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Can Equality in Education Be A New Anti-Corruption Tool? Cross-Country Evidence (1990-2005)*

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Abstract

Recently, expectations have been raised on the civic participation role that requires supports from free press, decent average years in education attainment and independent juridical system in controlling corruption. Even so, questions have been put forward on how far this promising approach can go. This paper asks if these determinants are sufficient for fighting corruption through civic engagement. We propose that education in particular its distribution is the crucial tool for the majority of citizens to correctly acquire the key information and skills to succeed in their anti-corruption initiatives. This paper presents the simple reduced-form theoretical model which allows education inequality among agents before it employs the cross-national panel data estimations between 1990-2005 to evaluate the anti-corruption effect of education equality across the globe. Education equality significantly shows independent and complimentary anti-corruption effects through press freedom and the length of democracy. However, the anti-corruption effect of average years in education lost its robustness when education equality measures are included in fixed effects estimation.

JEL Classification Code: D72, I21, O15

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1 Introduction

> *"In the fight against corruption, citizens can no longer be seen as passive recipients; they are main actors and strategic partners rather than targeted groups. The principles of empowerment, transparency, participation and accountability are at the core of the civic-based anti-corruption initiative,"*
>
> *(UNDP, 2004: p.6).*

As one of the leading international organisations that have been actively engaged in numerous international anti-corruption programs, the UNDP has developed the above strategic vision for its anti-corruption initiatives[1]. The vision clearly values the new "civic-based" approach in combating corruption which has received growing supports from international anti-corruption initiatives. In fact, Svensson (2005) argues that the classic anti-corruption programs that aim to reduce the size of government and regulation have received very few successes in practice, and limited support in empirical evidence. On the other hand, the civic-based[2] anti-corruption programs that aim to promote socioeconomic factors which encourage civic monitoring, have received great supports from both practitioners and scholars [3].

For instance, Keen (2000), in association with the Human Rights Education Association (HREA), suggests that public education program should incorporate anti-corruption education as its prime purpose to reduce the likelihood of corruption in society. Public education program should cover the broad spectrum of activities which promote the dissemination of information and increase the awareness about corruption. It should also change the perception and attitudes towards corruption and pass on the new skills and abilities needed to counter corruption. In fact, a number of governments have adopted anti-corruption education in actual compulsory curriculum[4]. For example, Cameroon started their pilot program of "Fighting against corruption through schools" that teaches students and parents to identify and act against dishonesty in their school and the rest of the society. Hence, education can be an effective channel to indoctrinate the right awareness and perception towards corruption which makes the perceived benefits of engaging in anti-corruption activity of people more obvious.

Despite the significant policy recommendations and large literature that support the roles of socioeconomic factors in promoting civic-based anti-corruption initiatives, the empirical evidences and theoretical foundation for the role of education are limited and no single study

[1] OECD and UNESCO also have similar policy recommendations.
[2] Comparable to an external mechanism (outside bureaucratic system) in Brunetti and Weder (2003)
[3] For instance, Glaeser and Saks (2006) and Rikka and Svennsson (2006)
[4] See Table 4 in Appendix 3

examine the role of equality in education. However, Magnus et al. (2002) finds that education can increase the tolerance of people in the society against corrupt behaviors, which can stop them perform corruptive activities and engage in any anti-corruption initiative. Furthermore, as schooling raises interpersonal and cognitive skills, an increase in schooling reduces the cost of engaging in anti-corruption initiative and also improves the efficiency in doing so, Glaeser et al. (2007). On the other hand, education can promote corruption through various channels. Since corruption is an illegal and secret activity, politicians and bureaucratic officers have incentives to make it complicated and unnoticeable. Educated officials can be more effective in making corruption sophisticated. When corruption becomes more complicated and very well concealed, it is more difficult and costly for the media and citizens to challenge the corrupt acts, Ahrend (2002). Moreover, an expansion of education brings about the larger potential rents that corrupted agents can extract, Eicher et al. (2007) and Frechette (2006). As a result, the relationship between education and corruption is non-monotonic which could be the underlying reason behind the fragile relationship between education and corruption in the literature. However, economists have paid very limited attention to this issue.

The main argument of this paper is that people in the society who are potential monitors of corruption, depending on their stock of human capital, have heterogeneous attitudes toward corruption and heterogeneous anti-corruption skills through civic participation. There are several studies that support this argument. For instance, Magnus et al. (2002) uses the cross-national evidence to show that the level of intolerance against cheating increase in the year of schooling[5]. Dwivedi (1967) uses the evidences from Indian Public Opinion Survey to show that the differences in education attainment can explain the heterogeneity in civic engagement and political knowledge as well as the perspective towards honesty of government officials among the participants[6]. Hence, the equality in human capital distribution should reduce the scale of undesirable heterogeneities and allow the monitoring agents to credibly create monitoring threats against corrupted officials. This can eventually control corruption. In other words, what matters for constraining corruption through civic-based anti-corruption mechanism is not only the absolute stock of human capital in the society but the relative stock of human capital across the population. Consequently, theoretical models that assume homogeneous stocks of human capital across agents and identification strategy that employ only the average enrollment or attainment rates of schooling across total population are likely to find either insignificant or inaccurate effects of education on corruption.

[5] Magnus conducted the experiment with 885 students (high school, undergraduate and post graduate) from Russia, Israel, Netherlands and US

[6] See Table 6-7 in Appendix 3

This paper tests the hypothesis that education has either insignificant or promoting effect on corruption against the alternative hypothesis that education, and in particular its equality, has anti-corruption effect in the society. We focus on the cross-country evidence between 1990-2005 and identify the causal relationship between equality in education and the perceived level of corruption by using the new measures of education equality that has not yet employed by the corruption studies. These measures are calculated from education attainment dataset from Barro and Lee (2000). Overall the estimations suggest that the past condition of equality in education distribution affects the current perceived level of corruption independently and complimentarily with other socioeconomic factors of civic participation. The anti-corruption effects of education equality remain robust through various specification changes. The following section reviews the literature that is relevant to our research agenda. Section 3 provides a simple theoretical model that allows for inequality in education amongst citizens and public officials. Section 4 illustrates the dataset that we will employ in the empirical analysis in Section 5-7 which in turn will search for the empirical evidence for the theoretical predictions in Section 3. Section 8 concludes the findings and gives policy implication and research opportunity.

2 Literatures Review

This section reviews the relevant discoveries of the determinants of corruption in order to address the non-monotonic relationship between education and corruption. As the studies about the relationship between education and corruption are diverging, this section will classify them by the nature of the effects. The survey focuses primarily on the results and identification strategies of the literature that can be useful for our investigation.

2.1 The Anti-Corruption Effects of Education

The relationship between education and corruption is nothing new. Scholars have praised the anti-corruption role of education through civic participation and political accountability. Several empirical studies on the causes of corruption[7] find that education determines the perceived level of corruption. Ades and Di Tella (1999) formally investigate the various causes of corruption by using the time-varying factors in their fixed-effect estimation. The identification strategies in their work also include the use of instrumental variables (IV) to overcome the endogeneity problem of country openness and corruption. They mainly examine whether

[7] Ades and Di Tella (1999), Ahrend (2002) and Svensson (2005), See Table 1 in Appendix for the list of other determinants studies

availability of rents, in general, and market structure in particular determine the corruption level or not. Using World Competitive Report's and Business International Corruption Indices in 1980s, the results from basic cross-section analysis and panel data, controlling for country and time fixed effects, show that, other things being equal, in countries where domestic firms enjoy sheltered business and low competition, there will be more rents that can be extracted and thus more corruption. More importantly, they are the first people who formally verify that civil society, measured by human capital stock, per-capita income and political right index, can control corruption.

However Ades and Di Tella (1999) did not check the anti-corruption role of civil society in fixed effects model as they argue that there is no variation in schooling across time. Also, they did not include press freedom in their civil society analysis. This is due, however, to data limitation problems. They have used an extremely short period of data from 1989-1990, but variables such as schooling might require longer time dimension than 2 years to reveal its variation for fixed effect model. Moreover, the press freedom quantitative data did not exist until 1994. We address these shortcomings and try to overcome them in our empirical analysis by employing a longer panel data of schooling and adding more relevant factors that support civic participation in controlling corruption including press freedom.

Another important work in the study of causes of corruption is Treisman (2000). This paper tests the broader ideas of factors that can determine the corruption level across countries. As he extensively includes all potential causes of corruption in his OLS and 2SLS estimations, one may have to place a greater emphasis on positive than negative results. Treisman focuses on various determinants, which range from religion and historical culture to current institutional and economic factors. Since his work employs generally the time-invariant factors, the main sources of variation for his analysis come from the cross-country differences. He primarily uses the Corruption Perception Index (CPI) for 1996-1998 as well as Business International's Corruption index (BI) for 1980-1983. In addition, Treisman detects the potential endogeneity problem between per-capita income and corruption in the empirical analysis where he proposes the time-invariant distance from the equator as an instrument for per-capita GDP. In effect, the income effect in reducing corruption still holds.

Unfortunately, Treisman (2000) does not include schooling and press freedom variables in his analysis. Although his 4^{th} hypothesis intends to test the effect of democracy, free press and civic association on corruption, the variables he actually employs, in contrast to the earlier attempt by Ades and Di Tella, are the length of uninterrupted democracy and political rights index from freedom house. It is unclear that these variables do correctly capture the effect of civic

society for many reasons. The length of democracy from Alvarez et al. (1996) is measured by just a dummy variable that indicates whether the country has been an uninterrupted democratic regime from the period of 1950-1995. However, it is unclear that the continuity in democracy is the only determinant of civil society and free press. Moreover, the differences in civil society and corruption among 23 countries with 40 years of uninterrupted democracy are substantial[8]. Also, the political right index from Freedom House is mainly constructed from the ratings whether the country has a free, fair and competitive political system or not. Even though Freedom House produces an exclusive quantitative score for press freedom since 1994, Treisman did not employ this rating into his analysis for the 4th hypothesis[9].

As the anti-corruption effects of press freedom and education have been found in a number of corruption studies[10], the explanatory power of some factors in Treisman's analysis, which correlate with education and press freedom, may unintentionally incorporate the effect of schooling and press freedom in its explanatory power. In other words, Treisman's estimations may have overestimated the anti-corruption effect of some variables that correlate with education and press freedom. Hence, we will contribute to this research gap by explicitly including the measures of schooling and free press along with other significant factors in Treisman (2000) to re-estimate the role of civic association and free press on corruption.

The other recent works that find the anti-corruption effect of education on corruption are Glaeser and Saks (2006) and Svensson (2005). Unlike Ades and Di Tell (1999) and Treisman (2000), Svensson (2005) employs 4 different corruption indices, which include both subjective and objective measures[11] of corruption. He finds robust evidences in all 4 different corruption indices that higher initial level of incomes and years of schooling in total population (in 1970) bring about lower corruption in 30 years later. Svensson concludes from his findings that economic development and human capital induce the institutional developments which in turn reduce the prevalence of corruption in the society.

Glaeser and Saks (2006) study corruption determinants within U.S. States by using average objective data on corruption convictions for the period of 1976-2002 from the Justice Department Report and states' education and economic characteristics. The dataset includes

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[8] India, South Africa and Mexico have been democratic for 40 years as well as Finland, Denmark, United States and United Kingdom

[9] The results of this hypothesis show that what matters to corruption is not the current status of democracy but the duration of uninterrupted democracy

[10] Brunetti and Weder (2003) and Chowdhury (2004) find the causal relationship between press freedom and corruption while Ades and Di Tella (1999), Ahrend (2002), Glaeser and Saks (2006) and Svensson (2005) find the causal relationship between education and corruption

[11] He uses the incidence of bribes from International Crime Victim Survey as an objective dependent variable along with corruption indices CPI, ICRG and World Bank's control of corrption

10,000 cases of corruption committed by government officers including conflict of interests, fraud, campaign-finance violations and obstruction of justice. This study uses a distinctive indicator of corruption compared with traditional cross-countries studies that we have reviewed earlier. Instead of using a typical subjective corruption index, they use data on federal conviction for corruption, which measures the real occurrence of corruption in each federal state. Hence, using more objective measures, the authors believe that they can overcome the measurement error and bias problem of perception-base indices and produce a more precise estimation.

The main findings of their survey are that the more educated, richer and less unequal states have less corruption. Also, heterogeneity in ethnicity and earnings appear to promote corrupt practices. Moreover, states with more corruption convictions experienced slower growth in total output during the past two decades. However, there appears to be a weak support on the negative impact of income and size of local government. Also, there is no evidence that the degree of regulation brings about higher level of corruption. These results reinforce the argument mentioned earlier in the introduction by Svensson (2005). Unlike the size of government or regulation, income and education are important factors, which raise the civic participation. Thus, the corrupted behaviour of government officers is strongly motivated by the potential costs of being caught rather than by the government reward. In other words, the external civic demand for greater accountability driven by education and income can effectively discipline the public servant. This finding strongly supports the prominent study about crime and punishment by Becker (1968). Also, these findings strongly support the view that civic participation can help reduce corruption in the U.S[12].

From a methodological standpoint, the identification strategy in Glaeser and Saks' study is an important contribution in the literature on corruption. They are ones of the very few researchers[13] who utilise past values of income and education from 1970 census data in the regression analysis. Stock of human capital is measured by the share of adult population with 4 or more years of college completion. This choice reflects the idea of the authors to measure the stock of advanced level of human capital. They instrument this education measure by using the share of church members in the state that are Congregationalist in 1890 census data. The authors argue that Congregationalism is associated with the elites and their commitment to education, thus the education system in those states with more Congregationalists developed faster, and these states still remain more educated today than others. For income, they measure by the logarithm of median household income in 1970 census and instrument by the median family wage

[12] Reinikka and Svensson (2005) presents evidences in least developed country that support this argument
[13] To my best of knowledge, the only work on the determinant of corruption study

and salary income in 1940 and the geographic location of each state. The latter instrument reflects the cost of transportation and economic activities. The states with natural harbor and river can be substantially more productive. When past education and income can predict the level of corruption today, Glaeser and Saks suggest that political institutions, which constrain public officers' incentive to become corrupted, are weaker in states with poorer and less educated citizens. Pursuing this idea to search for a similar instrument for education in cross-country level can be more difficult, we will discuss this task in Section 7.4.

2.2 The Adverse Effects of Education on Corruption

Ahrend (2002) and Frechette (2006) find striking results that an increase in human capital can increase the level of corruption in the society. This section reviews and analyses their unusual findings and the identification strategies. We argue that these adverse effects of education on corruption are ambiguous.

The main findings in Frechette (2006) are that the availability of rents driven by income and trade restrictions increase corruption. He also finds that an increase in education measured by the primary schooling enrollment rate in total population increases the perceived level of corruption in the society. Additionally, from a methodological stand point, Frechette (2006) makes an important contribution to Ades and Di Tella (1999) and Triesman (2000) by employing the new time-varying instruments[14] in his fixed effects estimations to identify the country's time varying and time invariant unobservable country's characteristics that correlate to both corruption and the explanatory variables.

Similarly, Ahrend (2002) finds that education increases corruption when the media freedom in the society is very limited. Specifically, Ahrend uses the following theoretical model to support his argument;

$$U(b,h,F,w) = w + B(b,h_B)(1 - P_D(h_B,b,M(h_m))) - P_D(h_B,b,M(h_M)) \cdot F$$

This government utility function represents the bureaucrat's problem of choosing bribe strategy. The expected return to bribery is the rents he extracts (B), which depends on the bribe rate (b) and his own stock of human capital (h_B), with the possibility of being detected and sentenced $P_D(h_B,b,M(h_M))$, which is a function of b, h_B and monitoring capacity (M). He assumes that M depends solely on the stock of human capital of monitors h_M and also assumes that $h_M = h_B$. This model predicts that an increase in human capital has two diverse effects; (1)

[14] He uses the logarithm of population and the income level of the greatest importer as the instruments for a share of import and per-capita income respectively

Increase corruption through the rise of the bureaucrat's productivity and the skills to make corruption sophisticated, (2) Reduce corruption through the rise of monitoring capacity which can be seen as the effectiveness and the independency of monitoring institutions (P). Hence, the crucial factor, which determines the nature of the net effect of education on corruption, is the effectiveness of monitoring institution, mathematically speaking the partial derivative of P with respect to M. Ahrend assumes that the determinant of effectiveness and independency of monitoring institutions are free of press and independency of judicial system. Ahrend also finds the empirical evidences from the cross-national regressions that education reduces the perceived level of corruption only if the efficiency of the monitoring capacity in the society measuring by press freedom is high enough[15].

We argue that Ahrend's theoretical conclusions are driven by the unusual strong assumptions in his theoretical model. Firstly, he assumes an identical human capital stock between public officials and monitors, which is a very strong assumption. As we have discussed earlier, the large education gap between the citizen and the public officer can potentially create room for corruption, thus this strong assumption prevents Ahrend's analysis to identify the anti-corruption effect of the equality in the distribution of education. Secondly, he concludes that freedom of the press and judicial independency determine the nature of education's role, however these two factors do not existed in his theoretical model. We, thus, aim to contribute to Ahrend's work by relaxing the assumption of identical human capital stock and explicitly incorporating press freedom and judicial independency into monitoring capacity's (M) function in the following theoretical section.

From the empirical standpoint, we argue that the findings in Frechette (2006) and Ahrend (2002) that schooling increase corruption is due to their choice of education measures. Frechette (2006) argues that an increase in education raises the availability of general rents and also increases bureaucrats' skills in performing corrupted acts. The later argument is unclear, however, when concerning the measure of schooling he uses which is the current ratio of primary school enrollment, regardless of age, to the total population of the age group that officially relate to the primary school level. Ahrend (2002) and Frechette (2006) argue that this choice is preferred to Ades and Di Tella (1999)'s secondary school attainment because it has more variation. Interestingly, Ahrend (2002) also employs the same school enrollment dataset from world development indicator as Frechette's (2006) and obtains similar result that education increase corruption. This choice of schooling variable and its interpretation are quite unclear for

[15] Specifically, education reduce corruption only in the countries with the "free" status of press freedom index by Freedom House

several reasons. An increase in the current share of total enrollment in primary schooling among the population should not affect the government officer's corruption skill for two reasons. Firstly, there is no convincing reason for the connection between today public officer's skill of corruption and today enrollment ratio of population at the age of primary school. Obviously, the age of public officers are substantially older than primary school age (e.g. 6-13), in fact, primary school qualification is typically insufficient for applying to bureaucratic jobs. Secondly, the enrollment rate is a weak proxy for human capital stock. When the school dropout rate is high, especially in the developing countries, this indicator becomes severely misleading. Glaeser et al. (2007) support our argument by showing that enrollment data conceptually reflects the investment flows rather than the stocks of human capital.

As the theoretical assumptions and choices of education measures in Ahrend (2002) and Frechette (2006) are unclear, this paper will test the robustness of their results by relaxing some of the strong assumptions and using the education attainment data from Barro and Lee (2000) instead of the enrollment data. Moreover, Ahrend's argument about the determining role of press freedom on the anti-corruption effect of education is based on the qualitative measure of press freedom from Freedom House.[16] We will revisit his argument by employing the quantitative measure of press freedom from Freedom House.

To conclude this review, cross-country and within-country evidences suggest that education significantly determines the level of corruption. The measures of education that are found to be the determinants of corruption include the historical and current levels of education attainments and the current enrollment rates across populations. Yet, no single study examines the role of the equality in the distribution of education on corruption. Furthermore, similar to other determinants, education is subjected to simultaneity and unobserved heterogeneity problems. Researchers, thus, employ the methods of instrumental variable and panel data estimation to overcome these problems and estimate the more precise effect of education on corruption.

Existing studies present two diverse types of education effects on corruption; its promoting and controlling effects. Yet those studies do not apply an appropriate theoretical or empirical treatment to study the non-monotonic relationship between education and corruption, instead they either claim that there is only one type or argue that the type depends upon the condition of its complementary factor like press freedom. Consequently, the effects of education are found to be "fragile"[17] and highly sensitive to specification changes as the chosen measure of aggregate human capital can not explicitly control for the non-monotonicity in the relationship

[16] They divide countries into 3 broad groups by the status of freedom
[17] Many studies including the sensitivity analysis, e.g. Serra (2006), find insignificant effect of education

between education and corruption. Moreover, these results cannot provide a clear explanation about how an increase in human capital affects corruption in reality, thus policy makers and practitioners receive very limited implications from the current identification strategy.

Studying the causal relationship between education and corruption requires a distinctive identification strategy that can control for heterogeneity of education in the economy. More importantly, it requires a comprehensive and convincing story to explain how it works. These issues will be investigated in the next section.

3 Theoretical Model

This section aims to propose the theoretical foundation for testing the hypothesis that education, and in particular its distribution can play a vital role in determining the optimal level of corruption in the society. We argue that education inequality is the primary cause of heterogeneity among agents which affects the optimal level of corruption in society. We will begin by presenting the static model of the bureaucrat's optimisation problem when the officer encounters the civic monitoring threat from local citizens. This single period model, which builds on Ahrend's (2002) and implements some necessary modifications following similar works by Persson and Tabellini (2000) and Gerrber and Green (1999), will show that the distribution of human capital is crucial in determining the bribery level of bureaucrats. The predictions from this reduced-form model will then be used as a foundation for empirical analysis in Section 6-8.

3.1 The Economy, Citizens and Bureaucrats

The economy consists of two types of agent; the citizen (C) who work and earn wage which is an increasing function, $E(.)$, of their education attainment ($W_C = E(e_C)$), and the government official (g) who authorises the public goods provision. As in Persson and Tabellini (2000), there are N citizens with identical preference given by

$$U_C = c + H(G) = (1-t)W_C(e_C) + H(G) \qquad (3A)$$

where c, t, e_C, G denote consumption, taxes, citizen's education attainment and net public good respectively; while H(.) is a concave and increasing function. The distribution of education attainment among citizens is predetermined and will be discussed shortly.

Each citizen has a different perspective towards the bureaucrat's ethical standards[18] which are normalised into one dimensional parameter represented by the bribe rate, b. All citizens

[18] See Dwivedi (1967) and Table 6-7 in Appendix 3

receive the same public information regarding the bribery from the media. However, each citizen interprets news differently subject to his or her private human capital stock. Put differently, the awareness and tolerance toward information about corruption that the citizen extracts from the news increases with the citizen's private stock of human capital.

Also, the levels of press freedom and education are exogenously predetermined and government officials cannot manipulate these determinants of civic society. This reflects the fact that stock of human capital and press freedom take time to accumulate as they rely on various exogenous factors outside the specific society. This idea is well captured by the empirical evidence that show persistency of the variation in education and press freedom[19] across time. However, corruption transactions require very short period of time to accomplish and getaway. Hence, the only choice variable of the government official in this simple model is the size of the bribe, b, regarding other predetermined variables. We would like to focus on the changes in the government officials' behavior given the changes in inequality in education attainment, which alter the probability of the corrupted official being caught (P). Our model intends to explain why there is more perceived corruption in some countries than others rather than how corruption in one specific country evolves across time.

3.2 Education

We relax the assumption of identical schoolings of Ahrend (2002) by assuming that citizens and bureaucrats obtain discrete years of schooling normally distributed according to the distribution function $N(\overline{e}, \delta_e^2)$. There is an inequality (skewness) in education distribution when the median level of education attainment is below the mean and $\overline{e} = 1$. Additionally, working with the government requires a substantial level of schooling, thus the government official attains education higher than the average and median schooling level of the society. Formally, these assumptions can be concluded as $e_m \leq \overline{e} < e_g$.

3.3 Corruption

The government official works as the provider of public goods G, which is financed by the flat income tax rate. There are two types of returns from being in the public office; private benefits and public welfare. The private gains for official are official wage, W_g and the expected return of taking bribes. We assume that the official can divert a proportion of the public goods,

[19] See Section 5.2

$b \in [0,1]$ in the form of monetary bribe (B), $B = b \cdot G$. Thus, government spending and bribery are financed by the flat income tax, $M = t \cdot \bar{w}_c \cdot N = G + B$ where $\bar{w}_c$ is the citizens' average income and N is the total population number.

Corruption will be noticed and prosecuted with probability P. However, the bureaucrat can make corruption sophisticated and more difficult to track down as his education attainment, e_g, increases. The educated bureaucrat's best strategy is to make corruption as sophisticated and secretive as possible in order to maximise the expected gain from rent seeking. From experience and inside information, the government officer knows the quality of the press freedom (I) and education equality (σ) in his service area and then optimises the bribery strategy (b) accordingly. Although the government officer cannot control the media market, by assumption, when corruption becomes complicated, it reduces the chance for the citizen to assimilate the revealing piece of information. This creates an imprecision of information on the bribe rate that uneducated citizens observe. The empirical evidences presented in Dwivedi (1967) show that this group of citizen is likely to downwardly misevaluate the level of corruption and has less incentive to participate in anti-corruption initiative[20].

If caught bribing, the government official will face a punishment, which, for simplicity, we assume to be a monetary cost, F. Nonetheless, when the political competition is tense, the public officer will be under political pressure from the central government to uphold the provision of G. The relative weight, $\gamma \in [0,1]$, of the officer's concern over the public goods provision to his private gains represents this political pressure[21]. Equation 3B describes the government official's original utility function while Equation 3C substitutes G with the budget constraint.

$$U_g = W_g + B(b)(1-P) - P(e_g, b, I, e_m) \cdot F + \gamma(G) \qquad (3B)$$

$$U_g = W_G + (1-P)B - P \cdot F + \gamma(M - B) \qquad (3C)$$

In this section we derive optimal bureaucrat's bribery rate (b) and carry out some comparative static analysis using the main properties of interest. We depart from Ahrend's model by relaxing the assumption of perfect equality in schoolings and explicitly include press freedom into P. We assume certainty in the prosecution of corruption. Therefore, the probability of catching the corrupted officer (P) is primarily increasing in the determinants of civic monitoring capacity; the media efficiency to minimise the imprecision of available information measuring by press freedom ($I \in [0,1]$, 1= free), the size of bribe (b) and the equality in education (σ). Making P an increasing function on b reflects the fact that when the briberies are large, it is more

[20] See Table 6-7 in Appendix 3

[21] Alternatively, γ may represents the type of officer, honest or corrupted

obvious to be noticed and challenged. In addition, as discussed earlier, to capture an education inequality aspect, we assume that P is determined by the human capital stocks of the median citizens and bureaucrats; relative to the mean schooling of the society ($\bar{e}$). Alternatively, P can be seen as the observable amount of rents in the public point of view. Our hypothesis is that as press freedom and education equality are improved the government officers will be more accountable for his or her rent seeking activities. Last but not least, as the income of the individual is increasing in education attainment, it is anticipated that increases in income driven by an increase in individual's schooling, improves civic monitoring (P) and reduces corruption[22].

$$P = \frac{I \cdot (e_m / \bar{e})}{(e_g / \bar{e})} \cdot b = \frac{I \cdot e_m}{e_g} \cdot b \quad \text{(3D)}$$

Equation 3D shows that mean schoolings are cancelled out, hence e_m / e_g ratio increases when the gap between the education attainments of the median citizen and the bureaucrat decreases. This ratio indicates education equality in the economy, let $\sigma = \frac{e_m}{e_g}$.

3.5 Optimal bribe level

Equations 3E-3G show FOC and SOC of the government official's utility with respect to b. Equation 3F presents the optimal bribe rate which is a function of political pressure (γ), monetary fine (F), press freedom (I) and education equality (σ) while Equation 3G shows its concavity.

$$\frac{\partial U_g}{\partial b} = G - \gamma G - FI\sigma - 2bI\sigma G = 0 \quad \text{(3E)}$$

(3F)

(3G)

We then calculate the optimal bribe level with respect to the determinants of interest. Equation 3H-3I present the effects of changes in education inequality and press freedom respectively.

(3H)

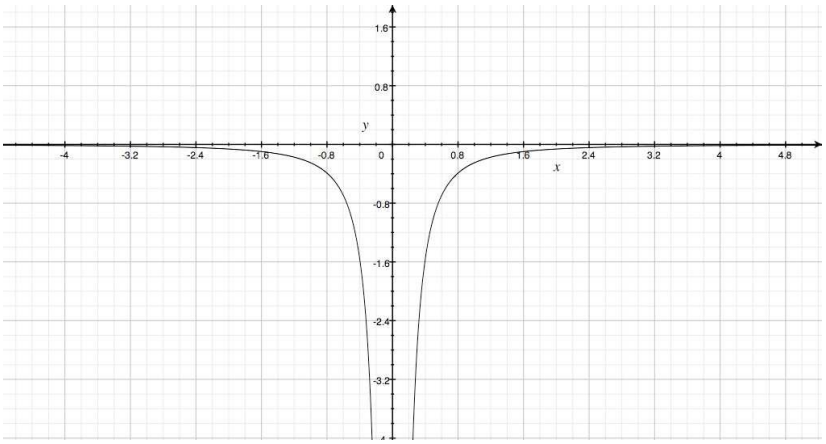
(3I)

Equation 3H and 3I represent the anti-corruption return to education equality and press freedom in fighting corruption. More importantly, apart from independent effects, both

[22] Although the income effect hypothesis is not explicitly showed in the model, it will be checked empirically

determinants of civic monitoring capacity work together in eliminating corruption. This finding contributes to Ahrend (2002) which implicitly shows that the anti-corruption role of education depends on monitoring capacity. Our finding explicitly illustrates that education equality and press freedom work together in controlling corruption through civic monitoring. To illustrate, using Equation 3H we assume that the bureaucrat is indifferent between private benefits and public goods provision (γ=0.5) due to the typical political pressure. Figure 3A shows that the anti-corruption effect of education equality is quadratic and increasing with press freedom. Similarly, the anti-corruption effect of press freedom is quadratic and increasing with education equality. Additionally, Equation 3H and 3I prove that political pressure complementarily promotes the effects of education equality and press freedom.

Figure 3A Anti-corruption Return to Education Equation when (γ=0.5)



From Equation 3J and 3K, political pressure γ and monetary fine (F) also have independent anti-corruption effects. The political pressure role is increasing with press freedom and education equality; while the role of monetary fine decreases with the size of public goods provision. This reflects the fact that what matters for constraining corruption are not the absolute value of punishment but the relative value of punishment and the value of the available rents.

$$\frac{\partial b}{\partial \gamma} = \frac{-1}{2I\sigma} < 0 \quad (3J) \qquad \frac{\partial b}{\partial F} = \frac{-1}{2G} < 0 \quad (3K)$$

To conclude, this section illustrates the theoretical foundation for our research agenda. Predictions from the comparative analysis of the reduced-form model proves that improvements in education equality, press freedom, political pressure on bureaucrat and magnitude of punishment (I, σ, F, γ) can reduce the optimal bribery level chosen by the government officials in the economy. Intuitively, when the inequality in education is substantial, it significantly reduces the credibility of civic monitoring threat against corruption, which results in the

persistence of the misuse of public office. Education equality also shows its supplementary roles in curbing corruption. The next Section will seek for empirical supports for these predictions.

4 Data and Analysis

4.1 Subjective Corruption Indices

We use cross-country subjective indices of perceived level of corruption from 3 different sources; Transparency International's Corruption Perception Index (CPI), International Country Risk Guide's Corruption Index (ICRG) and Daniel Kaufmann's Control of Corruption (WB). All corruption indices are re-scaled to 0-10 basis, where 10 stands for countries with the least corruption. WB and CPI indices are constructed by aggregating a number of corruption indicators from over 10 different sources and combine with their own country surveys that target the experts including international businessman, risk analyst and local citizens. On the other hand, ICRG relies solely on its individual survey. From this limitation of data source, therefore, one might consider ICRG index as the least reliable among the 3 indices we are using when it comes to identifying the true level of corruption. However, one incomparable advantage of ICRG index is its longest availability from 1984-2003 whereas the indices for CPI and WB are only available from 1995 onwards. Nevertheless, these 3 corruption indices are very much similar by design and variation. In fact, the correlations between them from 1995 to 2005 are well above 0.8.

Table 2 in Appendix 3 summarises all corruption indices by year. The average perceived level of corruption has been increasing across the globe while its dispersion has been decreasing. The mean values of each index are very close to each other throughout the time. All indices will be employed as the dependent variable in 3 different regression specifications; cross-national OLS analysis, pooled OLS and Panel Fixed Effect model. The first specification will employ the averaged values of indices between 1995 and 2005. On the other hand, in pooled OLS and panel fixed effects model, as all education variables are available in the 5 years basis, the corruption indices will be an average value of the periods of 4 years around the time of analysis, (e.g. an average of year 2002-2005 represents for year 2005). As CPI and WB indices are available between 1995-2005 while ICRG index is available between 1984-2003, pooled OLS and fixed effect estimations that use CPI and WB indices for its dependent variable will employ 3 periods of repeated cross-country dataset whereas ICRG regression will employ 4 periods of dataset between 1990-2005.

Variation of Corruption Indices

To estimate the within-country time trend and the significance of country specific effect of ICRG corruption indices between 1980 and 2005, we estimate these linear time trend models;

$$ICRG_{it} = \mu_i + \beta d_t + \nu_{it}$$

The null hypothesis of equal country specific effect $(\mu_i = \mu : \forall i)$ are rejected (μ=6.875) and β equals to -0.165, with a significance level at 1 percent interval, thus corruption is significantly different across countries and time. However when we split countries into regional groups and re-estimate the above model, some groups[23] show no sign of difference in corruption across time dimension. Moreover, having checked the correlation of corruption index within 10 years interval also reveals that it is never less than 0.7. Therefore, although corruption varies overtime, it is found to be very persistent. This could give a serious problem in panel data estimation that attempt to identify the causal relationship within country. Consequently, it is anticipated that the variation in ICRG corruption index comes primarily from the cross-country variation rather than the within country variation.

The Validity of Subjective Corruption Indices

Due to its subjective nature, the accuracy of corruption indices in measuring the countries' actual levels of corruption individually and comparatively is widely debated. Clearly, the participants in corruption index survey are different from country to country in terms of personal tolerance against corruption. For example, the questionnaire participants in TI's survey were asked to rate the perceived level of corruption from the scale of 1-7, Lambsdorff (2007). Therefore it is possible that the country-specific factors play a vital role in the measurement error of corruption index. A potential problem which arises from this flaw is that when using the cross-country variation in perceived level of corruption, the estimated differences in rating from between and within a country could artificially deviate from the actual differences. Nevertheless, Frechette (2006) argues that this preconceived bias affects the level of estimation across countries but not across time dimension if the survey methods are consistent over time.

TI replies to this comment by arguing that their subjects across countries were "businessman with international perspective", hence they have had the standardised approach to evaluate the perceived corruption level domestically and internationally, Lambsdorff (2007). In other words, TI claims that their surveyed businessmen across countries are treated "as if" the identical subject who can precisely identify the perceived level of corruption in each country. Other sources of subjective indices of corruption also rely on this safeguard including WB and

[23] Latin America, Middle East, South East Asia and Least Developed Countries

ICRG. Clearly, this is a strong assumption that raises the concern over the use of the subjective indices of corruption. Nevertheless, it is too costly and infeasible to conduct the perfect cross-country index of corruption that can overcome the above arguments. Furthermore, almost all empirical works in corruption study employ these 3 corruption indices in their analysis. Yet the interpretation derived from these subjective indices should be used with caution. We will estimate our empirical model by using all 3 corruption indices as dependent variables to check the consistency of the results.

5.2 Educational Determinants of Civic Monitoring

This section presents the description of cross-country education attainment dataset in Barro and Lee (2000) (B&L) and the strategies to identify the measure of education equality from this dataset. As discussed earlier, B&L dataset is a superior statistic of human capital stock to the enrollment rate used by Ahrend (2002) and Frechette (2006), which can be subject to various measurement error problems. BL dataset contains two main measures of cross-national education attainment; the percentage of total population who attained four different levels of schooling and the average years of schooling across population in three different education levels. The earlier information is presented in the left panel of Table 5A while the right panel presents the latter. Four levels of education consist of no schooling, primary schooling, secondary schooling and tertiary schooling. According to the international standard, primary education represents 6 years of schooling while secondary and tertiary educations represent 12 and 16 years of schoolings respectively. This benchmark will shortly be an important assumption in the analysis. Each B&L's education variable is available in 5 years intervals from 1960-2000. The education data of adult population at age 25 and above in B&L are being employed[24] in our analysis. The description of B&L dataset is presented in Table 5A below.

On average, the overall situation of education attainment around the globe has been improved between 1960-2000. For instance, there had been less population with no formal schooling (from 45% to 26%) and the mean of education attainment had risen from 3.35 to 6.06 in B&L's calculation and from 2.57 years to 5.10 years in our calculation[25]. In the next part we generate the new measure of education equality by using the information from Table 4A.

Table 4A Descriptive Statistics Barro-Lee dataset (2000)

[24] We choose 25 instead of 15 since student of age between 15-25 can pursue different during this age gap, this missing information can create the bias to education effect in the analysis

[25] Our calculation aims to identify the year of schooling attained by the citizen at the mean position of education distribution which is differ from the purpose of BL's calculation that identifies the average years of schooling in total population, nevertheless the correlation between two measures is equal to 1

Percentage of School Attainment in Total Adult Population						Average Years of Schooling in Total Adult Population					
Year	Mean	Median	Max	Min	Std. dev.	Year	Mean	Median	Max	Min	Std. dev.
No Schooling						Primary Schooling					
1960	45.92	46.60	99.00	0.00	33.07	1960	2.60	2.22	7.32	0.05	1.85
1965	45.16	44.70	98.40	0.00	32.67	1965	2.63	2.27	7.21	0.07	1.82
1970	43.59	40.70	99.60	0.50	32.83	1970	2.75	2.54	7.13	0.02	1.88
1975	41.98	36.70	98.20	0.60	32.03	1975	2.84	2.70	7.53	0.08	1.83
1980	37.86	32.60	92.70	0.00	30.49	1980	3.09	2.84	7.51	0.30	1.83
1985	34.65	29.80	90.80	0.30	28.51	1985	3.26	3.24	7.52	0.37	1.74
1990	31.24	24.50	88.90	0.00	26.72	1990	3.49	3.57	7.66	0.45	1.71
1995	28.30	19.80	87.40	0.00	24.95	1995	3.70	3.70	7.66	0.53	1.66
2000	26.16	17.50	86.40	0.00	23.43	2000	3.83	3.88	7.67	0.58	1.61
Primary Schooling						Secondary Schooling					
1960	39.70	37.50	89.30	0.30	24.87	1960	0.66	0.36	4.59	0.01	0.82
1965	40.22	39.20	85.60	0.80	24.02	1965	0.68	0.36	4.55	0.01	0.81
1970	38.71	38.10	86.80	0.10	22.75	1970	0.84	0.54	4.55	0.01	0.93
1975	38.28	40.50	82.00	0.60	21.71	1975	0.95	0.67	4.01	0.03	0.94
1980	38.00	39.80	79.80	3.20	19.65	1980	1.18	0.87	5.09	0.04	1.10
1985	38.02	39.10	72.70	4.60	17.54	1985	1.33	1.05	5.08	0.05	1.11
1990	36.88	36.20	65.40	4.80	15.76	1990	1.55	1.28	5.08	0.08	1.18
1995	36.24	35.65	64.40	8.20	14.36	1995	1.74	1.49	5.00	0.09	1.24
2000	36.14	37.05	64.30	9.10	13.50	2000	1.86	1.64	5.05	0.14	1.27
Secondary Schooling						Tertiary Schooling					
1960	11.55	6.50	61.00	0.20	13.13	1960	0.08	0.04	0.53	0.00	0.10
1965	11.71	6.80	58.90	0.20	12.80	1965	0.08	0.04	0.58	0.00	0.11
1970	14.27	9.40	63.90	0.30	14.33	1970	0.10	0.07	0.68	0.00	0.13
1975	15.54	11.40	61.20	0.40	13.69	1975	0.13	0.09	0.81	0.00	0.16
1980	18.59	14.60	62.90	0.50	14.63	1980	0.18	0.11	0.96	0.00	0.19
1985	20.61	17.60	60.00	0.70	14.65	1985	0.22	0.15	1.08	0.00	0.21
1990	23.42	22.40	69.60	1.40	15.18	1990	0.27	0.23	1.45	0.00	0.25
1995	25.72	25.55	66.70	1.70	15.72	1995	0.31	0.27	1.49	0.00	0.27
2000	26.45	26.45	62.50	2.40	15.21	2000	0.36	0.32	1.61	0.01	0.30
Tertiary Schooling						Total Schooling					
1960	2.35	1.10	20.00	0.00	3.47	1960	3.35	2.95	9.56	0.07	2.52
1965	2.53	1.30	19.50	0.00	3.50	1965	3.40	2.89	9.42	0.10	2.52
1970	3.22	2.00	21.50	0.00	4.17	1970	3.71	3.05	10.09	0.04	2.70
1975	4.20	2.70	30.90	0.00	5.26	1975	3.93	3.40	11.00	0.14	2.71
1980	5.56	3.40	37.40	0.10	6.60	1980	4.45	3.77	11.91	0.37	2.86
1985	6.69	4.50	38.10	0.10	7.07	1985	4.81	4.39	11.71	0.42	2.80
1990	8.34	6.90	45.20	0.10	8.41	1990	5.31	5.14	12.00	0.55	2.85
1995	9.71	7.95	48.70	0.10	9.12	1995	5.75	5.52	12.18	0.69	2.90
2000	11.26	9.40	53.00	0.20	10.10	2000	6.06	5.74	12.25	0.76	2.90

New Measures of Education Equality

Identifying education equality from B&L dataset is nothing new. Castello and Domenech (2002) and Thomas et al. (2003) have calculated the Gini coefficient of education distribution (Gh) and the ratio between education attained by lowest and highest quintiles, from B&L's education attainment data. In addition, the economic growth literature[26] employs the standard deviation of education attainment (ESD) as a proxy for education inequality. However ESD is not suitable for identifying education equality in our framework. It measures primarily the absolute dispersion of human capital across population but does not control for the differences in the mean of the distributions. As, some low-educated countries can have the same standard deviation in education attainment as the high-educated countries, the interpretation of anti-corruption effect of the distribution of education measured by ESD can be misleading.

On the other hand, although Gh captures the information of education equality of interest, there are two crucial methodological shortcomings of this indicator. The Gini coefficient itself cannot precisely identify the relative distance between human capital stocks within the

[26] Birdsall and Londoño (1997), López et al. (1998) and Park (2006)

distribution. It rather identifies the distribution of human capital stock across total population. In fact, the same value of Gini coefficient can represent different shapes of Lorenz curves. Putting it differently, when the relative level of education attainment between the median educated citizen and public officers (σ) varies, the value of Gini coefficient does not necessarily identify this difference. Another shortcoming of the Gini coefficient is the limitation of the granularity of the measurements. For instance, using the same distribution of education attainment, the Gini coefficient calculated from 10 levels of schoolings (high granularity) will often yield a higher value (less equal) than Gini coefficient calculated from 5 level of schoolings (low granularity), and vice versa. Since B&L's dataset in education attainment contains only 4 different levels of schoolings, it is likely that the Gini coefficient calculated from this dataset will overestimate the true equality of distribution in education attainment. As our analysis that focuses on the relative levels of schoolings we need a more precise indicator to identify σ from B&L's dataset.

To identify σ in B&L's data set, we calculate the years of schooling attained by the median citizen (Median) and by public officers. To locate the Median, we treat B&L's dataset as a simple group data where the percentage of population graduated in each level of schooling represents the frequency. For the public officer, we assume that the public officer's year of schooling is represented by the years of schooling attained by the (4^{th}) quartile group (Q4) in the distribution of education. Using simple statistical formulas one can identify σ from B&L's dataset as follow;

Notations

i : index for an education level

m : index for an education level which contain median

b : index for an education level before the median class

f : percentage of population

cy : cumulative years of schooling

cf : cumulative percentage of population

B : lower bound of class containing median

I : class interval

Define

$$Mean = \frac{\sum f_i \times (cy_i + avy_i)}{n} \quad Median = B + \left[\frac{n/2 - cf_b}{f_m}\right] \times I \quad Q_4 = B + \left[\frac{n - cf_b}{f_m}\right] \times I$$

$$\sigma = \frac{Median}{Q_4} \quad Std.dev. = \sqrt{\frac{\sum f_i \times (M - Mean)^2}{n}} \quad CV = \frac{Std.dev}{Mean}$$

As mentioned earlier we assume the length of schooling class interval (*I)* as 6, 6 and 4 respectively. Thus, in the calculation of the Mean, *cy* takes the value of 6, 12 and 16 while *f* and *avy* use the information from left and right panels of Table 5A accordingly. It is important to note that using the traditional midpoint value instead of *(cy+avy)* can overestimate the true value of mean schooling, as one may see from Table 4A that the average secondary and tertiary schooling years have never reached 2 years. For Median and Q4, the calculations are comparable[27]. The class that contains the median is located by calculating the cumulative distribution of the information in the right panel of Table 4A. Therefore, σ is identified as Median/Q4. We also calculate the coefficient of variation (CV), the measure of dispersion in education distribution that controls for the mean, from B&L's data set. All results of the above calculations are presented in Table 4B.

Table 4B shows several interesting features. The mean years of schooling of the 4th quartile was below 5 years in 1960 and increased to about 10 years in 2000. Apparently, 5-10 years of schooling is equivalent to normal secondary school qualification, which is the typical criterion for public servant employment. This evidence supports the external validity of the assumption that uses the 4th quartile as a proxy of public servant schooling. In addition, on average the Median had been lower than the Mean in the education distribution throughout 40 years of B&L's dataset. Therefore, statistically, Median is the superior measure of central tendency of education distribution than the Mean in B&L data set. Nevertheless, it is important to note that around 1/5 of countries in B&L's dataset had more than 50% of adult population with no formal schooling[28]. Undeniably, in this case, the schooling year of the median citizen equals to 0. As a result, the typical minimum values of the Median in Table 4B are 0.

In term of the dispersion in education attainment, different measures of dispersion yield diverse information. In table 4A, the standard deviation of average years of schooling in total population had risen from 2.52 in 1960 to 2.90 in 2000. One can notice that the primary source of increasing variation came from the attainment of secondary and tertiary education. The standard deviation in Table 4B shows the same intuition as Table4A. However, three other measures of education equality, namely Median/Q4 (σ), the coefficient of variation and Gini coefficient of education, show that cross-country education attainment has been more equal in 2000 than it has

[27] As *f* represents the percentage of population, n equals to 100

[28] This pattern is highly persistent in some countries over time (e.g. Algeria, Iran, Central African Republic and Pakistan).

been in 1960. This contradictory finding is driven by the fact that ESD does not control for the mean of education distribution. Hence, researchers should use this measure with caution.

Table 4B New Measures of Education Equality

Year	Mean	Median	Max	Min	Std. dev.	Year	Mean	Median	Max	Min	Std. dev.
Mean						Std. dev.					
1960	2.57	1.89	8.30	0.03	2.40	1960	1.19	1.21	3.01	0	0.51
1965	2.62	1.89	8.27	0.02	2.40	1965	1.19	1.21	2.89	0	0.50
1970	2.90	2.11	8.94	0.02	2.56	1970	1.23	1.19	3.46	0	0.50
1975	3.08	2.43	9.26	0.07	2.58	1975	1.29	1.24	3.24	0.44	0.39
1980	3.57	2.92	11.20	0.08	2.76	1980	1.34	1.27	3.52	0.75	0.39
1985	3.90	3.41	11.05	0.10	2.73	1985	1.34	1.29	3.05	0.81	0.35
1990	4.38	4.10	11.39	0.16	2.80	1990	1.35	1.26	3.07	0.85	0.37
1995	4.79	4.60	11.59	0.23	2.85	1995	1.33	1.25	2.99	0	0.37
2000	5.10	4.94	11.65	0.29	2.87	2000	1.33	1.24	2.90	0	0.36
Median						Median/Q4					
1960	1.98	1.00	8.55	0	2.38	1960	0.21	0.12	0.61	0	0.23
1965	2.03	1.14	8.13	0	2.31	1965	0.22	0.16	0.60	0	0.22
1970	2.30	1.79	8.96	0	2.54	1970	0.23	0.22	0.63	0	0.23
1975	2.43	2.09	9.37	0	2.64	1975	0.24	0.26	0.64	0	0.23
1980	2.87	2.48	10.57	0	2.91	1980	0.26	0.31	0.69	0	0.23
1985	3.17	2.96	11.16	0	3.01	1985	0.28	0.33	0.67	0	0.23
1990	3.70	3.64	12.45	0	3.22	1990	0.30	0.37	0.69	0	0.23
1995	4.20	4.37	12.23	0	3.31	1995	0.33	0.41	0.69	0	0.22
2000	4.59	4.53	12.73	0	3.32	2000	0.35	0.42	0.77	0	0.22
Q4						Coef. Var.					
1960	4.92	7.04	16.36	0	4.86	1960	2.16	0.66	27.48	0.08	3.87
1965	5.16	7.23	14.98	0	4.73	1965	2.19	0.63	36.98	0.07	4.53
1970	5.54	7.51	15.58	0	5.13	1970	1.92	0.51	28.44	0.06	3.64
1975	5.63	7.56	17.57	0	5.32	1975	1.40	0.46	12.24	0.08	2.14
1980	6.64	8.25	18.61	0	5.55	1980	1.08	0.43	11.44	0.12	1.75
1985	7.19	8.61	19.23	0	5.74	1985	0.86	0.39	9.88	0.11	1.38
1990	8.59	9.88	41.70	0	6.91	1990	0.65	0.32	6.29	0.11	0.93
1995	9.66	10.85	22.44	0	5.86	1995	0.55	0.28	4.75	0.11	0.73
2000	10.43	11.39	21.97	0	5.66	2000	0.48	0.26	3.98	0.11	0.61

The subsequent empirical analysis will use Median/Q4 as the main indicator in regression analysis to identify anti-corruption effect of education equality while the coefficient of variation (CV) and Gini coefficient of education (Gh) will be used as a robustness check.

Variation of Education Measures

To estimate the within-country time trend and the significance of country specific effect of 3 measures of equality in the distribution of education attainment between 1980-2005, we estimate these linear time trend models as follow;

$$Median/Q4_{it} = 0.184_i + 0.017d_t + \upsilon_{it}$$

$$Gini_{it} = 0.566_i - 0.019d_t + \upsilon_{it}$$

$$CV_{it} = 1.968_i - 0.016d_t + \upsilon_{it}$$

The null hypothesis of equal country specific effect is rejected in all 3 regressions which tell us that the differences between measures of education equality across countries are

significant. Furthermore, the effects of linear time trends in the first two models are positive and negative respectively. They are also highly significant whereas the effect of linear time trend in coefficient of variation (CV)'s model is not significantly different from 0. These facts tell us that the values of education equality measures (Median/Q4 and Gini) are significantly different across time dimension. Moreover, its sign and magnitude suggest that the distribution of education across the globe, on average, had been fairly improved. This result confirms the earlier observation on education equality measures in Table 5B. Nevertheless, the correlation between Gh within 10 years interval is never less than 0.97 which indicate that Gh is very persistent across time[29]. Therefore, cross-country differences are the primary source of variation to identify the relationship between education equality and corruption.

4.3 Other Determinants of Civic Monitoring

To measure the freedom of press (I), the quantitative press freedom score complied by Freedom House is employed. This surveyed data evaluates the freedom of information in printed media from various influential sources (e.g. legal, political and economic authorities). Although its qualitative score has been available since early 1980s, its quantitative score has not been available until 1994. Hence, in panel data analysis, press freedom score in 1994 will represent the freedom of the press in 1990 while the averaged value of this score between 1995-1998, 1999-2002 and 2003-2006 represent freedom of the press in 1995, 2000 and 2005 respectively. Due to the unavailability in quantitative press freedom score in 1985, the panel data regressions will employ 4 time periods from 1990 to 2005. Furthermore, as the theoretical model in Section 3 predicts that press freedom and education equality jointly affects corruption level, we will add the interaction terms between press freedom and different measures of education equality into regression specification.

A measure of judicial independence from the Political Constraint Index (POLCON) is used to measures the magnitude of punishment (F) in the economy. This index complied by Henisz[30]. The independence of judiciary is identified by using the information from various measures of judicial independence including a polity score on executive constraint and a score on law and order in International Country Risk Guide (ICRG). This measure is continuous from 0-1 and available from mid19th century until 2004. The higher value of this measure represents the strength and impartiality of legal system and the likelihood of judiciary to successfully constraint

[29] This persistent originate from the nature of Barro and Lee education attainment data which is well known for its extreme persistent, thus some researchers change to enrollment data instead with the expense of measurement error, Glaeser et al. (2007)

[30] http://www-management.wharton.upenn.edu/henisz/POLCON/ContactInfo.html

the decision of executive authority. As the degree of independency in court of justice increase, it is more likely that corrupt public officers will be fully accountable for their misuse of power. This likelihood of punishment can be seen as an increase in F in the theoretical model.

Political pressure (γ) is measured by the degree of political competition and turnout data from Poliarchy measures of democracy from Vanhanen (2003). Data are available from 1810 to 2002 in nearly all independent countries around the world. The measure of electoral competition represents the percentage of votes in parliamentary or presidential elections, or both, won by the largest party. Therefore, the smaller the measure is, the more likely a candidate from the small party won the election. Vanhanen argues that this occurrence represent the competitiveness of democracy. He also imposes the 70 percent upper limit on this measure to reduce the bias caused by the variation of electoral systems[31]. Another measure for political pressure is a turnout data which account for the percentage of the population which voted in the same elections that used to measure the electoral competition. These two measures will represent the political pressure (γ) in the regression analysis.

4.4 Control Variables

Many aspects of country characteristic have shown the deterministic relationship with corruption indices in the empirical literatures. However most of these factors fail to retain its robustness in the sensitivity analysis. Our list of controls for country's characteristics will base primarily on the findings of global sensitivity analysis in Serra (2006). These controls include economic development, religion, political stability, origin of institutional and legal system and regional factors.

To control for economic development and economic structure of a country, per-capita income at constant price and degree of openness are employed. These indicators are obtained from Penn World Table 6.2. For institutional and legal factors, following the argument in Treisman (2000) about the roles of legal culture and the stability of democracy, we, therefore, use the dummy variable for colonial history, equal to 1 if the country is a former UK colony, 0 otherwise, and the dummy variable for uninterrupted democracy, equal to 1 if the country had remained democratic between 1950-1995, 0 otherwise. We also add the interaction term between an uninterrupted democracy and education equality into the regression specification to test whether education equality works differently between the countries with different establishment of democracy. In addition, religion factor has consistently found to be significant determinant of

[31] Generally, proportional electoral systems tend to have a higher share of small parties than plurality or majority electoral systems

corruption, La Prota et al (1999), Serra (2006) and Treisman (2000). To control for this factor, we use the population share with a protestant tradition from La Prota et al (1999) as a proxy for protestant in the regression analysis. Lastly, continental dummies are employed as the proxy for regional factors that could determine the perceived level of corruption. The dummies correspond to the division of regions in the World Bank's classification which include Latin America, East European, Middle East, African, South Asia and Asia Pacific. Therefore, the baseline category is Western Europe and North America continents which contain the typical least corrupt countries. The descriptive statistics for the average values of other determinants of civic monitoring capacity and control variables between 1995-2005 are presented in Table 3 in Appendix 3.

5 Regression Specifications

In Section 3, we illustrate that corruption is determined by education equality (σ), press freedom (I), political pressure (γ) and magnitude of punishment (F). Previous section describes how we transform those determinants of civic monitoring capacity into measurable indicators. Here we will specify the regression models to evaluate the anti-corruption effect of education equality. We construct 2 types of empirical models; the cross-national, pooled cross-national OLS regressions in averaged levels data and panel data fixed effect model. As our empirical agenda continues in the next Section, the appropriate empirical strategy is executed when the identification problem emerges.

5.1 Cross-national OLS and Pooled Cross-sectional OLS

Equation 5A formalises our theoretical predictions into a typical cross-national OLS regression in the determinant of corruption literature which is reviewed earlier. We regress corruption indices on the measures of education equality and the control variables described in the previous section. All variables are the averaged value from 1995 to 2005. In addition, as education equality shows its supporting anti-corruption role to other variables such as press freedom, we look for empirical evidence of this argument by including the interaction terms (κ) between education equality and other variables into the regression analysis. To the best of our knowledge, this is the very first attempt in the determinant of corruption study that incorporates the interaction effects between education and press freedom into the analysis. When include the interaction term into the regression model, the interpretation of the results need some special

treatments, which depend on the nature of the factors of κ[32]. The next section will discuss this issue in more detail.

Also, one might concerns that what determine corruption is in fact the level of average years of schooling in total population or the proportion of population who graduate at a particular schooling level even though the theoretical model shows that it is indeed an equality effect. Furthermore, one can also think that education determine corruption though income effect. We, therefore, anticipate the arguments and test them by include those education variables (e) and per-capita income as control variables in the regression analysis to check the robustness of education equality. Additionally, we also control for country's characteristic and other determinants of corruption (x) that had its robustness verified by the sensitivity analysis in Serra (2006).

Hence, the observed averaged level of corruption in country i between 1995-2005 is determined by the specification of the form;

$$cor_i = \mu_i + \lambda_i + e_i + \sigma_i + pf_i + jur_i + com_i + tur_i + \kappa_i + x_i + \tau_i \quad (5A)$$

To estimate a more precise effect of education equality on corruption and incorporate within country variation across time dimension into the analysis, we extend our investigation to the repeated cross-country estimation. Similar to the equation 5A we estimate the pooled OLS regression model of cross-country data between 1990-2005 by regressing ICRG corruption index on the determinants of civic monitoring capacity, the interactions terms (κ_{ij}), the control variables (x_{ij}) and the time fixed effects, λ_{ij}. Specifically, the observed level of corruption in country i at time j between 1990-2005 is determined by the specification of the form;

$$cor_{ij} = \mu_{ij} + \lambda_{ij} + e_{ij} + \sigma_{ij} + pf_{ij} + jur_{ij} + com_{ij} + tur_{ij} + \kappa_{ij} + x_{ij} + \tau_{ij} \quad (5B)$$

5.2 Fixed Effect Model

To anticipate the possibility of the omitting variable problem and the existence of unobservable heterogeneity, we employ a more advance methodology in the empirical investigation, the fixed effects estimation. Similar to Equation 5B, we regress ICRG index on the determinants of civic monitoring capacity (M), other education variables (e), the interaction term (κ), the control variables (x) and the time fixed effects, λ_{ij}. Additionally, we control for individual

[32] For example κ can be an interaction between categorical variable and continuous variable or both continuous variables.

country specific characteristic, ψ_{ij}.[33] Hence, the observed level of corruption in country i at time j is determined by the equation 5C;

$$cor_{ij} = \alpha_{ij} + \psi_{ij} + \lambda_{ij} + e_{ij} + M_{ij} + \kappa_{ij} + x_{ij} + \varepsilon_{ij} \qquad (5C)$$

If education equality does indeed have the causal relationship with perceived level of corruption, the regression models presented here should be able to consistently identify the significant causal relationships. Moreover, the results should remain robust through various specification changes. These 3 specifications are the base models of our empirical investigation. However, if further identification problem emerges during the investigation we will present the new identification strategy to evaluate anti-corruption effect of education equality. The new results will then present subsequently. This will be the agenda for the next sections.

6 Empirical Results

Figure 1 in Appendix 1 gives the graphical description of the relationship between the dependent variable and its determinants. These evidences convey the necessary information to the readers before studying the subsequent regression results. However, this is not an attempt to suggest any causal relationship between variables. Subsequently, the baseline estimations from equations 5A and 5B, which are presented in Table 1-6 in Appendix 2, will be described before we discuss about identification problems and the strategy to overcome it in the next section.

Figures 1A to 1D present the scatter diagrams with the fitted regression lines between the averaged values of corruption indices and education equality measures between 1995-2005. In Figures 1A and 1B, all 3 corruption indices show a strong relationship with education equality measure. On average, the higher Median/Q4 ratio (σ), the lower corruption practices; while the higher Gini coefficient in education attainment (less equal distribution) the more likely corruption were observed in the society. Figure 1R re-presents Figure 1A again with clearer information about the specific country position in this analysis. Moreover, Figures 1L and 1M show the consistent association between ICRG corruption index and σ in Panel dataset between 1985-2005. On the other hand, Figures 1C and 1D present graphic relationships between CPI corruption index and coefficient of variation in education attainment (CV) with two different intervals. From Figure 1C, it can be seen that there are some 5% of outliers in the CV data on the right of the majority of dataset. Figure 1D illustrates the same picture as Figure 1C but reduces

[33] Most of empirical literatures of corruption employ fixed effect model rather than random effect model as it is generally believed that the country's specific effect correlate to some extent with the covariates, after using Durbin-Wu test, the results support this argument well

the scale of CV axis to 0-1 to focus primarily on the main samples. Apparently, the scatter diagrams with or without the outlier consistently show the negative relationship between perceived level of corruption and CV.

In addition, countries with higher income per capita and freedom of press seems to observe less corruption activities. Figures 1E and 1F show strong positive and negative trends between these factors and the CPI corruption index respectively. Furthermore, Figures 1G to 1K present scatter diagrams of CPI corruption index and 5 different education measures- average years of schooling in total population, percentage of population attained, primary, secondary and tertiary schoolings respectively. As one may expect, a country with higher years of average schooling and smaller proportion of population who have no schooling qualification tend to have less corruption in their society. Additionally, the more population attained primary, secondary or tertiary education the less likely corruption can be perceived in the society. Nevertheless, it is worth noting that among 3 schooling levels, the percentage of secondary schooling attainment shows the strongest link with corruption index whereas primary schooling attainment shows the weakest association.

Therefore, the theoretical predictions in Section 3 that less equality in the distribution of education increases the likelihood of corruption practices are well supported from the graphical evidences in the scatter diagrams. Nevertheless, all hypothetical observations here need to be verified by the formal regression analysis in the next part; in which we will see whether these associations are causal or just spurious relationships.

6.1 Cross-Country OLS

It is crucial to note that all education measures in our analysis are lagged variables. In OLS regressions, education variables are the averaged values between 1960-1980 while all other variables are the averaged values between 1995-2005 whereas the Pooled OLS estimations in Section 6.2 employ the 10 years lagged values of education measures. This identification strategy is used to prevent the endogeneity problem between corruption and education equality and to minimise the undesirable transitory shocks that may affect corruption in each country. Moreover, using lagged values of educational measures reflects a more realistic story. People influence the level of corruption in the society for the most of their lives as the educated citizens can produce lasting anti-corruption or corruption initiatives. This argument is in line with Glaeser et al. (2007) and Svensson (2005)[34].

[34] They both find the empirical evidences support the economic and human capital theories of institutional development

Table 1 and columns 1-6 in Table 2 present the baseline results of OLS regressions as specified by equation 5A without and with the vector of interaction terms (κ) respectively. Columns 7-12 in Table 2 present the results of Pooled OLS regressions with time fixed effects as specified by equation 5B. Table 2 presents the key estimations that use Median/Q4 as a measure of education equality, which has the theoretical support from Section 3, while Table 3 presents the robustness check by re-estimating equation 5A and 5B again with alternative measures of education equality. Additionally, Tables 4-6 include other aggregated measures of human capital to test the robustness of our main hypothesis as discussed previously.

Education Equality and Press Freedom

In Table 1, the estimates of the association between education equality and corruption indices as specified in equation 5A, without interaction term, yield no significant result. We thus follow the theoretical prediction by adding the interaction terms into the specification, the results are presented in Table 2. The result is unsurprising as the measures of education equality now show a significant relationship with the corruption indices. The possible explanation is that the equality in education distribution determines corruption level individually and jointly with other variables. When exclude the interaction terms from the regression specification the interaction effect remain inside the error term, which then creates the problem of omitted variable bias. As most of the significant interaction terms (columns 1,2,4,7-8,10-11 in Table 2) have opposite sign of the measures of education equality[35], there are two opposite forces determining corruption level which need to be identified. Unable to identify such effect, the regression specifications in Table 1 fail to reject the null hypothesis that the measures of education equality have no causal relationship with corruption indices.

From the results in regression 1, 2 and 4 in Table 2, given everything being equal, the countries with a smaller gap of schooling year between the median and the 4th quartile in the distribution of education (higher Median/Q4) during 1960-80, the less likely the countries to be corrupt during the period 1995-2005. More specifically, from regression 1 in Table 2, reducing 10% of the year of schooling gap between the median and the 4th quartile (σ) increase 0.6112 score of corruption indices. This increase is equivalent to the difference between CPI index of Cameroon (2.3) and Argentina (2.9) in 2005[36].

Nonetheless, as regression models in Table 2 contain 2 interactions of education equality measures with other determinants of corruption, the interpretation of anti-corruption effect of

[35] See Figure L in Appendix A
[36] Figure S in Appendix 1 gives a supporting idea on how significant this difference is in reality.

education equality measures need to incorporate the supplementary effect of other determinants if the interaction effects are significantly different from 0. Otherwise the interpretation can be inaccurate. In regressions 1 to 6, the coefficients of the interaction term between education equality and press freedom are significantly different from 0. Consequently, the interpretation of anti-corruption effect of education equality σ_i needs to incorporate the supplementary effect of press freedom. As both factors of interaction term are continuous, we need to calculate the net effect as follows:

Let X_i represents other covariates, in Table 2 we regress;

$$cor_i = \alpha_i + \beta_1\sigma_i + \beta_2 I_i + \beta_3(\sigma_i * I_i) + \beta_4 X_i + \varepsilon_i \quad (6A)$$

Calculate for the main effect

$$= \alpha_i + \beta_1\sigma_i + (\beta_2 + \beta_3\sigma_i) * I_i \quad (6B)$$

The anti-corruption effect of education equality (σ_i) depends on the coefficients of education equality, press freedom (I), their interaction term and the level of press freedom. To make our interpretation more meaningful we choose the mean level of press freedom to interpret the result which equals to 42.5. Thus, using equation 6B, from regression 1 in Table 2 a reduction of 10% of the year of schooling gap yields, on average, an increase of the CPI index around 0.717. This suggests that the OLS estimators in Table 1 underestimate the effect of education equality on corruption due to the omitted variable problem. Also, the earlier interpretation, which does not incorporate an interaction effects, undervalues the true effect of education equality. Table 6A and Figure 6A present graphically that the effects of Median/Q4 (σ_i) on corruption depending on levels of press freedom.

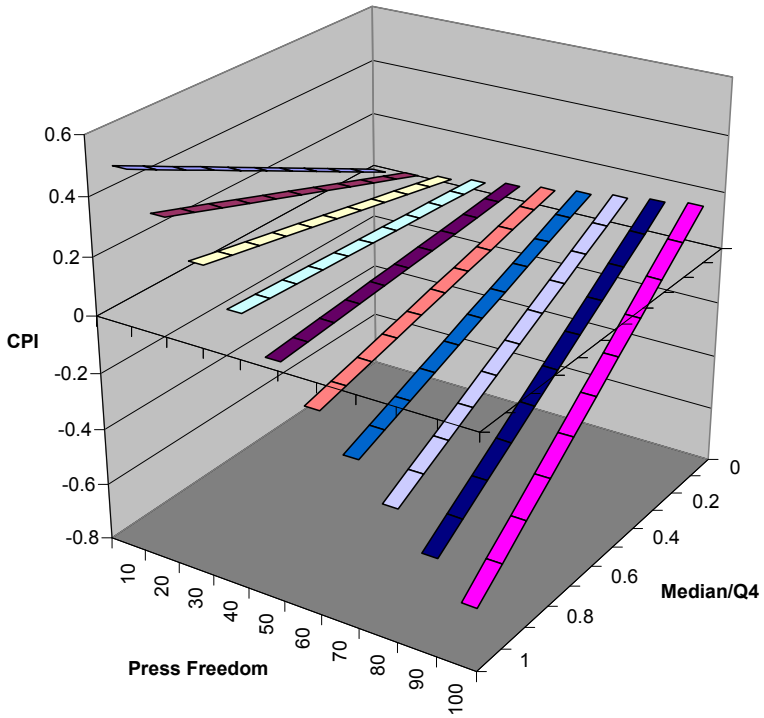
In Table 6A, the shaded area presents the negative effect of Median/Q4 on corruption which contradicts the intuition of our earlier findings. However, if one looks more closely, the negative effects of Median/Q4 level occurs when the level of press freedom increases to above 50 (limited freedom). Therefore, the negative effect of the limitation in press freedom can overcome the positive effect of education equality on corruption score which leads to the negative net effect of education equality. This finding is consistent with the argument in Section 3 that although the equality in education distribution is very high, as long as freedom of information is limited, it is very difficult for the citizen to successfully challenge the corrupt officers.

Table 6A The Effects of Median/Q4 and Press Freedom on CPI Index (with interactions)

mdq	0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1
10	0.0166	0.06362	0.11064	0.15766	0.20468	0.2517	0.29872	0.34574	0.39276	0.43978	0.4868
20	0.0332	0.06612	0.09904	0.13196	0.16488	0.1978	0.23072	0.26364	0.29656	0.32948	0.3624
30	0.0498	0.06862	0.08744	0.10626	0.12508	0.1439	0.16272	0.18154	0.20036	0.21918	0.238
40	0.0664	0.07112	0.07584	0.08056	0.08528	0.09	0.09472	0.09944	0.10416	0.10888	0.1136
50	0.083	0.07362	0.06424	0.05486	0.04548	0.0361	0.02672	0.01734	0.00796	-0.00142	-0.0108
60	0.0996	0.07612	0.05264	0.02916	0.00568	-0.0178	-0.04128	-0.06476	-0.08824	-0.11172	-0.1352
70	0.1162	0.07862	0.04104	0.00346	-0.03412	-0.0717	-0.10928	-0.14686	-0.18444	-0.22202	-0.2596
80	0.1328	0.08112	0.02944	-0.02224	-0.07392	-0.1256	-0.17728	-0.22896	-0.28064	-0.33232	-0.384
90	0.1494	0.08362	0.01784	-0.04794	-0.11372	-0.1795	-0.24528	-0.31106	-0.37684	-0.44262	-0.5084
100	0.166	0.08612	0.00624	-0.07364	-0.15352	-0.2334	-0.31328	-0.39316	-0.47304	-0.55292	-0.6328

To make this interpretation more intuitive, Figure 6A shows that given the press freedom level below 50 (free press), as we move down to 1 along the Median/Q4's axis (more equality) or move up to 0 along the Press Freedom's axis (more freedom), the CPI score increase. Put it differently, the marginal anti-corruption effect of education equality is positive. On the other hand, when the press freedom is above 50, the slopes become negative. This portrays that the marginal effect of an increase in education equality becomes negative when press freedom is limited. However, although the slopes become negative, the net effects still remain positive until the changes in Median/Q4 are more than 0.4. Hence, the negative net effects of Median/Q4 level occur when 2 conditions are met; when the level of press freedom is above 50 and an increase in education equality is dramatic (over 0.3).

Figure 6A The Effects of Median/Q4 and Press Freedom on CPI Index (with interactions)

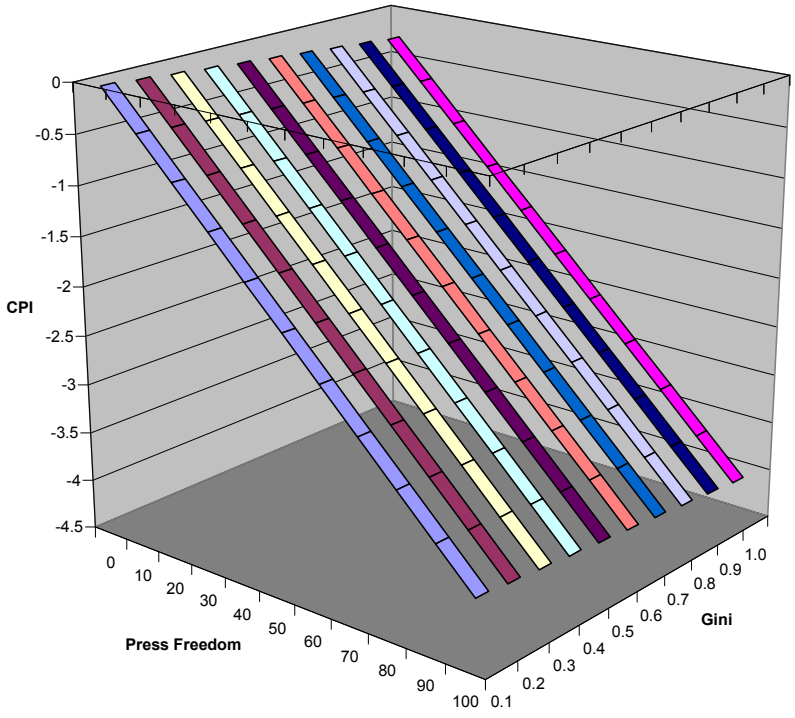


However, it is very difficult to see the net negative effect of education equality in reality. From the data of Median/Q4 between the period 1960-2000 which contains 832 observations, we calculate the first differences of this variable to see how likely any country in the dataset has had a change of over 0.3 units in Median/Q4 within its 5 years interval. We find that out of 738 observations of the first differences, there are only 2 observations (0.28%) that had values above 0.3. Hence, in principle the negative effect of education equality is possible but it is very unlikely to occur in reality. This likelihood is far less than the findings in Ahrend (2002).

The other 2 measures of education distribution, the coefficient of variation and the Gini coefficient of education, which the results are presented in Table 3, show the similar relationships with corruption indices to the Median/Q4. The countries with less equal education distribution increase the likelihood of observing more corruption incidence, ceteris paribus. From regression 2 in Table 3, the increase in 0.1 of the coefficient of variation in education attainment can explain the reduction in WB corruption index around -1.2. This is comparable to the average gap between WB corruption index from 1996-2005 between Brazil (4.8) and South Africa (5.9). Likewise, from regression 10 in Table 3, an increase of 0.1 in Gini coefficient in education attainment can explain the reduction of around 2.47 in the averaged CPI corruption index between 1995-2005. Nevertheless, using the same procedure as Table 6A above, we find that the net effect of education equality measured by Gini and coefficient of variation are always positive. In other words, given all possible levels of press freedom, the more equal the distribution of education measured by the Gini and CV, the less perceived corruption in the society.

Similarly, press freedom has both individual and joint relationship with education equality measures, especially with the Gini and CV. Regressions in Table 3 consistently show that countries with more press freedom were less likely to witness corruption. However, the effect of press freedom was reduced by the inequality in education distribution. The interpretation of the press freedom effects from Table 3 is comparable to the interpretation of education equality above, this is presented by Figure 6C. Figure 6C depicts a negative relationship between press freedom and corruption from regression 10 in Table 3. Obviously, this link depends partially on the level of education equality measured by the Gini coefficient. The least corrupted society occurs at the top left of the plain where the distribution of education is at the most equal point and press freedom is at its freest point. On the contrary, the most corrupted society occurs at the bottom right of the plain with the most unequal distribution in education and fully limited freedom of the press. Hence, press freedom and education equality should be considered as complimentary tools in the anti-corruption campaign.

Figure 6C Corruption by Press Freedom and Gini Education (with interaction)



Education Equality and Democracy

In Table 2, the coefficient of the interaction term between Median/Q4 and uninterrupted democracy are insignificantly different from 0, hence the anti-corruption effect of education equality in a country that has more than 40 years of uninterrupted democracy (Alldem=1) is insignificantly different from a country that has not had such stability in its political system[37]. Therefore, we do not need to interpret anti-corruption effect of education equality in the country with and without uninterrupted democracy separately. Besides, the length of democracy shows no significant anti-corruption effect when Median/Q4 is used as the measure of education equality.

Nevertheless, in Table 3, when Gini Coefficient and Coefficient of Variation are used as the measure of education equality, the effect of democratic stability becomes significantly positive. Base on the results in Table 3, the country with uninterrupted democracy is more likely receive, on average, 1-2 higher corruption score compare to the country with interruption. The possible explanation for this finding is that countries with established democracy may have institutional factors or supporting mechanisms which promote accountability more effectively than countries with fragile democracies. Moreover, some interaction terms between education equality measures and uninterrupted democracy are significantly different from 0 (columns 1-3,

[37] Although we exclude this interaction out of the model, all main results are still robust

6-9, 10 and 16-18) which means that the impact of changes in education distribution measuring by Gini coefficient and coefficient of variation in the country without 40 years of uninterrupted democracy (AllDem=0) is different from the country with 40 years of uninterrupted democracy. However, this finding is barely significant and highly sensitive to specification changes, thus we focus our attention primarily on the results from Table 2.

Other Determinants of Civic Monitoring

Regressions in Table 2 and 3 also show that most of the other determinants of civic monitoring capacity also have significant associations with corruption indices. Other things being equal, in countries with higher judicial independencies and competitive democracy corruption was less likely to occur. Moreover, countries with less Protestants, lower income per-capita and smaller degree of openness were more prone to corruption. However, the measure of legal and institutional culture, British heritage, does not show any significant link to perceived level of corruption across the globe. These findings are consistent with the Serra (2006).

The results in regression 4-6 and 10-12 in Table 2 and regression 4-6, and 13-15 in Table 3 include regional dummies into the regression model[38]. The Latin American countries tend to have more corruption than Western European and North American countries, specifically around 1.5 points lower in corruption indices. Moreover, the anti-corruption effects of all education equality measures increase when adding the regional dummies. This suggests that the regional factors do matter in our analysis and can not be left in the residual terms. Nonetheless, all main results discussed above still remain robust.

Other Educational Measures

So far the evidences in Table 2 support the theoretical predictions in Section 3 very well. Countries with more equal distribution of education tend to perceive less corruption. Nevertheless, as discussed earlier, some people are still concerned that other aspects of education attainment determine corruption level. Table 4 and 6 test these alternative arguments by adding these additional educational measures (e) into the regression specification 5A. This attempt can also be seen as a robustness check of the results in Table 2. The main dependent variable in Table 4 and 5 is the CPI corruption index while the main measures of education equality are Median/Q4 and CV.

From regressions 1 in Table 4, adding average schooling years into the analysis reduce the effect of Median/Q4 on corruption by half of the results in Table 2, which makes it become

[38] The results are available upon request

insignificant whereas the average years of schooling itself is highly significant. An increase of 1 year in average schooling in total population can increase around 0.3 units of CPI index (less corruption). On the other hand, the measures of average schooling years by education levels have differential effects on the corruption index. In regressions 2, the average years of primary schooling show no significant effect on the corruption index whereas the effects of education equality remain significant with slight reduction in its size. In contrast, regressions 3-4 show that the levels of average years of secondary and tertiary schoolings significantly determine the variation in the CPI index, so do education equality measures. An increase of 1 year in average years of secondary and tertiary schoolings raises corruption score around 0.6 and 2.6 respectively.

Although the measures of education equality lost its significance in determining corruption after adding the measure of average years of schooling, we argue that the reduction in the explanatory power of education equality is driven by the problem of muticolinearity. The correlation between Median/Q4 and average years of schooling in total population is over 0.9. Consequently, having both variables as the covariates is an inappropriate specification to study their causal relationship. Therefore, we propose an alternative approach to verify this argument. We calculate for Mean/Q4 by using the years of schooling attained by the citizen at the mean position in the distribution divided the year of schooling attained by the 4^{th} quartile. This new measure highly correlates with the measure of average year of schooling in total population (0.9). We regress the same regression model using all corruption indices as the dependent variables and compare the results with the model with Median/Q4. Table 5 presents these results.

Apparently, the effects of the new measure, Mean/Q4, on corruption are smaller than the effects of Median/Q4. Specifically, given constant year of schooling attained by the 4^{th} quartile of population, a 10% increase in the schooling gap between the median and the 4^{th} quartile raise the corruption indices around 0.29 scores[39] higher than the exact increase in the gap between the mean and the 4^{th} quartile, see columns 1-6. In other words, moving the median close to the 4^{th} quartile can reduce the likelihood of perceived level of corruption slightly more than moving the mean. Nevertheless, both Mean/Q4 and Median/Q4 do have the negative relationship with the levels of corruption in the society.

Another aspect of education attainment that may also determine the corruption level is the proportion of population that attained any particular schooling levels. As discussed earlier, Ahrend (2002) and Frechette (2006) find supporting results for this argument. However they both use the data on enrollment rate, not the attainment data that we are using. Table 6 revisits this argument by adding the proportions of the total adult population that attained 4 different

[39] The net effects calculates by equation 6B

schooling levels; no schooling, primary schooling, secondary schooling and tertiary schooling. The CPI index is used as the dependent variable in regressions 1-4 while Median/Q4 is used as the measures of education equality.

Interestingly, having a more educated population does not necessarily always reduce the likelihood of corruption in the society. All measures of population share, in each schooling level, show significant and differential effects towards corruption. Specifically, from regressions 1-2, a 1 percent increase in population share with no schooling or primary schooling result in the reduction of the CPI score (more corruption) by 0.02, though the effect of no schooling is insignificant. The effect of primary schooling is consistent with Ahrend (2002) and Frechette (2006). On the other hand, from regressions 3-4, a 1 percent increase in the population which has attained secondary or tertiary schooling increases around 0.05 and 0.09 score in the CPI (less corruption) respectively. Hence, having more population with an attainment in secondary education and above, brings about a less corrupted society. Put it differently, an increase in the proportion of population attaining schooling can reduce corruption in the society if only the schooling is the secondary level and above.

This finding, however, contradicts that of Ahrend (2002:14) which show that only tertiary education can significantly control corruption while primary and secondary education have neither positive nor negative significant effects. These different findings could potentially originate from the difference in the measure in education between our work and Ahrend (2002) as discussed earlier. Moreover, in the sub-sample analysis Ahrend argues that the promoting-corruption effect of secondary and tertiary education can occur when press freedom is extremely limited. Specifically, he classifies countries into 3 types; by the qualitative status of press freedom which is a very broad classification[40]. Potentially, when estimating the anti-corruption effect of education in each group separately, the intra-variations of press freedom inside each category of freedom status, which are left unidentified in the residual term, can cause a problem of omitted variable bias. As we find a very strong anti-corruption effect of secondary and tertiary education which remains robust through the specification changes while the effect of press freedom is barely significant, the negative finding in Ahrend's sub-sample analysis is ambiguous.

6.2 Pooled OLS Estimation

Generally we re-estimate the OLS regression model as we did in the previous section; however, we employ the repeated cross-country dataset of the same set of countries between

[40] Free, Partly Free and Not Free which each class accounts for around 30% difference in quantitative score

1990-2005 and include time fixed effects into the model. Columns 7-12 in Table 2 and Columns 7-9, 16-18 in Table 3 present the results of Pooled OLS regressions as specified by equation 6B. Table 4-6 add more measures of education to test the robustness of the main results as discussed previously. As CPI and WB corruption indices are only available from 1995, the regressions, which employ these indices as its dependent variable, will estimate the repeated cross-country dataset between 1995-2005. All education measures are in the 10 years lagged values.

Education Equality and Press Freedom

From regression 7 and 8 in Table 2, reducing 10% of the year of schooling gap between the median and the 4th quartile increase around 0.851 and 0.837 scores of CPI and WB corruption indices respectively. When include the regional dummies into the regression model, the anti-corruption effect of education equality in terms of corruption indices score is slightly reduce to 0.724 and 0.673 respectively as presented in columns 10 and 11. Hence, the OLS regressions that employ averaged values and repeated cross-country datasets show highly consistent estimations of the anti-corruption effect of education equality measured by Median/Q4. The effects of Gini in education attainment and CV presented in columns 7-9 and 16-18 in Table 3 are also similar to the previous section. These evidences suggest that the country with a more equal education distribution is likely to have less corruption activity.

Interestingly, the anti-corruption effects of education equality and economic development are insignificant in the regressions that employ ICRG corruption index as its dependent variable. The effects of other regressors also vary by its magnitude compare with the regressions that employ CPI and WB as its dependent variable. This difference could originate from the fact that ICRG is complied by a distinctive method compare to CPI and the WB as discussed earlier in Section 4. When different indices, which are designed to capture different aspects of corruption, are employed as dependent variable, it is possible that the estimations, even with the same specification, can yield slightly different results. Nevertheless, when dropping all the interaction terms from the specification, the effects of education equality and economic development become highly significant although the magnitude is reduce by half[41].

Other Determinants of Civic Monitoring

Similar to earlier findings, richer countries seem to have less corruption specifically an increase in 1,000 US dollars of per-capita income can increase about 0.03-0.05 scores in corruption indices. In addition, the anti-corruption effect of press freedom, share of protestant and

[41] The results are available upon request

uninterrupted democracy are very much the same as the cross-country OLS estimation in Section 6.1. The effect of openness and political pressures are insignificant here. Interestingly, however, the income effect disappears when regional dummies are included to the regression specification while the effects of other explanatory variables remain unchanged.

Other Education Measures

The results from repeated cross-national estimations continue to reinforce the earlier findings in Section 6.1. Table 4-6 include additional measures of schooling to test the robustness of the main results as discussed previously. From regressions 5-16 in Table 4, Median/Q4 loses its explanatory power when including the measures of average years of schooling into the regression models. However, the anti-corruption effects of Median/Q4 when the average years of schooling in each education level are included remains consistent with the earlier findings in Section 6.1. Similarly, in regression 7-12 in Table 5, the gap between anti-corruption effects between Median/Q4 and Mean/Q4 is very much the same as columns 1-6. Additionally, from regressions 5-16 in Table 6, when include the percentage measures of total adult population that attained different education levels into the regression specification, the anti-corruption effect of Median/Q4 is significant and remain consistent with the results in Table 2. Additionally, the results confirm the differential anti-corruption effects of education in each schooling level as found in regression 1-4 from the same table. Specifically, an increase in the proportion of populations that attained secondary education or above, 10 years ago, significantly reduces the observed level of corruption measured by all corruption indices. On the other hand, increase in the percentages of total population with no schooling or with primary schooling attainment increase the observation of corruption in the society. Moreover, the effect of education equality remains robust except when the percentage of population attained secondary schooling is included.

7 Identification Problems and Strategy

Although the findings in Tables 1-6 highly support our hypothesis that education equality has independent and complimentary anti-corruption effect, this section checks for any possible misspecification problem which can lead to the loss of identifiability in the parameters of interest. We employ fixed effects model and instrumental variable to control the problems of endogeneity and omitting variable. The section starts by reviewing studies which portrays the endogenous relationship between education and corruption.

7.1 Endogeneity Problem

There are very well-documented literatures and policy recommendation from leading organisations that recognise the reverse causality between education and corruption. The literature consistently shows the effects of corruption on public provision of education[42]. Researches suggest that by reducing corruption today, it can improve the education system in the future by securing government funding to the targeted educational plans, Mauro (1998) and Reinikka and Svensson (2005). Using the instrumental variable (IV)[43] estimation, Reinikka and Svensson show that an increase in public information exposure is associated with an increase in government spending to local schools which would have been extracted by rent-seeking activities. Additionally, the schools that are located nearer to the newspaper outlet which make them less prone to corruption are likely to have more students enrolled and bring about better student performances.

The estimations presented in Section 6.1-6.2 anticipate the endogenous relationship between education and corruption presented by literature and identify the anti-corruption effects of education equality by using the lagged values of education measures to prevent such problem. The validity of this strategy depends upon the identifying assumption that the present value of corruption does not affect the past value of education measures. There are realistic arguments that support this assumption. Firstly, there is no evidence to support the hypothesis that corruption today can cause education inequality in the past. Muaro (1998) and Rikka and Svensson (2005) present only the evidences in which current levels of corruption affect future values of education spending, enrollment rates and academic performance. Secondly, as subjective corruption indices were conducted primarily by evaluating the perception of international businessmen towards corruption in their host country, there is no clear channel that their perceptions[44] toward the present level of corruption today can possibly determine the situation of education inequality a decade ago.

We perform Durbin-Wu-Hausman test for endogeneity to see how effective the current identification strategy is in preventing such problem. The results of the test on OLS and Pooled OLS estimations are presented in Table 7-8. Surprisingly, the coefficients of the residual terms from the reduced-from regression from regressions 4-6, 10-12 and 16-18 in Table 7 and from regressions 3-4 in Table 8 are consistently significant which means that the endogeneity problem still exists in the estimations. However, recall to the argument about heterogeneity discussed

[42] See Table 4 in Appendix 3 for the projects against corruption in education sector
[43] They used the distance to the nearest newspaper outlet as an instrument of teacher's knowledge on grant program
[44] There is no question about the country education system in the past 10-20 years in the questionnaire

earlier, we suspect that the endogeneity problem detected by Durbin-Wu-Hausman test does not originate from the reverse causality problem but from the unobservable heterogeneity problem.

7.2 Unobservable Heterogeneity

The problem of unobservable heterogeneity in our context is similar to the omission of the ability in earnings of return to schooling study. In our estimates, this problem could potentially originate from the correlation between educational regressors and unobservable anti-corruption ability of civil society, more specifically;

$$cor = \mu + \beta E + \theta X + (\alpha z + v) \qquad (7A)$$

Equation 7A presents the hypothetical equality between corruption and its determinants where E and X stand for educational determinants and other determinants in Equation 5B while z represents the unobservable anti-corruption ability of civil society. When z is correlated with E, the residual term (αz+v) will be associated with the regressor E which cause the inconsistency in OLS estimators. In fact, from the surveys evidences in Table 6-7 in Appendix 3, it is difficult to reject the hypothesis that Cov[E, z] ≠ 0.

There are some attempts that solve the unobservable heterogeneity problem in corruption study. In the attempts to evaluate the civic return to education in cross-country analysis by Ades and Di Tella (1999) and Ahrend (2002), they use the fixed effect panel data estimation to capture the unobservable country's characteristic. Nevertheless, the validity of their attempt subjects to the identifying assumption that an unobserved heterogeneity effect is time-invariant. Frechette (2006) finds evidence that contradicts the time-invariant assumption, thus he employs the time-varying instrumental variables in his fixed effects estimations. Hence we follow both recommendations from the literature and employ the method of instrumental variable and fixed effects estimation into our empirical investigation. If the unobservable anti-corruption ability is time-invariant, fixed effects estimation should provide the consistent parameters of our interest. However, if ability is indeed time varying factor, we also need to employ the instrumental variable method to identify the causal relationships in the fixed effects estimation. On the other hand, for averaged cross-national OLS estimates, IV method is the only option we have.

7.3 Fixed Effect Estimation

Fixed effects estimation is a demanding methodology, thus, due to the limited availability of our panel dataset, we start the fixed effects estimation from the simplest specification by running all corruption indices on education equality measures and income in regressions 1-9 in

Table 9. The anti-corruption effect of education equality measures, Median/Q4 and Gini Coefficient, remain significant but its magnitude is substantially reduced compare to the earlier estimates. From regressions 2-3, reducing by 10% the year of schooling gap between the median and the 4th quartile can increase by around 0.06-1.01 in score of corruption indices while a 10% reduction in Gini Coefficient increase around 2 scores in WB corruption indices. The reduction in anti-corruption effect of Median/Q4 supports the hypothesis that Cov[E, z] > 0. Thus, OLS estimator overestimates the anti-corruption effect of the education equality measure. Interestingly, the anti-corruption effect of Mean/Q4 is insignificant which suggests that the relative years of schooling attained by the median is more important than the mean citizen in anti-corruption context[45]. More importantly, in regression 11-12, when including the measure of average years of schooling into the model, the coefficient of Median/Q4 is relatively unchanged from regression 2-3 while the effect of averaged schooling years is insignificant. This result suggests that the significance of this variable in Table 4 is driven by the correlation with unobservable anti-corruption ability in the error term.

7.4 Instrumental Variable and 2SLS Estimates

To control the unobservable heterogeneity in averaged cross-national OLS estimates, the method of instrumental variable is most feasible one in our context. In Section 2, we have reviewed some efforts by Glaeser and Saks (2006), Cook (2002), Moretti (2004) and Park (2006) to ease the endogeneity problem by instrumenting education indicators. The IVs which have been used so far include population structure, gender ratio and share of church members in the community. Cook (2002) and Moretti (2004) use the demographic variables including the population structure, gender ratio and life expectancy at birth as the instruments whereas Park (2006) also employs world price of some commodities as an instrument. They argue that the variation in these variables influence human capital formation but not corruption and income. We follow the literature and propose the share of middle age cohort (15-60) in total population and gender ratio as the instruments[46]. The share of middle age cohort (m) is calculated by using the information of young (y) and aging (o) cohorts' shares in total population, specifically;

$$m_{it} = 1 - y_{i,t-10} - o_{i,t-10} \qquad (7B)$$

From equation 7B, the share of the mid age cohort in country i at time t equals to 1 minus by the shares of young and old cohorts 10 years ago. Hence, when the shares of young and/or old

[45] The result is available by request
[46] Data is obtainable at Population Division, United Nations; http://esa.un.org/unpp/index.asp?panel=2

cohorts increase, it raises the future share of mid age cohort. Gender ratio is also in 10 years-lagged values, the value of 110 means that, on average, there are 110 men for every 100 women in total populations.

To be valid instruments, these demographic variables need to be uncorrelated with the error terms in equations 5A and 5B, in particular the unobservable anti-corruption ability, and sufficiently correlate to the education equality measures. For the exogeneity criteria, the underlying argument is that larger share of mid age cohort means that old populations with lower averaged schooling years are leaving the population structure while the young generation with higher averaged schooling years enter. On the other hand, women have better opportunity to obtain schooling nowadays than decades ago. A new generation of female populations should attain higher schooling than her ancestors did. Therefore, the changes in these instruments are mainly due to the demographic variation which there is no obvious link to unobserved anti-corruption ability. Therefore, it creates the exogenous variations for the distribution of human capital across population. For the second criteria, Figures 1N, 1O, 1P and 1Q in Appendix 1 show the graphical relationships between the endogenous variable, Median/Q4, and both instruments in 2 datasets. Clearly, larger share of mid age cohort and female population correlate to the more equal distribution of education in the society.

Nevertheless, the validity of this identification strategy still depends on the identifying assumption that these past demographic changes do not directly correlate with the current perceived level of corruption in the society. One concern may be that more mid age population bring about the intolerance against corruption and civic movements. However, based on the evidences presented in Magnus et al., 2002 and Glaeser et al., 2007, we argue that these anti-corruption effect of demographic changes work through the education system. In other words, there are no clear direct link between demographic changes and the perceived level of corruption except through education channel.

Hence, we run the first stage regression according to this specification;

$$\sigma_{ij} = \mu_{ij} + a\lambda_{ij} + b\rho_{ij} + cZ_{ij} + \upsilon_{ij} \qquad (7C)$$

Let ρ_{ij} stands for all predetermined variables while Z_{ij} is vector of instrumental variables. Table 7-8 present the 2SLS results of averaged cross-national estimate and repeated cross-national estimate accordingly. For robustness check, all 3 measures of education equality are instrumented and we estimate 2SLS regressions for all available corruption indices. From Table 7, regressions 1-3 present the reduced forms estimates as specified by equation 7C by different measures of education equality. The results show that mid age cohort can significantly explain the

variation of education equality measures while gender ratio can barely explain the variation. Columns 7-9, 13-15 and 19-21 present second stage estimations. When the measures of education equality are instrumented its anti-corruption effects become substantially larger. However, the F-statistic for the test of overall fit of first stage regression at the bottom of Table 7 shows the values range from 1.3 to 5.5. As the anti-corruption effects of education equality measure become considerably larger than OLS estimates in Table 2-3 even the values of F-statistic in reduced form estimates are lower than 10, it is a rule of thumb that these are the signal of weak instrument problem. If the instrument is to be a legitimate instrument, it should correct inconsistency in the estimator of educational measure not increase. In this case, as $Cov[E, z] > 0$ the 2SLS estimator should be smaller than the OLS estimator which is contaminated by the effect from the error term. The possible explanation for the weak instrument problem is the limitation in the variation of instruments, especially the gender ratio[47].

The 2SLS estimates on repeated cross-section in Table 8 and fixed effects estimations with instrumental variable in Table 9 also present similar results and problem. From column 5-6, 9-10 and 13-14 in Table 8, the anti-corruption effects of Median/Q4 and Gini Coefficient in 2SLS estimates are larger than OLS estimations in Table 2-3. However, this problem is improved in repeated cross-country context, as there are more observations available compare to the averaged OLS estimations. Consequently, the F-statistics increase around 5-6 times and the coefficients of the second-stage regression are sizable reduced. Therefore, for the cross-country analysis we need a better instrument or the larger panel data to estimate the consistent relationship between education equality and corruption. We leave this opportunity for future research.

Nevertheless, we have estimated the fixed effects model that control unobservable heterogeneity problem by the country fixed effects. As long as the assumption that an unobserved anti-corruption ability is time invariant holds the identifiability of these results remains consistent. In fact, unlike the time varying unobserved heterogeneity in Frechette (2006) which determine the availability of rents in the economy, there is no clear evidence that the anti-corruption ability of civil society around the globe has changed dramatically during the past 10 years. Hence, the result of fixed effect model in Table 9 supports our hypothesis that education equality can control corruption while the results from OLS and Pooled OLS estimates in Table 2-6 should be treated with caution until the legitimate instruments for education equality measures or the larger panel dataset is available.

[47] See Figure P in Appendix 1

7.5 Robustness Analysis

We have implemented various approaches to check the robustness of our findings through the empirical investigation. These attempts include re-estimates the regression model with different dependent variables and different education equality measures and also add regional dummies and additional education variables. Moreover, we estimate our regression models in 4 different specifications which include OLS, pooled OLS, 2SLS and Fixed effects model. The main findings remain robust throughout the changes. Nevertheless, we leave the intensive sensitivity analysis for future research.

8 Conclusion

As different levels of education work differently in anti-corruption and corruption initiatives, policy makers should pay attention to the structural aspect of education distribution in the society. Some studies find the evidence that support the hypothesis that education, in general, has insignificant or promoting effects on corruption. However they use a specific measure of education, mostly primary school enrollment, to support their argument. This paper argues that this is an inappropriate identification strategy. We have shown theoretical argument and empirical evidence which support an alternative hypothesis that the effect of education is differential in its levels of schooling and, more importantly, the equality aspect of education play a crucial role in determining the level of corruption in cross-country data. Therefore, the role of education in civic anti-corruption initiative should be treated differently by its levels and the nature of measurement. In addition, the freedom of information, which has received a growing attention in its crucial anti-corruption role, works more effectively in the country with more equal distribution of education, and vice versa. Also, education equality has net anti-corruption effect at almost every quantitative levels of press freedom. Yet, it works better in a country with free press. This finding fundamentally contradicts to the previous literature which argues that education could only control corruption when the press freedom is high. Therefore, the consequence of human capital distribution should receive more attention from anti-corruption initiatives as a supplement tool to combat corruption. As education is like a two-sided sword in this context, understanding what each side is meant for should help policy makers and practitioners to employ education in an accurate and efficient way to control corruption in the society.

Moreover, a non-monotonic relationship between education and corruption emerges from the diverse roles of education. Hence, future research should study further in the theoretical path to gain a better understanding of this aspect in the relationship between education and corruption.

Additionally, the potential effects of human capital distribution across other dimensions (e.g. genders and geographical areas) should also be examined. On the empirical stand point, the longer panel dataset and the micro-based dataset which have richness of both observations and time length should allow researchers to estimate a more precise effect of education on corruption with a more demanding identification strategy.

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Appendix 1

Figure 1: Corruption and its determinants

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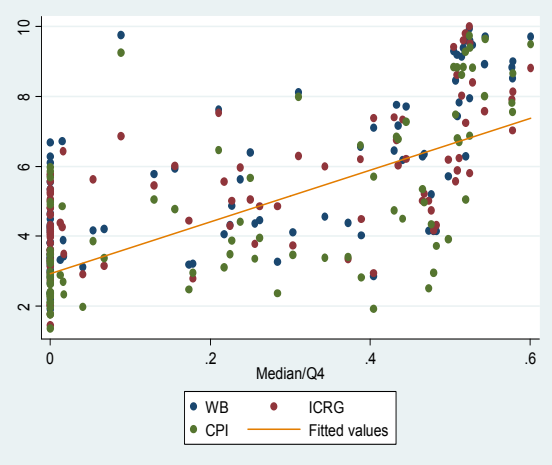

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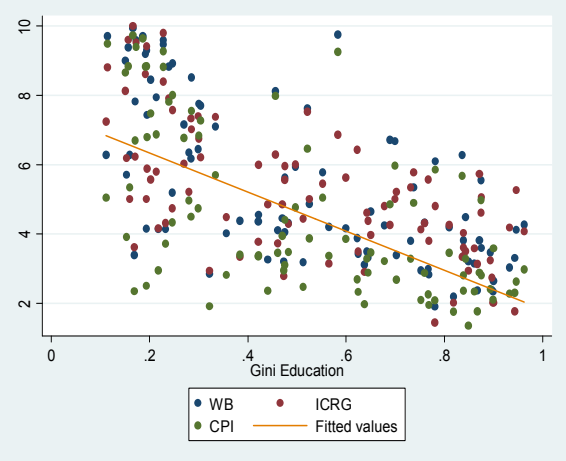

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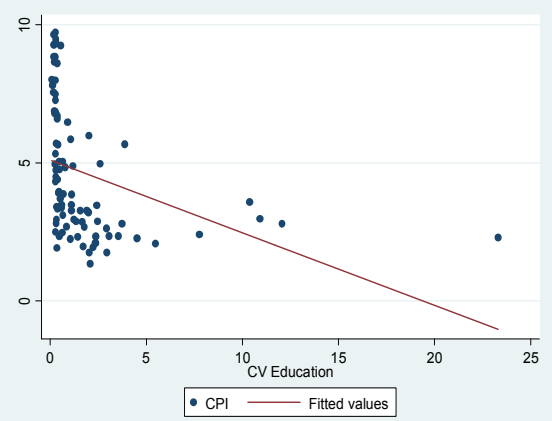

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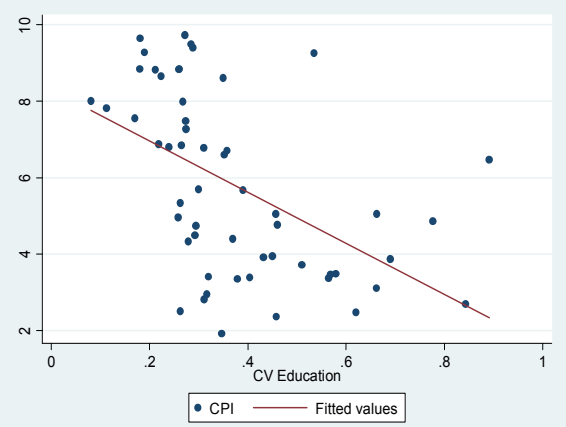

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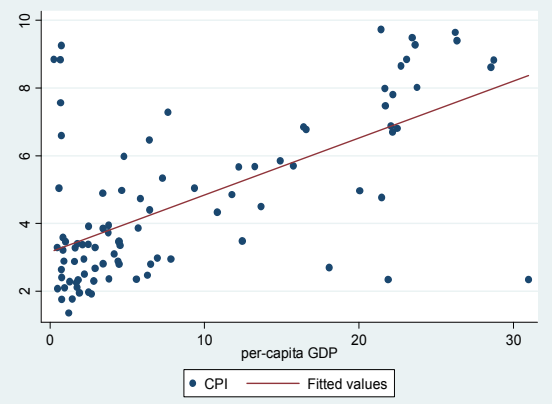

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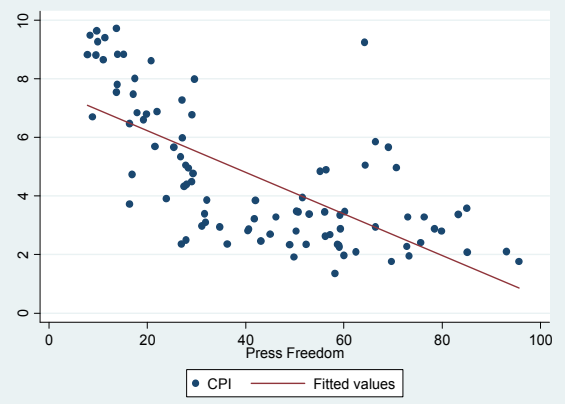

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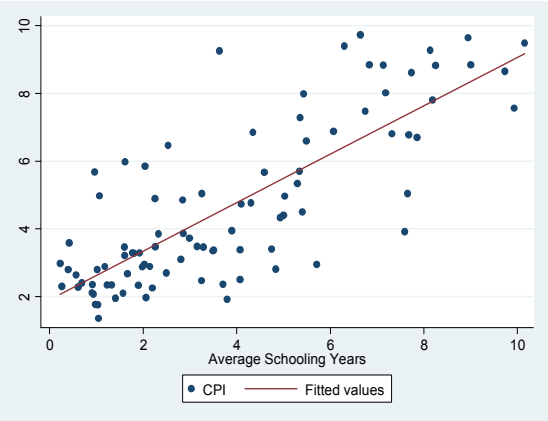
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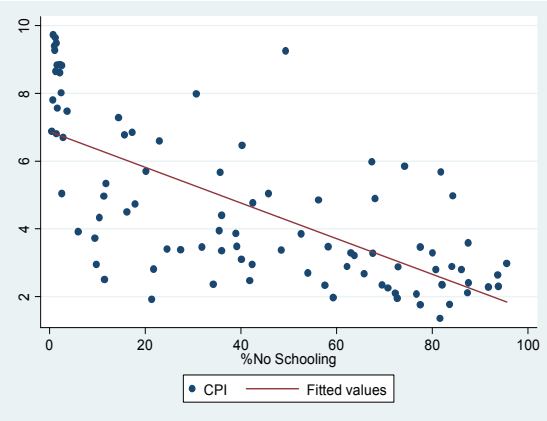
4
2
0
2
4
6
8
10
Average Schooling Years
CPI
Fitted values

1H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4
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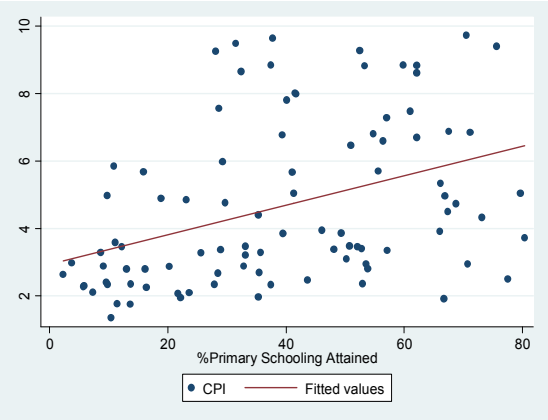
0
20
40
60
80
100
%No Schooling
CPI
Fitted values

1I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8
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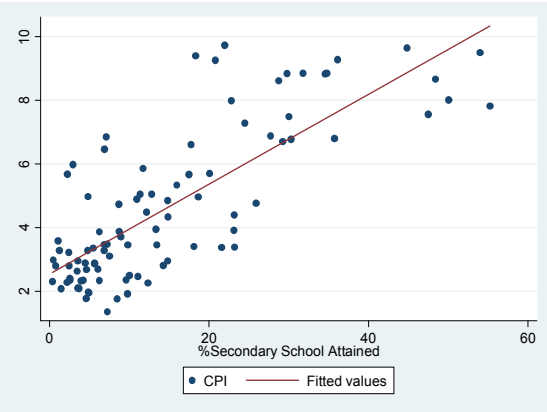
40
60
80
%Primary Schooling Attained
CPI
Fitted values

1J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40
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%Secondary School Attained
CPI
Fitted values

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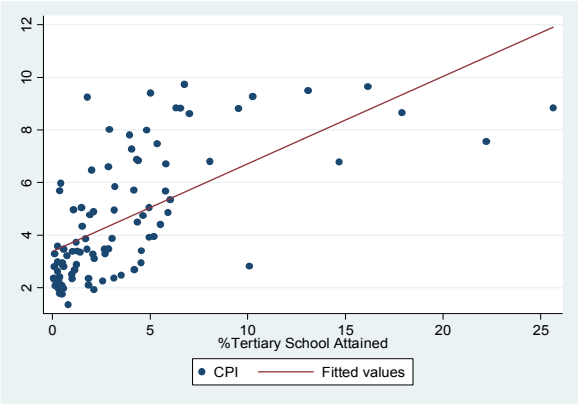
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6
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2
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5
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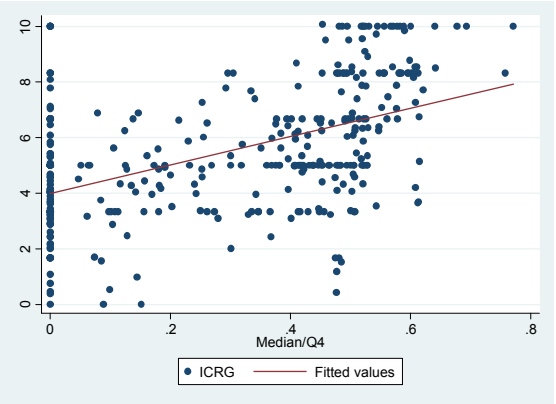
15
20
25
%Tertiary School Attained
CPI
Fitted values

1L



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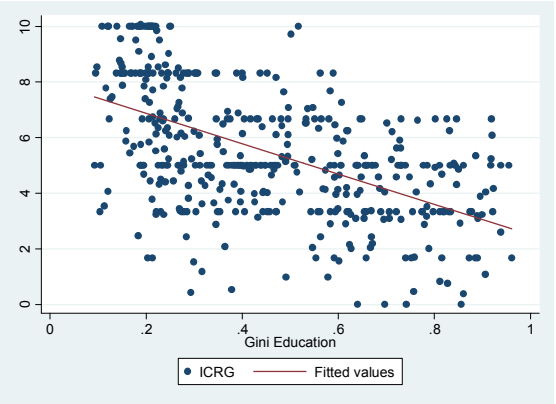

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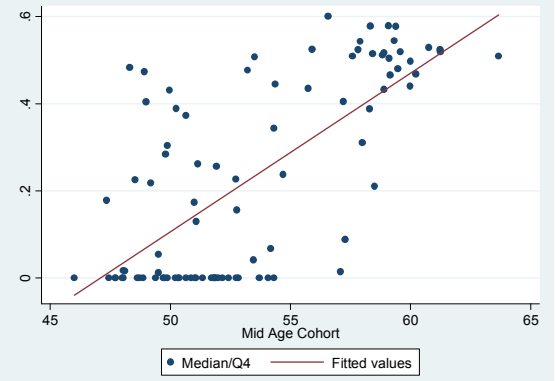

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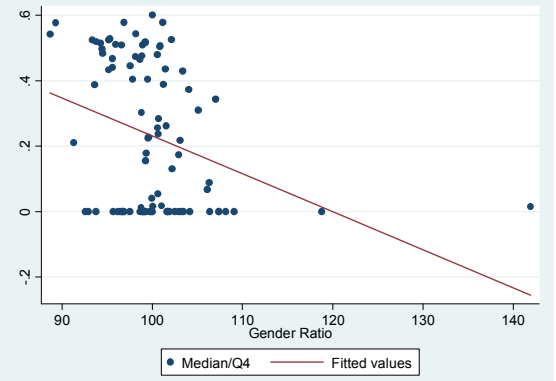

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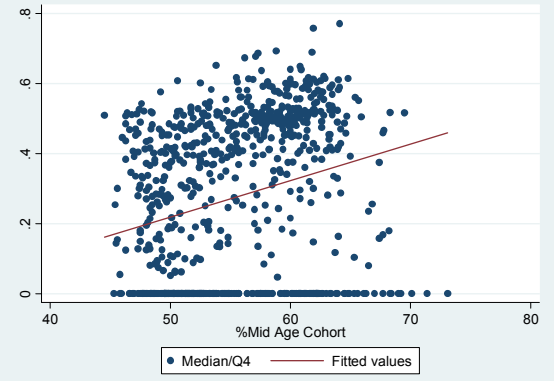

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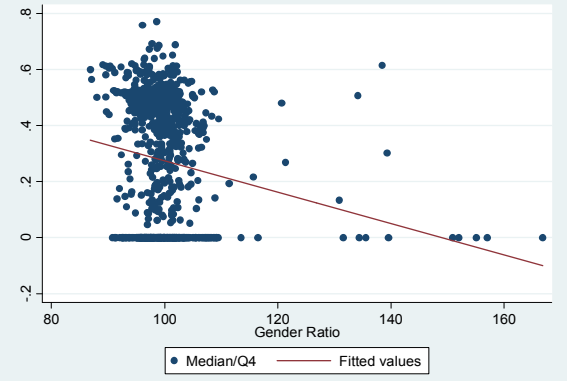

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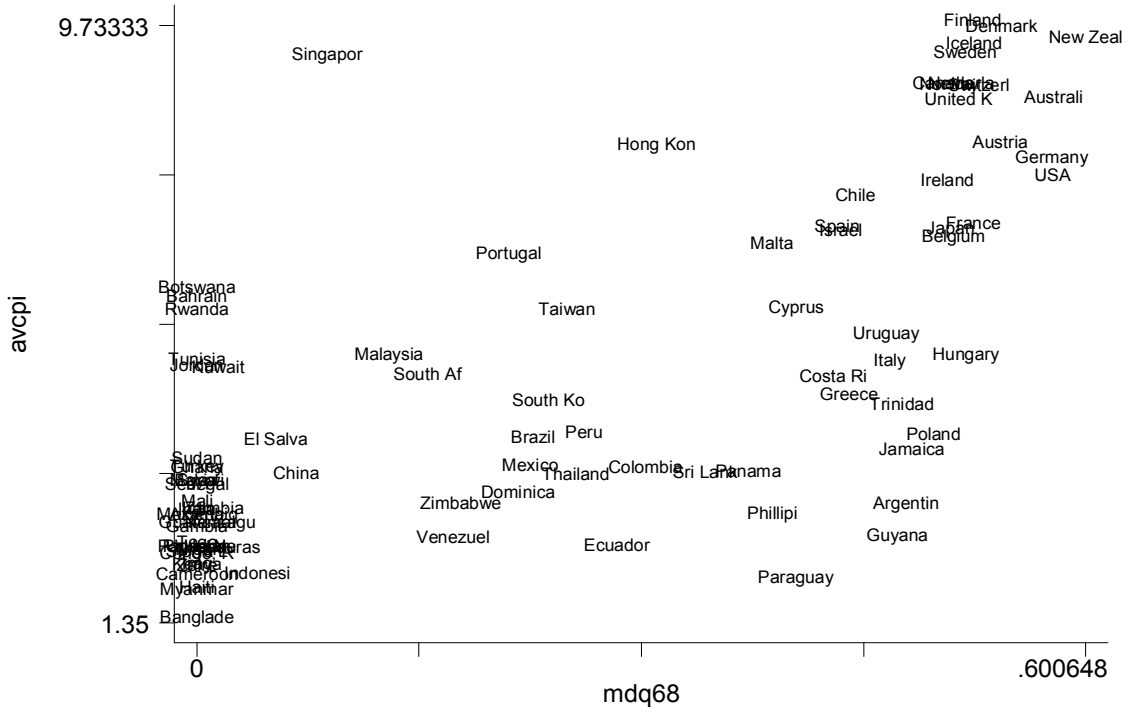
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Singapor
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Hong Kon
Austria
Germany
USA
Ireland
Chile
France
Belgium
Malta
Portugal
Botswana
Bahrain
Rwanda
Taiwan
Cyprus
Uruguay
Tunisia
Malaysia
South Af
Italy
Hungary
Costa Ri
Greece
Trinidad
South Ko
El Salva
Brazil
Peru
Poland
Jamaica
Sudan
China
Mexico
Thailand
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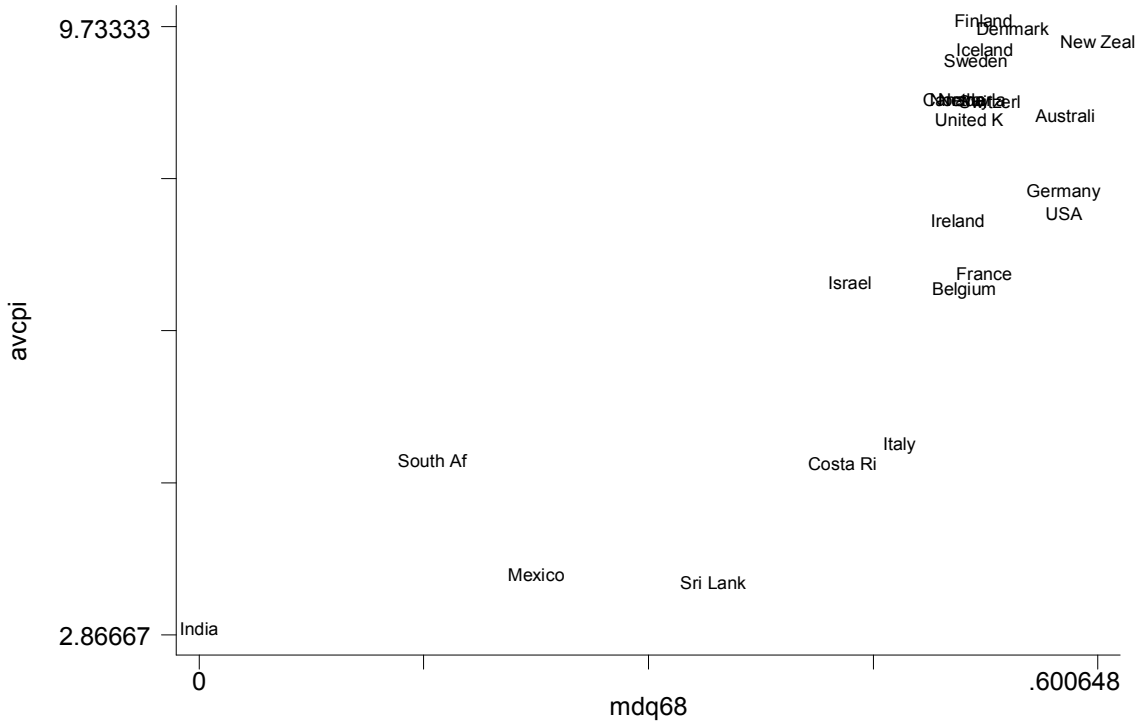
Venezuel
Ecuador
Guyana
Paraguay
Banglade

1S


9.73333
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Finland
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Germany
USA
Ireland
Israel
France
Belgium
Italy
South Af
Costa Ri
Mexico
Sri Lank
India

Appendix 2: Regression Results

Table 1: Determinant of Perceived Corruption*

	OLS (1) CPI	OLS (2) CPI	OLS (3) CPI	OLS (4) WB	OLS (5) WB	OLS (6) WB	OLS (7) ICRG	OLS (8) ICRG	OLS (9) ICRG
Median/Q4	1.837			1.142			-0.291		
	(1.348)			(1.167)			(1.108)		
CV Education		-0.0110			-0.0168			-0.0810**	
		(0.034)			(0.025)			(0.033)	
Gini Education			-0.347			-0.0490			0.0595
			(1.080)			(0.929)			(0.885)
PGDP	0.0704***	0.0721***	0.0715***	0.0552***	0.0563***	0.0568***	0.0229	0.0208	0.0231
	(0.021)	(0.023)	(0.023)	(0.018)	(0.018)	(0.019)	(0.014)	(0.014)	(0.015)
Press Freedom	-0.000702	-0.0102	-0.00878	-0.0150	-0.0210*	-0.0215*	-0.0265**	-0.0262**	-0.0271**
	(0.014)	(0.014)	(0.013)	(0.012)	(0.012)	(0.012)	(0.011)	(0.010)	(0.011)
Elect Comp	-0.0471***	-0.0475***	-0.0484***	-0.0460***	-0.0466***	-0.0482***	-0.0233*	-0.0262**	-0.0268**
	(0.013)	(0.015)	(0.016)	(0.012)	(0.013)	(0.014)	(0.012)	(0.011)	(0.013)
Turnouts	0.0256**	0.0334***	0.0320***	0.0305***	0.0351***	0.0345***	0.0299***	0.0274***	0.0277***
	(0.011)	(0.011)	(0.011)	(0.011)	(0.010)	(0.011)	(0.010)	(0.009)	(0.010)
Judicial Independency	4.039***	4.032***	4.088***	3.933***	3.896***	4.070***	1.851**	1.608*	2.071**
	(1.026)	(0.982)	(1.058)	(0.924)	(0.897)	(0.948)	(0.886)	(0.922)	(0.921)
Openness	0.0110**	0.0111**	0.0112**	0.0111***	0.0111***	0.0113***	0.00585**	0.00528*	0.00602**
	(0.005)	(0.005)	(0.005)	(0.004)	(0.004)	(0.004)	(0.003)	(0.003)	(0.003)
AllDem	1.036**	1.146**	1.134**	1.112**	1.183***	1.172***	0.759*	0.772*	0.737*
	(0.484)	(0.513)	(0.505)	(0.425)	(0.442)	(0.440)	(0.435)	(0.423)	(0.433)
British Colony	-0.208	-0.196	-0.210	-0.204	-0.204	-0.229	-0.227	-0.283	-0.287
	(0.306)	(0.319)	(0.321)	(0.277)	(0.282)	(0.286)	(0.293)	(0.295)	(0.302)
Share of Protestant	0.0203***	0.0194***	0.0194***	0.00854	0.00795	0.00767	0.0184***	0.0182***	0.0179**
	(0.006)	(0.007)	(0.007)	(0.006)	(0.006)	(0.006)	(0.007)	(0.007)	(0.007)
N	88	88	87	89	89	88	88	88	87
adj. R-sq	0.734	0.725	0.725	0.775	0.771	0.771	0.670	0.687	0.674

Note: OLS coefficient with robust standard errors in parentheses. *P<0.10, **P<0.05, ***P<0.01
*All variables are in averaged values between 1995-2005

Table 2: OLS Determinants of Perceived Corruption with Interaction Terms and Regional Dummies*

	OLS (1) CPI	OLS (2) WB	OLS (3) ICRG	OLS (4) CPI	OLS (5) WB	OLS (6) ICRG	OLS (7) CPI	OLS (8) WB	OLS (9) ICRG	OLS (10) CPI	OLS (11) WB	OLS (12) ICRG
Median/Q4	6.112**	5.114**	1.965	6.212**	4.694**	0.547	6.208***	5.208***	1.631	6.053***	4.638***	0.840
	(2.440)	(2.083)	(2.417)	(2.646)	(2.186)	(2.513)	(1.917)	(1.206)	(1.362)	(2.129)	(1.192)	(1.390)
Median/Q4 x PF	-0.141***	-0.127***	-0.0736	-0.112*	-0.0843	-0.0293	-0.0940***	-0.0737***	-0.0168	-0.0802*	-0.0483**	0.0102
	(0.052)	(0.045)	(0.058)	(0.060)	(0.051)	(0.059)	(0.035)	(0.022)	(0.026)	(0.042)	(0.021)	(0.025)
Median/Q4 x AllDem	1.792	1.062	0.833	-0.0619	-0.0217	1.007	1.733	2.204	2.674**	-0.00699	0.948	0.712
	(1.574)	(1.336)	(1.564)	(1.482)	(1.252)	(1.777)	(1.529)	(1.507)	(1.205)	(1.506)	(1.147)	(1.273)
PGDP	0.0529***	0.0399**	0.0135	0.0358**	0.0218	0.00381	0.0504***	0.0446***	0.0304*	0.0325**	0.0155	0.00595
	(0.019)	(0.016)	(0.015)	(0.017)	(0.015)	(0.017)	(0.014)	(0.014)	(0.016)	(0.015)	(0.012)	(0.018)
Press Freedom	0.0166	0.000989	-0.0175	0.0143	-0.00688	-0.0266*	0.0148	0.00328	-0.0103	0.0108	-0.00975	-0.0240**
	(0.014)	(0.012)	(0.012)	(0.017)	(0.014)	(0.014)	(0.014)	(0.009)	(0.010)	(0.018)	(0.009)	(0.010)
Openness	0.0109**	0.0111**	0.00581**	0.0105*	0.0107**	0.00628*	0.0134***	0.0105***	0.00422**	0.0123***	0.00877***	0.00215
	(0.005)	(0.004)	(0.003)	(0.005)	(0.005)	(0.003)	(0.003)	(0.003)	(0.002)	(0.003)	(0.003)	(0.002)
Elect Comp	-0.0287**	-0.0302**	-0.0139	-0.0190	-0.0235	-0.0160	-0.0257***	-0.0180***	-0.00847	-0.0203**	-0.0138**	-0.00440
	(0.014)	(0.012)	(0.013)	(0.017)	(0.015)	(0.015)	(0.007)	(0.006)	(0.008)	(0.009)	(0.006)	(0.008)
Turnouts	0.0131	0.0195*	0.0234**	-0.00303	0.00191	0.0133	0.0232***	0.0170**	0.0141	0.00978	0.00111	0.00142
	(0.011)	(0.011)	(0.012)	(0.011)	(0.011)	(0.012)	(0.008)	(0.007)	(0.009)	(0.008)	(0.007)	(0.008)
AllDem	0.0657	0.452	0.294	0.550	0.689	0.244	-0.0271	0.0211	-0.198	0.649	0.448	0.797
	(0.560)	(0.473)	(0.535)	(0.557)	(0.480)	(0.586)	(0.643)	(0.677)	(0.511)	(0.676)	(0.498)	(0.591)
British Colony	-0.235	-0.236	-0.241	-0.382	-0.464	-0.384	0.216	0.0285	-0.136	0.0811	-0.142	-0.233
	(0.290)	(0.262)	(0.288)	(0.357)	(0.306)	(0.362)	(0.247)	(0.196)	(0.227)	(0.294)	(0.211)	(0.244)
Share of Protestant	0.0114	0.00105	0.0138*	0.0111	0.00177	0.0168**	0.0166***	0.00417	0.0108**	0.0160***	0.00331	0.00969**
	(0.007)	(0.007)	(0.008)	(0.007)	(0.007)	(0.008)	(0.005)	(0.004)	(0.005)	(0.005)	(0.004)	(0.004)
Judicial Independency	3.830***	3.786***	1.751**	3.707***	3.600***	1.694*	1.238**	1.487***	1.400**	1.217**	1.310***	1.166**
	(0.991)	(0.878)	(0.872)	(1.183)	(1.016)	(1.007)	(0.546)	(0.448)	(0.545)	(0.614)	(0.442)	(0.527)
Regional Dummy	No	No	No	Yes	Yes	Yes	No	No	No	Yes	Yes	Yes
Year Fixed Effects	No	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
N	88	89	88	88	89	88	146	174	257	146	174	257
adj. R-sq	0.763	0.797	0.676	0.774	0.819	0.677	0.752	0.763	0.554	0.767	0.813	0.607

Note: OLS coefficient with robust standard errors in parentheses. *P<0.10, **P<0.05, ***P<0.01

*All variables in columns 1-6 are in averaged values between 1995-2005. Columns 7-12 present repeated cross-country estimations between 1990-2005

Table 3 Robustness Estimations

	OLS (1) CPI	OLS (2) WB	OLS (3) ICRG	OLS (4) CPI	OLS (5) WB	OLS (6) ICRG	OLS (7) CPI	OLS (8) WB	OLS (9) ICRG	OLS (10) CPI	OLS (11) WB	OLS (12) ICRG	OLS (13) CPI	OLS (14) WB	OLS (15) ICRG	OLS (16) CPI	OLS (17) WB	OLS (18) ICRG
CV Education	-0.380**	-0.219**	-0.106	-0.421**	-0.283**	-0.139	-1.336*	-0.698**	-0.294									
	(0.152)	(0.102)	(0.128)	(0.173)	(0.120)	(0.119)	(0.753)	(0.306)	(0.299)									
CV x PF	0.00648**	0.00354**	0.000447	0.00679**	0.00429**	0.000800	0.0270	0.0122**	0.00533									
	(0.003)	(0.002)	(0.002)	(0.003)	(0.002)	(0.002)	(0.017)	(0.005)	(0.005)									
CV x AllDem	-1.158*	-0.973*	-0.825*	-0.567	-0.698	-0.838*	-7.381***	-7.620***	-3.905***									
	(0.585)	(0.532)	(0.450)	(0.508)	(0.430)	(0.479)	(2.487)	(2.586)	(1.152)									
Gini Education										-3.740**	-2.599	-0.976	-4.161*	-2.700	-0.000648	-5.115**	-4.042***	-1.446
										(1.870)	(1.580)	(1.916)	(2.159)	(1.838)	(2.132)	(2.008)	(1.268)	(1.259)
Gini x PF										0.0843**	0.0628**	0.0265	0.0841**	0.0549*	0.00527	0.0971**	0.0642**	0.00258
										(0.034)	(0.029)	(0.036)	(0.039)	(0.032)	(0.036)	(0.042)	(0.025)	(0.024)
Gini x AllDem										-3.014*	-2.079	-1.453	-0.924	-0.744	-1.482	-5.642***	-5.508***	-4.726***
										(1.761)	(1.444)	(1.497)	(1.637)	(1.354)	(1.712)	(2.063)	(2.090)	(1.384)
PGDP	0.0637***	0.0502***	0.0169	0.0386*	0.0243	0.00131	0.0495***	0.0462***	0.0319**	0.0552***	0.0440**	0.0163	0.0371**	0.0236	0.00432	0.0379**	0.0356**	0.0233
	(0.022)	(0.018)	(0.014)	(0.020)	(0.016)	(0.017)	(0.016)	(0.015)	(0.016)	(0.021)	(0.018)	(0.015)	(0.018)	(0.015)	(0.017)	(0.017)	(0.015)	(0.016)
Press Freedom	-0.0236	-0.0281*	-0.0267**	-0.0302*	-0.0382***	-0.0307**	-0.0357***	-0.0318***	-0.0215***	-0.0578**	-0.0583**	-0.0427*	-0.0600**	-0.0597***	-0.0349	-0.0587***	-0.0485***	-0.0153
	(0.017)	(0.014)	(0.013)	(0.017)	(0.014)	(0.014)	(0.010)	(0.008)	(0.008)	(0.027)	(0.023)	(0.024)	(0.027)	(0.022)	(0.025)	(0.019)	(0.013)	(0.013)
Openness	0.0113**	0.0111**	0.00499*	0.0106*	0.0107**	0.00628*	0.0141***	0.0109***	0.00455**	0.0108**	0.0110**	0.00574**	0.0103*	0.0105**	0.00614*	0.0134***	0.0104***	0.00361*
	(0.005)	(0.004)	(0.003)	(0.006)	(0.005)	(0.003)	(0.003)	(0.003)	(0.002)	(0.005)	(0.004)	(0.003)	(0.006)	(0.005)	(0.003)	(0.003)	(0.003)	(0.002)
Elect Comp	-0.0454***	-0.0446***	-0.0243**	-0.0316	-0.0328*	-0.0195	-0.0310***	-0.0220***	-0.00873	-0.0344**	-0.0382***	-0.0219*	-0.0244	-0.0308*	-0.0216	-0.0273***	-0.0196***	-0.00889
	(0.014)	(0.013)	(0.012)	(0.019)	(0.017)	(0.013)	(0.007)	(0.006)	(0.007)	(0.014)	(0.013)	(0.012)	(0.019)	(0.017)	(0.014)	(0.007)	(0.006)	(0.007)
Turnouts	0.0262**	0.0308***	0.0260***	0.00656	0.00954	0.0104	0.0319***	0.0274***	0.0165**	0.0153	0.0224**	0.0221*	0.000999	0.00596	0.0124	0.0243***	0.0189**	0.0129
	(0.010)	(0.010)	(0.010)	(0.012)	(0.011)	(0.010)	(0.008)	(0.007)	(0.008)	(0.010)	(0.011)	(0.012)	(0.011)	(0.011)	(0.012)	(0.008)	(0.007)	(0.008)
AllDem	1.567**	1.560***	1.124**	1.094**	1.229***	0.954*	2.592***	2.903***	1.999***	1.897**	1.687**	1.148	1.006	1.096	1.160	2.557***	2.769***	2.487***
	(0.630)	(0.547)	(0.537)	(0.517)	(0.439)	(0.488)	(0.661)	(0.650)	(0.450)	(0.907)	(0.792)	(0.843)	(0.804)	(0.689)	(0.872)	(0.757)	(0.724)	(0.583)
British Colony	-0.227	-0.205	-0.250	-0.389	-0.480	-0.576	0.131	0.000315	-0.160	-0.232	-0.243	-0.280	-0.353	-0.452	-0.429	0.0246	-0.105	-0.182
	(0.301)	(0.279)	(0.298)	(0.369)	(0.315)	(0.353)	(0.240)	(0.198)	(0.229)	(0.304)	(0.277)	(0.303)	(0.379)	(0.330)	(0.387)	(0.231)	(0.189)	(0.221)
Share of Protestant	0.0160**	0.00554	0.0166**	0.0130*	0.00293	0.0161**	0.0179***	0.00558	0.0119***	0.0122*	0.00236	0.0149*	0.0108	0.00154	0.0169**	0.0131**	0.00161	0.00928**
	(0.007)	(0.006)	(0.007)	(0.007)	(0.006)	(0.007)	(0.005)	(0.004)	(0.004)	(0.007)	(0.007)	(0.008)	(0.008)	(0.007)	(0.008)	(0.005)	(0.004)	(0.004)
Judicial Independency	3.858***	3.770***	1.530	3.432***	3.384***	1.708*	1.464**	1.557***	1.507***	4.122***	4.121***	2.070**	3.842***	3.765***	1.905*	1.675***	1.730***	1.327**
	(1.012)	(0.918)	(0.931)	(1.141)	(0.985)	(0.971)	(0.567)	(0.449)	(0.514)	(1.072)	(0.943)	(0.929)	(1.251)	(1.069)	(1.040)	(0.504)	(0.429)	(0.521)
Regional Dummy	No	No	No	Yes	Yes	Yes	No	No	No	No	No	No	Yes	Yes	Yes	No	No	No
Year Fixed Effects	No	No	No	No	No	No	Yes	Yes	Yes	No	No	No	No	No	No	Yes	Yes	Yes
N	88	89	88	88	89	88	146	174	257	87	88	87	87	88	87	146	174	257
adj. R-sq	0.742	0.776	0.683	0.766	0.813	0.697	0.738	0.742	0.548	0.758	0.788	0.674	0.767	0.812	0.677	0.752	0.758	0.563

Note: OLS coefficient with robust standard errors in parentheses. *P<0.10, **P<0.05, ***P<0.01

*All variables in columns 1-6 and 10-15 are in averaged values between 1995-2005. The others present repeated cross-country estimations between 1990-2005

Table 4 Determinants of Perceived Corruption with Average Years of Schooling in Total Population Age 25 and above*

	OLS (1) CPI	OLS (2) CPI	OLS (3) CPI	OLS (4) CPI	OLS (5) CPI	OLS (6) CPI	OLS (7) CPI	OLS (8) CPI	OLS (9) WB	OLS (10) WB	OLS (11) WB	OLS (12) WB	OLS (13) ICRG	OLS (14) ICRG	OLS (15) ICRG	OLS (16) ICRG
Median/Q4	2.411	4.947*	3.822	5.223**	2.099	5.519**	1.566	4.752**	1.372	4.521***	1.087	4.162***	-2.413	-0.822	-0.0242	0.993
	(2.839)	(2.815)	(2.714)	(2.547)	(2.587)	(2.236)	(2.466)	(2.030)	(1.637)	(1.529)	(1.448)	(1.294)	(1.602)	(1.457)	(1.624)	(1.406)
Average Schooling Years	0.326**				0.282***				0.282***				0.307***			
	(0.129)				(0.103)				(0.078)				(0.076)			
Average Primary Schooling Years		0.163				0.105				0.102				0.356***		
		(0.177)				(0.129)				(0.105)				(0.095)		
Average Secondary Schooling Years			0.592*				0.645***				0.678***				0.296**	
			(0.301)				(0.180)				(0.129)				(0.124)	
Average Tertiary Schooling Years				2.662**				1.787***				1.341***				0.906*
				(1.077)				(0.575)				(0.513)				(0.503)
Median/Q4 x PF	-0.112**	-0.136**	-0.106*	-0.132**	-0.0548	-0.0902**	-0.0323	-0.0800**	-0.0410*	-0.0702***	-0.0235	-0.0631***	0.0163	-0.00569	0.00372	-0.00994
	(0.052)	(0.053)	(0.053)	(0.052)	(0.041)	(0.037)	(0.042)	(0.036)	(0.024)	(0.023)	(0.024)	(0.022)	(0.026)	(0.025)	(0.028)	(0.026)
Median/Q4 x AllDem	1.296	1.830	1.012	0.635	1.883	1.882	1.494	0.791	2.278*	2.382	1.564	1.482	2.475**	3.126***	2.289*	2.111*
	(1.475)	(1.589)	(1.382)	(1.518)	(1.311)	(1.550)	(1.227)	(1.424)	(1.275)	(1.549)	(1.056)	(1.393)	(1.122)	(1.142)	(1.165)	(1.226)
PGDP	0.0480**	0.0529***	0.0439**	0.0536***	0.0472***	0.0507***	0.0394***	0.0562***	0.0403***	0.0444***	0.0344***	0.0467***	0.0254	0.0301*	0.0255	0.0315**
	(0.018)	(0.019)	(0.019)	(0.020)	(0.013)	(0.014)	(0.013)	(0.013)	(0.013)	(0.014)	(0.012)	(0.013)	(0.016)	(0.015)	(0.016)	(0.016)
Press Freedom	0.00992	0.0155	0.00893	0.0158	0.00420	0.0139	-0.00373	0.0137	-0.00472	0.00249	-0.0102	0.00224	-0.0176*	-0.0126	-0.0152	-0.0112
	(0.014)	(0.014)	(0.014)	(0.014)	(0.015)	(0.015)	(0.016)	(0.015)	(0.009)	(0.009)	(0.009)	(0.009)	(0.010)	(0.010)	(0.010)	(0.010)
Openness	0.0108**	0.0108**	0.0109**	0.0121**	0.0132***	0.0133***	0.0130***	0.0145***	0.0103***	0.0105***	0.0102***	0.0112***	0.00403**	0.00410**	0.00401**	0.00461**
	(0.005)	(0.005)	(0.004)	(0.005)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.002)	(0.002)	(0.002)	(0.002)
Elect Comp	-0.0289**	-0.0290**	-0.0280**	-0.0286**	-0.0273***	-0.0260***	-0.0270***	-0.0257***	-0.0183***	-0.0182***	-0.0179***	-0.0179***	-0.00860	-0.00905	-0.00815	-0.00838
	(0.014)	(0.014)	(0.014)	(0.014)	(0.007)	(0.007)	(0.006)	(0.007)	(0.006)	(0.006)	(0.006)	(0.006)	(0.007)	(0.007)	(0.008)	(0.007)
Turnouts	0.0151	0.0130	0.0170	0.0139	0.0230***	0.0222***	0.0284***	0.0246***	0.0159**	0.0160**	0.0207***	0.0177**	0.0133	0.0116	0.0153*	0.0140
	(0.010)	(0.011)	(0.011)	(0.011)	(0.007)	(0.008)	(0.007)	(0.008)	(0.007)	(0.007)	(0.007)	(0.007)	(0.008)	(0.008)	(0.009)	(0.009)
AllDem	0.0745	0.0132	0.202	0.370	-0.342	-0.130	-0.171	0.135	-0.244	-0.0883	0.0326	0.175	-0.349	-0.495	-0.145	-0.0481
	(0.539)	(0.566)	(0.510)	(0.538)	(0.571)	(0.658)	(0.522)	(0.587)	(0.578)	(0.695)	(0.473)	(0.607)	(0.505)	(0.489)	(0.519)	(0.510)
British Colony	-0.263	-0.245	-0.221	-0.342	0.144	0.198	0.206	0.0983	-0.0402	0.0142	-0.00967	-0.0348	-0.242	-0.212	-0.159	-0.186
	(0.263)	(0.285)	(0.268)	(0.283)	(0.216)	(0.244)	(0.218)	(0.234)	(0.176)	(0.194)	(0.174)	(0.191)	(0.215)	(0.221)	(0.221)	(0.228)
Share of Protestant	0.0120*	0.0116	0.0114	0.0126*	0.0175***	0.0167***	0.0163***	0.0207***	0.00474	0.00420	0.00401	0.00685	0.0110**	0.0108**	0.0106**	0.0123**
	(0.007)	(0.007)	(0.007)	(0.007)	(0.005)	(0.005)	(0.005)	(0.005)	(0.004)	(0.004)	(0.004)	(0.004)	(0.005)	(0.004)	(0.005)	(0.005)
Judicial Independency	3.128***	3.657***	3.251***	3.588***	1.018**	1.201**	1.053**	0.990*	1.257***	1.454***	1.223***	1.345***	1.162**	1.288**	1.292**	1.315**
	(0.926)	(0.979)	(0.915)	(0.949)	(0.472)	(0.530)	(0.467)	(0.509)	(0.395)	(0.441)	(0.378)	(0.426)	(0.526)	(0.527)	(0.539)	(0.541)
Year Fixed Effects	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	88	88	88	88	146	146	146	146	174	174	174	174	257	257	257	257
adj. R-sq	0.777	0.763	0.778	0.772	0.770	0.752	0.779	0.768	0.782	0.763	0.796	0.772	0.576	0.571	0.558	0.556

Note: OLS coefficient with robust standard errors in parentheses. *P<0.10, **P<0.05, ***P<0.01

*All variables in columns 1-4 are in averaged values between 1995-2005. Columns 5-16 present repeated cross-country estimations between 1990-2005

Table 5 Determinant of Perceived Corruption with Median/Q4 and Mean/Q4*

	OLS (1) CPI	OLS (2) WB	OLS (3) ICRG	OLS (4) CPI	OLS (5) WB	OLS (6) ICRG	OLS (7) CPI	OLS (8) CPI	OLS (9) WB	OLS (10) WB	OLS (11) ICRG	OLS (12) ICRG
Median/Q4	6.112**	5.114**	1.965				6.208***		5.208***		1.631	
	(2.440)	(2.083)	(2.417)				(1.917)		(1.206)		(1.362)	
Mean/Q4				4.608**	4.281**	2.614		5.162***		4.307***		1.750
				(2.146)	(1.757)	(1.952)		(1.906)		(1.126)		(1.256)
Median/Q4 x PF	-0.141***	-0.127***	-0.0736				-0.0940***		-0.0737***		-0.0168	
	(0.052)	(0.045)	(0.058)				(0.035)		(0.022)		(0.026)	
Median/Q4 x AllDem	1.792	1.062	0.833				1.733		2.204		2.674**	
	(1.574)	(1.336)	(1.564)				(1.529)		(1.507)		(1.205)	
Mean/Q4 x AllDem				1.614	0.722	-0.537		-0.0830**		-0.0641***		-0.0141
				(1.609)	(1.344)	(1.763)		(0.036)		(0.020)		(0.024)
Mean/Q4 x PF				-0.116**	-0.113**	-0.0787		1.094		1.886		2.185*
				(0.052)	(0.045)	(0.051)		(1.377)		(1.288)		(1.193)
PGDP	0.0529***	0.0399**	0.0135	0.0530**	0.0402**	0.0139	0.0504***	0.0544***	0.0446***	0.0473***	0.0304*	0.0316**
	(0.019)	(0.016)	(0.015)	(0.020)	(0.017)	(0.015)	(0.014)	(0.016)	(0.014)	(0.015)	(0.016)	(0.015)
Press Freedom	0.0166	0.000989	-0.0175	0.0109	-0.00160	-0.0139	0.0148	0.0122	0.00328	0.000794	-0.0103	-0.0106
	(0.014)	(0.012)	(0.012)	(0.014)	(0.012)	(0.012)	(0.014)	(0.016)	(0.009)	(0.009)	(0.010)	(0.010)
Openness	0.0109**	0.0111**	0.00581**	0.0107**	0.0110**	0.00609**	0.0134***	0.0134***	0.0105***	0.0104***	0.00422**	0.00392**
	(0.005)	(0.004)	(0.003)	(0.005)	(0.004)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.002)	(0.002)
Elect Comp	-0.0287**	-0.0302**	-0.0139	-0.0308**	-0.0312**	-0.0144	-0.0257***	-0.0257***	-0.0180***	-0.0182***	-0.00847	-0.00901
	(0.014)	(0.012)	(0.013)	(0.014)	(0.013)	(0.012)	(0.007)	(0.007)	(0.006)	(0.006)	(0.008)	(0.007)
Turnouts	0.0131	0.0195*	0.0234**	0.0179	0.0218**	0.0217*	0.0232***	0.0253***	0.0170**	0.0189**	0.0141	0.0137
	(0.011)	(0.011)	(0.012)	(0.011)	(0.011)	(0.011)	(0.008)	(0.008)	(0.007)	(0.007)	(0.009)	(0.008)
AllDem	0.0657	0.452	0.294	0.0825	0.536	0.782	-0.0271	0.303	0.0211	0.202	-0.198	-0.00643
	(0.560)	(0.473)	(0.535)	(0.608)	(0.502)	(0.722)	(0.643)	(0.594)	(0.677)	(0.579)	(0.511)	(0.543)
British Colony	-0.235	-0.236	-0.241	-0.122	-0.159	-0.247	0.216	0.288	0.0285	0.114	-0.136	-0.0530
	(0.290)	(0.262)	(0.288)	(0.292)	(0.257)	(0.290)	(0.247)	(0.252)	(0.196)	(0.199)	(0.227)	(0.234)
Share of Protestant	0.0114	0.00105	0.0138*	0.0112	0.00104	0.0146	0.0166***	0.0185***	0.00417	0.00527	0.0108**	0.0114**
	(0.007)	(0.007)	(0.008)	(0.008)	(0.008)	(0.009)	(0.005)	(0.006)	(0.004)	(0.005)	(0.005)	(0.005)
Judicial Independency	3.830***	3.786***	1.751**	3.841***	3.803***	1.849**	1.238**	1.275**	1.487***	1.505***	1.400**	1.318**
	(0.991)	(0.878)	(0.872)	(0.989)	(0.873)	(0.893)	(0.546)	(0.547)	(0.448)	(0.451)	(0.545)	(0.537)
Year Fixed Effects	No	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
N	88	89	88	88	89	88	146	146	174	174	257	257
adj. R-sq	0.763	0.797	0.676	0.754	0.794	0.675	0.752	0.733	0.763	0.748	0.554	0.554

Note: OLS coefficient with robust standard errors in parentheses. *P<0.10, **P<0.05, ***P<0.01

*All variables in columns 1-6 are in averaged values between 1995-2005. Columns 7-12 present repeated cross-country estimations between 1990-2005

Table 6 Determinants of Perceived Corruption with Proportion Population Age 25 and Above Who Attained Schooling in Each Level*

	OLS (1) CPI	OLS (2) CPI	OLS (3) CPI	OLS (4) CPI	OLS (5) CPI	OLS (6) CPI	OLS (7) CPI	OLS (8) CPI	OLS (9) WB	OLS (10) WB	OLS (11) WB	OLS (12) WB	OLS (13) ICRG	OLS (14) ICRG	OLS (15) ICRG	OLS (16) ICRG
Median/Q4	4.174	7.110***	3.171	5.301**	6.342**	5.637***	2.711	4.733**	5.786***	5.336***	1.760	4.167***	-0.606	1.752	-0.308	0.994
	(2.958)	(2.339)	(2.743)	(2.513)	(2.509)	(1.966)	(2.717)	(2.009)	(1.661)	(1.155)	(1.548)	(1.268)	(1.853)	(1.369)	(1.657)	(1.395)
%No Schooling	-0.0170				0.00122				0.00507				-0.0187*			
	(0.014)				(0.016)				(0.010)				(0.011)			
%Primary Schooling Attained		-0.0231*				-0.0318***				-0.0308***				-0.00707		
		(0.012)				(0.009)				(0.007)				(0.007)		
%Secondary Schooling Attained			0.0493***				0.0338**				0.0398***				0.0238**	
			(0.019)				(0.015)				(0.011)				(0.011)	
%Tertiary Schooling Attained				0.0851***				0.0602***				0.0442***				0.0300**
				(0.032)				(0.016)				(0.014)				(0.014)
Median/Q4 x PF	-0.149***	-0.107*	-0.100*	-0.132**	-0.0943***	-0.0549	-0.0511	-0.0799**	-0.0747***	-0.0434*	-0.0361	-0.0631***	-0.0129	-0.0105	0.00397	-0.00982
	(0.053)	(0.056)	(0.053)	(0.052)	(0.035)	(0.038)	(0.044)	(0.036)	(0.022)	(0.022)	(0.024)	(0.022)	(0.026)	(0.027)	(0.028)	(0.026)
Median/Q4 x AllDem	1.981	0.873	1.090	0.444	1.705	0.874	2.272	0.583	2.059	0.960	2.564*	1.346	3.161**	2.351*	2.766**	1.997
	(1.618)	(1.443)	(1.454)	(1.521)	(1.492)	(1.263)	(1.416)	(1.401)	(1.477)	(1.135)	(1.308)	(1.385)	(1.222)	(1.210)	(1.180)	(1.224)
PGDP	0.0517***	0.0506***	0.0447**	0.0530***	0.0505***	0.0472***	0.0435***	0.0553***	0.0447***	0.0405***	0.0380***	0.0459***	0.0302**	0.0293*	0.0260	0.0309*
	(0.019)	(0.018)	(0.018)	(0.019)	(0.014)	(0.014)	(0.014)	(0.013)	(0.014)	(0.013)	(0.014)	(0.013)	(0.015)	(0.016)	(0.016)	(0.016)
Press Freedom	0.0158	0.0137	0.00872	0.0161	0.0148	0.00304	0.00183	0.0143	0.00330	-0.00465	-0.00650	0.00253	-0.0106	-0.0118	-0.0151	-0.0111
	(0.014)	(0.014)	(0.013)	(0.014)	(0.014)	(0.015)	(0.016)	(0.015)	(0.008)	(0.008)	(0.009)	(0.009)	(0.010)	(0.010)	(0.010)	(0.010)
Openness	0.0104**	0.0117**	0.0105**	0.0122**	0.0134***	0.0135***	0.0127***	0.0146***	0.0105***	0.0103***	0.00969***	0.0113***	0.00427**	0.00416**	0.00375**	0.00465**
	(0.005)	(0.005)	(0.004)	(0.005)	(0.003)	(0.002)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.002)	(0.002)	(0.002)	(0.002)
Elect Comp	-0.0296**	-0.0279**	-0.0294**	-0.0287**	-0.0256***	-0.0258***	-0.0268***	-0.0261***	-0.0180***	-0.0185***	-0.0182***	-0.0182***	-0.00841	-0.00853	-0.00858	-0.00844
	(0.014)	(0.014)	(0.013)	(0.013)	(0.007)	(0.007)	(0.007)	(0.007)	(0.006)	(0.006)	(0.006)	(0.006)	(0.007)	(0.008)	(0.008)	(0.007)
Turnouts	0.0148	0.0130	0.0174*	0.0137	0.0234***	0.0301***	0.0247***	0.0247***	0.0179**	0.0238***	0.0180***	0.0178**	0.0124	0.0150*	0.0150*	0.0140
	(0.011)	(0.011)	(0.010)	(0.011)	(0.008)	(0.008)	(0.007)	(0.008)	(0.007)	(0.007)	(0.007)	(0.007)	(0.009)	(0.009)	(0.009)	(0.009)
AllDem	0.00306	0.240	0.0660	0.407	-0.0150	0.0997	-0.354	0.171	0.0833	0.311	-0.268	0.197	-0.403	-0.118	-0.337	-0.0226
	(0.567)	(0.542)	(0.586)	(0.532)	(0.634)	(0.527)	(0.613)	(0.577)	(0.664)	(0.480)	(0.594)	(0.602)	(0.515)	(0.518)	(0.522)	(0.510)
British Colony	-0.185	-0.368	-0.290	-0.371	0.214	0.00302	0.153	0.0423	0.0256	-0.133	-0.0621	-0.0669	-0.129	-0.174	-0.196	-0.206
	(0.290)	(0.287)	(0.262)	(0.281)	(0.247)	(0.234)	(0.239)	(0.234)	(0.197)	(0.184)	(0.188)	(0.192)	(0.226)	(0.235)	(0.225)	(0.229)
Share of Protestant	0.0104	0.0138*	0.0127*	0.0127*	0.0166***	0.0181***	0.0159***	0.0209***	0.00419	0.00561	0.00336	0.00690	0.0105**	0.0112**	0.0104**	0.0124***
	(0.007)	(0.008)	(0.007)	(0.007)	(0.005)	(0.005)	(0.005)	(0.005)	(0.004)	(0.004)	(0.004)	(0.004)	(0.005)	(0.005)	(0.005)	(0.005)
Judicial Independency	3.495***	3.994***	3.378***	3.596***	1.234**	1.113**	1.331***	1.022**	1.484***	1.420***	1.528***	1.372***	1.356**	1.407***	1.426***	1.326**
	(1.042)	(0.966)	(0.871)	(0.944)	(0.539)	(0.450)	(0.500)	(0.495)	(0.447)	(0.375)	(0.394)	(0.421)	(0.552)	(0.540)	(0.540)	(0.539)
Year Fixed Effects	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	88	88	88	88	146	146	146	146	174	174	174	174	257	257	257	257
adj. R-sq	0.763	0.771	0.784	0.774	0.750	0.776	0.763	0.774	0.762	0.788	0.781	0.774	0.557	0.553	0.559	0.557

Note: OLS coefficient with robust standard errors in parentheses. *P<0.10, **P<0.05, ***P<0.01

*All variables in columns 1-4 are in averaged values between 1995-2005. Columns 5-16 present repeated cross-country estimations between 1990-2005

Table 7 Averaged Cross-National 2SLS*

	OLS (1) Median/Q4	OLS (2) CV Education	OLS (3) Gini Education	OLS (4) CPI	OLS (5) CPI	OLS (6) CPI	2SLS (7) CPI	2SLS (8) CPI	2SLS (9) CPI	OLS (10) WB	OLS (11) WB	OLS (12) WB	2SLS (13) WB	2SLS (14) WB	2SLS (15) WB	OLS (16) ICRG	OLS (17) ICRG	OLS (18) ICRG	2SLS (19) ICRG	2SLS (20) ICRG	2SLS (21) ICRG
Second Stage																					
Median/Q4				23.61***			23.85**			23.74***			23.74***			15.96***			16.00**		
				(6.181)			(9.184)			(4.894)			(8.450)			(5.665)			(7.826)		
CV Education					-2.682***			-2.732			-2.489***			-2.489			-1.710**			-1.710	
					(0.798)			(1.746)			(0.734)			(1.625)			(0.707)			(1.172)	
Gini Education						-17.68***			-18.11**			-16.92***			-16.92**			-11.13**			-11.15*
						(4.998)			(7.923)			(4.262)			(7.186)			(4.719)			(6.111)
Median/Q4 x PF	0.0205***			-0.508***			-0.513**			-0.518***			-0.518***			-0.366***			-0.367**		
	(0.001)			(0.135)			(0.206)			(0.107)			(0.191)			(0.117)			(0.171)		
Median/Q4 x AllDem	0.500***			-7.577**			-7.735			-8.967***			-8.967*			-6.796**			-6.813		
	(0.097)			(3.295)			(5.273)			(2.575)			(5.000)			(3.150)			(4.775)		
Education CV x PF		0.0164***			0.0442***			0.0450			0.0407***			0.0407			0.0267**			0.0267	
		(0.001)			(0.013)			(0.029)			(0.012)			(0.027)			(0.012)			(0.020)	
Education CV x AllDem		0.703***			0.746			0.813			0.910			0.910			0.539			0.539	
		(0.240)			(0.762)			(1.331)			(0.673)			(1.152)			(0.632)			(0.842)	
Gini x PF			0.0177***			0.330***			0.339**			0.315***			0.315**			0.205**			0.206*
			(0.001)			(0.090)			(0.142)			(0.075)			(0.128)			(0.082)			(0.112)
Gini x AllDem			0.539***			4.889			5.247			6.039**			6.039			4.301			4.308
			(0.104)			(3.093)			(4.775)			(2.556)			(4.231)			(2.825)			(3.677)
PGDP	0.00118	-0.00175	-0.000986	0.0225	0.0526**	0.0329	0.0252	0.0550***	0.0375*	0.00787	0.0388**	0.0212	0.00787	0.0388*	0.0212	-0.0102	0.00901	0.0000092	-0.0106	0.00896	-0.000231
	(0.001)	(0.006)	(0.001)	(0.021)	(0.020)	(0.020)	(0.022)	(0.021)	(0.020)	(0.018)	(0.018)	(0.018)	(0.022)	(0.020)	(0.021)	(0.017)	(0.015)	(0.016)	(0.024)	(0.019)	(0.021)
Press Freedom	-0.00385***	-0.0412**	-0.00969***	0.0902***	-0.112***	-0.185***	0.0920*	-0.113**	-0.189***	0.0787***	-0.115***	-0.189***	0.0787	-0.115**	-0.189***	0.0398	-0.0895***	-0.136***	0.0398	-0.0895**	-0.136**
	(0.001)	(0.018)	(0.002)	(0.031)	(0.030)	(0.046)	(0.051)	(0.054)	(0.070)	(0.024)	(0.028)	(0.039)	(0.048)	(0.051)	(0.063)	(0.026)	(0.029)	(0.044)	(0.038)	(0.041)	(0.060)
Openness	-0.0000223	0.00125	0.0000750	0.0121***	0.0153***	0.0126***	0.0122**	0.0155**	0.0130**	0.0124***	0.0150***	0.0129***	0.0124**	0.0150**	0.0129**	0.00692***	0.00787***	0.00712***	0.00691**	0.00787*	0.00711*
	(0.000)	(0.002)	(0.000)	(0.004)	(0.005)	(0.004)	(0.006)	(0.008)	(0.007)	(0.003)	(0.004)	(0.003)	(0.005)	(0.007)	(0.006)	(0.002)	(0.003)	(0.002)	(0.003)	(0.004)	(0.004)
Elect Comp	-0.00150**	-0.0101	0.00109	0.00199	-0.0665***	-0.0155	0.00306	-0.0664*	-0.0137	0.00105	-0.0664***	-0.0188	0.00105	-0.0664**	-0.0188	0.00725	-0.0418***	-0.00819	0.00731	-0.0418*	-0.00816
	(0.001)	(0.016)	(0.001)	(0.019)	(0.016)	(0.016)	(0.027)	(0.035)	(0.026)	(0.016)	(0.014)	(0.014)	(0.025)	(0.033)	(0.024)	(0.016)	(0.013)	(0.014)	(0.020)	(0.022)	(0.019)
Turnouts	0.00193***	-0.0100	-0.00244***	-0.0311*	-0.0105	-0.0306*	-0.0324	-0.0119	-0.0331	-0.0280**	-0.00547	-0.0247	-0.0280	-0.00547	-0.0247	-0.0129	-0.000236	-0.0113	-0.0131	-0.000263	-0.0115
	(0.001)	(0.007)	(0.001)	(0.017)	(0.014)	(0.018)	(0.027)	(0.035)	(0.031)	(0.014)	(0.013)	(0.015)	(0.024)	(0.031)	(0.027)	(0.017)	(0.015)	(0.018)	(0.024)	(0.025)	(0.026)
Judicial Independency	-0.0266	-0.0420	0.0473	4.052***	3.650***	4.556***	3.993***	3.591**	4.484***	4.106***	3.622***	4.566***	4.106***	3.622**	4.566***	2.130***	1.550*	2.385***	2.130*	1.550	2.385*
	(0.045)	(0.469)	(0.058)	(0.952)	(0.952)	(1.008)	(1.476)	(1.522)	(1.586)	(0.777)	(0.869)	(0.828)	(1.423)	(1.466)	(1.491)	(0.788)	(0.884)	(0.837)	(1.263)	(1.291)	(1.318)
AllDem	-0.141***	-0.509*	-0.236***	2.784***	0.313	-1.489	2.824	0.269	-1.649	3.365***	0.321	-1.792	3.365*	0.321	-1.792	2.515**	0.232	-1.318	2.522	0.232	-1.320
	(0.045)	(0.259)	(0.048)	(1.042)	(0.628)	(1.343)	(1.724)	(1.175)	(2.172)	(0.846)	(0.520)	(1.098)	(1.719)	(1.003)	(1.903)	(1.007)	(0.585)	(1.283)	(1.683)	(0.780)	(1.638)
British Colony	0.0209	-0.369	-0.0346	-0.562*	-1.065**	-0.669*	-0.587	-1.101	-0.719	-0.606**	-1.040**	-0.692**	-0.606	-1.040*	-0.692	-0.556*	-0.874**	-0.597*	-0.554	-0.874*	-0.597
	(0.016)	(0.237)	(0.021)	(0.321)	(0.447)	(0.342)	(0.528)	(0.692)	(0.569)	(0.275)	(0.401)	(0.301)	(0.493)	(0.616)	(0.515)	(0.282)	(0.382)	(0.302)	(0.421)	(0.511)	(0.426)
Share of Protestant	0.000388	-0.00297	-0.000197	0.00470	0.00893	0.00963	0.00501	0.00914	0.0101	-0.00626	-0.00162	-0.000255	-0.00626	-0.00162	-0.000255	0.00793	0.0111	0.0130*	0.00760	0.0111	0.0128
	(0.000)	(0.005)	(0.001)	(0.007)	(0.007)	(0.007)	(0.011)	(0.011)	(0.010)	(0.007)	(0.006)	(0.006)	(0.011)	(0.011)	(0.010)	(0.008)	(0.007)	(0.008)	(0.011)	(0.009)	(0.009)
Fisrt Stage																					
%Mid Cohort	0.00606***	-0.0440	-0.00724***																		
	(0.002)	(0.028)	(0.003)																		
Gender Ratio	-0.00129	0.0155	0.00209*																		
	(0.001)	(0.013)	(0.001)																		
Hausman Test																					
Median/Q4_res				-19.91***						-21.24***						-16.05**					
				(6.779)						(5.395)						(6.355)					
CV Education_res					2.392***						2.355***						1.650**				
					(0.837)						(0.774)						(0.748)				
Gini Education_res						15.78***						16.20***						11.49**			
						(5.477)						(4.721)						(5.184)			
F							5.46	1.34	4.28				5.54	1.37	4.34				5.49	1.36	4.3
N	88	88	88	87	87	87	87	87	87	88	88	88	88	88	88	87	87	87	87	87	87
adj. R-sq	0.943	0.944	0.932	0.784	0.764	0.780	0.577	0.153	0.556	0.825	0.801	0.815	0.574	0.186	0.570	0.700	0.702	0.690	0.496	0.271	0.515

Note: OLS coefficient with robust standard errors in parentheses. *P<0.10, **P<0.05, ***P<0.01

*All variables are in averaged values between 1995-2005.

Table 8 Repeated Cross-National 2SLS

	OLS (1) Median/Q4	OLS (2) Gini Education	OLS (3) CPI	OLS (4) CPI	2SLS (5) CPI	2SLS (6) CPI	OLS (7) WB	OLS (8) WB	2SLS (9) WB	2SLS (10) WB	OLS (11) ICRG	OLS (12) ICRG	2SLS (13) ICRG	2SLS (14) ICRG
Second Stage														
Median/Q4			19.55***		21.00***		19.71***		20.34***		9.621***		9.587***	
			(2.921)		(4.172)		(2.377)		(3.840)		(3.322)		(3.500)	
Gini Education				-22.27***		-29.08***		-21.12***		-23.20***		-9.818***		-9.765**
				(3.367)		(7.779)		(2.675)		(5.789)		(3.526)		(3.813)
Median/Q4 x PF	0.0151***		-0.311***		-0.348***		-0.314***		-0.322***		-0.148***		-0.148**	
	(0.001)		(0.053)		(0.073)		(0.041)		(0.061)		(0.056)		(0.059)	
Median/Q4 x AllDem	0.543***		-6.390***		-6.484**		-6.609***		-7.006***		-2.301		-2.268	
	(0.063)		(1.975)		(2.829)		(1.873)		(2.677)		(2.182)		(2.370)	
Gini x PF		0.0158***		0.379***		0.528***		0.346***		0.393***		0.140**		0.139**
		(0.001)		(0.064)		(0.144)		(0.046)		(0.100)		(0.059)		(0.065)
Gini x AllDem		0.546***		4.695*		8.020*		4.945*		6.460*		0.441		0.385
		(0.074)		(2.706)		(4.780)		(2.621)		(3.793)		(2.396)		(2.506)
PGDP	0.000495	-0.000945	0.0301**	0.0101	0.0495***	0.0194	0.0260**	0.0115	0.0361**	0.0148	0.0204	0.0115	0.0205	0.0116
	(0.001)	(0.001)	(0.013)	(0.015)	(0.015)	(0.023)	(0.013)	(0.014)	(0.016)	(0.021)	(0.016)	(0.017)	(0.017)	(0.019)
Press Freedom	-0.00431***	-0.00722***	0.0732***	-0.189***	0.106***	-0.226***	0.0711***	-0.176***	0.0864***	-0.182***	0.0275	-0.0769***	0.0276	-0.0762**
	(0.000)	(0.001)	(0.018)	(0.029)	(0.032)	(0.056)	(0.013)	(0.022)	(0.027)	(0.040)	(0.017)	(0.028)	(0.019)	(0.031)
Openness	-0.000267***	0.000246***	0.0147***	0.0147***	0.0151***	0.0167***	0.0127***	0.0125***	0.0118***	0.0125***	0.00571***	0.00504***	0.00563***	0.00496**
	(0.000)	(0.000)	(0.002)	(0.002)	(0.003)	(0.004)	(0.002)	(0.002)	(0.003)	(0.004)	(0.002)	(0.002)	(0.002)	(0.002)
Elect Comp	-0.000469	0.000511	-0.0190***	-0.0184***	-0.0160	-0.0157	-0.00986*	-0.00977*	-0.00747	-0.00849	-0.00368	-0.00399	-0.00342	-0.00376
	(0.000)	(0.000)	(0.007)	(0.007)	(0.010)	(0.013)	(0.006)	(0.006)	(0.009)	(0.010)	(0.008)	(0.008)	(0.008)	(0.008)
Turnouts	0.00134***	-0.00130***	-0.00666	-0.0118	-0.00797	-0.0230	-0.0120	-0.0138*	-0.0183	-0.0222	-0.00114	-0.00240	-0.00150	-0.00262
	(0.000)	(0.000)	(0.009)	(0.009)	(0.011)	(0.017)	(0.008)	(0.008)	(0.012)	(0.015)	(0.011)	(0.011)	(0.012)	(0.012)
AllDem	-0.211***	-0.188***	2.958***	-1.198	3.262***	-1.853	3.254***	-1.048	3.655***	-1.170	1.663*	0.632	1.652*	0.653
	(0.030)	(0.026)	(0.761)	(0.958)	(1.138)	(1.650)	(0.781)	(0.869)	(1.086)	(1.313)	(0.882)	(0.884)	(0.964)	(0.931)
British Colony	0.0134	-0.0259***	0.260	-0.101	0.0695	-0.597	-0.0134	-0.306*	-0.137	-0.645*	-0.189	-0.321	-0.189	-0.318
	(0.009)	(0.010)	(0.230)	(0.213)	(0.342)	(0.421)	(0.181)	(0.179)	(0.292)	(0.331)	(0.228)	(0.226)	(0.254)	(0.251)
Share of Protestant	0.000136	-0.000202	0.0159***	0.0108**	0.0146**	0.00931	0.00351	0.0000234	0.00361	0.000216	0.0104**	0.00839*	0.0104**	0.00842*
	(0.000)	(0.000)	(0.005)	(0.005)	(0.007)	(0.008)	(0.004)	(0.004)	(0.007)	(0.007)	(0.005)	(0.004)	(0.005)	(0.005)
Judicial Independency	-0.00594	0.00565	1.189**	1.457***	1.203	2.094**	1.314***	1.389***	1.704**	2.276***	1.250**	1.135**	1.263**	1.145*
	(0.025)	(0.025)	(0.530)	(0.503)	(0.764)	(0.888)	(0.419)	(0.427)	(0.661)	(0.691)	(0.559)	(0.542)	(0.610)	(0.605)
Fisrt Stage														
%Mid Cohort	0.00815***	-0.00693***												
	(0.001)	(0.001)												
Gender Ratio	-0.00231***	0.00253***												
	(0.001)	(0.001)												
Hausman Test														
Median/Q4_res			-17.68***				-18.53***				-10.04***			
			(2.972)				(2.840)				(3.790)			
Gini Education_res				21.29***				20.90***				10.09**		
				(3.109)				(3.008)				(3.912)		
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
F					23.37	9.99			22.47	12.66			31.62	21.00
N	257	257	144	144	144	144	172	172	172	172	254	254	254	254
adj. R-sq	0.931	0.920	0.792	0.804	0.607	0.426	0.812	0.812	0.568	0.477	0.568	0.575	0.496	0.499

Note: OLS coefficient with robust standard errors in parentheses. *P<0.10, **P<0.05, ***P<0.01

Table 9 Fixed Effects Estimations

	FE (1) CPI	FE (2) WB	FE (3) ICRG	FE (4) CPI	FE (5) WB	FE (6) ICRG	FE (7) CPI	FE (8) WB	FE (9) ICRG	FE (10) CPI	FE (11) WB	FE (12) ICRG	FE-IV (13) ICRG	FE-IV (14) ICRG
Second Stage														
Median/Q4	0.474	1.019*	0.661*							1.282	0.998*	0.671*	3.575**	5.115*
	(0.787)	(0.555)	(0.373)							(0.862)	(0.582)	(0.384)	(1.792)	(2.736)
CV Education				0.198	0.0543	-0.0161								
				(0.271)	(0.143)	(0.021)								
Gini Education							0.000429	-1.992*	-1.021					
							(1.443)	(1.077)	(1.263)					
Average Schooling Years										-0.169	0.00128	0.0149		0.373
										(0.161)	(0.117)	(0.138)		(0.273)
PGDP	0.00817	-0.0000447	-0.0258**	0.00672	-0.00189	-0.0250**	0.00759	0.00248	-0.0189	0.00424	-0.00517	-0.0257**	-0.0339**	-0.0344**
	(0.006)	(0.005)	(0.012)	(0.006)	(0.005)	(0.012)	(0.007)	(0.005)	(0.012)	(0.007)	(0.006)	(0.012)	(0.015)	(0.016)
Fisrt Stage													-0.022***	-0.017***
													(0.006)	(0.006)
%Mid Cohort (1st Stage)													0.003	0.004
													(0.005)	(0.005)
Gender Ratio (1st Stage)														
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	244	279	366	244	279	366	240	273	450	182	213	366	363	363
Within R-sq	0.0132	0.0678	0.164	0.0143	0.0512	0.156	0.0109	0.0771	0.178	0.0463	0.128	0.164		
Overall R-sq	0.573	0.487	0.002	0.003	0.103	0.01	0.343	0.471	0.064	0.132	0.359	0.012	0.124	0.389

Note: OLS coefficient with robust standard errors in parentheses. *P<0.10, **P<0.05, ***P<0.01

Appendix 3

Table 1 Correlation Matrix of Corruption Indices (average levels between 1995-2005)

	ICRG	CPI	WB
ICRG	1		
CPI	0.8152	1	
WB	0.8376	0.9813	1

Table 2 Descriptive Statistics of Corruption Indices

	Mean	Median	Min	Max	Std. Dev.
CPI					
1998	5.23	4.65	1.40	10.00	2.48
2000	5.46	5.00	1.70	10.00	2.42
2002	5.36	4.48	1.70	10.00	2.34
2004	5.36	4.47	1.80	10.02	2.31
2006	4.60	3.30	1.80	9.60	2.45
WB					
1998	5.50	4.53	1.70	10.04	2.39
2000	5.43	4.55	1.88	9.98	2.30
2002	5.36	4.48	1.70	10.00	2.34
2004	5.36	4.47	1.80	10.02	2.31
2005	5.31	4.45	2.10	9.98	2.28
ICRG					
1985	5.59	5.00	0.00	10.07	2.62
1990	5.68	5.00	0.00	10.00	2.50
1995	6.07	5.49	0.00	10.00	2.29
2000	5.64	5.42	1.08	10.00	2.09
2005	4.78	4.50	0.52	10.00	1.99

Table 3 Summary Statistics of Civic Monitoring Capacity and Control Variables

Variable	Mean	Std. Dev.	Min	Max	Note
Per-Capita Income	8.979	8.967	0.248	30.975	
Press Freedom	42.579	23.382	7.813	95.625	0=free
Degree Openness	73.994	51.610	16.823	340.126	
Electoral Competition	38.088	21.185	0	70	0=Most Competition
Turnouts	34.416	18.216	0	67.14	%
Judicial Independency	0.463	0.278	0	0.892	1=Most Independent
Share of Protestant	14.282	23.163	0	97.8	
Past British Colony	0.376	0.487	0	1	1=Yes
Uninterrupted Democracy	0.247	0.434	0	1	1=40 years Dem
Latin American	0.223	0.419	0	1	1=Yes
East European	0.043	0.203	0	1	1=Yes
Middle East	0.106	0.310	0	1	1=Yes
African	0.223	0.419	0	1	1=Yes
South Asia	0.043	0.203	0	1	1=Yes
Asian Pacific	0.128	0.335	0	1	1=Yes

Table 4: A Survey of Corruption Determinants[48]

Variables	(+) Positive-Significant by (+)	(-) Negative-Significant by (-)
Economic Factors		
Income #*	Braun-Di Tella (2004), Frechette (2001)	Alt-Lassen (2003), Persson et al. (2003), Paldam (2002-01), Frechette (2001), Treisman (2000), Wei (2000), Ades-Di Tellla (1999), van Rijckeghem-Weder (1997)
Income Distribution*	Paldam (2002)	
Government Expenditure	Ali-Isse (2003)	Fisman-Gatti (2002), Bonaglia et al. (2001)
Government Revenue	Lederman et al. (2005), Alt-Lassen (2003)	
Govt. transfter to lower level		Lederman et al. (2005)
Black market premium		Brunetti-Weder (2003), van Rijckeghem-Weder (1997)
Inflation, Inflation Vars.	Braun-Di Tella (2004), Paldam (2002-01)	
Economic Institution Factors		
Foreign Aid	Ali-Isse (2003)	Tavares (2003)
Import share		Herzfeld-Weiss (2003), Fisman-Gatti (2002), Frechette (2001), Treisman (2000), Ades-Di Tella (1999)
Raw material export	Herzfeld-Weiss (2003), Tavares (2003), Bonaglia et al. (2001), Frechette (2001)	Frechette (2001)
Trade openness #*		Brunetti-Weder (2003), Persson et al. (2003), Fisman-Gatti (2002), Frechette (2001), Wei (2000), Ades-Di Tella (1999), Leite-Weidmann (1997)
Economic Freedom	Graeff-Mehlkop (2003), Paldam (2001)	Gurgur-Shah (2005), Ali-Isse (2003), Graeff-Mehlkop (2003), Park (2003), Treisman (2000), Goldsmith (1999)
Entry barriers	Broadman-Recanatini (2002-00)	Gurgur-Shah (2005), Suphachalasai (2005)
Structural reform		Abed-Davoodi (2000)
Infrastructure		Broadman-Recanatini (2000)
Budget constraint		Broadman-Recanatini (2002-00)
Political Factors		
Democracy, civil liberty*		Paldam (2002), Bonaglia et al. (2001), Frechette (2001), Swamy et al. (2001), Treisman (2000), Wei (2000), Ades-Di Tella (1999-97), Leite-Weidmann (1997), Goldsmith (1999), van Rijckeghem-Weder (1997)
Press freedom, media*		Lederman et al. (2005), Suphachalasai (2005), Brunetti-Weder (2003)
Turnout*		Chowdhury (2004)
Electoral Compeition*		Chowdhury (2004)
Decentralization, Federalism	Brown et al. (2005), Kunicova-R. Ackerman (2005), Damania et al. (2004), treisman (2000), Goldsmith (1999)	Gurgur-Shah (2005), Lederman et al. (2005), Fisman-Gatti (2002), Ali-Isse (2003), Wei (2000)
District maginute		Chang-Golden (2004)
Closed list system	Kunicova-R. Ackerman (2005), Persson-Tabellini (2003), Persson et al. (2003)	Lederman et al. (2005), Chang-Goldern (2004)
Presidentialism	Brown et al. (2005), Kunicova-R. Ackerman (2005), Lederman et al. (2005), Chang-Golden (2004)	
Number of party	Chang-Golden (2004)	
Political instability	Park (2003), Leite-Weidmann (1999)	
Uninterupted Democracy #*		Treisman (2000)
Ideological Polarization		Brown et al. (2005)
Majoritarian plurality		Kunicova-R. Ackerman (2005)
Central Planning		Abeb-Davoodi (2000)
Women in public position		Swamy et al. (2001)
Variables	**(+) Positive-Significant by (+)**	**(-) Negative-Significant by (-)**
Demographic Factors		
Schooling*	Ahrend(2002), Frechette (2006)	Ali-Isse (2003), Alt-Lassen (2003), Brunetti-Weder (2003), Persson et al. (2003), Evan-Rauch (2000), Ades-Di Tella (1999-97), van Rijckeghem-Weder (1997), Ahrend (2002), Glaeser and Saks (2006)
Population	Damania et al. (2004), Alt-Lassen (2003), Knack-Azfar (2003), Fisman-Gatti (2002)	Tavares (2003)
Femal labour force		Swamy et al. (2001)
Judicial and Bureaucratic Factors		
Government wage		Alt-Laseen (2003), Herzfeld-Weiss (2003), Rauch-Evan (2000), van Rijckeghem-Weder (1997)
Quality of bureaucracy		Gurgur-Shah (2005), Brunetti-Weder (2003), van Rijckeghem-Weder (1997)
Merit system		Rauch-Evan (2000)
Judicial Independency*	Rios-Figueroa (2006)	Waisman (2005), Rios-Figueroa (2006)
Rule of law		Ali-Isse (2003), Brunetti-Weder (2003), Herzfeld-Weiss (2003), Park (2003), Broadman-Recanatini (2000), Leite-Weidmann (1997), Ades-Di Tella (1997)
Culture and Geographical Factors		
Population with particular religious affiliation #*	Paldm (2001), La Porta et al (1999)	Chang-Golden (2004), Herzfeld-Weiss (2003), Persson et al. (2003), Bonaglia et al. (2001), Paldam (2001), Treisman (2000), La Porta et al. (1999)
Ethnic heterogeneity*	Lederman et al (2005), Suphachalasai (2005), Herzfeld-Weiss (2003), Treisman (2000), La Porta et al (1999)	Bonaglia et al. (2001)
Colonial past #*	Gurgur-Shah (2005), Tavares (2003)	Herzfeld-Weiss (2003), Persson et al. (2003), Swamy et al. (2001), Treisman (2000)
Distance to large exporter	Ades-Di Tella (1999)	Bonaglia et al. (2001)
Legal origin	Gatti (1999), La Porta et al (1999)	Suphachalasai (2005)
Area wide		Bonaglia et al. (2001)
Latitude		La Porta et al. (1999)
Mascullinity	Park (2003)	
Natural Resources	Leite-Weidmann (1997)	

[48] Compound and Modified from Seldadyo and Haan (2005)

Table 5: Education and Anti-Corruption Initiatives around the World[49]

Country	DATE	PROJECT	DESCRIPTION OF PROJECT	CHANNEL (how to stop corruption)	WEBSITE (for further info)
Bulgaria	20/06/06	Anti-Corruption Academy to set up in Bulgaria	Setting up of an anti-corruption academy whereby there will be foreign experts delivering lectures on the fight against corruption.	GERB	www.novinite.com
Bosnia and Herzegovina	23/5/05	Education against corruption	Printing of a textbook to be used in school classes and enable students and professors to discuss corruption issues, have lectures on ethics and an opinion poll	TI office (providing education on reducing corruption amongst school classes)	http://see.oneworld.net
Brunei	29/3/05	Road show held to stamp out corruption	Road show aimed at disseminating information on anti-corruption activities to the public. Organized by the anti-corruption bureau to impart messages on the risks of corruption in its effort to eradicate it	Anti-Curruption Bureau	www.brudirect.com
Cameroon	5/6/2006	Catholic schools' pilot program to fight corruption	Teaching to identify and act of dishonesty in schools and rest of society to students and parents	Pilot program, 'Fighting agains corruption through schools'	http://ww1.transparency.org
China	Spring 05	Corruption in China's higher education system: a malignant turmor	Government has begun to address corruption issues by insituting counter measures. Since 1990s, corruption has seriously threatened mainland China's universities in their teaching, research, service to society and international links and exchanges.	Government of China	www.bc.edu
Congo	9/5/2005	La Celc s'attaqu a la corruption a L'Universite (french) ==> english translated = Celc attacks on Universities corruption	Commission for Ethics and fight against corruption (Celc) organized a conference in Kinshasa to raise awareness among students on how to refure 'incorrect' values	Celc	www.allafrica.com
Hong Kong	18/3/06	ICA launches HK's first audio-visual package to promote moral education through liberal studies	ICAC has launched HK's first audio-visual liberal studies teaching package to promote moral education among secondary scholl students	ICAC	www.icac.org
Namibia	30/8/05	Namcol undergoes quality audit	Botswana College of Distance and Open Learning conducted its first external quality assurance audit on the Namibian College of Open Learning (Namcol) to see whether Namcol's system and precedures are in line with international best practices	Namcol	www.allafrica.com
Philippines	11/4/2005	Expenditure tracking surveys can fight corruption	Philippines learn from Uganda, whereby it uses the Public Expenditure Tracking Surveys (PETS) which has helped reduce corruption in education	PETS	http://money.ing7.net

[49] Compound from UNESCO data: http://www.unesco.org/iiep/eng/focus/etico/pdfs/news.pdf

Table 6 Public Opinion Survey on Political Participation and Personal Estimation

	No Schooling (465)		Some Primary (540)		Some Secondary (668)		Some Tertiary (321)		Total (2014)	
All in %	**(16) If youtried to influence the () government, how likely is it that any good would come of it ?**									
	Local	National	Local	National	Local	National	Local	National	Local	National
Very likely	9	8	15	12	33	28	29	30	21	19
Moderately	4	3	10	16	28	25	44	39	21	20
Not at all	2	2	7	3	3	4	5	4	3	3
Don't know	3	3	4	6	9	8	5	4	5	5
Wouldn't try anyway	82	82	58	58	31	31	17	17	48	53
	(17) How likely is it that you would actually do something to influence () government ?									
	(17)	(18)	(17)	(18)	(17)	(18)	(17)	(18)	(17)	(18)
Very likely	10	9	22	17	45	41	46	40	31	27
Moderately	4	2	14	12	20	19	31	30	17	15
Not at all	1	1	3	2	2	2	1	2	2	2
Don't know	2	4	3	5	3	3	2	3	2	3
Not applicable	82	84	58	64	30	35	19	25	49	53
	(18) Have you ever done anything to try to inflence a () decision ?									
	(17)	(18)	(17)	(18)	(17)	(18)	(17)	(18)	(17)	(18)
Often	2	1	5	2	3	3	7	2	4	2
Once or twice	1	1	8	7	13	5	20	14	10	6
Never	65	77	74	81	77	88	71	83	72	83
Don't know	33	21	13	10	6	4	2	1	14	9
Total %	100	100	100	100	100	100	100	100	100	100

Source: India Institute of Public Opinion (1965: 112-113)

Table 7 Expectations of Treatment from Government Officials[50]

(N=1999)	No Schooling	Some Primary	Some Secondary	Some Tertiary	Total
Politely with interest	11	15	27	25	20
Politely with no interest	4	15	14	16	12
No interest	8	10	9	7	8
Rudely-hostile	10	10	7	9	9
It depends	3	10	16	26	13
Yes-if given money	6	11	16	11	12
Don't know	57	28	11	6	26
Total	100	100	100	100	100

Source: India Institute of Public Opinion (1965: 112-113)

[50] The villagers across India were asked the question "If you had some problems that you had to talk about with a government official, such as questions about taxes, agricultural regulations shortage from of water and so on, how do you think you would be treated?"

Correlation Matrixes

Averaged OLS Regressions

	CPI	WB	ICRG	Median	Mean	Median/Q4	Mean/Q4	CV Educat	Gini Educa	Prim Sch	Sec Sch	Ter Sch	AVG Sch	%No Sch	%Prim Sch	%Sec Sch	%Ter Sch	%Young	%Old	%Mid	Sex Ratio	PGDP	Press Free	Openness	Judicial Ind	Elect Comp	Turnouts	British Colo	Share Prot	AllDem
CPI	1.000																													
WB	0.981	1.000																												
ICRG	0.829	0.847	1.000																											
Median	0.671	0.704	0.658	1.000																										
Mean	0.774	0.801	0.745	0.929	1.000																									
Median/Q4	0.671	0.704	0.658	1.000	0.929	1.000																								
Mean/Q4	0.662	0.701	0.670	0.979	0.926	0.979	1.000																							
CV Educatior	-0.326	-0.356	-0.420	-0.448	-0.459	-0.448	-0.445	1.000																						
Gini Educatio	-0.616	-0.650	-0.630	-0.925	-0.868	-0.925	-0.921	0.557	1.000																					
Prim Sch	0.691	0.720	0.698	0.912	0.949	0.912	0.940	-0.513	-0.909	1.000																				
Sec Sch	0.757	0.773	0.678	0.727	0.864	0.727	0.676	-0.370	-0.626	0.681	1.000																			
Ter Sch	0.616	0.624	0.593	0.651	0.811	0.651	0.634	-0.335	-0.584	0.736	0.730	1.000																		
AVG Sch	0.770	0.796	0.746	0.913	0.994	0.913	0.914	-0.499	-0.873	0.963	0.853	0.812	1.000																	
%No Sch	-0.672	-0.706	-0.675	-0.965	-0.915	-0.965	-0.954	0.574	0.966	-0.927	-0.709	-0.635	-0.917	1.000																
%Prim Sch	0.376	0.415	0.440	0.800	0.611	0.800	0.815	-0.519	-0.865	0.723	0.293	0.274	0.614	-0.863	1.000															
%Sec Sch	0.768	0.783	0.680	0.765	0.902	0.765	0.723	-0.405	-0.686	0.777	0.953	0.724	0.903	-0.752	0.330	1.000														
%Ter Sch	0.621	0.622	0.593	0.627	0.791	0.627	0.601	-0.314	-0.561	0.708	0.726	0.992	0.790	-0.610	0.242	0.714	1.000													
%Young	-0.751	-0.795	-0.723	-0.782	-0.836	-0.782	-0.806	0.344	0.696	-0.769	-0.754	-0.572	-0.820	0.748	-0.511	-0.749	-0.550	1.000												
%Old	0.735	0.770	0.708	0.800	0.825	0.800	0.809	-0.335	-0.710	0.751	0.752	0.524	0.805	-0.760	0.545	0.736	0.503	-0.952	1.000											
%Mid	0.687	0.737	0.661	0.679	0.759	0.679	0.716	-0.318	-0.606	0.705	0.675	0.563	0.748	-0.655	0.420	0.683	0.541	-0.944	0.799	1.000										
Sex Ratio	-0.159	-0.137	-0.227	-0.337	-0.243	-0.337	-0.330	-0.024	0.286	-0.250	-0.161	-0.016	-0.228	0.271	-0.292	-0.159	-0.012	0.312	-0.428	-0.154	1.000									
PGDP	0.585	0.599	0.511	0.496	0.563	0.496	0.496	-0.217	-0.493	0.487	0.570	0.423	0.554	-0.480	0.265	0.557	0.430	-0.572	0.570	0.513	-0.104	1.000								
Press Freedo	-0.664	-0.717	-0.736	-0.810	-0.781	-0.810	-0.797	0.347	0.782	-0.767	-0.626	-0.564	-0.774	0.805	-0.656	-0.649	-0.550	0.703	-0.711	-0.619	0.306	-0.529	1.000							
Openness	0.194	0.210	0.123	0.020	0.010	0.020	0.032	-0.136	-0.054	0.048	-0.016	-0.110	0.022	-0.061	0.095	0.026	-0.106	0.049	-0.048	-0.045	0.158	-0.135	-0.003	1.000						
Judicial Indep	0.688	0.735	0.682	0.712	0.738	0.712	0.717	-0.424	-0.719	0.730	0.635	0.563	0.752	-0.760	0.594	0.641	0.549	-0.644	0.633	0.587	-0.187	0.480	-0.811	0.062	1.000					
Elect Comp	0.543	0.598	0.612	0.737	0.699	0.737	0.740	-0.408	-0.720	0.721	0.542	0.493	0.710	-0.769	0.666	0.570	0.477	-0.637	0.639	0.566	-0.239	0.441	-0.817	0.021	0.837	1.000				
Turnouts	0.592	0.641	0.644	0.743	0.702	0.743	0.751	-0.324	-0.676	0.703	0.534	0.466	0.694	-0.718	0.605	0.557	0.450	-0.721	0.755	0.607	-0.389	0.405	-0.677	0.005	0.642	0.744	1.000			
British Colony	0.014	-0.013	-0.099	-0.146	-0.067	-0.146	-0.190	-0.050	0.118	-0.087	-0.007	0.070	-0.058	0.158	-0.271	0.034	0.098	0.186	-0.212	-0.138	0.268	-0.008	0.133	0.240	-0.032	-0.235	-0.334	1.000		
Share Protes	0.507	0.458	0.552	0.360	0.404	0.360	0.361	-0.157	-0.332	0.351	0.385	0.273	0.388	-0.356	0.239	0.363	0.283	-0.348	0.389	0.266	-0.205	0.236	-0.471	0.005	0.341	0.303	0.295	0.002	1.000	
AllDem	0.635	0.646	0.613	0.574	0.653	0.574	0.559	-0.247	-0.512	0.593	0.618	0.553	0.651	-0.554	0.294	0.647	0.564	-0.563	0.598	0.464	-0.094	0.511	-0.566	-0.072	0.559	0.544	0.503	0.066	0.478	1.000

Panel Data Regressions

	ICRG	Median	Mean	Median/Q4	Mean/Q4	CV Educati	Gini Educa	Prim Sch	Sec Sch	Ter Sch	AVG Sch	%No Sch	%Prim Sch	%Sec Sch	%Ter Sch	%Young	%Old	%Mid	Sex Ratio	PGDP	Press Free	Openness	Judicial Ind	Elect Comp	Turnouts	British Colo	Share Prot	AllDem
ICRG	1.000																											
Median	0.663	1.000																										
Mean	0.452	0.429	1.000																									
Median/Q4	0.410	0.390	0.931	1.000																								
Mean/Q4	0.582	0.873	0.439	0.423	1.000																							
CV Educatior	0.079	0.060	-0.396	-0.401	0.050	1.000																						
Gini Educatio	-0.586	-0.854	-0.444	-0.450	-0.911	-0.053	1.000																					
Prim Sch	0.621	0.870	0.436	0.402	0.881	0.068	-0.894	1.000																				
Sec Sch	0.642	0.881	0.426	0.383	0.694	0.062	-0.672	0.663	1.000																			
Ter Sch	0.506	0.807	0.333	0.276	0.589	0.009	-0.593	0.729	0.706	1.000																		
AVG Sch	0.685	0.959	0.468	0.425	0.869	0.068	-0.868	0.940	0.876	0.817	1.000																	
%No Sch	-0.602	-0.886	-0.447	-0.459	-0.953	-0.063	0.963	-0.897	-0.725	-0.621	-0.895	1.000																
%Prim Sch	0.173	0.273	0.170	0.249	0.624	0.045	-0.631	0.452	0.012	-0.009	0.276	-0.652	1.000															
%Sec Sch	0.629	0.877	0.446	0.414	0.745	0.055	-0.739	0.753	0.937	0.605	0.895	-0.775	0.094	1.000														
%Ter Sch	0.516	0.803	0.341	0.278	0.555	0.015	-0.576	0.706	0.698	0.991	0.799	-0.597	-0.040	0.588	1.000													
%Young	-0.686	-0.825	-0.411	-0.372	-0.775	-0.063	0.723	-0.744	-0.809	-0.579	-0.834	0.775	-0.266	-0.816	-0.565	1.000												
%Old	0.695	0.775	0.382	0.345	0.734	0.115	-0.685	0.696	0.771	0.537	0.786	-0.732	0.270	0.755	0.525	-0.928	1.000											
%Mid	0.566	0.746	0.376	0.342	0.694	-0.002	-0.647	0.676	0.721	0.532	0.752	-0.697	0.219	0.750	0.518	-0.917	0.703	1.000										
Sex Ratio	-0.264	-0.298	-0.059	-0.070	-0.368	-0.020	0.314	-0.270	-0.190	-0.076	-0.248	0.323	-0.319	-0.191	-0.075	0.290	-0.466	-0.054	1.000									
PGDP	0.507	0.577	0.341	0.300	0.457	-0.085	-0.495	0.455	0.604	0.442	0.563	-0.466	0.027	0.572	0.456	-0.589	0.599	0.485	-0.127	1.000								
Press Freedo	-0.651	-0.742	-0.432	-0.407	-0.712	-0.050	0.684	-0.672	-0.635	-0.526	-0.714	0.719	-0.351	-0.639	-0.523	0.677	-0.707	-0.537	0.334	-0.526	1.000							
Openness	0.074	0.047	-0.057	-0.032	0.072	0.048	-0.076	0.091	0.045	-0.018	0.072	-0.090	0.065	0.100	-0.021	-0.107	-0.011	0.216	0.156	-0.045	-0.012	1.000						
Judicial Indep	0.596	0.714	0.345	0.323	0.724	0.084	-0.708	0.687	0.612	0.542	0.714	-0.733	0.404	0.604	0.523	-0.659	0.605	0.612	-0.282	0.467	-0.757	0.133	1.000					
Elect Comp	0.517	0.657	0.331	0.310	0.694	0.046	-0.649	0.643	0.523	0.456	0.644	-0.694	0.437	0.541	0.442	-0.629	0.603	0.556	-0.311	0.433	-0.764	0.056	0.797	1.000				
Turnouts	0.532	0.603	0.347	0.321	0.637	0.092	-0.584	0.594	0.506	0.418	0.604	-0.636	0.387	0.512	0.407	-0.653	0.701	0.497	-0.433	0.398	-0.648	0.018	0.601	0.671	1.000			
British Colony	0.506	0.397	0.199	0.151	0.296	0.236	-0.317	0.335	0.432	0.272	0.405	-0.332	0.046	0.401	0.288	-0.362	0.440	0.221	-0.197	0.279	-0.458	-0.014	0.311	0.295	0.303	1.000		
Share Protes	-0.073	-0.058	-0.013	-0.032	-0.222	-0.021	0.108	-0.067	-0.051	0.050	-0.058	0.169	-0.302	-0.023	0.083	0.189	-0.247	-0.098	0.274	-0.059	0.131	0.202	-0.047	-0.209	-0.317	-0.037	1.000	
AllDem	0.599	0.622	0.357	0.293	0.453	0.072	-0.466	0.531	0.614	0.518	0.619	-0.487	0.003	0.594	0.540	-0.565	0.598	0.439	-0.179	0.534	-0.541	-0.064	0.483	0.485	0.455	0.522	0.068	1.000