nearly all countries run by dictators were poorly educated. The authors also noticed that as education levels increased, democracies were more common, albeit many imperfect. In terms of growth, they noticed that most of the poor countries in 1960 were run by dictators. In the four decades that followed, the growth rates among poor countries varied, and some of them managed to get out of poverty while still being run by dictators. This evidence suggests, they argue, that it was not constraints on dictators imposed by institutions that led to growth; rather, dictators chose policies that provided security of property rights to foster investment in physical and human capital, and this led to growth. The authors mention China as an example of a dictatorship in which economic growth has been the result of favorable policy choices and not of institutional constraints on the government.

Regardless of whether there are any direct effects of democracy on economic growth, the connection between democracy and human capital highlighted by Glaeser and his co-authors has been the subject of more analysis.

Political scientists Matthew Baum and David Lake have found important indirect effects of democracy on growth through its impact on public health and education, two common determinants and proxies of human capital. Both public health and education have large social spillovers even when they are privately provided; therefore, investment in these areas is subject to be influenced by public policy. Baum and Lake found that increasing democracy in poor countries improves the life expectancy of women, whereas increasing democracy in more developed countries improves secondary education enrollment of women. Although the authors did not find any direct effects of democracy on growth, they found that both life expectancy and secondary education have positive effects on gross domestic product per capita growth.

The debate about whether democracy and political institutions generate growth or rather economic development leads countries to adopt better institutions is likely to continue. But, as Barro and others have pointed out, this type of analysis has important implications about the feasibility and desirability of exporting democratic institutions to developing nations, particularly those with low levels of human capital. Initially, it may be easier (or wiser) to promote fundamental features of Western economic systems, such as free markets and the importance of securing private property

Alberto Alesina and Roberto Perotti (1996), studied the derivatives of socio-political instability through several indices that capture the violent phenomena of political unrest. They hypothesized that income inequality and social discontent create a socio-political environment with great uncertainty that don't attract investment. They estimated a cross section of 70 countries for the period of 1960-85, and structured a two-equation system in which the endogenous variables were the investments on physical capital and a measure of political instability. The authors took into account the effects of the income distribution to the society and the size of the middle class, since those factors indicate the stability of a current political status. Specifically, they claimed that the higher the middle class is, the higher is the protection to the current governmental state. On the contrary, when a political instability occurs, the property rights that enhance investment and growth- are under question. The issue of political instability

is important because of the negative consequences it delivers on both social and economic aspect to the people of the country that is deeply affected by it.

The results of the author's research confirmed their hypothesis in terms that income inequality does increase political instability, which in turn reduces the investment. These findings help explain different investment and growth performances in different parts of the world. In countries in South East Asia, that had very high growth rates in the post WWII period, and following land reforms in the aftermath of the war, the income and wealth inequality were reduced. Most of these countries have been relatively stable, compared to Latin America countries. The latter on the other hand have had a much more unequal income distribution, more socio-political instability and less growth. The "four dragons", Hong Kong, Singapore, South Korea and Taiwan are a good example of Asian countries with a successful socio-political growth. From another point of view, their results have some implications for the effects of fiscal redistribution. Fiscal redistribution, by increasing the tax burden on capitalists and investors reduces any investment tendency. Nevertheless, these same policies may affect positively social tensions and thus create a socio-political environment attracting productive activities and capital accumulation. Hence, redistribution policies on growth needs to weigh the costs of distortionary taxation and lost investment opportunities against reduced social tensions.

The observed negative correlation between inequality in wealth (or income) in a country and the per capita growth rate is the point of departure in the Alesina and Rodrik article (1994). The authors set up a model to check whether the observed phenomenon can be explained through the following two mechanisms: (a) the political mechanism. High inequality leads to strong pressure, by the majority in the population, for redistribution through some form of progressive taxation. (b) The economic mechanism. A high tax rate on capital income leads to a low after-tax rate of return on saving. This results in low aggregate saving and investment and thereby in a low growth. The key finding of the theoretical model and subsequent empirical testing is that inequality retards growth. The government taxes capital (growth –producing assets, including physical capital, human capital and proprietary technology) in order to provide government services which are themselves essential for growth (think infrastructure, education etc.) and there is thus a growth maximizing level of tax and spend. However as individuals are endowed with different levels of capital and labor, the ideal tax rate is different for different individuals. An individual who derives all of his income from capital prefers the growth maximizing tax rate whereas everyone else would prefer a higher tax rate with a lower level of growth in the economy. The lower an individual's share of capital income in his total income, the greater he want the tax rate to be, and the lower his ideal growth rate. The more equitable the distribution of capital within a society the more capital is owned by the median voter and thus the lower the tax rate will be. In other words inequality is inversely proportional to economic growth as distributional struggles harmful to growth are more likely to occur when resources are unevenly distributed.

Another conclusion from their research is that countries (at least more or less democratic countries) with high wealth and income inequality tend to have lower per capita growth. In the last section of their article Alesina and Rodrik provide some empirical evidence (cross-country regression analysis) to support this conclusion. It is the combination of a political mechanism and an economic mechanism that gives the negative correlation between inequality and growth. The political mechanism is that high inequality leads to political pressure for some form of progressive taxation. The economic mechanism is that a rise in the marginal tax rate distorts saving and investment incentives and thence leads to a lower

growth rate. In models where the diminishing marginal productivity of capital is not fully offset by other factors, and the growth effect is permanent. A thorough empirical investigation would test these two mechanisms separately. Alesina and Rodrik do not do this, but Perotti (1996) does. Perotti concludes that the evidence does not support it. Perotti rather emphasizes social and political instability as hampering growth. All in all, the relationship between inequality and growth is a disputed topic.

Kristine J. Forbes (2000) challenged and rejected the current belief that income inequality has a negative effect on economic growth. In her paper, she used an improved set of inequality statistics not only to reduce measurement error, but also to utilize panel estimation to control for time invariant omitted variables. She estimated how changes in inequality are correlated with changes in growth within a given country. Results suggest that in the short and medium term, an increase in a country's level of income inequality has a significant positive relationship with subsequent economic growth. This relationship is highly robust across samples, variable definitions, and model specifications, with the one caveat that it may not apply to very poor countries.

However, this paper's finding of a positive relationship between inequality and growth has disappointing implications. Countries may face a trade-off between reducing inequality and improving growth performance. It would be too reckless, to draw any definitive policy conclusions. Sample selection, endogeneity, and serial correlation could still influence estimates. Not enough data are available to accurately measure this relationship for very poor countries. Although the data on inequality are markedly improved, measurement error may still be a problem, and although panel estimation adjusts for time-invariant omitted variables, it does not control for omitted variables that vary across time. Both of these problems could be aggravated by the use of panel estimation. Moreover, these estimates do not directly contradict the previously reported negative relationship between inequality and growth. Therefore, their paper suggests the need for not only a further careful reassessment of the reduced-form relationship between these two variables, but also further theoretical and empirical work evaluating the channels through which inequality, growth, and any other related variables.

Torsten Persson and Guido Tabellini (1994) suggest too, that inequality is harmful for growth. In societies where distributional conflict is important, political decisions produce economic policies that tax investment and growth promoting activities so as to redistribute income. The authors formulated a simple general-equilibrium model that relates equilibrium growth to income inequality and political institutions. They confronted the model's empirical implications through two sets of data; the first is an historical panel of nine currently developed countries: USA and 8 European countries. The second sample contains postwar evidence from a broad cross section of countries, both developed and less developed. As politico-economic equilibrium is defined a set of private economic decisions such that: (i) the economic decisions of all citizens are optimal, given the policy, and markets clear; (ii) the policy cannot be defeated by any alternative in a majority vote among the citizens in the enfranchised section of the population.

The model's politico-economic equilibrium determines a sequence of growth rates as a function of parameters and initial conditions. This work largely revolves around the so-called Kuznets curve: the hypothesis that income inequality first increases and then decreases with development. The Kuznets curve remains a controversial concept both theoretically and empirically. The work on the Kuznets curve, however, deals with the question of how the level of income affects income distribution, while the work of Persson and Tabellini instead addresses the question of how income distribution affects the



change in income. Their theories, as well as their empirical tests, remain valid both in the presence and in the absence of a Kuznets curve.

Many countries in the sample of the Persson and Tabellini have nondemocratic political institutions. In these countries there may be little relationship between income inequality in the population at large and the redistributive preferences of the government. The authors illustrated that growth is inversely related to inequality in a democracy, but not necessarily in a dictatorship. The nature of the political regime, on the other hand, should not matter too much for how growth relates to the other variables that mainly control for the features of the economy. Democracies on average grow faster and have a higher initial level of per capita income, even though there are some very poor countries in this group. The findings are particularly important, because they suggest that the effect of equality on growth may indeed operate through a political mechanism. Generally democratic countries have a much higher average GDP per capita than nondemocratic countries. Equality affects growth by promoting investment and this in effect is present only in the democracies. Inequality on the other hand is harmful for growth because it leads to policies that do not protect property rights and do not allow full private appropriation of returns of investment.

Gilles Saint-Paul and Thierry Verdier (1992), explored whether redistribution and democratization of a society, produce adverse effects on growth. Their findings suggest that redistribution and democratization do not necessarily have these effects on growth. They created a model, based on Becker and Tomes (1979) and Aghion and Bolton (1990), where the main channel of redistribution is public education. From a political economy aspect public education has the two following essential features: first it may be an instrument of intra-generational redistribution and therefore is an issue of redistributive politics. Secondly, it is an activity that creates human capital and therefore promotes long-run growth. In their model, education is equally provided and financed by proportional taxation on labor income. The agents of this type of society are interested in obtaining education, since education will increase their human capital compared to the previous generation. This would therefore imply that more public education would encourage growth. The authors focused to present a simple political economy model of growth and development where distribution and growth are two interrelated endogenous variables. Public education affects growth, through the political process and is depended on the shape of income distribution. Income distribution on the other hand is affected by the equalizing effects of public education through the increase of human capital through generations. The dynamics of the economy will therefore have two state variables: income distribution and average stock of human capital.

The authors resulted that for a given structure of property rights countries starting with more inequality may produce steady growth performance. This economy will have an equal income distribution and a declined tax rate that will be following the eventually declined rate of growth. This would occur due to the fact that as the distribution of human capital becomes more equal through public education, the median voter acquires increased human capital and thus becomes richer; his children therefore will benefit less from public education compared to the inherited human capital. Hence, the level of education, produced by the political equilibrium will gradually be declining. In other words, in democratic societies increased inequalities will foster growth provided that they support public education.

So as to justify their models results, the authors highlighted the course of the western democratic societies, in the last two centuries. Western democracies, characterized by inequalities and wide range of property rights, have enjoyed sustained growth. Democratization thus proved that it fosters growth and contributes in maintaining political support for education.

David Romer (2003) examined the effects of correlated errors in individuals' beliefs on political decisions under different institutional arrangements. Individual's errors in assessing the political policies can be harmful for the entire economy, since there are political decisions that affect resource allocation, trade, environmental regulation, tax policies and budget deficits. The prevailing view of economists suggests that political outcomes that appear to reduce welfare stem not from strategic interactions, but from ignorance. Based on this assumption, trade barriers, command-and-control approaches to environmental regulation, and high deficits are so prevalent in part because voters and politicians do not understand the efficiency benefits of free trade, the distortions and rent-seeking created by regulation, and the long-run benefits of government saving. This paper develops a simple model that illustrates this possibility, and investigates how such correlated errors in belief affect political decisions under different institutions. David Romer introduced the term of "misconception", so as to correlate the individuals' rational errors in assessing the likely consequences of the proposed policy and distinguished it from any type of bias.

According to the author, each individual has little impact on political outcomes, therefore individuals' incentives to gather and evaluate information about alternative policies or candidates are small. In the same view, individuals have only small incentives to determine what types of institutions produce desirable outcomes in the face of the possibility of misconceptions, and to support the adoption of such institutions. Hence, it is plausible that in the political arena, individuals take existing institutions as given and support the candidates or policies that a superficial examination of the evidence suggests will produce the more desirable outcomes. As a result, their errors may be especially large, and it is particularly likely that they will not take corrective action even if misconceptions have large effects.

There is also the case when individuals do not have perfect information about the utility the proposed change would provide but instead they are recipients of signals, sent by the government. One way in which a government can send signals is to engage in costly acts of public education or persuasion regarding the nature of good policy. Romer forcefully highlighted that education is very important when bad policy is caused by misconceptions. If the source of inefficiency in a model is held to be unrelated to misconceptions then clearly education would be irrelevant because the voters are already fully informed. Individuals who are better informed or evaluate better the signals (or information) are more likely to vote. A vote however can only slightly affect an outcome and this in turn discourages the voters to get more informed.

We are particularly interested on the author's analysis regarding the effects of various alternative institutions. He found that letting decisions be made by an elected representative rather than by a referendum does not improve outcomes even if candidates for office have been exposed to more information than the average voter has. The reason is that even among those who have been exposed to information, there are always a number of candidates who support the policies that are most popular to the voters, and it is these individuals who are elected. The encouraging finding was that exposing elected representatives to information after their election improves political outcomes. Thus, the possibility of providing representatives with information gives representative democracy an advantage over government by referendum.

If individuals had more influence, their incentives to acquire information would be greater. In order to increase some individuals' influence, you need to reduce others'. The only way to make some individuals more influential is to make the distribution of political power unequal. Romer illustrated how concentration of power affects political decisions by examining the extreme case where decisions are made by a single exogenously chosen individual. Such an arrangement could correspond to dictatorship, hereditary monarchy, or decision making by an individual chosen by lot. Romer's goal was not to provide a basis for a complete analysis of concentration of power and dictatorship. He focused on the baseline case where decision makers act to maximize their interests and ignore the fact that the policy affects all individuals. By making this assumption, the author understated decision makers' incentives to acquire information that in turn understated the benefits of concentration of power.

His analysis identified one advantage and two disadvantages of dictatorship; the advantage is that a sole decision-maker has a greater incentive to acquire information than individuals in a democracy do. That is, according to Romer, due to the fact that this increase in information tends to improve political decisions. On the other hand, the first disadvantage of dictatorship is that when a single individual decides whether a policy is to be adopted, his or her idiosyncratic views of the policy's merits affect the decision. The findings show that the reduction in the number of decision makers tends to worsen political decisions. The second disadvantage of dictatorship is that it eliminates the utility benefits of political participation. High voter participation is interpreted as if individuals' participation affects their utility not just through its impact on outcomes, but also directly. The switch to dictatorship eliminates this source of utility and thus changes expected welfare. The consequences of a system where the number of decision makers is finite but not necessarily equal to one (oligarchy) are similar to those of dictatorship.

## 2.4 Institutions and Regulations

### *Law & Corruption*

The importance of good governance that facilitates profit driven market directed commerce is an important part of the research by Timothy Frye and Andrei Shleifer (1997). The authors examined the role of governance factors in economic development and prosperity in specific time periods and countries. In particular, they studied the different relationships between the government and business in East European economies of Poland and Russia that went through radical reforms packages, such as trade liberalization, macroeconomic stabilization and large privatization in the 90's. These countries were selected due to the similarities of the radical economic reforms they took in the same period as well as the growing private business. The authors describe three perspectives on the role and function of government in the market place. These three perspectives are labeled: (1) The Invisible Hand; (2) The Helping Hand; and (3) The Grabbing Hand.

Under the invisible-hand model, the government is well-organized, generally uncorrupt, and relatively benevolent. It restricts itself to providing basic public goods, such as contract enforcement, law and order, and some regulations, and it leaves most allocative decisions to the private sector. Many countries in Eastern Europe, particularly those hoping to join the European Community have looked to this model in their reforms. Adam Smith used the metaphor of an invisible hand to represent the instincts of human nature that direct behavior. Moderated by self-control and guided by proper institutional incentives, actions grounded in instincts can be shown to generate a beneficial social order even if not intended. Smith's concept, however, has been diluted and distorted over time through extension and misuse. Common misperceptions are that Smith unconditionally endorsed laissez-faire markets, selfish individualism. In the two alternative models, government plays a larger role.

Under the helping-hand model, commonly invoked in discussions of China, bureaucrats are intimately involved in promoting private economic activity: they support some firms and kill off others, pursue industrial policy, and often have close economic and family ties to entrepreneurs. The legal framework plays a limited role in this model, because bureaucrats adjudicate most disputes. Bureaucrats are corrupt, but corruption is relatively limited and organized. An extreme version of this model, the iron-hand model, is found in Southeast Asian countries like Korea and Singapore.

In transition economies, however, the helping hand model has been less prevalent.

In the final, grabbing-hand, model, government is just as interventionist, but much less organized, than in the helping-hand model. The government consists of a large number of substantially independent bureaucrats pursuing their own agendas; including taking bribes. While these bureaucrats adopt the helping hand rhetoric, in reality they are scarcely guided by a unified public-policy stance, and they remain largely independent of courts, capable of imposing their will in commercial disputes, and empowered to impose on business a variety of predatory regulations. In extreme cases where the government becomes sufficiently disorganized, it loses its ability to ensure law and order and to provide basic legal protections. As a consequence, contracts become privately enforced.

The authors focused on the legal and regulatory environments of Moscow and Warsaw so as to understand which of the three “ideal government types” match most with the local governments. Under the invisible-hand model, courts are effective in resolving disputes between private parties as well as between them and the government, and there is no room for protection rackets. Under the helping-hand model, courts play a smaller role, especially in disputes with the government, but the government is powerful enough to displace the rackets. Under the grabbing hand model, government is ineffective in providing basic services, courts are ineffective in resolving disputes and in the extreme, and agreements are enforced privately. Businesspeople in both countries have significant skepticism about the independence and effectiveness of courts in disputes with the government. These data make clear that private enforcement of law and order plays a greater role in Russia than in Poland. Since the respondents in both cities are equally skeptical about courts, the likely reason for the higher incidence of protection rackets in Russia is the greater failure of simple police protection (order as opposed to law) in Russia. Additionally it seems that both local governments have no influence on, or help small business. At least in their stance toward small business, both countries are very different from the East Asian model. The author’s research pointed that there is the greater burden of corruption and regulation in Moscow than in Warsaw.

Overall, their evidence indicates that shop owners in neither country are particularly keen on using courts, though the Russian respondents have a greater need for them. Private protection on the other hand is used much more extensively in Russia than in Poland. Regulations in Russia appear to be a good deal more oppressive to business than they are in Poland. This is reflected in some measures of regulation, in the greater legal vulnerability that Russian respondents feel, and in the greater burden of corruption in Moscow. The more predatory stance of Moscow's government toward business is consistent with the greater dynamism of such business in Warsaw.

The authors concluded that neither government is an "ideal type" but illustrated that there is relatively greater relevance of the invisible-hand model to describe Poland, and of the grabbing-hand model to describe Russia. The law-enforcement and regulatory evidence in particular proved that Polish local governments are more supportive of business. This evidence is consistent with the greater dynamic shown by small business in Poland than in Russia despite similar economic reforms. Evidently, so as to understand transition experiences in the economic sector, besides the radical reforms adopted by a country, one needs to study the regulatory stance of the national and local governments towards business.

In my view, radical reforms such as privatization for example were obviously not effective in the absence of institutions that protect property rights and provide a modern commercial law framework. However, without property owners and a business class to support them, it was politically impossible to establish institutions to protect property rights and facilitate commerce. In Russia, unfortunately, the institutions that facilitate market commerce are ineffective, and enormous control over economic life has been left in the hands of local politicians. Economic restructuring has been far greater in transition nations like Poland - where new managers and politicians have taken over - than in Russia and similar transition nations where communist era managers and politicians remain. The authors convincingly assert that it is this failure to radically replace the old communist politicians and institutions with newer market friendly politicians and institutions. In Poland local politicians are dependent on their local tax base, and so have considerable incentive to facilitate local economic growth. In Russia, new businesses require multiple permits, inspections, and registrations that often can only be obtained by bribing local

officials. Private racketeers also take a cut. Smothering taxes and regulations drive business "underground." There is a huge gray market, which increases the need to rely on criminals rather than on the police for protection of property rights. This also makes it difficult to discern the actual extent of economic progress. In Poland, these factors are not a problem, and competition flourishes. Competition is far less vigorous in Russia.

Both nations offer only problematic judicial recourse. Corruption is a major obstacle to economic development. Trying to find and provide incentives for honest bureaucrats is difficult and slow. But deregulation to eliminate opportunities for corruption is much faster and more effective. Deregulation and liberalization are far more important for fighting corruption than the improvement of incentives and personnel selection inside the bureaucracy. Where regulation is essential or unavoidable, it should be designed to give individual bureaucrats as little discretion as possible.

Andrei Shleifer and Robert W. Vishny (1993), examined the determinants and effects of corruption. Their main propositions are that (1) the structure of government institutions and political process are important for determining level of corruption; weak governments experience high corruption levels and (2) the illegality of corruption & need for secrecy make it more distortionary than taxation. "An important reason why many of these permits and regulations exist is probably to give officials the power to deny them and to collect bribes in return for providing the permits." [De Soto, 1989].

Shleifer and Vishny defined corruption as the sale by government officials of government property for personal gain. They distinguish between corruption without theft (which always leads to higher all-in prices) and corruption with theft (which may actually lower prices below the official level) and studied their on the consequences of corruption for resource allocation. In corruption-without-theft, government agents demand a bribe above any required fees (so the government still receives its fees). In corruption-with-theft, government agencies demand a bribe but do not give the government its fees (as with customs agents who take a bribe instead of collecting customs fees). Both buyers and sellers benefit from corruption-with-theft (since government services can be procured more cheaply), so one of the first steps in ending corruption is developing adequate accounting systems to prevent the theft.

Previous literature identified the reasons for corruption being desirable and the authors examined the reasons why corruption spreads and is more costly than taxation. A bureaucrat might be more helpful when paid directly and the entrepreneurs on the other hand through bribe overcome rigid regulations. Andrei Shleifer and Robert W. Vishny analysis suggested that corruption spreads due to competition among the officials and among the consumers. Market forces at work that create profit maximizing incentives of government officials; those who would pay most to be an official get to be an official and those who can pay the most are those that can collect the most bribes, i.e. maximal bribes collected. Buyers want to be more competitive in the market. When there is corruption without theft, buyers can reduce the cost of goods that officials sell through bribery.

The agency organization has a major role in corruption. If there is just one agency selling different complementary goods, a joint monopolist, then it can strategize so that the low price of one good spurs the demand for a complementary good. The agency extracts greater rents this way. When different agencies with different jurisdictions operate independently when selling complementary goods, each agency will sell its respective good at the monopoly price. The cost becomes exorbitant for the buyer who must buy all complementary goods in order to operate and fewer goods will be purchased in comparison to when there is a joint monopolist. When agencies have overlapping jurisdictions

(redundancy), then there is competition and there will be minimal to no corruption because buyers can just find the agency that charges the lowest price.

Andrei Shleifer and Robert W. Vishny explained the reasons why corruption is costly for governments; 2 two broad reasons justified the authors' proposition: Weak central government and the distortions entailed by the necessary secrecy of corruption. When the central government can't prevent agencies from claiming new turf, they'll all want a claim on every transaction so that they can get more revenue. There is very little foreign investment in Russia because you have to bribe "every agency involved in foreign investment, including the foreign investment office, the relevant industrial ministry, the finance ministry, the executive branch of the local government, the legislative branch, the central bank, the state property bureau, and so on".

The demands of secrecy can shift a country's investments away from the highest value projects, such as health and education, into potentially useless projects, such as defense and infrastructure, if the latter offer better opportunities for secret corruption. The demands of secrecy can also cause leaders of a country to maintain monopolies, to prevent entry, and to discourage innovation by outsiders if expanding the ranks of the elite can expose existing corruption practices. Such distortions from corruption can discourage useful investment and growth. This suggests why many poor countries would rather spend money on defense and infrastructure (where corruption opportunities are plentiful) than education and health (although NYC seems to do OK with education corruption).

A first step in reducing corruption may be to create an accounting system that limits theft, giving buyers incentive to reduce corruption. A second one is to penalizing officials. If probability of detection and penalty are independent of bribe size and number of people who pay, there is no change (unless expected penalty so large that corruption no longer pays). If expected penalty rises with bribe size, will naturally reduce size and raise output. If with number of bribers, then limit supply and charge larger bribe.

As mentioned above, corruption can have adverse effects on a country's growth. A country's legal environment is therefore a major factor of a well-functioning capital market. Generally speaking, legal rules are expected to be more favorable to growth if property rights are enforced and transaction costs are low. There is a growing body of work suggests that cross-country differences in legal origin help explain cross-country differences in financial development.

La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1996), henceforth LLSV, distinguish four legal traditions: British common law, French civil law, German civil law, and Scandinavian civil law. Common law is the legal tradition of England and its former colonies, including the United States. One of its main characteristics is that it is case-based: appellate judges establish precedents by solving concrete legal cases. The civil law tradition, instead, originates in Roman law and generally relies more on formal legislation and less on case-based evolution. Among the three types of civil law distinguished by the authors – French, German, and Scandinavian – the French civil-law tradition is most wide spread. It is found in large parts of continental Europe, Latin America, most of Asia, and French colonies in Africa. This four-part classification scheme (common law versus the three types of civil law) has become standard in the law-and-finance literature. LLSV showed that whether a country's Commercial/Company law is based on British, French, German, or Scandinavian legal origins is important for explaining the country's laws on creditor rights, shareholder rights, any private property rights as well as the country's level of bank and stock market development.

Based on this classification of legal systems, LLSV attempt to show empirically that common law leads to better economic outcomes than civil law. The empirical analyses exploit that, through colonization and later also through imitation, especially in transition economies, legal traditions spread beyond Europe, allowing the authors to employ cross-country comparisons around the world. In other words, the authors test whether countries with different legal traditions have systematically different finance and growth outcomes. To perform the empirical analyses, the authors compile an impressive data set of legal rules and financial outcomes across common-law and civil-law jurisdictions. Legal origin is used as an econometric instrument, i.e., an empirical technique to causally identify how amenable different legal systems are to economic growth and financial development. Their sample covers 49 different countries, though it does not include any socialist or transition countries. They include only countries that have at least five domestic, non-financial, publicly traded firms with no government ownership. Their final sample contains twenty-one countries from the French civil-law tradition, six countries from the German civil-law tradition, four from the Scandinavian civil-law tradition, and eighteen from the common-law tradition.

In La Porta et al. (1998) relate the legal traditions of those countries to one specific aspect of financial development: investor protection. The quality of investor protection is likely to determine how smoothly a financial market is working in funding growth. If the rights of investors are not enforced, managers can divert the return of corporate investments into their own pockets, and investors will be unwilling to finance such investments in the first place. Note that relating legal origin to investor protection provides only for a very indirect test of the relationship between law and financial or economic growth. A more direct test would relate the different legal traditions directly to growth outcomes, e.g., to annual GDP growth across countries-La Porta et al. never provide such direct evidence.

The authors use several measures of investor protection. For shareholders, they measure how much and how easily shareholders can influence corporate decisions and obtain a share of the company's cash flow, e.g., through voting rights and minorities protection. For creditors, they measure the rights creditors have when the borrowing company becomes illiquid and is reorganized or is sold. In both cases, they find that investors are best protected in common-law countries and worst in French civil-law countries. From statistics and correlations, the authors conclude that legal origin explains both weak shareholder and creditor rights. The quality of legal protection of shareholders helps determine ownership concentration, accounting for the higher concentration of ownership in French –civil-law countries. The results suggest that heavily concentrated ownership is an adaptation to poor legal protection of investors in a corporate governance system, since only large shareholders can hope to receive a return on their investment.

Other substitute mechanisms are statutory and mandatory dividends or legal reserve requirements in the case of remedial rules. Countries with civil law were documented to display such adaptive mechanisms. The reasons why ownership in such countries is more concentrated are (1)the shareholders need to own more capital and exercise their control rights so as to avoid being expropriated by the managers and (2) low demand for corporate shares by minority investors. The findings also suggest that larger economies have a lower ownership concentration and more unequal countries have a higher ownership concentration.

Another interesting conclusion is- besides the fact that law enforcement differs a great deal around the world, the importance of the quality law enforcement. German-civil-law and Scandinavian countries have the best quality of law enforcement. In countries with common law, law enforcement is strong and



in French-civil-law countries, weak. Poor enforcement and accounting standards aggravate, rather than cure, the difficulties faced by the investors in the French-civil-law countries.

The main result is that countries with Roman legal origin have been found to have less developed financial markets. The literature commonly interprets this finding as showing that the codified legal systems that build on Roman origin are too rigid to accommodate financial and economic development. But, while it is intuitive that a reliable and efficient legal system fosters economic growth, it is difficult to prove that there is a causal effect. Moreover, even if the thesis is true it is difficult to prove which types of legal environments are more amenable to economic growth. The big hurdle in the empirical analysis is the “endogeneity” of economics and law: The legal environment of a country is endogenous to its growth path. Suppose, for example, that a country makes a political choice in favor of a bank-financed economy and then adopt laws that strengthen banks’ position as creditors. The resulting correlation between laws in favor of creditor protection and growth might reflect the political choice rather than a causal effect of laws since the country’s growth path might predominantly be determined by the political decision to create a bank-financed economy. Hence, it is difficult to establish a causal effect of the legal environment on economic growth.

Paul H. Rubin (1997), examined whether the common law is economically efficient in a society and its causes. He states that the efficiency of the common law and the decision to use the courts to settle a dispute – are related. When we refer to the common’s law efficiency, we mean its capability to be maintained as it is or to be changed in a better form. The author analyzed the framework (torts, property, and contract law) that pressures efficiency. The crucial point was the interest which the parties have in decisions as precedents. Thus, some legal cases involved individuals with a one-time interest in the outcome, while other cases involved corporate bodies of some sort- government agencies, labor unions, firms and insurance companies. Such organizations would have interest in legal cases as precedents as well as interests as litigants. In analyzing the relation between efficiency and litigation, three basic situations were considered:

A. Both parties interested in Precedent.

If both parties to a certain type of legal dispute have a substantial interest in future cases of this sort, then precedents will evolve towards efficiency. In overall, efficient rules will be maintained, and inefficient rules litigated until overturned.

B. Only one party interested in Precedent.

If only one party to a dispute is interested in future cases of this sort, there will be pressure for precedents to evolve in favor of that party which does have a stake in future cases, whether or not this is the efficient solution.

C. No interest in Precedent.

If neither party is interested in precedents, the current rule will persist, whether it is efficient or inefficient. In other words, neither will force the use of courts. All such cases will be settled on the basis of the current rule, whatever it might be. Since cases will not go to court, there will be no pressure to change this rule.

In addition, the author examined the efficiency regarding bribery. Bribery occurs for the case A, where both parties are interested in decisions. There is no relationship between court costs and bribery costs. The decision to bribe or not is taken before the accident occurs. While the decision to go to court is made after an accident has happened. Settlement costs (for an out of court dispute settlement) are

ignored on the study of the examiner. Also, once a decision is reached in a case, the decision is a public good. It affects all parties of type A and B. Furthermore, the author referred to the statute law and its inefficiency. He concluded that the efficiency of the common law can be explained through his model, and if decisions were made randomly, there would definitely be a movement in the direction of efficient laws.

In their previous research (mentioned earlier) “LAW AND FINANCE” (1996), La Porta, Lopes-de-Silanes, Shleifer and Vichny invariably found that common law countries had “better” laws than civil law countries, particularly those of the French legal family. In particular, it appeared that common law countries were much better at protecting investors, and hence developed larger and more liquid financial markets. In this research LLS (2008) provided a synthesis of the academic debate that has taken place over the last ten years. They summarize that historical origin of a country’s laws is highly correlated with a broad range of its legal rules and regulations and attempt a unified interpretation. They also examined the effects of legal origins on resource allocation and economic growth. Furthermore they addressed a broad range of objections to the empirical claim that legal origins matter.

The paper’s survey main contribution is its articulation of a “unified interpretation” of the empirical results. LLS “develop the Legal Origin Theory, namely that legal origins represent fundamentally different strategies of social control of economic life.” A big advantage of this theory is that it can explain why legal origins also seem to matter in areas dominated by statutes, such as military conscription or the regulation of entry of new businesses. These subjects had eluded previous attempts at explanation; earlier hypotheses had usually focused on the differences between judicial and legislative law-making.

The “Legal Origins Theory” predicts differences in legal rules as found in the data collected by LLS and others. But the theory seems to locate the root cause of these differences in the cultural and political inclinations of countries’ populations or elites rather than in institutional differences (even though LLS argue vigorously against competing cultural and political explanations in the paper). Among the many questions raised by the theory, then, is how these inclinations could have been so profoundly influenced by the identity of the colonizing power—which is ultimately what legal origins refers to (where a country chose its legal family, as in the case of Japan, legal origin is endogenous and hence does not have explanatory power). Likewise, one might ask how these inclinations could be so stable over time, especially through the many and often profound changes in local political climate.

Studies of legal change promise some insight into these questions. Many researches on the matter concluded that the difference between legal origins is neither a recent phenomenon nor about to disappear, at least in civil procedure for the cases they study. At the same time, LLS explicitly recognized that French civil procedure in these cases was less “formalist” than English civil procedure, at least until the late 1960s and throughout the 150 years before that.

This seems to be at odds with LLS’s theory that differences in legal origins originated in England and France and spread from there to the rest of the world, mainly by colonization. After all, the main wave of colonization happened in the 19th century, and de-colonization was largely complete by the late 1960s—and during these periods France was less “formalist” than England by LLS’s measure. Moreover, if “formalism” is a consequence of “fundamentally different strategies of social control of economic life,” why did England and France flip positions on “formalism” between 1950 and 2000? Apparently,

LLS do not believe that England and France changed their “fundamentally different strategies of social control of economic life” around 1970. Instead, they argue that the change in the English and French procedure was a reaction to a perceived “crisis” of litigation, and that the different strategies manifested themselves in the means chosen for facing that crisis—centralization in France, decentralization in England.

Legal origins influence legal rules and regulations, which in turn have substantial impact on important economic outcomes—from financial development, to unemployment, to investment and entry, to the size of unofficial economy, to international trade. Much of this evidence suggests that common law is associated with better economic outcomes than French civil law. The evidence also shows that legal origins influence patterns of growth within industries, but it is less clear that legal origins predict aggregate growth. The last finding resonates with the obvious observation made by LLSV (1998) that countries like France and Belgium achieved high living standards despite their legal origin. One possible explanation of the aggregate growth evidence is that civil law countries have found compensating mechanisms to overcome the baggage of their legal tradition in the long run.

Another possibility is that the last forty years have been unrepresentative and that, in the long run, there are periods that advantage civil law regimes (such as state-led growth). Common law countries succeed in finance because their regulatory strategies seek to sustain markets rather than replace them. The statutory requirements of disclosure originate in the common law of fiduciary relationships. Market forces on their own, are not strong enough, and contract claims not cheap enough to pursue, to protect investors from being cheated. A regulatory framework that offers and enforces such protection, and makes it easier for investors to seek legal remedies to rectify the wrongs even when doing so relies on public action, allows more extensive financial contracting. The form of statutory protection of investors in common law countries, as compared to civil law countries, is consistent with Legal Origins

As noted by LLSV (1998), English common law countries have laws that emphasize the rights of creditors to a greater degree than the French, German, and Scandinavian countries. On average, French civil law countries protect creditors the least. In terms of law enforcement, countries with a French legal heritage have, on average, the lowest quality of law enforcement, while countries with German and Scandinavian legal traditions tend to be the best at enforcing laws and contracts.

Ross Levine research complements LLSV findings by examining the relationship between legal systems and banking sector development. He identified the exogenous component of banking development and studied the association of the component of banking development—defined by the legal system, with economic development (growth, capital accumulation and productivity improvements) in a cross section of countries over the period 1976-1993. By “banking development” Levine defines credit allocated by commercial and other deposit-taking banks to the private sector divided by GDP.

The data show that countries with legal systems that give a high priority to banks receiving the full present value of their claims against firms have better-developed banks than countries where the legal codes do not emphasize the rights of creditors. Furthermore, enforcing legal codes is as important as the legal codes themselves. The data indicate that countries that effectively enforce compliance with laws tend to have better-developed banks than countries where enforcement is lax. Finally, the data also indicate that countries with a German legal system tend to have better-developed banks, even after controlling for the level of economic development. Hence, the legal system influences banking development in a fundamental way.

The legal environment influences the banking sector and this component of banking-sector development is strongly linked with long-run rates of economic growth. In respect to the association of the exogenous component of banking development, defined by the legal environment-with economic growth, the findings reflect a positive link between them; the legal environment influences the banking sector and this component of banking-sector development is strongly linked with long-run rates of economic growth, capital accumulation and productivity growth.

The data also confirm that financial development is a good predictor of economic growth – a very contradictory issue of literature and scholars. This finding was robust to changes in the conditioning information set and to alterations in the instrumental variables, but creates policy implications. Although changing legal codes and improving the efficiency with which legal systems enforce laws and contracts is difficult, the economic returns of improving the legal environment appear very large. For many countries, these reforms could begin at the level of regulation and implementation. Nevertheless, corporate reorganization procedures could be improved to reduce delays and uncertainty, so that bankers feel greater confidence about receiving the full present value of their loans. Therefore, this paper's results robust the crucial role that legal reforms can have in stimulating economic development by improving the functioning of the banking system.

## **2.5. The Gambling Industry**

The gambling industry has always been viewed as different from other sectors of the economy. Unlike other industries in which the market is the principal determinant of supply and demand, government decisions have quite largely determined the size and form of the legalized gambling sector all over the world. One of the biggest gambling industry markets, the United States has legalized gambling activity in some form- in every state, with the exception of Hawaii and Utah, and has declared itself the monopolistic provider. In other forms of gambling, federal, state and local governments determine the kinds of gambling permitted as well as the number, location and size of establishments allowed. Their form however has spread in various countries all over the world with a diverse mix of strategic approaches. The three largest industries in the legalized gambling sector are: commercial casinos, Native American casinos (in the case of the US) and state lotteries. The form of legal gambling that is most associated with growth strategy and a tourism strategy, is casino gaming. Other popular forms of gambling, such as lotteries, wagering on racing, charitable gambling, and non-casino located gaming devices-cater mainly to local markets and therefore have little direct impact on tourism or tourism development. On the other hand, famous historic casino centers-such as Las Vegas, Monte Carlo, Sun City and Macao-have attracted visitors from neighboring or distant states or countries as their main source of business. Indeed, Las Vegas, which in 1997 attracted over 30 million visitors per year to its 105,000 hotel rooms and myriad casino and entertainment facilities, had become the ideal tourism destination resort, centered around casinos.

As gambling continues to grow in popularity and prevalence, and new forms of gaming are introduced and expanded, there is much debate about the cost and benefits of this sector of the economy. Many countries have often viewed the economic dimension that has been the driving force behind permitting most forms of gambling, especially casinos. However, the desired outcomes of economic development

and tourism stimulation have not been the same all over the world. In order for significant economic stimulation to occur, a large proportion of customers must come from outside the region in which the casinos are located. Alternatively, casino facilities that cater primarily to locals will not have a high impact on growth unless they heavily draw business from local residents who would otherwise leave the region in order to gamble.

Generally, most customers of urban casinos have not been tourists. Many new casino jurisdictions in the United States provide "casinos of convenience" which cater mainly to residents of the area where the casinos are located. In such cases, there has been little net economic stimulation to the area, though casinos themselves have been substantial revenue generators. The same pattern is observed with casinos in most other countries that have recently authorized casinos. Permitted gambling has been embraced more for the ancillary economic benefits it creates rather than for the customer demands that it fulfils. This perspective has been challenged from other researchers, as gambling becomes more localized and fewer tourists oriented. Furthermore, new technologies will increasingly bring gambling into home—through internet, through interactive television wagering systems—whether or not such activities are legally sanctioned. This could further erode gambling's role in tourism and increase public concerns about the permitted gambling.

Thus, if permitted gambling continues to expand in society, then the role of gaming in tourism will most likely decline unless gambling, specially casino-style, becomes part of a wider range of complementary entertainment offerings. This is a formula that has been well developed by Las Vegas, but not in many other countries. Usually, casinos become tourism generators primarily because of prohibitions of gambling in places where people live. As those prohibitions disappear, then most of tourism-based gambling will diminish as well.

Many countries have approved legalized gambling activities, primarily because they see it as a valid strategy for economic development. The greatest perceived benefits are increased employment, greater tax revenue to state and local governments, and growth in local retail sales. Increasing fiscal pressure on state budgets, the fear of lost revenue to casinos in neighboring states-countries and a more favorable public attitude regarding casino gambling have all led to its acceptance, according to the National Gambling Impact Study Commission's Final Report. However, to become legitimized, gambling must change from being perceived by many as a social problem to an ethical neutral form of entertainment, or even a positive force for economic development. Governments usually help in this transformation by openly promoting various forms of the state gambling such as lotteries and number games.

There is some confusion surrounding the question of how many new jobs and how much government revenue gambling has created. According to Rockefeller Institute, from a fiscal perspective, state-sponsored gambling resembles a blue-chip stock, generating large amounts of cash but no longer promising dramatic growth. Researchers from the same institute speculated that growth mitigation in gambling revenue over time might be partly explained by negative economic conditions.

Most analysts claim that estimates of the benefits of gambling are grossly overestimated. In recent economic history, legalized gambling activities have been directly and indirectly subsidized by the taxpayers. The field research throughout the nation indicates that for every dollar the legalized gambling interests indicate is being contributed in taxes, it usually costs the taxpayers at least 3 dollars-- and higher numbers have been calculated (Politzer, Morrow and Leavey 1981). These costs to taxpayers are reflected in infrastructure costs, relatively high regulatory costs, expenses to the criminal justice system,

and large social-welfare costs. Accordingly, several state legislators (e.g., in South Dakota) have called for at least partially internalizing these external costs by taxing all legalized gambling activities at a straight 50 percent tax rate.

Furthermore, as a matter of good public policy, state officials and legislators in some states in US, have proposed legislation to prohibit contributions by legalized gambling interests to politicians and political campaigns. In the case of casinos, some might they already had such prohibitions, but other states had neglected to enact similar prohibitions. Political scientists have raised concerns that the newly developing constituencies in the licensed gambling industry are becoming so widespread that the industry can dictate economic, social, and tax policies. For example, the industry drafted a state constitutional referendum in Florida US which would have mandated the introduction of casinos into communities even if a particular community voted unanimously against a casino (Dyckman 1994). The industry spent approximately \$3 million to get the Florida referendum on the ballot and \$6.5 million to campaign for the casinos- more than the combined gubernatorial campaigns of Governor Lawton Chiles and his challenger Jeb Bush (Lavelle 1994). In these contexts, an article in the Columbia Journalism Review cautions the news media "flat out ask [experts, academics, and even other reporters] if they make money off the industry" (Simurda 1994).

Gambling proponents commonly point to a great economic benefit, the lower local unemployment rate after a casino is introduced as evidence that gambling through casinos improve local employment. Because the local unemployment rate dropped after the casino was introduced, it must be that the casino that helped lowers the local unemployment rate. However, the change in the unemployment rate in the local area should be compared with the change in the statewide unemployment rate during the same period. If these changes are about the same, then it is possible that all of the employment growth in the casino area is the result of the natural course of the business cycle (economic changes in other sectors of the economy) and not the introduction of the casino. If the drop in unemployment is higher in the local area than statewide after the casino is introduced, then one could argue that the casino has indeed reduced local unemployment.

At any of the cases above, local changes in unemployment should be compared with statewide unemployment changes. Other factors, such as population changes and local business conditions, should also be considered when comparing local unemployment rates before and after a casino opens. Just looking at differences in local unemployment rates over time without an understanding of population dynamics and the statewide business cycle can paint a false picture as to the employment benefits of casinos.

## 2.6 Impacts of Gambling on Society

In recent years there has been a great deal of debate about benefits and costs of legalized gambling activity. Whatever economic benefits gambling industry provide, be it growth, additional tax revenue or just an alternative choice of entertainment for consumers, there is a potential downside of legalized gambling. The types of negative social impacts that have raised the greatest concerns have been linkages between casinos and casino style gambling and organized crime; neighbourhood crime and other crimes against property, such as burglaries, break-ins; and family-related crimes and disruptions, such as child abuse, spousal abuse, suicides and divorce. Gambling can negatively affect significant areas of a person's life, including their health, employment, finances, and interpersonal relationships. In addition, there are significant co-morbidities with problem gambling, including depression, alcoholism, and obsessive-compulsive behaviours. These co-morbidities may exacerbate, or be exacerbated by, problem gambling. Availability of opportunities to gamble and the incidence of problem gambling within a community are known to be linked (Griffiths, 2003a; Abbott, 2007). The terms 'problem gambling' and 'pathological gambling' (often used interchangeably) have been used by many researchers, bodies, and organisations, to describe gambling that compromises, disrupts or damages family, personal or recreational pursuits (Budd Report, 2001; Griffiths, 2004; Sproston et al, 2000; Wardle et al, 2007).

Availability of opportunities to gamble and the incidence of problem gambling within a community are known to be linked. However there is no clear scientific research that links increases in the availability of gambling services to increases in the rates of problem and pathological gambling, even though there is considerable evidence that suggests this might be the case. In contrast to economic impacts, which tend to be positive –are quantifiable, tangible and measurable; whereas social impacts that tend to be negative- are qualitative, elusive and very difficult to measure. Thus, one can readily account for the positive economic performance of new casino industries, such as visitations, revenues, tax collections, jobs created. It is however very difficult to create a measure of the incidence of many social impacts attributable to expanded presence of legalized gambling.

Despite the point above, many claims have been made in recent years, primary by the opponents of legalized gambling about the negative social impacts linked to casinos and casino style gambling and the costs they create for society. These claims are based on questionable research methods, untraceable figures, selective data interpretation, incorrect concepts that do not adequately measure the social costs. Welfare economics provide the definition of the social cost so as to classify the consequences of human behaviour as social cost. The welfare economics measure of the social cost of an action is the amount by which that action reduces aggregate societal real wealth. For instance, suppose that an action harms some members of a society and benefits no one. In this case the social cost of the action is the sum of the amounts by which real wealth is reduced for those who are harmed. On the other hand if an action harms some members of society (eg by taxing away part of their wealth) and benefits others (by providing them with wealth transfers). If we further assume that the collective harm to those made worse off is equal to the losses of others, the level of societal wealth is unchanged, and so the action produces no social cost.

“Externality” is another misinterpreted concept, related to social cost that leads very often to confusion in the gambling literature. Some researchers appear to equate externalities and social costs, while others

consider any third party effect as a social cost. Both views are misguided. Externalities occur when the action of a person impact the welfare of another that has no direct control over the actor. Without a doubt, pathological gamblers often engage in behaviour that has negative effects on others. Not all externalities represent costs. Even if the proper definition of social cost was clear; there are still other obstacles to measuring the social costs of gambling. Of course, the inability to measure costs does not mean that the costs do not exist. Rather, it simply means that researchers and policymakers must be careful in interpreting social cost studies. Probably the most serious obstacle in performing valid social cost estimates is the issue of comorbidity. According to this issue, pathological gamblers may have other problems that contribute to their socially costly behaviour, so the costly behaviour is the result of multiple disorders.

A second issue is the counterfactual scenario. Would pathological gambling and the associated social costs disappear if casinos were not legal? Most probably they would not. A valid estimate of the costs of pathological gambling, as it relates to government policy, is not the total cost of pathological gambling behaviours. The relevant cost is rather the difference between the costs when casinos are legal and when they are not. Unfortunately, it is very difficult to know with accuracy the counterfactual scenario. Since most social cost estimates do not consider this, they must be viewed with scepticism.

A third problem is the unreliable survey data that many of the published estimates have been based on. In some studies authors have based their cost estimates on diagnostic tools like the DSM-IV SOGS, measurement devices initially designed as clinical diagnostic tools rather than survey instruments and should therefore be used with caution. Some papers use original surveys in which problem gamblers are asked about the extent of their gambling losses or the sources of their money used for gambling. The fourth and final problem with estimating social costs relates to how government expenditures are handled. A large portion of the social costs of gambling may be related to government expenditures.

Most social cost estimates simply take the value of the government-provided treatment for expenditures and call them “social costs.” It would seem obvious that, since government spending requires taxes, these expenditures should be considered social costs. Indeed, most people would agree that lower spending on these types of expenses would be preferred to higher spending. But the same is not necessarily true in the case of education. People often vote for more public education spending. The main point is that government expenditures are not equivalent to social costs. If they were, then we could reduce the social costs of gambling by simply reducing spending on gambling-related problems! Unfortunately, this does not leave us with a clear and appropriate way to classify gambling-related government expenditure.

Gambling can be viewed as an individual social pathology, a societal menace, a viable tool for growth and a source of governmental revenue. Each perspective possesses some credibility. The extent to which the gaming industry can operate as a legitimate tool of economic development will depend largely on the resolution of conflicts among competing perspectives.



### 3.0 Research Method

The 30 countries under study were identified by using the latest TOP 30 rank for 2014 on All Gambling Gross Win (Table 1), that accounts for 90,4% of the global gambling market. All Gambling Gross Win includes land based and interactive values across betting, casino, poker, bingo, skill/other gaming/commercial lotteries and state lotteries. The 30-nations sample is offering a wide range of qualitative and quantitative characteristics on the sample studied. The countries in an alphabetic order are the following:

Australia, Argentina, Belgium, Brazil, Canada, China (inc SARs), France, Finland, Germany, Greece, Italy, Ireland, Japan, Malaysia, Netherlands, New Zealand, Peru, Philippines, Russia, Singapore, South Africa, South Korea, Spain, Sweden Switzerland, Taiwan, Thailand, Turkey, United Kingdom, United States.

In order to investigate the determinants of gambling activity, we will use the fractional percentage of the Gambling Gross Win as a Percentage of GDP (henceforth GGW % GDP), to indicate the gambling activity in every country studied. GGW % GDP will represent the dependent (target) variable in a multiple linear regression. Figures 2 and 3 depict the average GGW % GDP, within the sample of 30 countries for 2006 and 2007 correspondingly. Through this regression analysis we shall measure the degree of influence of 6 independent institutional variables on the GGW % GDP dependent variable, compiled from 6 sources: the non-profit Natural Resource Governance Institute (NRGI), the non-profit organization Brookings Institution, the non-profit organization Center For Systemic Peace and the private companies, World Bank Development Research Group, Transparency International and H2 Gambling Capital.

The dependent variable could be predicted from the independent variables (selected a year before, in 2006), by the simple equation:

$$(1) \quad y = a + b_1x_1 + b_2x_2 + b_3x_3 + \dots + b_nx_n + \varepsilon$$

GDP per capita will allows us to compare the prosperity of countries with different population sizes (Table 2).

We used the observations that World Bank Development Research Group along with Natural Resource Governance Institute (NRGI) and the Brookings Institution published on The Worldwide Governance Indicators (WGI) project, which provides ratings for the variable Rule of Law.

Rule of Law reflects perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence. Percentile rank among all countries (ranges from 0 (lowest) to 100 (highest) rank). If countries score low on this dimension, they are likely to suffer a

reduction in the quantity and efficiency of investment in physical and human capital. As the probability increases that the investors will lose the proceeds from investment on a new gambling industry, or the investment itself, investors reduce their investment and channel their resources to a more secure investment (Table 2).

GINI index (World Bank estimate), measures the extent to which the distribution of income among individuals or households within an economy deviates from a perfectly equal distribution, in other words the extent of inequality. Thus a Gini index of 0 represents perfect equality, while an index of 100 implies perfect inequality. Earlier research suggests that actors on higher incomes are by some criteria more positively engaged with gambling than those on lower incomes (Grun & McKeigue, 2000). Table 2, indicates the GINI index ranking for the countries under study, for 2006.

Index of Democracy is an index compiled by The Center for Systemic Peace (Polity IV Project) that focuses on political regime characteristic worldwide since the 1800. An index of Democracy of 10 represents ideal political regimes and freedom though an index of -10, implies low quality of democracy. One of the important characteristics of democracy is the provision of transparent rules for the alternation of political forces in power. Democracies may exhibit peaceful and predictable transfers of political power where autocracies experience violent and erratic changes. The lower degree of uncertainty that results from reduced political instability is likely to foster investment and growth in a new gambling industry or economy as a whole. As mention on the second chapter, on the empirical side, Alesina et al. (1996) showed that political instability has a negative effect on growth (Table2).

The remaining two independent variables used in this Paper are Legal Origins and Ascendant Religion. These variables do not have a ranking; they classify observations (classifier predictors) into more than two classes (e.g. French Civil Law, German Law, German Civil or Scandinavian civil law) therefore they were splitted it into separate dichotomous variables as described under dummy variables.

Legal Origins are broadly interpreted as highly persistent systems of social control of economic life and have significant consequences for the legal and regulatory framework of a country, as well as for economic outcomes. As already mentioned in the second chapter, countries are classified on whether they adhere to common law or whether their legal system is based on French Civil Law, German Law, German Civil or Scandinavian civil law (Table 3). There has been empirical research finding correlations between economic indicators and that classification.

In regards to Ascendant Religion variable, due to the wide range of the religion types in the 30 countries studied (7 major in terms of population majority), they were grouped in 3 major categories and then processed as dummies variables (Table 4). In the second section, there have been references on the impacts of religion on people's life, values, culture and way of living and acting.

### 3.1 Examining the Variables

First we run correlations between the GDP Per Capita and the Institutional variables. Low correlations between the data are an indication that the GDP Per Capita and institutional variables contain information not in the other variables. High correlations on the contrary suggest, that a set of variables may add little additional information.

In fact, the correlations are relatively high, as table 5 indicates. In specific, the Rule of Law Index has a correlation coefficient of 0.8792 with GDP per Capita and -0.7124 with GINI. In Addition, the GINI index has a correlation coefficient of -0.7523 with GDP per Capita. Index of Democracy (Polity IV) has a correlation coefficient of 0.6072 with the dummy religion variable that represents the group of Christians, Orthodox, Catholics and Protestants.

Then, a regression analysis is used so as to quantify the association between all the variables. The results yield a low p-value 0.04582, indicating a statistical significance of the Legal Origins variable. This practically means that the Legal Origins variable is a significant factor , affecting the performance of the GGW % GDP.

So as to eliminate the high correlation between GINI and Rule of Law index, we shall exclude both these indices, from the regression model and run correlations between the remaining variables. As shown on table 7, the Index of Democracy (Polity IV) has a correlation coefficient of 0.6072 with the dummy religion variable that represents the group of Christians, Orthodox, Catholics and Protestants. The dummy religion variable that represents the group of Christians, Orthodox, Catholics and Protestants, has in turn, a correlation coefficient of -0.5991 with the dummy religion variable that represents the group of Buddhism and East Religions. The correlations observed are rather low and thus acceptable.

## 4.0 Empirical Results

In order to explore the relationships among the variables left, another regression analysis is performed. The 4 remaining variables are: GGW % GDP, GDP Per Capita, Legal Origins, Ascendant Religion and Index of Democracy (Polity IV). Table 8, presents the results of the regression analysis. Amongst the three institutional variables and GDP Per Capita, only Legal Origins variable is significant in the gambling activity to GDP regression. The Legal Origin index has a p-value of 0.03796 and a coefficient of -0.00353063.

These results suggest two observations. Firstly, Legal Origins variable is statistical significant and has an impact on GGW % GDP. Secondly, the negative coefficient of Legal Origins variable does seem to be a robust channel linking common law (dummy variable classified as 0) to GGW % GDP. The results verify the predictor property of the Legal Origins variable in regards to the size of Gambling Gross Win to GDP over time and are in aligning with the literature review, confirming the “Legal Origins Theory” by LLS and others (1998).

According to this theory- as mentioned in literature review, countries with common law favor the development and growth of economy. Legal origins have a major role in countries dominated by statutes or the regulation of entry of new businesses. They influence legal rules and regulations, which in turn affect patterns of growth within industries. Investors are protected by a regulatory framework that allows more extensive financial contracting. Common law is associated with better economic outcomes than French civil law. This resonates with the obvious observation that gambling industry is affected positively in countries with common law, compared to those with civil. Figure 4, is consistent with the points above, illustrating the higher average of the Gross Gambling Win in common law countries compared to the lower one in civil law countries, for years 2006 and 2007 correspondingly.

## **5.0 Conclusion**

This Paper has attempted to identify the main factors that influence the size of gambling activity in 30 countries all over the world. Gambling activity has been a growth industry globally over the past decades and continues to grow in terms of popularity, as it is attractive stimulator of economic growth.

The Paper looks at a number of institutional variables of the sample and investigates their effect on the Gambling Gross Win as a percentage of GDP. The variables examined represent spectrums of a society, country; economic welfare-as expressed through GDP per capita, legal system, regulations, corruption, polity, religion and inequality. Amongst these variables, high correlation was observed; but as soon as that was eliminated, statistical evidence was found to suggest that legal origins of a country's legal system have major impact on the gambling industry. Common law countries were found to have a statistically significant relationship with gambling activity and thus growth in the gambling activity industry.

Our interpretation of the results is that common law countries are more responsive to the demands of gambling industry, by encouraging new entry business and protecting the investor's interests and investment through a beneficial and functional regulatory framework. Gambling activity in civil law countries is less developed, regardless the levels of economic welfare, polity, education level and religion.

## **Acknowledgements**

I would like to thank H2 Gambling Capital, for permission to include confidential data from the gambling industry worldwide and James England for his prompt and helpful input, by providing these data. I would like to express my appreciation to Professor Christodoulos Stefanadis for his invaluable constructive guidance and advices.

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**Table 1.** 2014 TOP 30 Countries on All Gambling Gross Win

| <b>All Gambling (Player Location) 2014</b> |                          |                       |                          |                              |
|--|--------------------------|-----------------------|--------------------------|------------------------------|
| <b>Rank</b>                                | <b>Nation</b>            | <b>Gross Win(€bn)</b> | <b>% of Global Total</b> | <b>Cum % of Global Total</b> |
| 1  | United States            | 107,28                | 29,20%                   | 29,20%                       |
| 2  | China (inc SARs)         | 71,32                 | 19,40%                   | 48,60%                       |
| 3  | Japan                    | 22,86                 | 6,20%                    | 54,90%                       |
| 4  | Italy                    | 18,03                 | 4,90%                    | 59,80%                       |
| 5  | United Kingdom           | 17,11                 | 4,70%                    | 64,40%                       |
| 6  | Australia                | 13,93                 | 3,80%                    | 68,20%                       |
| 7  | Germany                  | 10,99                 | 3,00%                    | 71,20%                       |
| 8  | France                   | 9,7                   | 2,60%                    | 73,90%                       |
| 9  | Canada                   | 9,42                  | 2,60%                    | 76,40%                       |
| 10   | Spain                    | 8,22                  | 2,20%                    | 78,70%                       |
| 11   | Singapore                | 6,37                  | 1,70%                    | 80,40%                       |
| 12   | South Korea              | 5,38                  | 1,50%                    | 81,90%                       |
| 13   | Brazil                   | 2,42                  | 0,70%                    | 82,50%                       |
| 14   | Netherlands              | 2,25                  | 0,60%                    | 83,20%                       |
| 15   | Sweden                   | 2,2                   | 0,60%                    | 83,80%                       |
| 16   | Argentina                | 2,1                   | 0,60%                    | 84,30%                       |
| 17   | Finland                  | 1,87                  | 0,50%                    | 84,80%                       |
| 18   | Greece                   | 1,78                  | 0,50%                    | 85,30%                       |
| 19   | Peru                     | 1,72                  | 0,50%                    | 85,80%                       |
| 20   | Turkey                   | 1,72                  | 0,50%                    | 86,30%                       |
| 21   | Ireland                  | 1,68                  | 0,50%                    | 86,70%                       |
| 22   | Malaysia                 | 1,68                  | 0,50%                    | 87,20%                       |
| 23   | South Africa             | 1,64                  | 0,40%                    | 87,60%                       |
| 24   | Switzerland              | 1,62                  | 0,40%                    | 88,10%                       |
| 25   | Taiwan                   | 1,56                  | 0,40%                    | 88,50%                       |
| 26   | Russia                   | 1,47                  | 0,40%                    | 88,90%                       |
| 27   | Belgium                  | 1,43                  | 0,40%                    | 89,30%                       |
| 28   | Thailand                 | 1,35                  | 0,40%                    | 89,60%                       |
| 29   | Philippines              | 1,33                  | 0,40%                    | 90,00%                       |
| 30   | New Zealand              | 1,29                  | 0,40%                    | 90,40%                       |
|  | <i>Rest of the World</i> | 35,39                 | 9,60%                    | 100,00%                      |
|  | <b>Global Total</b>      | <b>367,14</b>         | <b>100,00%</b>           |                              |

Source: H2 Gambling Capital

**Table 2.** Independent Variables for year 2006

| COUNTRY        | GDP Per Capita | CPI | Legal Origins | catholicism,christianity, protestand, orthodox,other christ. | muslim | buddism and east religions | GINI inequality | Polity IV |
|----------------|----------------|-----|---------------|--|--------|----------------------------|-----------------|-----------|
| Argentina      | 8239,14        | 2,9 | 1             | 1  | 0      | 0                          | 47,37           | 8         |
| Australia      | 40957,83       | 8,7 | 0             | 1  | 0      | 0                          | 35,63           | 10        |
| Belgium        | 44403,83       | 7,3 | 1             | 1  | 0      | 0                          | 29,57           | 10        |
| Brazil         | 7240,92        | 3,3 | 1             | 1  | 0      | 0                          | 55,23           | 8         |
| Canada         | 44328,48       | 8,5 | 0             | 1  | 0      | 0                          | 33,9            | 10        |
| China          | 2673,29        | 3,3 | 1             | 0  | 0      | 0                          | 42,63           | -7        |
| Finland        | 48288,55       | 9,6 | 1             | 1  | 0      | 0                          | 28,29           | 10        |
| France         | 41600,58       | 7,4 | 1             | 1  | 0      | 0                          | 32,63           | 9         |
| Germany        | 41814,82       | 8,0 | 1             | 1  | 0      | 0                          | 32,4            | 10        |
| Greece         | 28531,57       | 4,4 | 1             | 1  | 0      | 0                          | 34,61           | 10        |
| Ireland        | 61313,58       | 7,4 | 0             | 1  | 0      | 0                          | 31,96           | 10        |
| Italy          | 37716,45       | 4,9 | 1             | 1  | 0      | 0                          | 33,19           | 10        |
| Japan          | 34033,70       | 7,6 | 1             | 0  | 0      | 1                          | 32,11           | 10        |
| Korea, Rep,    | 23101,51       | 5,1 | 1             | 0  | 0      | 0                          |                 | 8         |
| Malaysia       | 7240,68        | 5,0 | 0             | 0  | 1      | 0                          | 46              | 3         |
| Netherlands    | 51241,32       | 8,7 | 1             | 1  | 0      | 0                          | 30,35           | 10        |
| New Zealand    | 32382,27       | 9,6 | 0             | 1  | 0      | 0                          |                 | 10        |
| Peru           | 3611,20        | 3,3 | 1             | 1  | 0      | 0                          | 51,35           | 9         |
| Philippines    | 1678,85        | 2,5 | 1             | 1  | 0      | 0                          |                 | 8         |
| Russia         | 9101,26        | 2,5 | 1             | 0  | 0      | 0                          | 42,33           | 6         |
| Singapore      | 39223,57       | 9,4 | 0             | 0  | 0      | 1                          |                 | -2        |
| South Africa   | 6153,66        | 4,6 | 0             | 1  | 0      | 0                          | 64              | 9         |
| Spain          | 32709,40       | 6,8 | 1             | 1  | 0      | 0                          | 33,86           | 10        |
| Sweden         | 53324,38       | 9,2 | 1             | 1  | 0      | 0                          | 26,92           | 10        |
| Switzerland    | 63223,47       | 9,1 | 1             | 1  | 0      | 0                          | 34,47           | 10        |
| Thailand       | 3962,75        | 3,6 | 0             | 0  | 0      | 1                          | 39,76           | 6         |
| Turkey         | 9309,51        | 3,8 | 1             | 0  | 1      | 0                          | 38,44           | 7         |
| United Kingdom | 48428,16       | 8,6 | 0             | 1  | 0      | 0                          | 35,93           | 10        |
| United States  | 48061,54       | 8,6 | 0             | 1  | 0      | 0                          | 41,75           | 10        |
| Taiwan         |                | 5,9 | 1             | 0  | 0      | 1                          |                 | 10        |

**Table 3.** Legal Origins: Common And Civil Law Countries Breakdown, [Dummy Variable]

| <b>COUNTRY</b>     | <b>COMMON</b>   | <b>CIVIL</b>    | <b>CIVIL</b>    | <b>CIVIL</b>    | <b>CIVIL</b>    | <b>Common<br/>Law=0 και<br/>Civil Law =1</b> |
|--------------------|-----------------|-----------------|-----------------|-----------------|-----------------|--|
|                    | <b>legor_uk</b> | <b>legor_fr</b> | <b>legor_ge</b> | <b>legor_sc</b> | <b>legor_so</b> |  |
| Argentina          | 0               | 1               | 0               | 0               | 0               | 1  |
| Australia          | 1               | 0               | 0               | 0               | 0               | 0  |
| Belgium            | 0               | 1               | 0               | 0               | 0               | 1  |
| Brazil             | 0               | 1               | 0               | 0               | 0               | 1  |
| Canada             | 1               | 0               | 0               | 0               | 0               | 0  |
| Switzerland        | 0               | 0               | 1               | 0               | 0               | 1  |
| China              | 0               | 0               | 1               | 0               | 0               | 1  |
| Germany            | 0               | 0               | 1               | 0               | 0               | 1  |
| Spain              | 0               | 1               | 0               | 0               | 0               | 1  |
| Finland            | 0               | 0               | 0               | 1               | 0               | 1  |
| France             | 0               | 1               | 0               | 0               | 0               | 1  |
| United Kingdom     | 1               | 0               | 0               | 0               | 0               | 0  |
| Greece             | 0               | 1               | 0               | 0               | 0               | 1  |
| Ireland            | 1               | 0               | 0               | 0               | 0               | 0  |
| Italy              | 0               | 1               | 0               | 0               | 0               | 1  |
| Japan              | 0               | 0               | 1               | 0               | 0               | 1  |
| Korea, Rep.        | 0               | 0               | 1               | 0               | 0               | 1  |
| Malaysia           | 1               | 0               | 0               | 0               | 0               | 0  |
| Netherlands        | 0               | 1               | 0               | 0               | 0               | 1  |
| New Zealand        | 1               | 0               | 0               | 0               | 0               | 0  |
| Peru               | 0               | 1               | 0               | 0               | 0               | 1  |
| Philippines        | 0               | 1               | 0               | 0               | 0               | 1  |
| Russian Federation | 0               | 1               | 0               | 0               | 0               | 1  |
| Singapore          | 1               | 0               | 0               | 0               | 0               | 0  |
| Sweden             | 0               | 0               | 0               | 1               | 0               | 1  |
| Thailand           | 1               | 0               | 0               | 0               | 0               | 0  |
| Turkey             | 0               | 1               | 0               | 0               | 0               | 1  |
| Taiwan             | 0               | 0               | 1               | 0               | 0               | 1  |
| United States      | 1               | 0               | 0               | 0               | 0               | 0  |
| South Africa       | 1               | 0               | 0               | 0               | 0               | 0  |

**Table 4.** Ascendant Religions and Categorization by Country, [Dummy Variable]

| Country      | CATH70 | PROT70 | OTHCHRIST | ORTH70 | JEWS70 | MUSLIM70 | HINDU70 | BUDDIS70 | EASREL | OTHREL70 | NONREL70    | Categories                       |
|--------------|--------|--------|-----------|--------|--------|----------|---------|----------|--------|----------|-------------|----------------------------------|
| Argentina    | 0,918  | 0,013  | 0,027     | 0,003  | 0,02   | 0,002    | 0       | 0        | 0      | 0,002    | 0,015       | 1 c, prots, orthdx, other chr :1 |
| Australia    | 0,242  | 0,454  | 0,211     | 0,021  | 0,005  | 0,002    | 0       | 0,001    | 0      | 0,003    | 0,061000001 | 1 c, prots, orthdx, other chr :1 |
| Belgium      | 0,896  | 0,009  | 0,014     | 0,006  | 0,004  | 0,009    | 0       | 0        | 0      | 0,004    | 0,057999998 | 1 c, prots, orthdx, other chr :1 |
| Brazil       | 0,854  | 0,057  | 0,043     | 0,001  | 0,002  | 0,001    | 0       | 0,003    | 0,002  | 0,027    | 0,01        | 1 c, prots, orthdx, other chr :1 |
| Canada       | 0,419  | 0,246  | 0,262     | 0,018  | 0,014  | 0,002    | 0,001   | 0,001    | 0,001  | 0,001    | 0,035       | 1 c, prots, orthdx, other chr :1 |
| Switzerland  | 0,460  | 0,454  | 0,051     | 0,003  | 0,003  | 0,003    | 0       | 0        | 0      | 0,016    | 0,01        | 1 c, prots, orthdx, other chr :1 |
| China        | 0,001  | 0      | 0,001     | 0      | 0      | 0,026    | 0       | 0,066    | 0,642  | 0,003    | 0,261       | 3 bud, east religion: 3          |
| Spain        | 0,969  | 0,002  | 0,007     | 0      | 0      | 0        | 0       | 0        | 0      | 0        | 0,022       | 1 c, prots, orthdx, other chr :1 |
| Finland      | 0,001  | 0,941  | 0,01      | 0,012  | 0      | 0        | 0       | 0        | 0      | 0,001    | 0,035       | 1 c, prots, orthdx, other chr :1 |
| France       | 0,814  | 0,012  | 0,007     | 0,005  | 0,011  | 0,027    | 0       | 0,001    | 0,002  | 0,001    | 0,119999997 | 1 c, prots, orthdx, other chr :1 |
| United King  | 0,100  | 0,661  | 0,12      | 0,006  | 0,008  | 0,011    | 0,008   | 0,001    | 0      | 0,003    | 0,082       | 1 c, prots, orthdx, other chr :1 |
| Germany      | 0,360  | 0,444  | 0,086     | 0,007  | 0      | 0,006    | 0       | 0        | 0      | 0,001    |             | 1 c, prots, orthdx, other chr :1 |
| Greece       | 0,005  | 0,003  | 0,034     | 0,942  | 0      | 0,015    | 0       | 0        | 0      | 0        | 0,002       | 1 c, prots, orthdx, other chr :1 |
| Ireland      | 0,908  | 0,066  | 0,012     | 0      | 0,001  | 0        | 0       | 0        | 0      | 0,011    | 0,002       | 1 c, prots, orthdx, other chr :1 |
| Italy        | 0,873  | 0,006  | 0,004     | 0,001  | 0,001  | 0,001    | 0       | 0        | 0      | 0,024    | 0,090000004 | 1 c, prots, orthdx, other chr :1 |
| Japan        | 0,004  | 0,005  | 0,021     | 0      | 0      | 0        | 0       | 0,66     | 0,204  | 0        | 0,105999999 | 3 bud, east religion: 3          |
| Korea, Rep.  | 0,026  | 0,07   | 0,086     | 0      | 0      | 0        | 0       | 0,17     | 0,393  | 0,257    | 0,003       | 3 bud, east religion: 3          |
| Malaysia     | 0,028  | 0,021  | 0,004     | 0      | 0      | 0,495    | 0,076   | 0,064    | 0,254  | 0,055    | 0,003       | 2 muslim:2                       |
| Netherlands  | 0,412  | 0,361  | 0,121     | 0      | 0,002  | 0,005    | 0       | 0        | 0,001  | 0,001    | 0,097000003 | 1 c, prots, orthdx, other chr :1 |
| New Zealan   | 0,151  | 0,613  | 0,188     | 0,002  | 0,001  | 0        | 0,001   | 0        | 0,002  | 0,007    | 0,035       | 1 c, prots, orthdx, other chr :1 |
| Peru         | 0,957  | 0,019  | 0,005     | 0      | 0      | 0        | 0       | 0,002    | 0      | 0,013    | 0,004       | 1 c, prots, orthdx, other chr :1 |
| Philippines  | 0,751  | 0,028  | 0,163     | 0      | 0      | 0,043    | 0       | 0,001    | 0,002  | 0,009    | 0,003       | 1 c, prots, orthdx, other chr :1 |
| Russian Fed  | 0,000  | 0,007  | 0,099     | 0,515  | 0,017  | 0,078    | 0       | 0,004    | 0,278  | 0,002    | 0,515       | 1 c, prots, orthdx, other chr :1 |
| Singapore    | 0,039  | 0,022  | 0,017     | 0      | 0      | 0,180    | 0,068   | 0,096    | 0,547  | 0        | 0,030999999 | 3 bud, east religion: 3          |
| Sweden       | 0,007  | 0,73   | 0,008     | 0,005  | 0,002  | 0        | 0       | 0        | 0      | 0,001    | 0,247       | 1 c, prots, orthdx, other chr :1 |
| Thailand     | 0,004  | 0,003  | 0,003     | 0      | 0      | 0,039    | 0,002   | 0,921    | 0,018  | 0,007    | 0,003       | 3 bud, east religion: 3          |
| Turkey       | 0,001  | 0,001  | 0         | 0,006  | 0,001  | 0,990    | 0       | 0        | 0      | 0        | 0,001       | 2 muslim:2                       |
| Taiwan       | 0,021  | 0,019  | 0,029     | 0      | 0      | 0,004    | 0       | 0,41     | 0,514  | 0,001    | 0,002       | 3 bud, east religion: 3          |
| United State | 0,226  | 0,289  | 0,376     | 0,02   | 0,033  | 0,004    | 0       | 0,001    | 0,001  | 0,001    | 0,048999999 | 1 c, prots, orthdx, other chr :1 |
| South Africa | 0,072  | 0,349  | 0,35      | 0,001  | 0,006  | 0,013    | 0,02    | 0        | 0      | 0,182    | 0,007       | 1 c, prots, orthdx, other chr :1 |

**Table 5.** Correlation coefficients, using the observations 1 – 3  
5% critical value (two-tailed) = 0.3610 for n = 30

| Correlation coefficients, <b>RULE OF LAW</b> , using the observations 1 – 30 |                   |                    |                |                          |                             |
|--|-------------------|--------------------|----------------|--------------------------|-----------------------------|
| (Missing values were skipped)  |                   |                    |                |                          |                             |
| GGW %<br>GDP   | GDP Per<br>Capita | Rule Of Law        | Legal Origins  | christ/protst<br>/orthdx |                             |
| 1.000  | 0.1004            | 0.2068             | -0.5006        | 0.1383                   | GGW%GDP                     |
|  | 1.000             | <b>0.8792</b>      | -0.1145        | 0.4459                   | <b>GDP Per Capita</b>       |
|  |                   | 1.000              | -0.2660        | 0.2814                   | Rule Of Law                 |
|  |                   |                    | 1.000          | -0.0000                  | Legal Origins               |
|  |                   |                    |                | 1.000                    | christ/protst/orthdx        |
|  |                   |                    |                |                          |                             |
|  | muslim            | bud/east religions | GINI           | Polity IV                |                             |
|  | 0.0171            | 0.0385             | 0.0093         | -0.0042                  | GGW%GDP                     |
|  | -0.3058           | -0.0767            | <b>-0.7523</b> | 0.4481                   | <b>GDP Per Capita</b>       |
|  | -0.1538           | 0.0485             | -0.7124        | 0.3597                   | Rule Of Law                 |
|  | -0.0945           | -0.1387            | -0.2288        | 0.0872                   | Legal Origins               |
|  | -0.4082           | -0.5991            | -0.1295        | <b>0.6072</b>            | <b>christ/protst/orthdx</b> |
|  | 1.000             | -0.1048            | 0.1354         | -0.2165                  | muslim                      |
|  |                   | 1.000              | -0.0756        | -0.2141                  | bud/east religions          |
|  |                   |                    | 1.000          | -0.3054                  | GINI                        |
|  |                   |                    |                | 1.000                    | Polity IV                   |

**Table 6.** Regression Analysis Results, All Variables

|  |  |  |  |  |  |
|--|--|--|--|--|--|
| Model 1: OLS, using observations 1-30 (n = 25) |  |  |  |  |  |
| Dependent variable: GGW % GDP                  |  |  |  |  |  |

|                             | <b>Coefficient</b> | <b>Std. Error</b> | <b>t-ratio</b> | <b>p-value</b> |    |
|-----------------------------|--------------------|-------------------|----------------|----------------|----|
| <b>const</b>                | 0.0155464          | 0.00919307        | 16911          | 0.10907        |    |
| <b>GDP Per Capita</b>       | -0,0202433         | 0,0012171         | -16.632        | 0.11459        |    |
| <b>Rule Of Law</b>          | 5,14336            | 7,60965           | 0.6759         | 0.50820        |    |
| <b>Legal Origins</b>        | -0.00407305        | 0.0018903         | -21547         | 0.04582        | ** |
| <b>christ/protst/orthdx</b> | 0.00534533         | 0.00344061        | 15536          | 0.13870        |    |
| <b>muslim</b>               | 0.00189859         | 0.00332071        | 0.5717         | 0.57498        |    |
| <b>GINI</b>                 | -0.000248144       | 0.000166169       | -14933         | 0.15368        |    |
| <b>Polity IV</b>            | 0.000196553        | 0.000294309       | 0.6678         | 0.51320        |    |
|                             |                    |                   |                |                |    |

|                    |          |  |                    |          |
|--------------------|----------|--|--------------------|----------|
| Mean dependent var | 0.006831 |  | S.D. dependent var | 0.003693 |
| Sum squared resid  | 0.000213 |  | S.E. of regression | 0.003536 |
| R-squared          | 0.350764 |  | Adjusted R-squared | 0.083431 |
| F(7, 17)           | 1312087  |  | P-value(F)         | 0.303347 |
| Log-likelihood     | 1104664  |  | Akaike criterion   | -2049328 |
| Schwarz criterion  | -1951818 |  | Hannan-Quinn       | -2022283 |

**Table 7.** Correlation Coefficients Results, 4 remaining variables  
5% critical value (two-tailed) = 0.3610 for n = 30

|  |
|--|
| <b>Correlation coefficients, using the observations 1 - 30</b> |
| (missing values were skipped)                                  |

| <b>GGW % GDP</b>   | <b>GDP Per Capita</b> | <b>Legal Origins</b> | <b>christ/protst/orthdx</b> | <b>muslim</b> |                      |                           |                  |  |        |         |           |         |        |                |         |        |               |         |        |                      |         |         |        |       |         |                    |  |       |           |
|--|-----------------------|----------------------|-----------------------------|---------------|----------------------|---------------------------|------------------|--|--------|---------|-----------|---------|--------|----------------|---------|--------|---------------|---------|--------|----------------------|---------|---------|--------|-------|---------|--------------------|--|-------|-----------|
| 1.000  | 0.1004                | -0.5006              | 0.1383                      | 0.0171        | GGW %GDP             |                           |                  |  |        |         |           |         |        |                |         |        |               |         |        |                      |         |         |        |       |         |                    |  |       |           |
|  | 1.000                 | -0.1145              | 0.4459                      | -0.3058       | GDP Per Capita       |                           |                  |  |        |         |           |         |        |                |         |        |               |         |        |                      |         |         |        |       |         |                    |  |       |           |
|  |                       | 1.000                | -0.0000                     | -0.0945       | Legal Origins        |                           |                  |  |        |         |           |         |        |                |         |        |               |         |        |                      |         |         |        |       |         |                    |  |       |           |
|  |                       |                      | 1.000                       | -0.4082       | christ/protst/orthdx |                           |                  |  |        |         |           |         |        |                |         |        |               |         |        |                      |         |         |        |       |         |                    |  |       |           |
|  |                       |                      |                             | 1.000         | muslim               |                           |                  |  |        |         |           |         |        |                |         |        |               |         |        |                      |         |         |        |       |         |                    |  |       |           |
| <table border="1"> <thead> <tr> <th><b>bud/east religions</b></th> <th><b>Polity IV</b></th> <th></th> </tr> </thead> <tbody> <tr> <td>0.0385</td> <td>-0.0042</td> <td>GGW % GDP</td> </tr> <tr> <td>-0.0767</td> <td>0.4481</td> <td>GDP Per Capita</td> </tr> <tr> <td>-0.1387</td> <td>0.0872</td> <td>Legal Origins</td> </tr> <tr> <td>-0.5991</td> <td>0.6072</td> <td>christ/protst/orthdx</td> </tr> <tr> <td>-0.1048</td> <td>-0.2165</td> <td>muslim</td> </tr> <tr> <td>1.000</td> <td>-0.2141</td> <td>bud/east religions</td> </tr> <tr> <td></td> <td>1.000</td> <td>Polity IV</td> </tr> </tbody> </table> |                       |                      |                             |               |                      | <b>bud/east religions</b> | <b>Polity IV</b> |  | 0.0385 | -0.0042 | GGW % GDP | -0.0767 | 0.4481 | GDP Per Capita | -0.1387 | 0.0872 | Legal Origins | -0.5991 | 0.6072 | christ/protst/orthdx | -0.1048 | -0.2165 | muslim | 1.000 | -0.2141 | bud/east religions |  | 1.000 | Polity IV |
| <b>bud/east religions</b>  | <b>Polity IV</b>      |                      |                             |               |                      |                           |                  |  |        |         |           |         |        |                |         |        |               |         |        |                      |         |         |        |       |         |                    |  |       |           |
| 0.0385   | -0.0042               | GGW % GDP            |                             |               |                      |                           |                  |  |        |         |           |         |        |                |         |        |               |         |        |                      |         |         |        |       |         |                    |  |       |           |
| -0.0767  | 0.4481                | GDP Per Capita       |                             |               |                      |                           |                  |  |        |         |           |         |        |                |         |        |               |         |        |                      |         |         |        |       |         |                    |  |       |           |
| -0.1387  | 0.0872                | Legal Origins        |                             |               |                      |                           |                  |  |        |         |           |         |        |                |         |        |               |         |        |                      |         |         |        |       |         |                    |  |       |           |
| -0.5991  | 0.6072                | christ/protst/orthdx |                             |               |                      |                           |                  |  |        |         |           |         |        |                |         |        |               |         |        |                      |         |         |        |       |         |                    |  |       |           |
| -0.1048  | -0.2165               | muslim               |                             |               |                      |                           |                  |  |        |         |           |         |        |                |         |        |               |         |        |                      |         |         |        |       |         |                    |  |       |           |
| 1.000  | -0.2141               | bud/east religions   |                             |               |                      |                           |                  |  |        |         |           |         |        |                |         |        |               |         |        |                      |         |         |        |       |         |                    |  |       |           |
|  | 1.000                 | Polity IV            |                             |               |                      |                           |                  |  |        |         |           |         |        |                |         |        |               |         |        |                      |         |         |        |       |         |                    |  |       |           |

**Table 8.** Final Regression Analysis Results

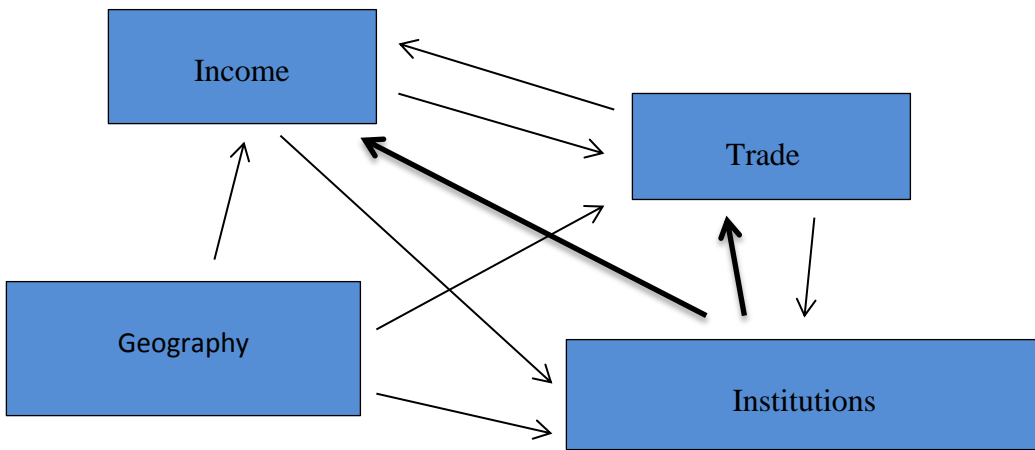
|                                       |
|---------------------------------------|
| Model 1: OLS, using observations 1-29 |
| Dependent variable: GGW % GDP         |

|                             | <b>Coefficient</b> | <b>Std. Error</b> | <b>t-ratio</b> | <b>p-value</b> |    |
|-----------------------------|--------------------|-------------------|----------------|----------------|----|
| <b>const</b>                | 0.00767321         | 0.00277155        | 27.686         | 0.01121        | ** |
| <b>GDP Per Capita</b>       | -2,17E-04          | 4,29E-03          | -0.0506        | 0.96013        |    |
| <b>Legal Origins</b>        | <b>-0.00353063</b> | 0.00159893        | -22.081        | <b>0.03796</b> | ** |
| <b>christ/protst/orthdx</b> | 0.00294949         | 0.00310185        | 0.9509         | 0.35199        |    |
| <b>muslim</b>               | 0.0018236          | 0.00365046        | 0.4996         | 0.62235        |    |
| <b>bud/east religions</b>   | 0.00288261         | 0.0033556         | 0.8590         | 0.39958        |    |
| <b>Polity IV</b>            | -8,2043400         | 0.00026152        | -0.3137        | 0.75669        |    |
|                             |                    |                   |                |                |    |

|                    |          |  |                    |          |
|--------------------|----------|--|--------------------|----------|
| Mean dependent var | 0.007198 |  | S.D. dependent var | 0.003935 |
| Sum squared resid  | 0.000314 |  | S.E. of regression | 0.003779 |
| R-squared          | 0.275149 |  | Adjusted R-squared | 0.077462 |
| F(6, 22)           | 1391841  |  | P-value(F)         | 0.261881 |
| Log-likelihood     | 1246256  |  | Akaike criterion   | -2352511 |
| Schwarz criterion  | -2256801 |  | Hannan-Quinn       | -2322536 |
|                    |          |  |                    |          |

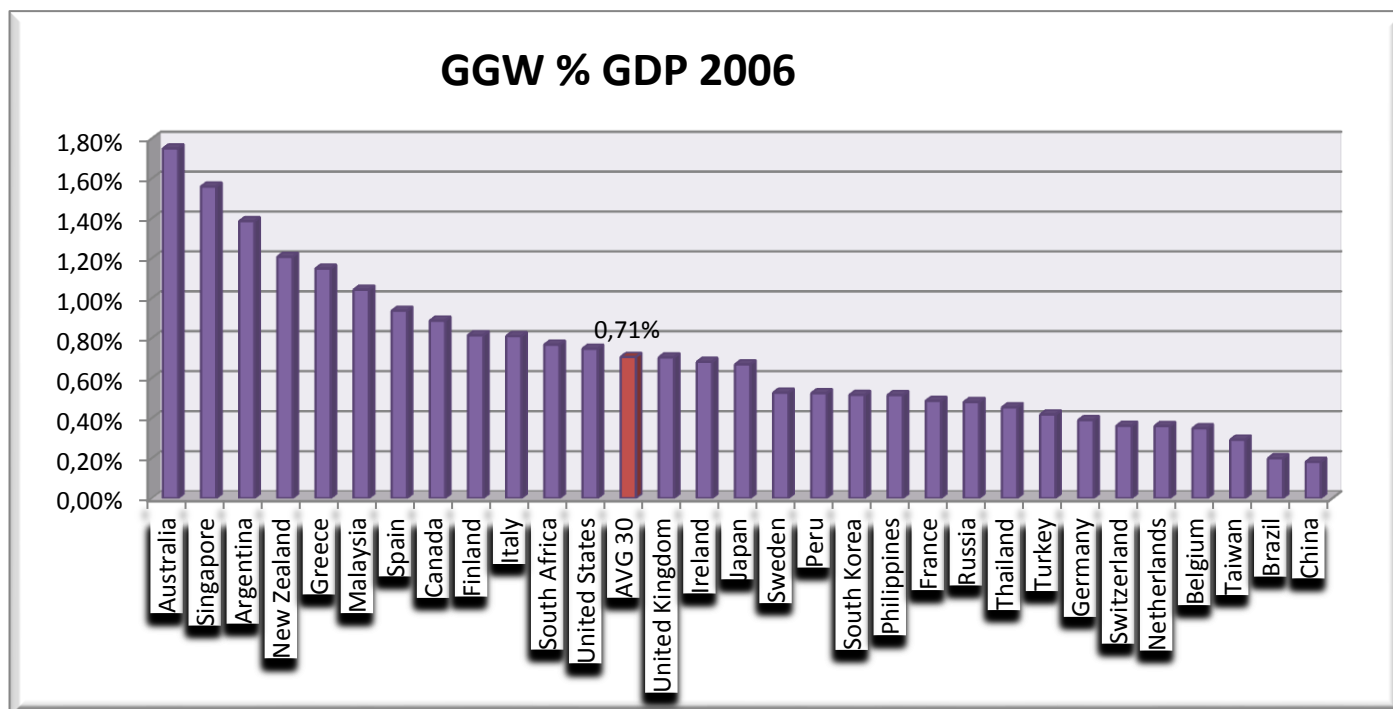


**Figure 1:** Institutions and Economic Development

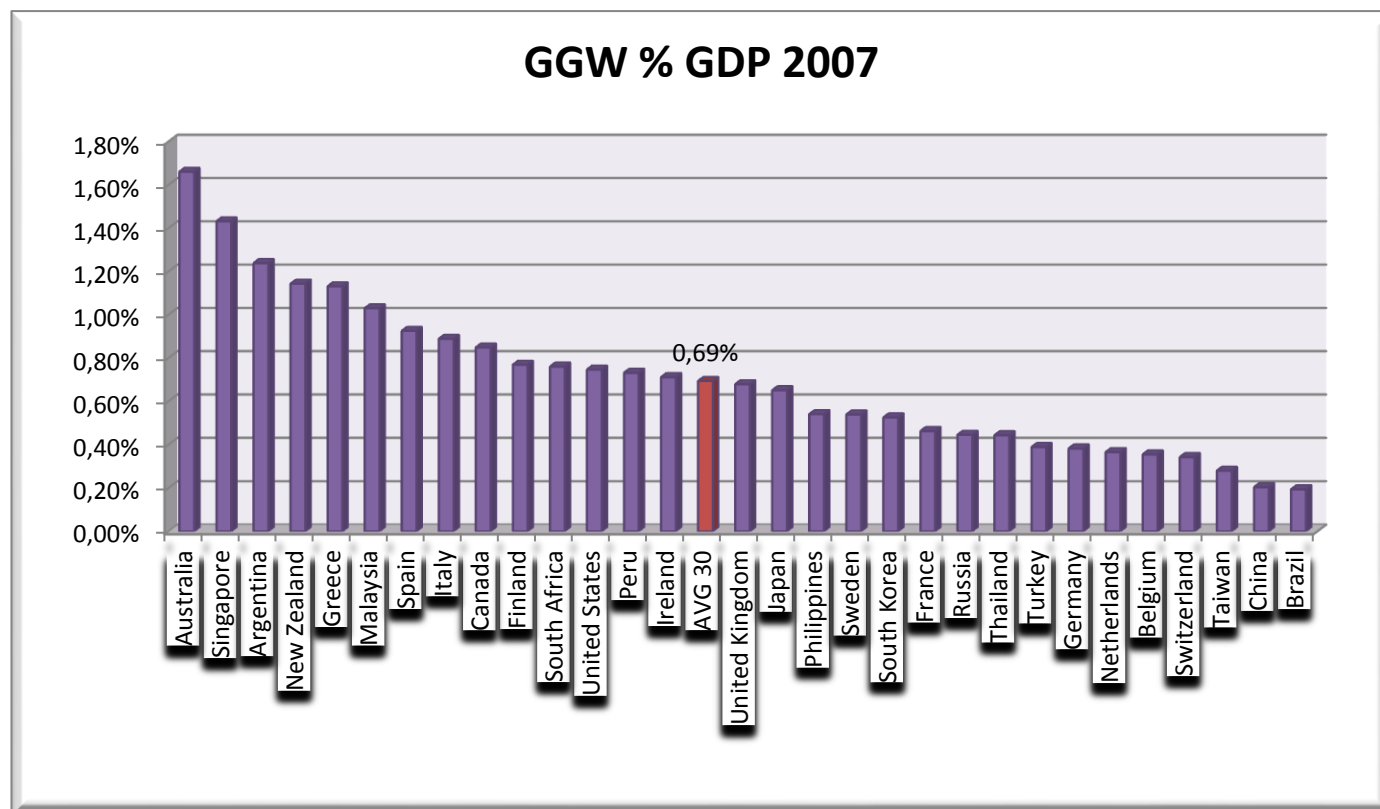


Institutions role in Deep Causes of Economic Growth and Development – Endogeneity

**Figure 2: 2006 Gross Gambling Win Average As A Fractional Percentage of GDP in 30 countries**



**Figure 3: 2007 Gross Gambling Win Average As A Fractional Percentage of GDP in 30 countries**



**Figure 4:** 2006 and 2007 Gross Gambling Win Average  
Common Law Versus Civil Law Countries

