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THE RELATIONSHIP BETWEEN INFORMAL INSTITUTIONS AND GROSS
DOMESTIC PRODUCT PER CAPITA

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Submitted to the Economics Faculty in partial fulfillment of the requirements for the degree of
Bachelor of Science in Business Administration

December 2010

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Previous research argues that “informal institutions” measured by an index of social norms and customs, maintain relative primacy over “formal institutions” measured by constitutional constraints, in determining economic prosperity. However, research in this field has yet to separate these institutional indices to determine the underlying relationships between each informal measure and economic prosperity. To address this shortcoming, I examine the relative importance of each disaggregated measure of informal institutions in the relationship with per capita income.

The findings from the OLS estimation of this relationship suggest the primacy of obedience over trust, respect, and self-determination when controlling for other determinates of development. Additionally, obedience shows a positive impact on GDP per capita, suggesting that when measured as a means of production, rather than a method of thought, obedience promotes efficiency and in turn prosperity.

JEL classifications: O13, O17

Key Words: informal institutions, formal institutions, culture, economic development

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I. Background on Institutional Economics

The post-industrialization divergence of economic development between countries has perplexed economists (North 1990). This divergence raises the fundamental question of what contributes to the vast differences in economic growth observed between modern countries. Economists have yet to come to a consensus on the relative importance of possible causes for differences in prosperity across countries and as a result, are burdened with finding ways to empirically analyze the relationship between institutions and wealth.

In the last two decades a literature has developed that focuses on the role institutions play in fostering economic development. Research suggests that institutions are responsible for the divergence in prosperity over the last forty years (Acemoglu et al., 2001, Acemoglu 2002, Acemoglu and Robinson 2005, Tabellini 2007, Boekette et al. 2008, Williamson 2010). However, uncertainty still exists regarding the relative importance of different types of institutions and their relationships with growth. Recent research examines the relative effects of informal versus formal institutions on prosperity, to try to establish the primacy of informal institutions in determining wealth (Tabellini 2007, Boekette et al. 2008, Williamson and Kerekes 2008, Williamson 2010).

Due to the difficulty in measuring institutions while separating out endogenous influences, this paper moves away from previous models making causal arguments between institutions and GDP per capita. Rather, this research further unbundles institutions by disaggregating previously used measures of informal and formal institutions. The goal of this analysis is to determine the relative importance of each cultural trait in the relationship between institutions and wealth.

The paper progresses as follows. Section II presents a review of the relevant literature. Section III presents the definitions and measures of institutions used within this paper as well as an explanation of the disaggregated OLS regression from the analysis. Section IV presents results and their interpretation. Section V concludes.

II. Literature Review

Acemoglu et al. (2001) attempt to determine what causes differences in economic performance using the instrument of settler mortality rates in European colonies. As mortality rates increase, the probability of implementation of extractive states also increases. Contrastingly, given low settler mortality rates institutions fostering settlement colonies, or Neo-Europes, were implemented. Assumingly, these settlements persisted until current times and thus partially determine the structures and types of current institutions, which in turn affect prosperity. By using the instrument of settler mortality rates Acemoglu et al. are able to circumvent the fundamental endogeneity problem facing this field. Because they are able to show that mortality rates affect GDP per capita only through institutions, this paper is the first to make a strong causal argument that differences in institutions cause differences in wealth. Their findings identify differences in settler mortality rates and the resulting institutions as a possible cause of differences between per-capita GDP across countries.

A subsequent paper by Acemoglu et al. (2002) similarly aims to explain the divergence of cross-country economic performance post 1500. They argue for the institutions hypothesis which suggests that wealth is expected to persist over time, given that the same institutions remain over time. However, the occurrence of a major organizational shock, such as European colonization, can alter wealth, or at least its persistence.

Data on urbanization patterns and population density suggests that poor communities in 1500s were usually located in sparsely populated areas. Additionally, sparsely populated areas were more likely to be settled by Europeans and the settlers accordingly brought “better” institutions. These institutions supported property rights and were similar to those present in Europe. Conversely, in 1500 richer areas were more densely populated. These densely populated areas were more likely to be used for extractive states, and thus the imposition of extractive institutions. Combining the institutions hypothesis with their theory of institutional reversal, Acemoglu et al. hypothesize that countries relatively rich in 1500s should be relatively poor today. Urbanization rates and population density are used as proxies in instrumental variable regressions to test for causality between institutions and the log of GDP per capita. Their findings show an inverse relationship between prosperity in 1500 and prosperity today, and suggest an income reversal occurred among the European colonies due to this institutional shock. Their unique instrument is again able to filter endogeneity from their measurements and further supports the hypothesis that differences in institutions are able to cause differences in prosperity.

Glaeser et al. (2004) offer an opposing view which also examines the direction of the causal relationship between institutions and economic growth instead arguing for human capital as the primary causal indicator of development. They maintain that many previous findings within new institutional economics are unwarranted due to the lack of appropriate instruments and use of outcome variables. Additionally, they suggest that the commonly used measures of risk of expropriation by the government, government effectiveness, and constraints on the executive are outcome variables and do not meet the requirements for a proxy of institutions. Another institutional measure analyzed within this paper, constraints on the executive, is also determined to be unacceptable due to its volatility and its nature as an outcome variable. To

overcome endogeneity issues, Glaeser et al. suggest using constitutional measures of institutions such as judicial independence, constitutional review, plurality, and proportional representation. Departing from previous research, they test the alternative hypothesis that human capital affects development. Their findings suggest a relationship exists between the amount of human capital and the average “level” of institutions during a period of time, and the amount of economic growth that occurs during that same period of time. Glaeser et al.’s findings support the theory that human and physical capital are the main determinates of economic growth. These results suggest that countries are more likely to improve their institutions as a response to increases in income.

La Porta et al. (2004) also expand upon measures of formal institutions and find common constitutional roots that are associated with greater economic freedom. Beginning with Hayek’s distinction between two types of legal government checks and balances judicial independence and constitutional review, they test to determine if judicial independence and constitutional review are associated with greater levels of economic freedom. Using a new dataset consisting of 71 countries reflecting measures of judicial independence and constitutional review, they find judicial independence is most important for economic freedom, while constitutional review contributes mainly to political freedom.

Acemoglu et al. (2005) further separate institutions into two categories, property rights and contracting institutions. Property rights institutions are defined as institutions that lower the risk of expropriation by government or the elite. This institutional classification is an extension of North’s (1981) contract theory, which argues that states should provide legal structures that foster and incentivize economic transactions. North’s second theory of the state, the predatory theory, views government as a mechanism used solely for redistribution of wealth. Acemoglu et

al.'s analysis expands on contract theory and classifies institutions that support private contract formation as contracting institutions. The analysis investigates the relative roles of these types of institutions in determining wealth. Acemoglu et al. use legal formalism as a proxy for contracting institutions and protection of citizens from expropriation and constraints on the government as proxies for property rights institutions. These proxies are used in a multiple instrumental variables analysis on a sample of former European Colonies. The results suggest that the effect of contracting institutions falls mainly on the form of financial intermediation and regulation, rather than growth, investment, and available credit in the economy. Alternatively, property rights institutions are associated with a large positive impact on long-run economic growth, investment, and financial development.

The idea of property rights institutions developed by Acemoglu has been further examined within the literature as being separate from formal influence, in the form of informal institutions. Informal institutions are social norms that determine the opportunities and actions of individuals within a society (Williamson 2010). Previous literature suggests that these social norms can promote self-enforcement of property rights, cooperation, and efficiency, without the requirement of formal publically provided legal systems (Leeson 2007c, Williamson 2008).

Benson (1989a) examines whether history presents any examples of laws that have emerged from social norms and efficiently enforced property rights. An examination of the Merchant Law in early Europe supports his hypothesis that law rooted in the social fabric of society can promote efficiency in property right enforcement. In fact, due to the efficiency of its constantly evolving nature, the Merchant Law was preferred over alternative legal systems at the time.

Additional examples also emphasize the importance of informal institutions. Anderson & Hill (1979) show that informal institutions in America's western frontier such as land claims clubs, cattlemens' associations, mining camps, and wagon trains, provided order even without a centralized government. Leeson (2007b) presents evidence from late pre-colonial Africa showing that informal institutions allowed weaker agents to trade with stronger, more violent agents by using credit as a means of exchange and charging premiums for trade to deter violent theft. Grief's (2003) paper on Maghribi Traders Association shows increasing costs associated with opportunistic, cheating behavior, changed incentives to ensure compliance of contracts. Failure to complete a contract resulted in punishment as well as a tarnished reputation, which affected future employment of the agent. These informal institutions were able to overcome commitment problems and allowed 11th century trade to expand internationally. Present day Somalia also presents an example where informal institutions foster self-enforcement without the presence of publically provided law (Nenova and Harford 2004, Leeson 2007a). Somali citizens use established trust networks, such as clans, to supplement contract enforcement, payment, and transmission of capital. Although Somalia is a failed state, the private sector has made some improvements via competition and market forces since the dissolution of government (Nenova and Harford 2004).

Benson (1989b) refers to these informal institutions as primary rules using Hart's definition of rules encompass social norms that govern society. Any market failures that primary rules do not combat such as any uncertainty, static character, or inefficiency are corrected by secondary rules. Although legal positivists assert that government is a requirement for law and order, primitive societies offer a persuasive counter argument. Examining three primitive societies, Benson asserts that the societies were truly lawless because the secondary rules were

mutually agreed upon, not imposed. These societies demonstrate that public order can sometimes be achieved through private mechanisms, suggesting that private forces such as social norms are sometimes able to promote market interaction.

Pejovich (2003) emphasizes the importance of informal indigenous acceptance of imposed formal institutions. He explores the interaction thesis which argues that transaction costs are reduced during the transition process when new formal rules overlap onto the already prevailing informal rules in society. Pejovich hypothesizes that differences that emerge in transition results of Central and Eastern Europe are a result of cultural differences. Governments in transition economies have two options for dealing with the implementation of new formal institutions on society, by fiat or by voluntary contracts. The first imposes the formal institutions and then later enacting clarifying laws which aim to minimize the conflict between the underlying informal institutions and the newly imposed and mismatched formal institutions. The voluntary contracts transition on the other hand emphasizes transition by assurance that the new formal policies are legitimate and credible. The findings within this study suggest that transition by voluntary contracts is correlated with greater economic freedom and better economic performance.

Boettke et al. (2008) further explain the importance of indigenous involvement in institutional formation. They argue that history is a main determinate of the stickiness of institutions within society. More specifically, they hypothesize that acceptance of institutions by the indigenous people of the previous period determines the stickiness of that institution in the current period. Within the paper, three types of institutions are identified, foreign introduced exogenous (FEX), indigenously introduced exogenous (IEX), and indigenously introduced endogenous (IEN). The findings suggest that any exogenously determined programs are unlikely

to be successful in developing countries because the lack of acceptance by indigenous people will prohibit these institutions from sticking. IEN institutions however, emerge from norm within the indigenous population are thus rooted in the social memory of society. This rootedness allows these institutions to remain sticky across periods.

The role of culture as fundamental to the development of institutional structures is further explored by Grief (1994). The analysis compares cultural factors contributing to the path divergence of two societies, Maghribi and Genoese traders. The Maghribi traders had collectivist cultural beliefs which influenced the development of their institutions to be collectivist in nature. This allowed them to organize society and its transactions to foster investment because of the threat of group action against deviants. Due to weakened dependence on the group, citizens of the individualistic Genoese society were decreasingly deterred by the threat of group punishment. Although similar in other areas such as environment, technology, and goods, the organizations within these two societies were vastly different due to differing cultural beliefs. Grief (1994) finds that collectivist values promote more efficient agencies within a country's economy and thus require less costly formal institutions. They are however, less effective when it comes to efficiency in intereconomy agency relations. Contrastingly, individualistic societies are less efficient when dealing with intraeconomy relations and thus require a more costly legal system. Grief (1994) argues that institutions and their efficiency implications differ across countries with differing cultural beliefs.

Knack and Keefer (1997) empirically investigate the relationship between social capital and economic growth. Social capital is measured by trust and civic norms as reported by questions in the World Values Survey that ask, “Generally speaking, would you say that most people can be trusted, or that you can't be too careful in dealing with people?” and whether

certain social actions can ever be justified. They find that trust and civic cooperation are correlated with economic prosperity and are stronger in countries with property rights protection.

Tabellini (2007) further dissents from the debate and specifically examines the role of culture in determining prosperity by exploiting regional variations in culture. This analysis follows an approach similar to Acemoglu et al. (2001) but examines regional effects rather than cross-country variation, allowing for the control for country fixed effects, leaving his estimates to be interpreted as the effect of history on culture, and thus on development. Tabellini argues that specific cultural traits found in regions are associated with historical patterns and their resulting current economic growth. Using data from the World Values Survey in the 1990 and 1995, Tabellini measures culture by aggregating measures of trust, respect, control over one's life, and obedience. His findings suggest that negative cultural traits, such as less trust in others and less confidence in individual achievement, are correlated with lower economic growth. Additionally, his results suggest that formal institutions have no primacy over informal institutions such as culture.

Williamson and Kerekes (2008) help to further unbundle institutions by analyzing the effects of formal and informal rules of the security of property rights. Following Glaeser et al. (2004)'s method to define formal rules and Tabellini's (2007) method to define informal rules, Williamson and Kerekes use data from the World Values Survey and La Porta et al. (2004) to empirically test the relationships between formal and informal rules and security of property rights. Their analysis first presents Ordinary Least Squares regressions to determine if relationships exist and then employs instrumental variable techniques to determine causality between the relationships. They instrument for formal institutions using legal origin and

informal institutions using latitude. The results of these analyses suggest that informal institutions are the driving force behind security of property rights.

Next, Williamson (2010) combines the previous literature of Glaeser et al. (2004) and Tabellini (2007), to measure formal and informal institutions, examining how different types of institutions shape per capita income. Her analysis defines four combinations of institutional strength; strong formal and strong informal, weak formal and strong informal, strong formal and weak informal, and weak formal and weak informal. Using Ordinary Least Squares to examine the relative importance formal versus informal institutions with regards to GDP per capita, Williamson's (2010) results suggest that countries with weak formal and strong informal institutions have the highest average GDP per capita. She argues that strong informal institutions are fundamental to economic success and in countries with weak informal institutions, the codification of formal institutions mismatched with the informal institutions in place, may be detrimental to economic success.

III. Methodology

Recent research in institutional economics focuses on determining the importance of informal institutions in the relationship between institutions and economic prosperity. Williamson and Kerekes (2008) are the first to combine the accepted constitutional constraints from Glaeser et al. (2004) with the measures of culture identified by Tabellini (2007), to examine the relationship between institutions and property rights. Additionally, Williamson (2010) combines the same measures of institutions to examine the relationship between institutions, this time defined as two separate indices, formal and informal, and GDP per capita. My paper follows the method of Williamson (2010) by utilizing the theoretical framework developed in

Glaeser et al. (2004) to define measures of formal institutions and Tabellini (2007) to define measures of informal institutions. This analysis diverges from Williamson (2010) and analyzes all institutional measures separately within the regression, rather than in indices. This disaggregation facilitates the examination of the individual measures of informal institutions and their relation to GDP per capita.

A. Informal Institutions

The focus of my analysis lies with informal institutions, broadly defined as conventions of human behavior (North 1991). However, it is impossible to completely capture informal institutions as defined by North. As a result, a slightly more narrow definition is offered by Williamson (2010) who distinguishes informal institutions as strictly private constraints founded in norms and codes of human behavior. Although theoretically defined as separate from formal influence, in reality formal institutions do impact norms of behavior. While not a flawless approach, the formal measures included in the regression absorb as much of the formal influence as possible given the limits on the measurement of formal institutions.

Within this paper, informal institutions are social norms and customs that shape and constrain human behavior and promote efficiency within market transactions. Increased efficiency causes increases in transactions which in turn affect GDP. While it is impossible to measure informal institutions completely, it is possible to measure reflections of social norms and customs. Trust, respect, self-determination, and obedience are defined by Tabellini (2007) and used by Williamson and Kerekes (2008) and Williamson (2010) to represent reflections of social norms within a country. Measures of these variables theoretically capture different aspects of informal institutions, so that the level of strength present within each measure reflects the

level of informal institutions present within society. The World Values Survey waves 1990, 1995, and 2000 supply the questions used for the measures of informal institutions. Thus far, the World Values Survey has produced five waves of their study thus far, allowing for a cross-national comparison of culture and social norms based on a panel of survey questions (Inglehart 2000). The dataset currently represents 85% of the world's population and contains responses from a large range of economic situations (Inglehart 2000). Despite the use of three waves my analysis remains cross-sectional due to the assumption that cultures, and thus subsets of cultures such as social norms, are constant in the short-run. This allows for the expansion of the dataset so that new measures of the reflections of informal institutions are available for use.

As with any measurement, there are limitations to the World Values Survey. A fundamental limitation to the survey, and this paper, is the difficulty in ensuring all respondents interpret the questions in the same way. To try to overcome this, the World Values Survey researchers interview respondents face to face, in the respondent's first language. However, there always exists some ambiguity when asking respondents about broad concepts such as trust or respect. When the data allows, I analyze several questions per measure of informal institutions attempting to choose the best available measure.

i. Measures of Informal Institutions

Trust, respect, self-determination, and obedience, measure culture as defined by Tabellini (2007). Due to data limitations I am only able to examine a limited number of World Values Survey questions per measure of culture.

Trust is defined as an individual's level of confidence or faith in someone or something. A country's level of informal institutions is reflected by trust because levels of trust directly

impact behavior. The level of trust one person has for another person constrains the opportunities present within their relationship. By constraining human activity in a private realm and affecting human interaction, trust reflects a portion of the informal institutions present within a society.

Trust promotes efficiency through its ability to reduce transaction costs, overcome commitment problems, and thus facilitate economic transactions which in turn impact GDP. As levels of trust increase within a culture, efficiency will also increase and in turn enhance informal institutions.

Due to data limitations, there is only one available measure of trust within the World Values Survey which asks, “Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?” A score of one is given if the respondent answered, “Most people can be trusted”, and zero if the respondent answered, “Need to be very careful”.

Respect refers to the level of esteem held by an individual for the economic rights of other individuals within the society. Increased levels of respect are correlated with increased individual reluctance to free-ride and decreased the likelihood of theft, thus promoting efficiency (Tabellini 2007). A more specific example can be seen with property right enforcement. The presence of higher levels of respect acts to decrease the violation of others’ rights. A decreased likelihood of violation, such as theft, translates into more secure property rights due to less fear of expropriation. Property right enforcement in turn promotes efficiency and thus wealth (Tabellini 2007, Williamson and Kerekes 2008, Williamson 2010).

Due to data limitations only one measure of respect is available. Respect is measured using the World Values Survey question that reads, “Here is a list of qualities that children can

be encouraged to learn at home. Which, if any, do you consider to be especially important? Please choose up to five!” with a list of ten possible answers. The respect variable equals one if the respondent mentioned, “Tolerance and respect for other people” as an important child quality.

Self-determination is defined as a person’s belief in their ability to create success for themselves. Theoretically, this feeling of control over one’s life is solely due to the cultural perspectives held by the individual rather than the formal influences they face, such as influence felt by courts, law enforcement, etc. In different situations, formal influences exert varied levels of impact. For example, a low level of self-determination caused by the current regime in power within a democratic country with regular elections is only slightly influential on a person’s value of self-determination, because the circumstances may change in the long-run. However, if a low level of self-determination is caused by a constitutional rule explicitly limiting the amount of success a person can achieve then formal influence impacts self-determination in a more permanent manner. In reality, the best controls the literature presents for these formal institutions are the constitutional constraints Glaeser et al. (2004) identify. These constitutional constraints allow for the maximum separation of formal influence on self-determination provided that the World Values Survey question chosen is also as separate as possible from formal influence

This belief in control over one’s life leads individuals to work harder, invest for the future, and innovate. Thus, increased levels of self-determination promote innovation and prosperity on an aggregate level with the motivation of success. I consider three different questions from the World Values Survey to measure self-determination.

The first measure I examine asks individuals to choose from a list of important child qualities, the five traits they believe are most important for children to have. Respondents who mentioned, “determination and perseverance” have a score of 1 while respondents who did not mention self-determination have a score of 0. Although not used in previous models, this measure is the most separate from formal influence and is thus the preferred measure of self-determination. It is conceivable that parents may allow the current regime’s attitude to shape what qualities they desire in their children, but this measure is less directly influenced by the current regime in power. Thus, although not completely separate from formal influence, this is the best measure of determination currently available within the data.

The second question presents respondents with a scale from 1 to 10, a response of 1 indicates agreement that, “In the long run, hard work usually brings a better life” whereas a score of 10 indicates agreement that, “Hard work doesn’t generally bring success-it’s more a matter of luck and connections”. Answers to this question are normalized between 1 and 10 and are then rescaled so that a higher score indicates a higher level of self-determination. However, this measure is flawed because respondents in countries with oppressive governments will record their level of self-determination *given* the government in place. This dependence on the regime in power shows that the question does not capture determination separate from formal influence.

Previous research by Tabellini (2007), Williamson and Kerekes (2008) and Williamson (2010) considers a third World Values Survey questions which asks,

“Some people feel they have completely free choice and control over their lives, while other people feel that what they do has no real effect on what happens to them. Please use this scale where 1 means "no choice at all" and 10 means "a great deal of choice" to

indicate how much freedom of choice and control you feel you have over the way your life turns out”.

Despite the presence of this measure in previous research, the question is flawed due to dependence on the type of government currently in power. The dependence on the regime in place is not separated from the measure of the self-determination and thus this question is not an appropriate measure.

Obedience is defined as an individual’s willingness to follow rules established by authority. Whether an individual abides by the social rules within a society constrains the individual’s opportunities within that society. The impact of obedience on behavior and opportunities reflects the level of informal institutions within a society. In societies with high levels of obedience, members are aware of how other members usually act in market transactions. When dealing in infrequent transactions that are not repeated, exchange with an obedient partner will increase predictability, reduce transaction costs, and promote efficiency. Additionally, in small societies members may be aware of the level of obedience possessed by other members. The expectation that others will act as instructed allows other members of society to decide whether to enter into market transactions with other members and determine how costly the transaction will be. In this scenario, higher levels of obedience promote market exchange and reduced transaction costs, thus promoting higher levels of GDP. Again, three measures are examined to estimate the effect of obedience on GDP per capita.

The first question asks respondents,

“People have different ideas about following instructions at work. Some say that one should follow one's superior's instructions even when one does not fully agree with them.

Others say that one should follow one's superior's instructions only when one is convinced that they are right. With which of these two opinions do you agree?"

Respondents are given a score of one if they indicate willingness to follow instructions without any questions and a score of zero if the individual must be convinced first. As compared to other available questions, this measure of obedience is the most separate from formal influence in that it asks about job duties, which are less reliant on the current regime in power than other measures of obedience. Due to this separation, this is the preferred measure of obedience within the available data, and thus measures obedience within my model.

A second possible question from the World Values Survey asks respondents to choose from a list important child qualities. Respondents who mention obedience as an important child quality are given and score of one. Tabellini (2007), Williamson and Kerekes (2008), and Williamson (2010) use this measure, however it may be especially subject to measurement error due to the nature of the question being asked. Logically, all parents want their children to be obedient because it makes parenting easier. However, this does not reflect the nature of obedience within a society and thus is not a measure of informal institutions.

The third possible measure of obedience asks respondents about their feelings towards greater respect of authority in the future. Respondents indicating they feel this is a “good thing” are given a score of one whereas respondents indicating this is a “bad thing” are given a score of zero. Again this question is flawed due to dependence on the current government sentiment within a country. Thus, the question is not measuring obedience as separate from formal influence.

The measures of informal institutions and the corresponding variable definitions are listed in table 1.

Table 1: Variable Descriptions for Measures of Informal Institutions.

Variable	Description
<i>Trust</i>	If individual indicates most people can be trusted then 1, 0 if individual indicates the need to be very careful
<i>Respect</i>	If individual mentions tolerance and respect as an important child quality then 1, 0 if not mentioned by individual
<i>Determination₁</i>	If individual mentions determination and perseverance as an important child quality then 1, 0 if not mentioned by individual
<i>Determination₂</i>	Score between 1 and 10 indicating individual's belief that hard work brings success
<i>Determination₃</i>	Score between 1 and 10 indicating individual's freedom of choice and control in their own life
<i>Obedience₁</i>	If individual indicates willingness to follow instructions without any questions then 1, 0 if individual must be convinced first
<i>Obedience₂</i>	If individual mentions obedience as an important child quality then 1, 0 if not mentioned by individual
<i>Obedience₃</i>	If individual indicates greater respect for authority within country is a good thing then 1, 0 if individual indicates greater respect for authority is a bad thing

B. Formal Institutions

In the broadest sense, the concept of formal institutions encompasses all rules planned and implemented by humankind (North 1991). As with informal institutions, it is impossible to fully measure all rules implemented by human kind, and as a result recent research uses different measures of formal constraints, such as constraints on the executive, risk of expropriation, government effectiveness, and autocracy, to measure formal institutions (Glaeser 2004). However, in order to appropriately measure institutions, rather than choices made by current rulers or outcomes of the institutions, permanent measures of institutional framework must be used. Thus, Glaeser et al. (2004) suggest a more narrow definition of formal institutions as being comprised of only constitutional rules limiting the power of the sovereign. Although this definition is narrow and certainly does not capture the entire concept of formal institutions, these

constitutional constraints ensure conservative measurements of institutions by strictly limiting what economists measure to represent formal constraints. Glaeser et al. (2004) argue that the only appropriate measures are judicial independence, constitutional review, proportional representation, and plurality, which measure specifically constitutional constraints. These constitutional constraints are considered the most important constraints on executive authority and most closely reflect the permanent formal institutions themselves, not outcomes of the institutions or choices of recent regimes (Glaeser 2004).

My analysis follows Glaeser et al. (2004), Williamson and Kerekes (2008), and Williamson (2010) and uses constitutional constraints to reflect this limited definition of formal institutions. These constitutional variables are measured using plurality and proportional representation as identified by Beck (2004) in the Database of Political Institutions, and constitutional review and judicial independence as measured by La Porta et al. (2004).

Plurality represents the use of a winner take all strategy in elections, and equals one when such a system is in place. Proportional representation measures whether candidates in the upper or lower houses of parliament are elected by a percentage of votes and equals one when a proportional representation system is in place. Constitutional review represents judicial review of the constitutions as well as constitutional stability as measured by the number of steps needed to change the constitution. A high score on constitutional review indicates a high level of constitutional review of supreme or constitutional judges within a country, as well as high stability of the constitution measured by number of steps needed to change the constitution, and therefore a high executive constraint (Glaeser et al. 2004, La Porta et al. 2004). Judicial independence measures tenure of Supreme Court justices, tenure of highest ranked administrative judges, and the ability of judges to create case law. A high judicial independence

score shows a high permanence of influence for Supreme Court justices as measured by tenure of supreme court justices, tenure of highest ranked judges ruling on administrative issues, and existence of case law, thus indicating a higher level of constraint of the executive using constitutional rules (Glaeser et al. 2004, La Porta et al. 2004).

Table 2 summarizes the variable definitions and sources for the constitutional constraints.

Table 2: Variable Description and Sources for Constitutional Constraints.

Variable	Source	Description
<i>Independence</i>	Judicial Checks and Balances Dataset, La Porta et al. (2004)	The normalized sum of measures of tenure of supreme court justices, tenure of highest ranked judges ruling on administrative issues, and existence of case law
<i>Review</i>	Judicial Checks and Balances Dataset, La Porta et al. (2004)	The sum of two variables measuring judicial review and stability of the constitution
<i>Plurality</i>	Database of Political Institutions, Beck (2004)	If country uses a winner-take-all system then 1, 0 if not
<i>ProportionalRep</i>	Database of Political Institutions, Beck (2004)	If country uses a winner-take-all system then 1, 0 if not

C. Disaggregation

In previous research, Tabellini (2007), Williamson and Kerekes (2008), and Williamson (2010) combine measures of informal institutions into an informal index using principal component analysis. This process takes a number of multicollinear variables and transforms them into a smaller number of uncorrelated variables, while preserving the variance from the original set of variables. In addition to correcting for multicollinearity, principal component analysis, and thus previous aggregation of informal measures, is also advantageous because it results in an increase in degrees of freedom.

It is important to note that aggregation also increases the difficulty of interpreting informal institutions once they have been normalized and combined with other measures. For example, it is difficult to understand what an informal index with a value of 8 means for trust, respect, self-determination, and obedience when principal component analysis is used. Additionally, the use of an index muddles the underlying patterns between measures of informal institutions and wealth, and increases the need for controls for all variables that may affect the index.

The use of new measures of self-determination and obedience eliminates the multicollinearity issue found in previous research. Variance inflation factors for all regressions specified in Tables 3 and 4 fall below the benchmark set forth in Kennedy (2003) of a multicollinearity problem when VIF is greater than 10. Therefore, measures of informal institutions utilized within this paper are not multicollinear and principal component analysis is unnecessary and the inclusion of disaggregated informal measures within the analysis is warranted. By disaggregating previously used informal indices into trust, respect, self-determination, and obedience the underlying relationships between each measure and GDP per capita can be examined to determine which measures of informal institutions have the most significant relationship with GDP per capita. Although with disaggregation comes a low number of degrees of freedom, some results still maintain high significance and thus sound conclusions can still be drawn.

D. Econometric Model

My analysis expands upon the work of Williamson (2010) by disaggregating the informal index to determine which cultural traits impact wealth. The model uses log of GDP per capita in

2000 as its dependent variable and is estimated using Ordinary Least Squares. The regression of focus in my paper is presented below in equation 1.

$$\begin{aligned} \log GDPpc_i = & \alpha + \beta_1 Trust_i + \beta_2 Respect_i + \beta_3 Obedience_{1_i} + \beta_4 Determination_{3_i} + \\ & \beta_5 Independence_i + \beta_6 Review_i + \beta_7 Plurality_i + \beta_8 Representation_i + \\ & \beta_9 UrbanPop_i + \beta_{10} Inequality_i + \beta_{11} GovCons_i + \beta_{12} English_i + \beta_{13} Corruption_i + \\ & \beta_{14} Latitude_i + \beta_{15} Education_i + \varepsilon_i \end{aligned} \quad (1)$$

The control variables included within my model come from economic theory as well as previous research (La Porta 2004, Tabellini 2007, and Williamson 2010) and control for effects on GDP per capita separate from institutions. These include urban population in 1960 (WDI 2006), ethnolinguistic fractionalization as a proxy for inequality (La Porta et al. 2004), government consumption (WDI 2006), English legal origin (La Porta et al. 2004), corruption (Transparency International 2000), latitude (La Porta et al. 2004), and educational attainment (Barro-Lee 2000).

IV. Results

The OLS regression results are presented below in Tables 3 and 4. Table 3 presents the regressions without controls, and Table 4 presents the regressions using all control variables. To correct for heteroskedasticity robust standard errors are used in all regressions.

A comparison of the results for trust across tables 3 and 4, points to the significance of the relationship between *Obedience₁* and institutions. In in table 3, *Trust* is significant at the .05 level only when *Obedience₁* is included (see columns (1), (4), and (7)). However, when moving to table 4, which includes control variables, *Trust* becomes insignificant in all regressions that include *Obedience₁*.

Table 3: Ordinary Least Squares Regression Results

Dependent Variable: log GDP per capita 2000

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Trust	0.222** (0.088)	0.194* (0.102)	0.358* (0.211)	0.247** (0.106)	0.235* (0.138)	0.399* (0.203)	0.244*** (0.088)	0.114 (0.106)	0.331 (0.210)
Respect	0.367** (0.163)	0.358*** (0.114)	0.341 (0.229)	0.383** (0.173)	0.313* (0.154)	0.337 (0.207)	0.065** (0.171)	0.356*** (0.106)	0.367* (0.200)
Determin1	0.157 (0.132)	-0.021 (0.089)	0.234 (0.172)	-	-	-	-	-	-
Determin2	-	-	-	-0.030 (0.229)	-0.119 (0.294)	-0.108 (0.258)	-	-	-
Determin3	-	-	-	-	-	-	0.041 (0.251)	0.144 (0.178)	0.085 (0.225)
Obedience1	0.385 (0.271)	-	-	0.414 (0.258)	-	-	0.363 (0.285)	-	-
Obedience2	-	-0.273*** (0.092)	-	-	-0.240* (0.132)	-	-	-0.332*** (0.096)	-
Obedience3	-	-	0.120 (0.184)	-	-	0.080 (0.145)	-	-	0.037 (0.165)
Independence	-0.805 (0.623)	-0.862 (0.428)	-0.890 (0.540)	-0.648 (0.724)	-0.856 (0.558)	-0.678 (0.629)	-0.687 (0.666)	-0.353 (0.439)	-0.730 (0.572)
Review	-0.957 (0.731)	-0.165 (0.462)	-0.495 (0.634)	-1.244* (0.706)	-0.510 (0.589)	-0.718 (0.617)	-0.927 (0.801)	0.088 (0.519)	-0.311 (0.689)
Plurality	0.133 (0.216)	0.133 (0.216)	0.269 (0.308)	0.387 (0.348)	0.055 (0.258)	0.245 (0.332)	0.527 (0.360)	0.173 (0.201)	0.389 (0.323)
PropRep	0.598 (0.469)	0.598 (0.469)	1.010 (0.6488)	1.407** (0.650)	0.640 (0.511)	0.946 (0.638)	1.392* (0.692)	0.745 (0.481)	0.962 (0.735)
Constant	7.395*** (1.082)	7.395*** (1.082)	4.211** (1.771)	4.239** (2.010)	8.162*** (2.120)	5.670*** (1.701)	3.941** (1.776)	6.109*** (1.643)	4.54*** (1.659)
# Observations	41	44	44	37	39	39	41	44	43
R-squared	0.56	0.59	0.53	0.57	0.58	0.55	0.55	0.58	0.51

Note: Robust standard errors are in parentheses. Significance level: *** at 1%, ** at 5%, * at 10%

Table 4: Ordinary Least Squares Regression Results with Controls

Dependent Variable: log GDP per capita 2000

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Trust	0.020 (0.088)	0.099 (0.108)	0.255*** (0.087)	-0.051 (0.095)	0.084 (0.119)	0.257*** (0.088)	0.009 (0.087)	0.121 (0.105)	0.261*** (0.135)
Respect	0.164 (0.176)	0.070 (0.140)	-0.076 (0.094)	0.230 (0.190)	0.122 (0.142)	0.008 (0.131)	0.181 (0.171)	0.090 (0.136)	-0.015 (0.134)
Determin1	-0.109 (0.116)	-0.079 (0.129)	0.285* (0.150)	-	-	-	-	-	-
Determin2	-	-	-	-0.138 (0.116)	-0.167 (0.138)	-0.173 (0.127)	-	-	-
Determin3	-	-	-	-	-	-	0.066 (0.140)	0.086 (0.179)	-0.081 (0.112)
Obedience1	0.323** (0.132)	-	-	0.352*** (0.108)	-	-	0.342** (0.127)	-	-
Obedience2	-	0.244 (0.145)	-	-	0.340** (0.153)	-	-	0.314** (0.113)	-
Obedience3	-	-	0.349*** (0.077)	-	-	0.300*** (0.081)	-	-	0.287*** (0.068)
Independence	-0.542 (0.600)	-0.398 (0.594)	-0.084 (0.443)	-0.488 (0.672)	-0.244 (0.566)	-0.122 (0.500)	-0.385 (0.577)	-0.249 (0.538)	-0.489 (0.413)
Review	-0.596 (0.455)	-0.423 (0.431)	-0.611 (0.365)	-0.697 (0.408)	-0.313 (0.371)	-0.122 (0.310)	-0.707 (0.435)	-0.335 (0.396)	-0.136 (0.382)
Plurality	0.444* (0.238)	0.286 (0.225)	0.311 (0.190)	0.426 (0.307)	0.326 (0.279)	0.580** (0.208)	0.407 (0.262)	0.297 (0.238)	0.441** (0.161)
PropRepresent	0.769** (0.297)	0.566* (0.325)	0.813*** (0.264)	0.854** (0.315)	0.571 (0.344)	0.551** (0.207)	0.799** (0.318)	0.528 (0.332)	0.624*** (0.218)
UrbanPop	-0.024*** (0.008)	-0.028** (0.011)	-0.024*** (0.007)	-0.027*** (0.008)	-0.032** (0.012)	-0.025*** (0.008)	-0.024** (0.009)	-0.031** (0.011)	-0.028*** (0.008)
Inequality	-1.284** (0.456)	-1.699** (0.704)	-1.077** (0.418)	-1.569** (0.582)	-2.127*** (0.686)	-1.211** (0.555)	-1.375*** (0.467)	-1.928** (0.753)	-0.911* (0.456)
GovCons	0.039 (0.026)	0.040* (0.021)	0.034* (0.018)	0.048 (0.031)	0.031 (0.027)	0.025 (0.023)	0.046* (0.026)	0.031 (0.023)	0.003 (0.019)
English	-0.418 (0.269)	-0.322 (0.309)	-0.656** (0.278)	-0.379 (0.244)	-0.466 (0.318)	-0.859** (0.346)	-0.432 (0.275)	-0.462 (0.324)	-0.680** (0.306)
Corruption	0.182* (0.103)	0.217 (0.132)	0.147* (0.077)	0.167* (0.085)	0.175* (0.097)	0.101 (0.061)	0.197* (0.106)	0.218* (0.123)	0.114 (0.074)
Latitude	2.544*** (0.635)	1.961** (0.806)	2.171*** (0.476)	1.480** (0.694)	1.802** (0.824)	2.344*** (0.635)	1.687** (0.746)	2.028** (0.866)	2.544*** (0.635)

Educational Attainment	1.559*** (0.282)	1.947*** (0.543)	1.398*** (0.266)	1.283*** (0.275)	1.974*** (0.575)	1.222*** (0.291)	1.257*** (0.279)	1.979*** (0.523)	1.559*** (0.282)
Constant	5.769*** (1.700)	5.133** (2.143)	3.728** (1.577)	5.488*** (1.763)	5.420** (1.930)	5.625*** (1.457)	4.224* (2.403)	4.006 (2.612)	5.769*** (1.670)
# Observations	36	38	38	33	34	34	36	37	37
R-squared	0.90	0.88	0.93	0.92	0.90	0.94	0.90	0.89	0.93

Note: Robust standard errors are in parentheses. Significance level: *** at 1%, ** at 5%, * at 10%

This suggests the efficiency implications attributed to trust are controlled for and thus do not maintain a significant relationship with GDP per capita independent of other factors affecting per capita income. The only other regressions in which *Trust* presents significant results are in table 4, when *Obedience₃* is included (columns (3), (6), and (9)).

Obedience₃, which asks respondents about greater respect for authority in the future, moves from insignificant in table 3 to significant and positive in table 4 (see columns (3), (6), and (9) in each table). These results suggest that when controls are included, the impact of greater respect for authority in the future becomes significant, and that increases in respect for authority are associated with increases in GDP per capita. Additionally, when *Trust* is included with *Obedience₃*, it is also significant and positive.

Obedience₃ measures obedience in a society given the government in power. A positive significant relationship is expected because high levels of GDP per capita are likely correlated with high levels of government sentiment. That is, it is likely that members of a society agree with greater respect for authority in the future when there is economic success within that society. It is unlikely that a country will have high levels of obedience, as measured by greater

respect for authority, when they are economically troubled. Thus, low levels of this obedience measure are correlated with low levels of GDP per capita, as would high levels of each measure. The results of this measure support the idea that the question measures government sentiment by measuring how respectful people are of the government in place. Not surprisingly, when there are higher levels of respect for authority in the future, trust becomes significant; indicating that on average respondents believe most people can be trusted. This is expected because high government sentiment usually implies less uncertainty and civil unrest than otherwise, both of which contribute to the level of trust within a society.

When examining trust within the preferred specification, represented by column (1) and containing *Trust*, *Respect*, *Determination₁*, and *Obedience₁*, the results again point to the primacy of obedience over other informal measures. These results show that when controlling for urban population in 1960, inequality, government consumption, English legal origin, latitude, corruption, and educational attainment, obedience maintains relative primacy over other measures of informal institutions. Accordingly, the efficiency implications associated with obedience are conclusively the only source of significant association with GDP per capita stemming solely from informal institutions. Columns (4) and (7) support this result but are less conclusive due the use of possibly flawed measures of determination.

Obedience₁ shows a positive and significant association with GDP per capita.

Obedience affects wealth by promoting efficiency through increased predictability within transactions. One can imagine the importance of this on an assembly line. The willingness of workers to follow instructions allows for the smooth operation of workflow and increased efficiency leading to higher levels of production and thus profits.

This finding contrasts with the arguments of Tabellini (2007), Williamson and Kerekes (2008), and Williamson (2010), which treat obedience as having a negative impact on economic performance. The underlying difference between these theoretical arguments arises in the different measurements of obedience. Previous research measures obedience using *Obedience₂*, which asks respondents to indicate whether obedience is an important child quality. One reason a negative association between obedience and GDP per capita is expected, follows from the manner children learn to be obedient. If children are taught to be obedient from an early age, this may reduce their ability to think creatively and thus could stifle innovation. However, *Obedience₂* asks parents if they consider obedience to be an important child quality. Naturally, because obedience makes parenting easier, most parents would cite obedience as important, regardless of how they value obedience within transactions.

To avoid the flaws with this measure of obedience, I use the self-reported willingness to follow instructions as recorded in the World Values Survey. This question better reflects the efficiency enhancing aspects of obedience, which follow from increased predictability within transactions.

Although trust and as well as measures of obedience produce results significant at the .05 level, the results for respect and self-determination are insignificant at this level and thus are subject to limited interpretation due to the size of my dataset and the corresponding degrees of freedom. Although *respect* shows significance in table 3, when the control variables are included in table 4, the variable becomes insignificant. What can be interpreted from this result within the confines of my dataset is that the efficiency implications associated with respect are absorbed within the control variables. It is important to note that the lack of significance of

respect may be a feature of the limited dataset and low degrees of freedom and is by no means conclusive evidence that respect has no significant association with GDP per capita.

The results for the determination variables are similar to those for respect. In table 3, self-determination is always insignificant, and remains to be insignificant at the .05 level within table 4. All that can be concluded from these results is that within this limited dataset self-determination does not present a significant relationship with GDP per capita. However, due to data limitations and low degrees of freedom, only results with significant at the .05 level are interpreted with certainty.

V. Conclusion

The purpose of this paper was to analyze the relationships between specific measures of informal institutions and GDP per capita to determine the relative importance of each measure within the model. The results, which incorporate new measures of self-determination and obedience, suggest that obedience has relative primacy over trust, respect, and self-determination when other effects on GDP per capita are controlled for.

In the preferred specification obedience shows a positive and significant association with GDP per capita. This finding contrasts with previous thought that obedience has a negative impact on wealth, suggesting that certain types of obedience promote efficiency and are associated with greater levels of economic prosperity. The measure of obedience within this paper treats obedience as a means of production, rather than a way of thought, and may be responsible for the differences in results as compared to previous literature. An important underlying finding within the paper suggests that different measures of obedience, with and without controls, produce different relationships with GDP per capita. Thus, it is important to

place additional emphasis on the use of appropriate control variables within similar analyses as well as the use of improved measures of informal institutions when available.

These results also suggest that the efficiency implications attributed to trust, respect, and self-determination are absorbed by the control variables within the preferred specification. However, this may be a feature of the limited data available and by no means is conclusive evidence that trust, respect, and self-determination do not have a significant relationship with GDP per capita.

This research sheds new light on which measures of informal institutions are most significantly related to GDP per capita. Due to the evidence presented within this paper, future research should look into the different relationships present between varied measures, of obedience and GDP per capita

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Appendix 1: Data on Informal Measures by Country

Country	Trust	Respect	Obedience1	Obedience2	Obedience3	Determin1	Determin2	Determin3
Algeria	2.00	7.04	3.43	5.62	4.69	5.86	1.75	2.91
Argentina	1.86	7.33	3.81	3.39	6.84	7.25	2.64	4.95
Australia	4.00	8.09	4.89	2.87	7.27	7.58	3.61	4.05
Austria	3.27	6.89	3.19	2.15	4.37	7.53	3.72	4.06
Bangladesh	2.22	7.00	4.21	1.91	8.94	5.98	4.47	2.37
Belgium	3.17	7.45	3.06	3.87	5.47	6.56	4.16	4.84
Brazil	0.50	6.32	1.99	4.83	8.16	7.32	2.90	6.71
Canada	4.45	8.09	5.54	2.97	6.65	7.63	4.29	3.79
Chile	2.24	7.33	4.80	5.14	6.56	7.13	3.59	4.75
China	5.53	5.68	2.31	1.92	4.17	6.97	3.30	4.10
Colombia	1.08	6.83		4.27	8.85	7.89	1.95	3.00
Denmark	6.21	8.41	3.56	1.73	3.65	7.18	3.13	6.05
Egypt	3.79	6.46	5.07	5.32	8.62	5.47	0.91	5.50
Finland	5.53	8.21	2.60	2.82	3.17	7.60	4.58	4.19
France	2.19	8.22	3.43	4.27	6.55	6.38	3.91	4.49
Germany	3.43	7.79	3.72	1.76	4.09	6.97	4.77	4.61
Greece	2.37	5.25	2.68	1.08	1.71	7.00	5.43	
Iceland	4.21	8.80	4.05	3.87	4.49	7.41	4.85	3.90
India	3.79	5.80	3.19	6.02	4.42	6.24	3.37	2.80
Indonesia	5.16	6.26	2.62	5.31	3.74	7.25	4.35	
Iran	6.53	5.90	2.48	4.14	7.14	6.62	2.84	
Iraq	4.76	7.78		7.38		5.91		
Ireland	4.17	7.65	4.27	4.17	8.03	7.19	2.71	4.55
Israel	2.35	8.19		1.63	5.87		3.07	
Italy	3.40	7.10	2.77	2.99	4.92	6.42	3.16	5.00
Japan	4.24	6.38	3.05	0.66	0.54	5.77	6.37	4.18
Jordan	2.77	6.68	2.53	4.71	9.02	7.17	1.64	
Korea, Rep.	2.64	6.08	2.64	2.40	2.94	6.70	3.47	3.81
Mexico	2.90	6.33	3.90	5.11	6.68	7.62	3.87	4.69
Netherlands	5.68	9.00	3.34	2.92	5.97	6.45	3.35	5.28
New Zealand	4.91	7.79	3.49	2.19	5.27	7.84	3.93	4.15
Nigeria	2.19	6.41	4.76	7.14	8.32	6.93	2.92	3.64
Norway	6.52	6.48	6.10	2.87	3.18	7.17	3.41	4.92
Pakistan	2.74	5.32		4.13	6.24	4.68	2.99	4.37
Peru	0.82	6.83	3.34	5.62	7.62	7.06	2.94	3.60
Philippines	0.71	5.39	4.19	4.41	7.22	6.92	3.29	3.79
Portugal	1.74	6.73	4.34	4.36	7.60	6.69	2.30	5.86
Saudia Arabia	5.30	5.64	3.95	6.66	7.30	6.60	4.02	5.00
Singapore	1.47	6.90	2.60	4.70	5.26	7.25	3.74	7.00
South Africa	1.90	6.69	4.50	4.82	8.07	6.83	3.35	2.78
Spain	3.42	7.56	3.53	4.44	6.58	6.70	2.39	5.11
Sweden	6.40	9.12	4.06	1.77	2.15	7.39	3.14	4.76
Switzerland	3.94	7.80	3.33	2.34	3.95	7.28	4.46	4.49
Taiwan	3.82	5.92	1.54	3.32	4.48	7.43	3.44	4.46
Turkey	1.25	6.30	3.32	3.68	6.55	5.29	2.18	4.18

Uganda	0.78	5.66	4.15	6.95	7.21	6.82	3.64	4.73
United Kingdom	3.52	8.26	4.43	4.59	7.48	7.06	3.42	4.82
United States	4.20	7.52	6.42	3.62	7.56	7.67	3.97	3.51
Venezuela	1.48	6.85	5.39	5.07	9.04	8.14	3.18	4.28
Vietnam	4.11	6.79	4.62	5.63	8.01	7.49	4.95	
Zimbabwe	1.12	7.67	4.53	6.70	8.95	5.77	3.27	

Appendix 2: Data on Constitutional Constraints by Country

Country	Independence	Review	Plurality	Prop.Rep.
Algeria	0	0.75	1	1
Argentina	1	0.67	0	1
Australia	1	0.83	1	1
Austria	0.67	0.67	0	1
Bangladesh	1	0.67	1	0
Belgium	0.67	0.58	0	1
Brazil	0.67	0.67	1	1
Canada	1	0.58	1	0
Chile	0.67	0.58	1	0
China	0	0.17		
Colombia	0.33	0.67	0	1
Denmark	1	0.83	0	1
Egypt	0.67	0.83	1	0
Finland	1	0.17	0	1
France	0.33	0.58	1	0.576923
Germany	1	0.83	1	1
Greece	0.67	0.67	1	1
Iceland	1	1	0	1
India	1	0.83	1	1
Indonesia	1	0.17	0	1
Iran	0.33	0	0.952381	
Iraq	0	0	1	0
Ireland	1	0.83	0	1
Israel	1	0	0	1
Italy	0.67	0.67	0.269231	1
Japan	0.67	1	1	1
Jordan	1	0.58	1	0
Korea, Rep.	0.67			
Mexico	0.33	0.83	0.884615	1
Netherlands	0.67	0.5	0	1
New Zealand	1	0	1	0.307692
Nigeria	1	1	0	1

Norway	1	0.83	0	1
Pakistan	1	0.75	1	0
Peru	1	0.67	0	1
Philippines	1	0.67	1	0
Portugal	0.67	0.67	0	1
Saudia Arabia	1	0		
Singapore	1	0.67	1	0
South Africa	1	0.67	0	1
Spain	0.67	0.58	1	1
Sweden	1	0.42	0	1
Switzerland	0.67	0.17	1	1
Taiwan	1	0.67	1	0.5
Turkey	1	0.42	0	1
Uganda	1	0.67	1	0
United Kingdom	1	0	1	0
United States	1	0.83	1	0
Venezuela	0.33	0.67	0	1
Vietnam	0	0.17	1	
Zimbabwe	1	0.58	1	0
