Erasmus Universiteit Rotterdam

The Social and Institutional factors enhancing the level of implementation of competition law and policy in the OECD countries.

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Abstract

Using an index that ranks OECD countries according to their key features in Competition legislation and policy, this paper investigates the impact certain institutional, social and economical variables estimators have on the overall implementation of competition law and policy for OECD countries over a period of 20 years. This thesis starts with a theoretical approach followed by an empirical analysis of the effect of specific estimators on Competition law and policy. We find , in particular, that social awareness, protectionism and the efficiency of law enforcement institutions have a strong positive impact on Competition. Therefore, governments which focus on fighting discrimination, on spreading a culture of competition, and which improves the efficiency of law enforcement institutions will be more likely, in the long run, to have a healthy competitive economic environment.

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I. Introduction

Competition Law has as leading objectives the protection of competition, by forbidding any type of firm behavior that could bring a distortion in the competitive climate and ensuring efficient allocation of resources. Competition is therefore considered the "tool" to enhance and maintain economic efficiency. Standard economic theory tells us that an efficient allocation of resources will lead to lower prices, higher quality and increasing competitiveness. From this both growth and development will benefit resulting in a higher level of social welfare. However, Competition Policy may not work in isolation therefore simply promoting competition may not be enough.
For instance a competitive economic environment is also considered fundamental to foster economic efficiency. Today we recognize that for a well functioning market economy a strong framework of laws, financial institutions and proper infrastructures are necessary. Information and enforcement problems also cause limits on economic possibilities and nonmarket institutions arise in response to those limits and influence outcomes (Stiglitz , 2004). Improvements in institutions require complementary changes also in other socialinstitutions.
"If *the institutional matrix rewards piracy, then piratical organizations will come into existence* . . ." (North 1994: 361).Therefore, also the effectiveness of competition law will depend on the extent to which it is coordinated with other policies (Mehta, 2002/03). The economic environment is influenced primarily by four features which are the political, economic, social and technological factors.
Economic performance, government efficiency and infrastructure are just some of the factors influencing the level of competition law and policies in a country. Efficient coordination of policies in these four areas is necessary for the good functioning of Competition laws and policies.
In the following paper I will focus on two of these features, namely on the institutional and on the social factors. Several factors of political dimension will also be described and are inserted in the same group as institutional determinants. I will control for the economic factors to see which social and institutional determinants spur competition law and policy enforcement.
To better understand the circumstances in which anti-trust law has developed and its main objectives I will begin my discussion by introducing the concept from a brief historical perspective, and by highlighting the most important historical events on this matter.

This brief historical review is also an example to show how social, institutional and historical factors firmly influence competition law and policy in a country.

The origins of modern competition law date back to the end of the 19th century and took place mainly in the United States and Canada. The United States at that time had a very fast growing economy which brought a number of rapid changes.

Along with technological innovations the most influencing events were the great improvements in transportation and communications (Motta, 2004). The U.S. market became very quickly one big single market, offering incredible opportunities.

Mergers, and economies of scale and scope became increasingly popular. This caused a rapid increase in the average size of businesses. Capacity also increased while prices followed the opposite trend. As a consequence price wars and price fixing cartels started. The consequences of this increased number of price fixing cartels was that the aggregate price level increased but only for specific groups such as small companies and final consumers. These groups were in difficulty and started complaining. Until they shared enough consensuses to push for the creation of a federal law that would protect them from unfair practices.

On July 2, 1890, The Sherman Anti-Trust Act was approved. The Sherman Act is the first measure passed by the U.S. Congress to prohibit trusts.

The Act states that any commercial agreement *"in the form of trust or otherwise that was in restraint of trade or commerce among the several states, or with foreign nations"* is prohibited.

The Sherman Act was very useful but did not cover certain areas, therefore companies still found ways of overcoming it. In particular the Sherman act did not take into account mergers (unless the companies merged into a monopoly). Firms that still sought to coordinate on prices had therefore the opportunity to merge.

In 1914 the Clayton Act was introduced as an extension of The Sherman Act and was more specific on particular anticompetitive conducts considered illegal.

By 2001, approximately 80 countries in the world had some form of competition law (WTO, 2003). According to the International Competition Network (ICN), at present (2010) more than one hundred national jurisdictions worldwide apply some form of competition law.

The aim of this analysis is to get a clearer view on what are the social and institutional determinants that have had influence, in the last two decades, on the level of competition policy in countries that are members of the Organization for Economic Co-operation and Development (OECD). While, much literature can be found on the influence that antitrust laws and policies have on social welfare, limited literature is available concerning the social and institutional determinants of competition policy enforcement.

Based on these reflections, the core statement of this thesis has been formulated as follows.

- *Which social and institutional factors enhance the level of implementation of competition law and policy in the OECD countries?*

In order to answer this question I will estimate the influence that social and institutional factors and competition enhancing policies have on the level of Competition Law and Policy in 31 OECD countries over the period 1990-2010.

The paper includes seven chapters. The remainder of the paper is organized as follows: The first, introductory chapter is followed by the second chapter which provides a theoretical background to the concept of competition law and policy and its main objectives. This section emphasizes the impact of competition on economic efficiency and pictures competition regulation also from an international point of view.

Chapter three examines competition law and policy from a social prospective highlighting the fundamental role that a wide spread culture of competition may play in achieving higher levels of competition policy implementation.

Chapter four discusses the methodology of the empirical research. Each variable chosen for the model and the description of the data is further explained. Chapter five reports the methodology used throughout the regressions along with chapter six which shows empirical results and their interpretations. Finally, the last chapter provides the conclusions of the research.

II. Theoretical background and Literature review

1. Introduction and Definition

The concept of competition is considered to be central for economic theory. What differs among theorists, policy-makers and bureaucrats is its definition and the impact it's believed to have on economic development.

The definition of competition has changed widely over time and even now economic thought provides different points of view on the subject.

Literally the word implies a contestable situation where people fight for superiority.

Adam Smith (1776) used the words “rivalry in the market place” to define competition. This rivalry is believed to function as an “invisible hand” that in the long run would lead to efficient resource allocation towards both consumer and producer surplus. Eventually extreme profits and unfulfilled demand would vanish. This definition however, takes account of competition only on a firm-level and does not include other determinants such as the structure of the market.

By the late nineteenth century the analytical development of the concept of competition differed in many aspects from the one portrayed by Adam Smith (Cook, 2001).

Neo-classical theorists (Edgeworth 1881; Clark 1915; Knight 1946; Stigler 1957) viewed competition as a state of affairs and focused mainly on the effects of competition. The general opinion was that the market was characterized by a state of equilibrium (namely perfect competition) in which survival or failure were determined by demand and cost functions. In this context institutions were not thought to have an influence on the economy.

Under neoclassical economics, the concepts of competition and the market have unified into one, now enterprises are classified by the number of players in a market and by the nature of their products. This approach to competition law is also known as “*Structural Approach*” (Cook, 2001).

In this background competition intensity is evaluated through firm concentration ratios which evaluate the inequality and number of participants in a specific market.

The Austrian and Evolutionary theorists (Littlechild 1986; Schumpeter 1943) introduced the concept of behavioral economics, viewing competition as a more dynamic process related to a wider set of variables.

'*It is not (price) competition which counts but the competition from the new commodity, the new technology, the new source of supply, the new type of organization… competition which commands a decisive cost or quality advantage and which strikes not at the margin of profits and the outputs of the existing firms but at their foundations and their way of lives'* (Schumpeter, 1943, p84).

Buccirossi et al. (2009) define competition policy as the set of prohibitions and obligations that form the substantive rules of competition (or antitrust) law together with the array of tools available to competition authorities for policing and punishing any violations of the same rules.

Competition law is viewed as a subset of competition policy that aims at establishing the rules and guidelines for two different but closely related concepts; market power and dominance (Cook, 2001). Competition law essentially prohibits any sort of agreement between two or more firms that has the effect of limiting access to the market by other players. Absence of competition laws and policies, therefore a freer environment, will definitively lead to anticompetitive behaviors. Competition law may help avoiding anticompetitive behavior that can start a chain of negative outcomes which in the long run might blow up the entire system.

2. Competition and economic efficiency

Competition Law and Policy aim at enhancing social welfare and economic efficiency by asserting and deterring anti-competitive behaviors.

The literature mainly distinguishes between two types of economic efficiency, which are the static effects and the dynamic effects. Competition policy may have impact on both (Creusen, 1997). As for the static effects of competition it is important to ensure that firms produce at lowest possible costs and that price do not rise above marginal costs. The dynamic effects of competition include incentives to innovate, to bring technological change, and to imitate. Since innovation of products and production processes is the key to attaining preferential positions within the competition process, every company strives for modernization (Lachmann, 1999).

Economic efficiency may be described through three subsets, *allocative efficiency*, *productive efficiency,* since competition also stimulates the efficient use of firms' resources, and *distributive efficiency* (Lachmann, 1999).

Many studies have been done on the effects that competition law and policy have on social welfare. Some economists are skeptical about this relation while others instead approach it positively.

Starting with economists from the "*Austrian School*" (Von Mises, 1940) they argued that any type of state intervention on free markets will make society worse off. More recently, Crandall and Winston (2003) stated that the antitrust law has been ineffective in the U.S. The reason for this is the difficulty to distinguish healthy competition from anti-competitive behaviour.

Other economists (e.g. Baker , 2003 and Werden , 2003) disagree with this point of view and argue that competition policy even without the need of any explicit intervention of competition authorities improves social welfare. While this debate is still going on, not much literature can be found on the impact that external (social and institutional) factors have on competition policy.

Buccirossi et al (2009) empirically investigate the effectiveness of competition policy by estimating its impact on Total Factor Productivity (TFP). In constructing their Competition Policy Indicator (CPI) they state that *"the effectiveness of Competition Policy is also likely to depend on external factors: the quality of a country's institution in general…"*

Experience shows us that competition improves competitiveness and development in the long run, but that in the short run governments may play a key role in supporting national firms by giving them a chance to become stronger and compete at an international level.

Simply promoting competition is not enough to ensure a fair market and to enhance economic development; this is why in the last few years the concept of flexible approach towards competition law has been introduced by the literature (Metcalfe and Ramlogan, 2005; Singleton, 1997 and Singh, 2002 and 2003 along with others). For example Metha (2002/03) states that the effectiveness of competition law and policy will depend on the extent to which it is coordinated with other policies (Mehta, 2002/03).

3. Competition Policy and Regulation from an International Prospective

The term competition policy refers to a set of measures and instruments used by governments that determine the overall conditions of competition that are likely to be met in specific markets (Cook, 2001).

Competition policy has emerged as a major issue on the global trade agenda due to the pressure of major developed countries which consider that in an increasingly liberalized world economy the issue of competition should be addressed at the international level and appropriate agreements and rules should be negotiated (Singh, 1999). In the light of globalization, national competition policies alone are insufficient to prevent anti-competitive behavior (Dahlman, 1994) . This fast change in the world economy has undoubtedly implications also towards developing economies, which find themselves in need for an efficient international competition policy and law.

On March 21st and 22nd 2002 over fifty Heads of State and two hundred Ministers of Finance, Foreign Affairs, Development and Trade together with the Heads of the United Nations, the World Bank, the WTO and the IMF gathered in Monterrey, Mexico for a conference, the United Nations International Conference on Financing for Development. The outcome of this prestigious meeting was the Monterrey Consensus. Since its implementation the Monterrey Consensus has been the biggest reference point for international development cooperation. The goal of the Monterrey Consensus is to eradicate poverty, achieve sustained economic growth and promote sustainable development as we advance to a fully inclusive and equitable global economic system1 by giving a global response to these challenges. The participants were aware of the dramatic delay in achieving the Millennium Development Goals contained in the United Nations Development Declaration. The main reason why many countries are still lagging behind in achieving the Millennium Goals by 2015 is the lack of necessary resources. The efficient use of resources is especially important in the development context where resources are particularly scarce, an issue emphasized in the Monterrey Consensus (OECD, 2005).

The Monterrey Consensus states that mobilizing and increasing the effective use of financial and domestic resources and achieving the national and international economic conditions is needed to fulfill the internationally agreed Development Goals.

[1] UN Department of Economic and Social Affair, Division for Sustainable Development, Monterray Consensus

The Monterrey Consensus agrees in promoting international trade and improving consistency of the international monetary, financial and trading systems as a tool for development.

In 2008, there was a follow-up conference in Doha, Qatar to review the implementation of the Monterrey Consensus. The Doha declaration reaffirms entirely the goals of the Monterrey Consensus but it also recognizes that there have been deep changes in the international context since the last meeting in Mexico. Taking into consideration that there has been progress in certain areas it also expresses the deep concerns towards the impact of the latest global financial and economic crisis and it points out the urgency of examining the impact on developing countries. The OECD claims that more transparency is needed in the exchange of information among member states

The OECD has strongly promoted cooperation among national competition authorities (most recently throughout the council recommendations in 1995 and 1998) as well as it has promoted an innovative cooperation among the different functional areas of regulation together with the institutions involved in implementing those regulations. .

The OECD classifies three different functional areas of regulation on which member countries should seek cooperation: economic, technical and competition. Economic regulation refers to those measures aimed at controlling monopoly pricing and protect consumers. Technical regulation more broadly sets standards for health, safety and the environment

III. Competition law and policy from a social prospective

1. Introduction

"People often value achievements that do not show up at all, or not immediately, in income or growth figures: greater access to knowledge, better nutrition and health services, more secure livelihoods, security against crime and physical violence, satisfying leisure hours, political and cultural freedoms and sense of participation in community activities."

Mahbub ul Haq, (1934-1998) Founder of the Human Development Report

Competition law and policy are often viewed only from an economic prospective and this may be considered as a limited point of view. In the following Chapter I will introduce the concept of 'Competitive Culture' and stress the fundamental role it plays in increasing the level of competitiveness in a country.

Economic performance, government efficiency and infrastructure are just some of the factors influencing the level of competition law and policies in a country. This is why the International Institute of Management Development (IMD), when ranking countries according to their degree of competitiveness, also takes into account other factors which may be considered to be 'social' such as education, health, and social services. It is central at this point of the discussion to asses if civil society's activities also play an important role in promoting fair competition.

2. The importance of spreading the concept of Competitive Culture

Efforts in enforcing competition law nowadays are done mainly by competition authorities. Greater results could be accomplished in different countries if we could spread larger consensus amongst market participants about the benefits drawn from competition.

Spreading competition culture and enhancing public awareness on the matter would certainly have a positive impact on the level of competitiveness of a country. Shleifer (2004) suggests that in the long run competition and ethical behavior are mutually beneficial.

Enhancing a company's competitiveness and maximizing consumer surplus are considered to be the two major goals of competition policies. In order to efficiently accomplish these goals, it becomes fundamental to achieve a widespread culture. Having a widespread culture of competition is essential especially in developing economies, market players must clearly understand the benefits that can be derived from a fair competition in the market.

The term competition culture refers to market participants' attitudes and their ways of thinking, as well as the manner in which they put into practice their understanding about competition laws and policies and how it operates in their everyday lives (Report and proceedings from the Competition Law and Policy roundtable, May 2006).

An example of weak culture of competition might be seen in consumers that easily surrender to monopolistic abuse of dominant position and producers that accept the situation and do not try to offer cheaper solutions to consumers.

An efficient divulgation of a culture of competition requires first of all a voluntary compliance to competition laws and at the same time the maintenance of ethical standards in corporate management. Even though, competition laws have been implemented for decades the transformation of the mentality of a society is rather a challenge and may take many years.

As affirmed by Dong-kyu Lee, Director General of Headquarters of Competition Policy from the Korean Fair Trade Commission "*Competition advocacy and competition law enforcement are the two most Important activities needed to establish and strengthen competition culture.*"

Competition advocacy is defined by the World Bank as *"the ability of the competition office to provide advice, influence and participate in government economic and regulatory policies in order to promote more competitive industry structure, firm behavior and market performance."*

The spread of a culture of competition among different social groups is necessary for the enforcement of competition law and policy. Competition culture must be promoted at any level of society starting from governmental agencies, the media, the judiciary, scholars and eventually also to the general public. Consumers must also actively monitor the market and control for competition restricting activities. It will be difficult if not impossible to achieve an effective implementation of Competition law and policy without the participation of all the above figures.

An example of how those citizens and market players who are aware of these matters could positively influence Competition authorities relies on the supply of evidence and information on possible abuses of dominant position or other activities restricting competition. As we know gathering this sort of information is costly, needs many resources and is very time taking. Therefore, a community which is aware of the consequences of anti competitive practices is more likely to cooperate and to disclose such information. A well radicate culture of competition will also have a positive impact on the rest of the business environment.

What is vital for an efficient spread of competition culture is an effective communication strategy. An effective communication strategy on the subject would serve to make competition policy easily understandable and more transparent for market players and citizens.

To effectively spread a competition culture it is therefore necessary that it's benefits become more familiar to market participants and public servants. For example, during the Latin American Competition Forum (held in San Jose' , on

September 2010) it has been discussed by senior officials of Latin American competition institutions that an efficient method of disseminating a competition culture is by offering trainings on antitrust law, economics and public policy and not only to selected students but also to governmental actors such as civil servants and public lawyers . Making people acknowledge the importance of competition is nevertheless a slow process which might take a decade to show its benefits.

IV. Data Analysis

1. Introduction

To study the impact that specific social and institutional characteristics of a country have on the implementation of its competition law and policy I created several econometric models.

The following section will provide information on the data that has been used in the empirical analysis. Before testing the hypothesis, the first section will review the countries I used in the sample. I will then describe the variables, their meaning and their a priori influence on the level of implementation of competition legislation in the OECD Countries. This section will conclude with the description of the control variables.

2. Data Description

The data set constructed for the analysis comprises 31 Countries. The countries included for this cross-section analysis are the member countries of the OECD. Currently the member countries are 32 including Slovenia which entered the group in July 2010. However, countries that entered the OECD after May 2010 are not included in the sample.

Table 1*: List of OECD member countries followed by the date on which they deposited their instruments of ratification*.

1	AUSTRALIA: 7 June 1971	**11**	GREECE: 27 September 1961	**21**	NEW ZEALAND: 29 May 1973	**31**	UNITED STATES: 12 April 1961
2	AUSTRIA: 29 September 1961	**12**	HUNGARY: 7 May 1996	**22**	NORWAY: 4 July 1961	**32**	SLOVENIA: 21 July 2010
3	BELGIUM: 13 September 1961	**13**	ICELAND: 5 June 1961	**23**	POLAND: 22 November 1996		
4	CANADA: 10 April 1961	**14**	IRELAND: 17 August 1961	**24**	PORTUGAL: 4 August 1961		
5	CHILE: 7 May 2010	**15**	ITALY: 29 March 1962	**25**	SLOVAK REPUBLIC: 14 December 2000		
6	CZECH REPUBLIC: 21 December 1995	**16**	JAPAN: 28 April 1964	**26**	SPAIN: 3 August 1961		
7	DENMARK: 30 May 1961	**17**	KOREA: 12 December 1996	**27**	SWEDEN: 28 September 1961		
8	FINLAND: 28 January 1969	**18**	LUXEMBOURG: 7 December 1961	**28**	SWITZERLAND: 28 September 1961		
9	FRANCE: 7 August 1961	**19**	MEXICO: 18 May 1994	**29**	TURKEY: 2 August 1961		
10	GERMANY: 27 September 1961	**20**	NETHERLANDS: 13 November 1961	**30**	UNITED KINGDOM: 2 May 1961		

Source: www.oecd.org

3. Variable Selection

In order to assess the effect of certain institutional, economic and social variables on the competition level of a country I identified a set of features that could be a factor in deterring or encouraging anti-competitive behaviour. Thirteen[2] variables which may affect competition policy are considered and investigated.

The 14 variables have been then classified into three groups according to their nature, namely institutional, economical and social. This distinction is shown in the following table (Table2).

Table 2: *Classification of independent and control variables.*

Institutional	Economic	Social
Bribery and corruption	Parallel Economy	Equal Opportunity
Democracy index	Protectionism	Human Development Index (HDI)
Free Press index	GDP growth(*)	Risk of Political Instability
Government Efficiency	Inflation(*)	Social Responsibility
Justice	Trade to GDP(*)	

In Table 2 variables followed by a (*) are selected as control variables. These will be described in further sections.

In all specifications of my model, I will control for unobserved individual country-time differences by using fixed effects for both cross-section (countries) and period (time) I will also use the economic control variables *GDP Growth*, *Inflation* and *Trade to GDP*.

Data has been primarily extracted from opinion surveys, the problems that might arise when using this type of data, namely, qualitative data will be described in the final section. Most of the variables have been drawn from the World Competitiveness Online database, from the World Development

[2] Note that some variables such as voice and accountability, rule of law and control of corruption, transparency, Democracy index etc. Contain very similar information and therefore are highly correlated and had to be excluded a priori.

Indicators database (World Bank, 2005), from the World Database of Happiness (WOH)[3] and from the United Nations Statistical Department.

4. Variable Description

This section will examine each variable employed in my regression. Furthermore, the expected influence of these variables on competition law and policy enforcement is discussed. First, I will start by describing the dependent variable.

Then, the description of the independent variables will follow. The independent variables adopted in the regression are classified into three groups. According to their nature the variables may be Social, Institutional and Economic. This section will be concluded discussing the control variables.

4.1. Dependent variable

Competition Legislation

The dependent or observed variable chosen is the Competition Legislation Index.

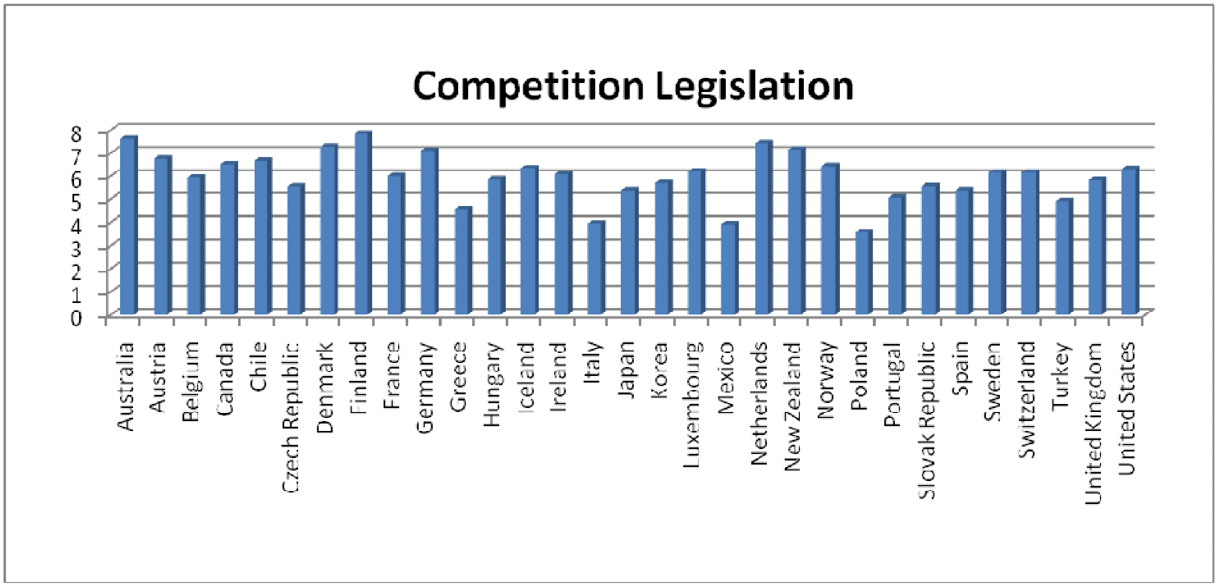
The Competition Legislation Index summarizes the key features of the competition law and policy in a country. The indicator reflects the idea that Competition Legislation is efficient in preventing unfair competition in other words the indicator shows how a country ranks in terms of competition. The indicator was derived from the Institute for Management and Development World Competitiveness Yearbook (WCY) and is based on an index from 1 – 10 with higher values meaning the country is very efficient in prevent unfair competition.

The Competition legislation index has been created integrating various indexes that determine the overall implementation of competition law. The index therefore includes measures of the business regulatory environment and of competition policies. It considers also if government subsidies impair economic development, if the legal framework supports competitiveness (in terms of leniency programs) and if price controls affect the pricing of products in specific industries.

The competition legislation index takes into consideration also consumer's issues, restrictive agreements, and merger regimes.

[3] The World Database of Happiness is an inventory of empirical findings on happiness that prepares for research synthesis, Ruut Veenhoven, Erasmus University Rotterdam ; worlddatabaseofhappiness.eur.nl

Figure 1. *Competition Legislation Index in OECD (average by country, throughout the period 1990-2010)*



4.2. Independent Variables

The independent variables or explanatory variables are the variables that may explain the dependent variable. The first set of variables which will be explained are the social determinants followed by the institutional determinants and concluding with the description of the economic variables.

4.2.1. Social Determinants

In the following section the social factors that might influence competition legislation are described and justified. The four variables considered more interesting for the regression are the following:
Risk of political instability, Human Development Index, Equal Opportunity and the Value System.

Risk of political instability

Risk of political instability indicates the level of threat that social protests have towards its own government.

The index ranges from 1 to 10 where a higher value indicating that the risk of political instability in that specific country is very low. Almost no research can be found on the direct effect of political instability on competition law. Therefore a more intuitive approach will be followed, in order to determine the a priori sign of the risk of political instability coefficient.

The level of political stability influences deeply the economic environment.

A more politically stable government is thought to have less “social” issues and therefore it can focus more on the economic environment. If a government is politically instable also the institutions that surround the government, such as the antitrust offices are expected to be inefficient.

A more stable government takes care of investment protection, simple tax and bureaucratic procedures; in other words, political stability increases the ease of doing business.

The researcher and economist Mr.Mizanur Rahman, states that political stability is essential for foreign direct investments (FDI).

Recent investment trends show that the Muslim countries (not considered politically stable at the moment) , among other developing countries, are the least popular receivers of FDI. This is why 57 Muslim countries received only 2.0 per cent of the world's total FDI in 2003, estimated at $735 billion (Rahman, 2010). Foreign investors seek for smooth business environments for their investments. And this indeed applies also to national entrepreneurs willing to invest in their own country. A less stable country inhibits entrepreneurial activities and therefore it is assumed to slow down also competition law and policy enforcement.

Therefore, a high level of risk of political stability is expected to have a deterring influence to the properties of a competition policy.

An interesting subject is presented by Dabbah, M. (2007) in his book “Competition Law and Policy in the Middle East” which examines weather there is a mutual influence of competition law and policy with Islam. The modern legal structure of the MECs (Middle East Countries) is analyzed. The author concludes that even though most of those countries have a competition legislation system, the main issue is that the competition culture is still in developing and that the rationale for competition law and its importance in the market still has to be fully understood.

Social Responsibility

Social responsibility in this context is described as the social responsibility of business leaders. The Social Responsibility index was derived from the World Competitiveness Report and it ranges from 1 to 10 with higher values denoting that business leaders give high attention to social responsibility.

Corporate social responsibility has been subject of discussions in the literature for the past 50 years (Bowen, 1953; Davis, 1960; Carroll, 1979, 1999). In the past thirty years pressure on firms to engage in corporate social responsibility (CSR) has increased and a greater amount of companies pay more attention to the subject. However, there are still companies which resist because from their point of view additional investment in CSR is inconsistent with maximizing profits. According to the publication "Making Good Business Sense" by The World Business Council for Sustainable Development, a company is defined as Socially Responsible if it engages in a *" Continuous commitment by business to behave ethically and contributes to economic development while improving the quality of life of the workforce and their families as well as of the local community and society at large"*.

Shleifer (2004) suggests that in the long run competition and ethical behavior are mutually beneficial. Competition promotes growth and increases incomes and therefore higher incomes raise the willingness to pay for social responsibility.

I hypothesize that Corporate social responsibility and the level of Competition Legislation are positively correlated since following ethial standards and a wide spread culture of competition suggests a more fair market.

Equal opportunity legislation

The equal opportunity legislation index describes a principle of non-discrimination explicitly in terms of economic development. The index was collected from the World Competitiveness Report and ranges from 1 to 10.

If a country is ranking high equal opportunities for citizens encourage economic development. Discriminatory behaviours which may influence the effectiveness of competition legislation may arise in situations such as opportunities in education, employment or in the distribution of resources.

A country that promotes equal opportunity implies a wide separation of power. Separation of power is one of the 5 factors that according to the study ”Deterrence in Competition Law” by Buccirossi et.al (2009) are likely to affect the degree of deterrence of competition policy enforcement. Therefore a country with a high degree of equal opportunities has a healthier market which gives more credit to merit and therefore leaves less space for negative influences such as corruption. Countries ranking higher are expected to be more efficient in preventing unfair competition.

Human Development Indicator (HDI):

The Human Development Indicator (HDI) has been drawn from the United Nations Development Program Report. It is considered to be an alternative index to income when measuring human well-being.

Inhabitants of countries with a higher level of HDI certainly have a greater number of choices to choose from and opportunities to pursue. The indicator focuses on three aspects that are considered to be essential for human development, the first is the chances to live a long and healthy life, the second is to be well-informed and the third is to have a decent standard of living. The areas of choices that are considered as essential for the United Nation’s economists are various and range from political, economic and social opportunities. Therefore, a higher HDI implies the opportunities for more alternatives in different areas, suggesting citizens being more aware of their opportunities. A more developed country is expected to also have a higher level of competitiveness.

The HDI ranges from 0 to 1 , with higher values indicating a superior stage of Human Development.

In the year 2007 the HDI average for all OECD member countries was 0.932 while the world’s average was 0.753 (Human Development Report, 2009) .

4.2.2. Institutional Determinants

The Institutional Environment is considered one of the main determinants of the level of competitiveness in a country.

"Institutions" is the first out of 12 pillars that determine the Global Competitiveness Index[4] created in the Global Competitiveness Report 2009-2010 by the World Economic Forum. In the report the Institutional Environment is described as "*the legal and administrative framework within which individuals, firms, and governments interact to generate income and wealth in the economy*". The role of institutions although, goes further than just the legal framework and influences investments in the market place, as well as regulation, or over-regulation. As highlighted by Prof. van Sinderen in his paper institutions set rules of The Game, as well as directly intervening in it. The variables that I included in my model and classified as "Institutional determinants" are the following: Government Efficiency, Bribery and Corruption, Democracy Index, Justice and the number of Women in Parliament. Factors of political dimension were also included in this section. Each one will be accurately described in the next section. Stiglitz, (2004) establishes that in many different settings non-market interactions may create complementarities , which may bring to multiple equilibria, therefore, outcomes are not only determined by technology and preferences.

" *The most important determinant of actions is one's environment, including the particular institutions in that environment*" (Stiglitz, 2004) .

[4] The Global Competitiveness Index captures competitiveness by providing a weighted average of many different components. The 12 Pillars composing the GCI are: Institutions, Infrastructure, Macroeconomic Stability, Health and Primary education, Higher education and Training, Goods Market efficiency, Labor Market efficiency, Financial Market Sophistication, Market size, Technological readiness, Business sophistication, and Innovation.

Government Efficiency

This indicator was developed by the International Institute for Management Development in the *World Competitiveness Yearbook (WCY)* and reflects the extent to which government policies are conducive to competitiveness (World Competitiveness Online, Updated 2010). The indicator contains data on the efficiency of the bureaucratic system, the competence of public servants and the independence of the civil service from political pressures. This indicator is expected to have a positive impact on the level of competition.

This relation is quite intuitive, the more the government works towards the creation of competitive policies the greater the level of competition legislation should be. Furthermore, the general efficiency of a government and the quality of its institutions create an environment that affects the effectiveness of all public policies (Buccirossi et al. ,2009). The Government efficiency index ranges from 1 to 10 where 1 indicates a government that does not contribute to an improvement of the level of competitiveness in a country. In the regression the variable Government Efficiency will be denoted as “Gov.

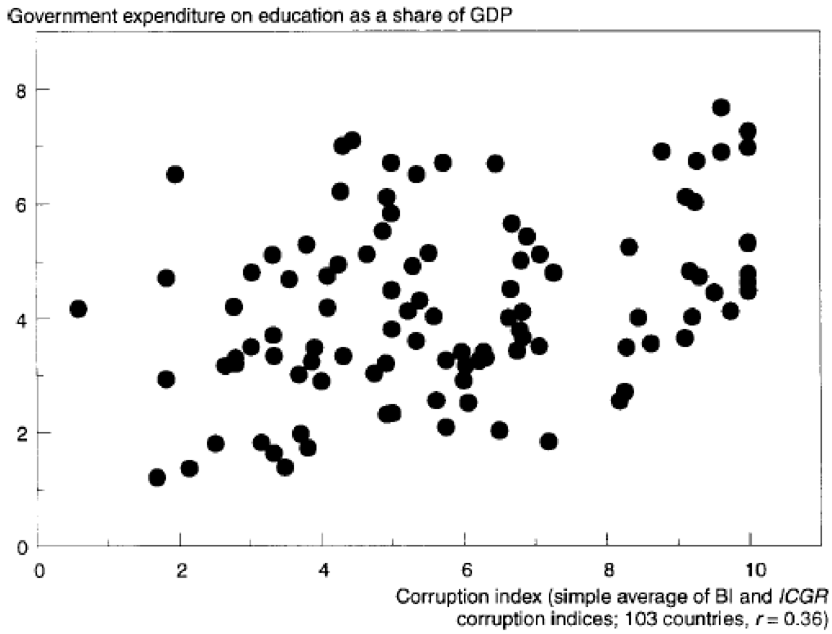
Bribery and Corruption

The Bribery and Corruption Index has been created by the IMD through a World Competitiveness Yearbook Executive Opinion Survey based on an index from 0 to 10, where a higher value corresponding to a lower level of corruption.

Literature on the economic causes and consequences of Bribery and Corruption has been recorded for many years, starting from Tullock (1967), Ackerman (1978) to Bhagwati (1982) and others. Corruption has been blamed for its negative influence on the efficiency of public spending, its disturbing effects on democratic development and for the decreasing effectiveness of aid (Svensson, 2005).

It is widely acknowledged that corruption and bribery have diverse detrimental effects in an economy. Empirical works suggest that corruption has been blamed for its negative influence on investments and economic growth, and tax revenues (Paulo, 1995) , creates distortions of incentives and misallocation of resources (Shleifer & Vishny, Corruption, 1993) and affects composition of government expenditure (James, 1995) . For this last statement see also Figure 2 below.

Figure 2: *Correlation between Corruption and Government Expenditure on Education for 103 countries.*



Sources: Barro (1991), BI, and *ICRG*.

Figure 4 shows the detrimental effect of corruption on government expenditure on education. As the corruption index increases (therefore as corruption has less influence on government's actions) the percentage of government expenditure on education decreases. Therefore, a higher Bribery and Corruption index, is positively correlated with higher government expenditure on education

Because of its various damaging effects, corruption is expected to have a negative correlation with the level of competition in a country.

Nevertheless, I found that literature on this topic is quite counter-intuitive.

Shleifer & Vishny, (1993) classify corruption in two categories: with theft and without theft.

Corruption with theft occurs when a government representative takes money in exchange for reducing for example taxes that the briber owes to the government.

Corruption without theft occurs when a government representative takes supplementary money from the briber in exchange for permits.

By comparing results with a regime without corruption the authors find that corruption without theft raises costs, but corruption with theft reduces costs and therefore spreads when more competition occurs.

Shleifer & Vishny, (1993) conclude that as competition intensifies also pressure to reduce costs increases and corruption becomes more persistent.

Nevertheless, I believe that lower corruption should lead to an increased level of competition.

Democracy Index

This index has been extracted from the World Database of Happiness. The Democracy index is a proxy for the level of suppression of political rights and civil liberties. Ranging from 2 to 14, higher scores imply more suppression and less democracy.

Democracy therefore is calculated considering the level of political participation by citizens. General knowledge would expect us to believe that a liberal democracy is the most successful tool to encourage global market competition and that it will as a consequence increase the level of competition. Nevertheless, the interaction between free markets and democracy is more complicated and intuition only is not sufficient to make a solid statement. This is due to the fact that it can be difficult to distinguish political from economical interests.

Xing (2001) discusses that market power usually has a strong tendency to define political power. She states that Western democracies, the World Bank and the United Nations are organized on the basis of strict hierarchies and that these are maintained through oligarchic structures where significant decisions are made by strong economic powers.

Justice

The concept of justice in a country is strictly related to the country's legal system. The judicial system, because of its nature, may play an important role in the enforcement of competition law and policies. On the basis of results from La Porta et al. (2004) and Djankov et al. (2003) I expect that a higher level of efficiency in legal institutions corresponds to a higher level of efficiency in the enforcement of competition law and policy.

The data was collected from the World Competitiveness Online database by the IMD WCY through an Executive Opinion Survey. The index ranges between 0 and 10, with 10 meaning that Justice is fairly administrated.

Free Press Index

The Free Press Index has been extracted from the World Database of Happiness (WOH).

The Free Press index is a "repression" index of the freedom of press enjoyed by journalists and writers. Higher values indicate less freedom enjoyed by the press. The variable is constructed based on responses to a questionnaire by journalists of the different countries. The questions composing the questionnaire concerned the following themes:

1) physical attacks, imprisonment and direct threats,

2) indirect threats,

3) legal situation and unjustified prosecution,

4) censorship and self censorship,

5) state monopoly on public media,

6) economic and administrative pressures,

7) state control of internet and new media

Studies on the direct link between Free Press and Competition have not been found. Nevertheless, Brunetti et al. (2003) have found strong evidence that the freedom of press lowers the level of corruption. If there is more freedom of press final consumers, for example, have a more realistic view of the market which is not biased by someone else such as Government authorities and lobbies which may have other interests.

4.2.3. Economic Determinants

Protectionism:

"If there were an Economist's Creed, it would surely contain the affirmations "I believe in the Principle of Comparative Advantage" and "I believe in Free Trade".

Paul Krugman, Professor of Economics at MIT, Cambridge

Protectionism and the level of competition in a country are certainly closely related.
One of the oldest insights of economic theory is the fact that trade protection damages a country's economy. Starting over two centuries ago with Adam Smith's enlightening work *Wealth of Nations*, numerous economists worked on this subject, emphasizing their belief for free trade (Ricardo, 1817 ; Heckscher and Ohlin , 1933; Stopler and Samuelson , 1941). In essence, these models explicate that international trade on the basis of labour or capital abundance enhances both country's social welfare. Nevertheless, these models are applicable under the assumptions of two perfectly competitive markets, goods being homogeneous, and no trade barriers such as transport costs .

One method of restricting trade is through tariffs. Tariffs are taxes on imports and are usually a percentage of the price of the import (Sloman J, 1998).
Economists in favor of protectionism affirm to welcome competition, but they believe that this competition must be "fair." Rothbard, (1986) argues that there is not price more "fair" than the market price. Therefore he considers any intervention to be inefficient or "unfair". Further arguments in favor of protectionism are the provisional tariff to aid an "infant industry" and to protect it from foreign competition.
Even though protecting "infant industry" could be an important reason to introduce or maintain protectionism, many argue that these may create distortions such as misallocation of resources, (Griffiths. A & Wall, 2004). Moreover when a protected industry establishes international competition they will find themselves with inefficiencies that could even be permanent (Sloman, J. 1998).
Protectionism could also be misused by groups (lobbies) which may not follow national interests.
These activities are defined by Bhagwati, (1998) as "directly unproductive profit-seeking activities".
They are considered unproductive in the sense that they do not create any income or any other valuable output for the society outside those lobbies.

In light of these discussions I expect that greater protectionism in a country results into a lower level of competition legislation.

The data has been collected from the World Competitiveness Online database by the IMD WCY through an Executive Opinion Survey. It is based on an index from 0 to 10, with 10 meaning that protectionism does not in any way impair the conduct of a business.

Parallel economy

The data was collected from the World Competitiveness Online database by the IMD WCY through an Executive Opinion Survey. It is based on an index from 0 to 10, with higher values indicating that unrecorded economy (black- market) does not have a negative effect on economic development. Parallel Economy , as suggested by the word, proceeds on a parallel path with respect to the official economy.

Official economy functions on the basis of an official monetary system. It also involves open transactions, and it is financed by identifiable sources (Ray, 2004). Examples of situations that often are part of parallel economy are crime but also babysitters and house cleaners. Parallel economy, in every country is in constant conflict with the Government. This is because finances come from unknown sources and therefore the profits from these transactions escape official estimation and hence taxation.

Parallel economy may although also be approached differently. Parallel economy might increase consumer surplus. It might be that it encourages price competition, and therefore consumers in the "official" economy may benefit from a reduction in price.

4.3. Control Variables

Any model that intends to clarify the relation between the level of competition in a certain country and other institutional and social factors must also pay attention to the variety of factors that contribute to it. To make sure that influence is direct and that it does not run through economic factors, the earlier mentioned control variables of economic nature have been added to every model. This will make the results of my analysis more robust, since I emphasize the political and social factors.

The following three economic variables have been selected as control variables: GDP growth, Inflation and Trade to GDP.

GDP growth

The Financial Dictionary defines GDP Growth as an increase in the nation's capacity to produce goods and services. Papers from the OECD (2005) point out strong evidence on gains in prosperity that may arise in developed countries by reducing barriers to trade, investment and competition. If GDP Growth rate is rising it will have a positive impact on the economy, on jobs, and on personal income. Data has been collected from the World Bank Statistical Database.

Inflation

The World Bank defines inflation as the "*yearly change in consumer prices expressed in percentages*". Competition and Inflation are certainly strictly related. A more competitive country (more open market) will cause prices to fall because of reduced mark-ups and raising productivity. The direct price restraint caused by greater imports, assuming unchanged monetary policy, can explain a fall in inflation (Chen, N. et al. 2004). Therefore more competition is expected to lower inflation. More specifically, by raising the price elasticity of demand, increased goods market competition theoretically lowers inflation and makes the aggregate price level less sensitive to aggregate demand shocks (van Hoose, D., 2000). Data on inflation has been collected from the World Bank Statistical Database.

Trade to GDP

Trade to GDP or trade openness is given by the following formula:

$$Trade\ to\ GDP = \frac{(\mathbf{import} + \mathbf{export})\mathbf{i,t-1}}{\mathbf{GDPi.t-1}}$$

Trade to GDP is the number of imports plus exports in a country calculated as a percentage of GDP. Trade Openness is certainly also strictly related to competition legislation. Chen, N. Et al (2006) find strong evidence that trade openness exerts a competitive effect, with prices and markups falling and productivity rising. A country with a high value of this index is expected to benefit from the increased market size and therefore from economies of scale. Concluding remarks of the OECD working paper "Cutting barriers to competition, investment and trade in US and EU would boost GDP[5]"
Asses that reducing trade barriers could increase GDP per head over the medium term by the following amounts:

- 2 to 3½ per cent in the European Union.

[5] http://www.oecd.org/officialdocuments/displaydocument/?doclanguage=en&cote=ECO/WKP(2005)19

- 1¼ to 3 per cent in the OECD area as a whole.
- 1 to 3 per cent in the United States.
- ½ to 1½ per cent in the OECD area outside the United States and the European Union

Competition is expected to benefit from greater market openness. The data for Trade to GDP has been extracted from the World Bank Statistical Database.

Limitations of existing data

Most of the data used in this thesis is considered to be qualitative. The major difference between qualitative and quantitative data is that qualitative data is based on subjective measures, such as perceptions. Qualitative data is therefore more problematic to gather and to work with. This type of data is generally collected through questionnaires or opinion surveys and people in different countries have different expectations, perceptions and levels of tolerance. As a result qualitative data may not represent the features in an objective way. This is why problems with qualitative data arise especially when wanting to perform a comparative analysis among different countries.

In the last years the interest towards broad measures of quality and efficiency of government institutions has significantly increased (OECD , 2005). Therefore, recently the most commonly used indicators that describe governance and institutions from the World Economic Forum, UN Statistics, World Bank Governance indicators, and indexes in the Global Competitiveness Report have been reviewed.

Concluding remarks of these studies highlight methodological problems in the creation of these indicators which significantly influence the results (Walle, 2005).

V. Methodology

The following section describes the methodological approach and estimation methods that will be applied throughout the study. Since the collected data, consists of cross- sections (countries) and time-series (years 1990-2009), country-time data, also known as panel data has been used. Panel data consists of repeated observations on the same cross-section over a period of time (Wooldridge, 2002).

1. Panel Data Approach

Panel data is a method which has several advantages over cross-section analyses. First of all, Panel data is more efficient and more informative. The occurrence of collinearity is smaller and the degrees of freedom are higher. Additionally, it reveals dynamics which are not easy to identify when only cross-sectional data is used. And finally, it allows controlling for bias caused by unobserved heterogeneity (Brüderl, 2005).

Multiple regression analysis (models with more than one independent variable) will be used to examine the relationship between Competition Legislation and other independent variables.

Ordinary Least Squares (OLS) has been used to estimate the coefficients and the models have been corrected for heteroskedasticity and serial correlation when necessary. As discussed before I have also controlled for differences within countries and between years, by using fixed effects for both cross-sections and periods.

The problem of multicollinearity may occur when multivariate analysis is used. Multicollinearity is caused by a high correlation between the independent variables within a multiple regression model. Multicollinearity is considered a sample problem which results in high standard errors. Correlations close to 1 may cause problems to the regression. Therefore, correlations greater than 0.7 are considered to distort the results, due to the fact that the independent variables nearly explain the same variation in the dependent variable. To get around this problem, independent variables that are highly correlated between each other have been removed from the models.

Because of the use of country-time data it is necessary to control for differences within countries and differences within years. To do this both country (cross section) and time (period) effects are set on fixed. This however requires a certain amount of data availability.

Furthermore, the econometric software used to perform the analysis is E-Views7.

2. The Model

A multiple regression analysis will be used to test the strength of the independent variables. In the following regression analysis Competition Legislation is the dependent variable or response variable. The variables on the right hand side of the equation mark are the independent or action variables. Each β is the marginal impact of each associated variable, ceteris paribus. In order to allow for variability across time (t), the parameters are estimated for each year independently.

The following four models are intended to be tested.

$$CL_{i,t} = \beta_{0t} + \beta_{1,t}\mathbf{X}_{1,i,t} + \beta_{2,t}\mathbf{X}_{2,i,t} + \beta_{3,t}X_{3,i,t} + \beta_{4,t}Y_{i,t} + \beta_{5,t}\lambda_{i,t} + \beta_{6,t}\delta_{i,t} + \varepsilon_{i,t} \quad (1)$$

With

$CL_{i,t}$ = Competition Legislation

$\mathbf{X}_{1,i,t}$ = GDP growth

$\mathbf{X}_{2,i,t}$ = Inflation

$\mathbf{X}_{3,i,t}$ = Trade to GDP

$\mathbf{Y}_{i,t}$ = Free Press

$\lambda_{i,t}$ = Government Efficiency

$\delta_{i,t}$ = Justice

β = Vectors of unknown subject- specific regression parameters

$\varepsilon_{i,t}$ = Error term

i = 1 , ..., 31 t= 1990, ..., 2010

$$CL_{i,t} = \beta_{0t} + \beta_{1,t}\mathbf{X}_{1,i,t} + \beta_{2,t}\mathbf{X}_{2,i,t} + \beta_{3,t}X_{3,i,t} + \beta_{4,t}\pi_{i,t} + \beta_{5,t}\tau_{i,t} + \varepsilon_{i,t}$$
(2)

With

$\pi_{i,t}$ = Parallel Economy

$\tau_{i,t}$ = Protectionism

$$CL_{i,t} = \beta_{0t} + \beta_{1,t} X_{1,i,t} + \beta_{2,t} X_{2,i,t} + \beta_{3,t} X_{3,i,t} + \beta_{4,t}\sigma_{i,t} + \beta_{5,t}\omega_{i,t} + \beta_{6,t}\nu_{i,t} + \varepsilon_{i,t}$$
(3)

With

$\sigma_{i,t}$ = Equal Opportunity

$\omega_{i,t}$ = Human Development Indicator

$\nu_{i,t}$ = Social Responsibility

$$CL_{i,t} = \beta_{0t} + \beta_{1,t} X_{1,i,t} + \beta_{2,t} X_{2,i,t} + \beta_{3,t} X_{3,i,t} + \beta_{4,t}\sigma_{i,t} + \beta_{5,t}\tau_{i,t} + \beta_{6,t}\nu_{i,t} + \beta_{7,t}\varphi_{3,i,t} + \beta_{8,t}\delta_{3,i,t} + \varepsilon_{i,t}$$
(4)

The subscripts "*i*" and "*t*" in the models denote respectively country and year.

The first regression taken was to test the significance of the three control variables, the following table shows the results.

Table 3

The variables for GDP Growth and Trade are not significant and therefore will be left out.

In the following tables results for each regression model are shown. The first column will contain the dependent and independent variables. Column two lists the parameter estimates while column three shows the standard error associated to these coefficients. The last two columns contain respectively the t-statistics and the p-value associated.

Institutional Model : Seven institutional variables need to be tested in this model

Table 4 *Regression Results, Model for Institutional Variables*

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Inflation	0,0018	0,0125	0,1401	0,8888

Corruption	0,2218	0,0670	3,3105	**0,0012**
Democracy	-0,0088	0,1017	-0,0864	0,9313
Free Press	0,0105	0,0112	0,9348	0,3518
Government Efficiency	-0,0146	0,0074	-1,9564	**0,0528**
Justice	0,0876	0,0626	1,3998	0,1643
Risk Political Instability	0,0708	0,0560	1,2642	0,2087
Women Parliament	0,0012	0,0076	0,1622	0,8714
C	3,9306	0,6369	6,1712	0,0000

Before testing the hypothesis the variable must pass the correlation test. The following Correlation matrix shows the strength of the relationship between variables for the institutional model, if there are any. The closer the value is to (negative) one the more the variables are (negatively) correlated among each other, therefore significant correlations (above 0.7) have been highlighted in bold and consequently removed from the sample.

Table 5. *Correlation Matrix, Institutional Model*

Given the some high correlations among these variables in the following corrected model the Corruption index, Democracy index, Risk of Political Instability, and Number of Women in Parliament were excluded. Corruption data has been deleted even though it was highly significant in the non-restricted model. From the correlation matrix we may observe high significant correlations of the Corruption index with Government Efficiency and Justice. Democracy index and Risk of Political Instability is deleted from the following regression because data is already covered by Free press and because of limited data availability. Number of Women in Parliament will also be deleted not because of high correlations but because of a restricted dataset. The synchronization between lacking data and multicollinearity problem makes it almost impossible to carry out the tests therefore those variables had to necessarily be removed.

The restricted model for institutional variables is therefore the following.

Table 6 *Regression Results, Restricted Model for Institutional Variable*

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C_Inflation	-0,0128	0,0053	-2,4051	**0,0169**
Free Press	0,0077	0,0062	1,2480	0,2133
Government Efficiency	0,0293	0,0047	-6,2017	**0,0000**
Justice	0,2761	0,0311	8,8895	**0,0000**
C	4,8925	0,3104	15,7627	**0,0000**

Economic Model :

The following figure shows the regression results of the model for economic variables.

Table Regression Results, Model for Economic Variabl

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C_Inflation	-0,0354	0,0047	-7,4598	0,0000
Parallel Economy	0,2939	0,0229	12,8378	**0,0312**
Protectionism	0,3973	0,0300	13,2412	**0,0087**
C	2,0130	0,2114	9,5246	0,0000

Figure Correlation Matrix for Economic Variables

	Competition Legislation	**Inflation**	**Parallel Economy**	**Protectionism**
Competition Legislation	1,0000	-0,2966	0,5961	0,5573
C_Inflation	-0,2966	1,0000	-0,1569	0,0281
Parallel Economy	0,5961	-0,1569	1,0000	0,2815
Protectionism	0,5573	0,0281	0,2815	1,0000

The table above illustrates the correlations among the independent variables for the economic model. In order to overcome the multicollinearity issue correlations above 0.7 are highlighted in bold and consequently will be excluded. Given that no high correlations exist among the variables above, no adjustments had to be done for the model for Economic variables.

Social Model :

***Figure** Regression Results, Model of Social Variables*

Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C_Inflation	-0,0237	0,0035	-6,8532	0,0003
HDI	-0,0040	0,1573	-0,0255	0,9790
Equal Opportunity	0,1789	0,0372	4,8069	**0,0000**
Social Responsibility	0,6563	0,0332	19,7884	**0,0000**
C	1,1636	0,2225	5,2289	0,0000

The following figure will show the correlations present in the third model. High correlations (above 0.7) will be highlighted in bold.

***Figure** Correlation Matrix ,Social Variables*

	Competition Legislation	C_Inflation	Equal Opportunity	Social Responsibility
Competition Legislation	1,0000	-0,3219	0,4733	0,7824
C_Inflation	-0,3219	1,0000	0,0570	-0,1950
Equal Opportunity	0,4733	0,0570	1,0000	0,4900
Social Responsibility	0,7824	-0,0950	0,4900	1,0000

Given that no correlations exist among the variables in the Social Model, no adjustments were necessary.

Mix Model:

The fourth model, *Mix Model*, has been created by pulling together all the variables that were most significant in each previous regression. First, considering the *Institutional Model (1)* the variables which were more significant and therefore considered to have a greater impact on Competition Legislation were Government Efficiency, Justice and Bribery and Corruption. The variable Bribery and Corruption, even if highly significant in previous model (0.000) had to be removed from the *Mix Model* because of significant correlations with other variables in the same model. For the *Economic Model* (2) the most significant variables were Parallel Economy and Protectionism. With regards to the *Social Model* (3), Social Responsibility and Equal Opportunity were highly significant (0.000) while the Human Development Indicator was not and therefore not included in the Mix Model.

The following correlation matrix shows the relation between the variables included in the Mix Model.

Figure 12 *. Correlation matrix, Mix Model*

Justice will be deleted from the following regression because of high correlations with Government Efficiency (-0.7745) and with Social Responsibility (0.8016). Government Efficiency is correlated also with Social Responsibility but with a value slightly above the 70% and therefore I decided to keep both variables.

Regression Result, Mix Model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C_Inflation	-0,0216	0,0034	-6,2939	0,2241
Government Efficiency	0,0158	0,0033	-4,8355	**0,0000**
Parallel Economy	0,1143	0,0211	5,4189	**0,0000**
Protectionism	0,1643	0,0277	5,9324	**0,0184**
Equal Opportunity	0,0413	0,0345	1,1953	0,2327
Social Responsibility	0,3864	0,0383	10,0970	**0,0107**
C	2,2462	0,3708	6,0577	0,0000

VI. Discussion and Empirical Results

The table above summarizes results of the regression OLS for each model. The value in brackets indicates the probability (between 0 and 1) that the variable is not significant. For example in model (1) a probability of 0.013 indicated there is a 1.3% probability that the variable "Justice" is not significant. Therefore a higher value corresponds to less significance in the regression, in other words less importance of that specific variable throughout the model. Generally only probabilities below 10% may be considered of statistical value and are therefore marked with one asterisk (*). Values below 5% are marked with 2 asterisks (**) and below 1%, considered of greater statistical value, have 3 asterisks (***).

Table Multiple regression models

Variable	(1)	(2)	(3)	(4)
C	4.8925*** (0.0000)	2.0130*** (0.0000)	1.1635*** (0.0000)	2.2461*** (0.0000)
C_Inflation	-0.0128 (0.0169)	-0.0354*** (0.0000)	-0.0237*** (0.0003)	-0.0215 (0.2241)
Free Press	0.007696 (0.2133)			