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JUDICIAL CHECKS ON CORRUPTION

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by
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ABSTRACT

Judicial oversight is widely regarded as an important check and balance on the abuse of governmental power. The literature identifies two important components of this oversight function: judicial independence and constitutional review. However, recent work using country-level data indicates that the effectiveness of constitutional review is largely determined by the rigidity of the constitution. My dissertation builds on this work by investigating whether judicial independence and constitutional review are deterrents to a specific type of abuse of power by government officials: corruption in office. Since the appropriate way to measure corruption, which is defined as the abuse of public office for private gain, remains an unsettled issue, I use both measures of corruption derived from criminal convictions data and measures of corruption derived from survey data. In the case of the former, I propose a new empirical strategy that explicitly recognizes the distinction between the unobserved number of corrupt officials and the observed number of convictions for corruption.

I begin by examining whether differences in judicial independence and constitutional rigidity at the state level in the United States explain the observed variation in the number of corruption convictions across states. I investigate these issues empirically using annual data for the years 1996-2005. Judicial independence is assessed by looking at judicial remuneration, method of selection, and term length. To assess constitutional rigidity, I use the legislative majority needed in each state to propose constitutional amendments, the provision (or lack thereof) for constitutional conventions, and the provision (or lack thereof) for popular initiatives to amend the constitution.

I find that both judicial independence and constitutional rigidity are significant predictors of corruption. The coefficient estimates indicate that in states where judges have a higher degree of independence (higher remuneration, merit plan selection, or longer terms), there is less corruption. Moreover, states that have more rigid constitutions (higher legislative majorities required to propose constitutional amendments) experience less corruption. These findings, which are new to the literature, suggest that policy reforms which promote judicial independence and make it more difficult to alter constitutions have the potential to mitigate the harmful effects of corruption that have been documented in other studies.

To develop additional insights, I conduct a similar empirical investigation in a cross-country setting. Since I do not have data on corruption convictions at the country level, I use several survey-based measures, from Transparency International, the World Bank (Kaufmann et al., 2007), and the Political Risk Survey Group. My measures of judicial independence and constitutional review are drawn from a variety of sources. I obtain indices of judicial independence from the Economic Freedom of the World Report, published by the Fraser Institute, from the Political Constraint Index Dataset, and from the La Porta et al. (2004) study cited earlier. The constitutional review index is taken from La Porta et al. (2004) as well. Like most of the literature, I analyze these data using linear regression methods: ordinary least squares, weighted least squares, and panel data techniques. Since data availability varies across indices, I conduct my analysis on cross-sections of between 37 to 165 countries for various years between 1995 and

2005. I then extend my analysis to panels of data with cross-sectional and time-series observations for 1998 to 2005.

The evidence on judicial independence from the cross-country analysis is generally consistent with that from the United States data. I find strong support in favor of my hypothesis that higher judicial independence is associated with lower corruption levels, ceteris paribus. This finding is robust to the way corruption and judicial independence levels are measured, to the estimation technique, and, in general, to the inclusion of various control variables. However, I do not find the expected relation between corruption and constitutional rigidity. It appears that countries with more rigid constitutions experience more corruption using the same controls as for the judicial independence models. In their study, La Porta et al. (2004) show that constitutional review is a guarantee of political freedom measured by indices of democracy, human rights and political rights, but *not* of economic freedom. This suggests that it may be possible to reconcile the findings from the cross-country analysis with the evidence for the United States by gaining a better understanding of the relation between political freedom and economic freedom.

DEDICATION

To Chris

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CHAPTER ONE

INTRODUCTION

Over the past two centuries, judicial oversight has evolved into a cornerstone of the system of checks and balances that is central to the United States model of governance at both the state and national levels. The literature identifies two main ways in which the judiciary provides checks on the power of the legislative and executive branches: judicial independence and constitutional review. Judicial independence matters because judges subject to the influence of the legislative or executive branches will be less likely to decide cases in an impartial manner. Constitutional review matters because, in addition to trying to influence judges, the legislative or executive branches may seek to pass laws or implement policies that are designed to benefit themselves and/or their associates. By reviewing whether such actions are constitutional, the judiciary places limits on such self-serving behavior.

Since the actions of a state government are subject to review not only against the provisions of the state's constitution but also against those of the federal constitution, one might hypothesize that there should be little difference in the effectiveness of constitutional review from one state to another. However, if the legislature of one state can as easily alter the state constitution as it enacts new laws, then it has much wider latitude than the legislature of another state that has a rigid constitution. Based on this argument, differences in constitutional rigidity across states could result in differences in the effectiveness of the judicial review process. The frequency with which state constitutions are altered suggests that it is necessary to consider the rigidity issue. State

legislatures proposed 974 constitutional amendments over my sample period, of which 78% were adopted. There were also 156 constitutional changes proposed via popular initiatives, of which 44% were successful.

La Porta et al. (2004) provide direct evidence on the need to consider constitutional rigidity when investigating the effectiveness of constitutional review. They use cross-country data to investigate whether judicial independence and constitutional review act as important guarantees of freedom. Using data for 71 countries, they find that both of these variables are associated with greater freedom. However, the impact of constitutional review is closely tied to the rigidity of the constitution. I build on this work by investigating whether judicial independence and constitutional rigidity are deterrents to a specific type of abuse of power by government officials: corruption in office.

First, I examine the relation between corruption and both judicial independence and constitutional rigidity in the United States using state-level data on corruption convictions for the years 1996-2005. Judicial independence is assessed by looking at judicial remuneration, method of selection, and term length. To assess constitutional rigidity, I use the legislative majority needed to propose constitutional amendments, the provision (or lack thereof) for constitutional conventions, and the provision (or lack thereof) for popular initiatives to amend the constitution. Unlike previous studies that use convictions data, which simply ignore the disparity between convictions and the underlying level of corruption, I propose an empirical strategy that explicitly recognizes

the difference between the unobserved number of corrupt officials and the observed number of convictions for corruption.

Since the number of officials convicted for corruption represents an unknown fraction of the total number of corrupt officials, I assume that each corrupt official faces some risk, i.e., probability, of being revealed as corrupt, and that this risk does not vary across individuals *within* a state. This allows me to express the number of officials convicted of corruption in each state as the outcome of n_i independent Bernoulli trials where n_i is the unobserved number of corrupt officials in state i. To obtain my empirical specifications, I model n_i as a Poisson process whose mean depends on a vector of explanatory variables, and show that this leads to a negative binomial specification for the number of corruption convictions.

Using this specification, I show that both judicial independence and constitutional rigidity are significant predictors of corruption. The coefficient estimates suggest that in states where judges have a higher degree of independence (higher remuneration, merit plan selection, or longer terms), there is less corruption. Moreover, states that have more rigid constitutions (larger legislative majorities required to propose constitutional amendments) experience less corruption. These findings, which are new to the literature, suggest that policy reforms which promote judicial independence and make it more difficult to alter constitutions have the potential to mitigate the harmful effects of corruption documented in other studies.

To see whether my findings generalize to other settings, I also investigate the determinants of corruption at the country level. Since I do not have data on corruption

convictions at the country level, I use several survey-based measures. The first is constructed and published by Transparency International. It is a composite index, computed as the average of surveys from up to 14 sources originating from 12 independent institutions. These surveys are based on the views of business people, risk analysts, journalists, and the general public. The second is a new index put together by researchers at the World Bank (Kaufmann et al., 2007). It aggregates views on corruption form a wide range of individual surveys to obtain a "consensus" corruption index for the years 1999-2006. The third is constructed and sold by the Political Risk Survey Group. This index represents an assessment, by international experts, of bureaucratic and political corruption.

My measures of judicial independence and constitutional review are drawn from a variety of sources. I obtain indices of judicial independence from the Economic Freedom of the World Report, published by the Fraser Institute, from the Political Constraint Index Dataset, and from the La Porta et al. (2004) study cited earlier. The constitutional review index is taken from La Porta et al. (2004) as well. Like most of the literature, I analyze these data using linear regression methods: ordinary least squares, weighted least squares, and panel data techniques. Since data availability varies across indices, I conduct my analysis on cross-sections of between 37 to 165 countries for various years between1995 and 2005. I then extend my analysis to panels of data with cross-sectional and time-series observations for 1998 to 2005.

The evidence on judicial independence from the cross-country analysis is generally consistent with that from the United States data. I find strong support in favor

of my hypothesis that higher judicial independence is associated with lower corruption levels, ceteris paribus. This finding is robust to the way corruption and judicial independence levels are measured, to the estimation technique, and in general to the inclusion of various control variables. However, I do not find the expected relation between corruption and constitutional rigidity. It appears that countries with more rigid constitutions experience more corruption using the same controls as for the judicial independence models. In their study, La Porta et al. (2004) show that constitutional review is a guarantee of political freedom measured by indices of democracy, human rights and political rights, but *not* of economic freedom. This suggests that it may be possible to reconcile the findings from the cross-country analysis with the evidence for the United States by gaining a better understanding of the relation between political freedom and economic freedom.

The rest of the dissertation is organized as follows. Chapter 2 reviews the relevant literature on both judicial oversight and corruption-related issues. Chapter 3 presents the theoretical framework and develops the hypotheses to be tested. Chapter 4 presents the empirical evidence from the United States. I first discuss the empirical strategy and the models. Then I describe the data and present the empirical results. Chapter 5 presents the cross-nations empirical evidence. Chapter 6 provides a few concluding remarks.

CHAPTER TWO

RELATED LITERATURE

Over the past three decades, beginning with Susan Rose-Ackerman (1975), economists have shown a growing interest in analyzing the causes and consequences of corruption. Much of the recent research on corruption is conducted in cross-country settings [see, e.g., Shleifer and Vishny (1993), Mauro (1995), Ades and di Tella (1997), Ades and di Tella (1999), La Porta et al. (1999), Treisman (2000), Adserà et al. (2000), Kunicova and Rose-Ackerman (2002), Braun and Di Tella (2004), Gokcekus and Knörich (2005)].

This literature documented that weak governments are an incubator for high corruption levels, and that corruption retards economic growth, and lowers investment and private savings (Mauro, 1995). In addition, the amount of corruption in a country is positively correlated with the variance of inflation (Braun and di Tella, 2004) and negatively correlated with Protestant religion traditions, histories of common law, long exposure to democracy (Treisman, 2000), or the level of openness, measured as ratio of total trade (exports and imports) to gross domestic product (Gokcekus and Knörich, 2005). The presence of democratic mechanisms of control and of an informed electorate, measured through the frequency of newspaper readership, are negatively correlated to corruption (Adserà et al., 2000), and presidential systems, in particular nationwide closed-list proportional representation in conjunction with presidentialism, i.e., where party leaders rank candidates and voters only select political parties, are positively associated with corruption (Kunicova and Rose-Ackerman, 2002).

Besides the empirical findings from the cross-national settings, there is a growing literature on corruption in the United States that exploits the availability of both criminal justice and survey data. Studies such as Meier and Holbrook (1992), Welch and Hibbing (1997), Goel and Nelson (1998), Alt and Lassen (2003), Glaeser and Saks (2004), and Maxwell and Winters (2005) show that many of the findings from the international literature regarding the economic, historical, cultural and political determinants of corruption appear to hold within the United States as well.

Corruption is negatively correlated with education and per capita income, and positively correlated with ethnic heterogeneity and income inequality (Glaeser and Saks, 2004). Government size, measured as state government expenditures, has a strong positive correlation with corruption (Goel and Nelson, 1998), and institutional variables related to the openness of the political system, such as direct initiatives, campaign expenditure restrictions, or open primaries, are negatively correlated with corruption (Alt and Lassen, 2003). In addition, historical/cultural factors, such as urbanism, Irish/ Italian ancestry, and crime rates, are positively related to corruption, and among the political forces, voter turnout lowers corruption, while party competition is weakly negatively associated with corruption (Meier and Holbrook, 1992).

Studies that investigate the relation between corruption and characteristics of the judicial system are scarcer. Legal origins have been shown to matter in cross-country studies [La Porta (1999), La Porta (2004), and Treisman (2000)]. In particular, the evidence suggests that the legal system is more effective, and hence corruption is lower, in countries with common law systems as opposed to civil law systems. La Porta et al.

(2004) investigate whether judicial checks and balances act as a guarantee of freedom. Using data for 71 countries around the world, they provide evidence that judicial independence and constitutional review are associated with (i) greater economic freedom, measured by the security of property rights, the lightness of government regulation, and the infrequency of state ownership, and (ii) greater political freedom, measured by indices of democracy, political rights, and human rights.

One of the few studies to directly address the impact of checks and balances on corruption using United States data is Alt and Lassen (2005). They argue that various forms of checks and balances are precautionary devices against government corruption. To test this hypothesis, they use Boylan and Long's (2003) survey of State House reporters' perceptions of public corruption as the dependent variable, along with data on the presence of divided government and on judicial selection. Their findings show that states in which the executive and the legislative branches of government are controlled by different political parties and states in which judges are elected rather than appointed experience lower corruption levels. This latter result contradicts the long-standing belief that appointed judges are more independent [Hall (1987), Hall (2001), Feld and Voigt (2003), Besley and Payne (2003), Hanssen (2004), Sobel and Hall (2007)]. Alt and Lassen (2005) also show that the effect of a judiciary accountable to the public is stronger under a unified government.

Other studies, such as Wallis (2004) and Glaeser and Goldin (2004), provide a historical overview of the corruption issue for the years 1842 to 1852 and 1815 to 1975, respectively, and illustrate how the institution of checks and balances evolved to ensure

an effective control between different levels of government. Glaeser and Goldin (2004) argue that corruption decreased significantly between the mid 1870s and 1920, and attribute this result to the increased costs that corrupt politicians faced as the news media began reporting corruption everywhere in America and “the full apparatus of modern checks on corruption were in place.”

CHAPTER THREE

JUDICIAL CHECKS AND BALANCES ON CORRUPTION

Corruption is defined as the abuse of public office for private gain (World Bank). Susan Rose Ackerman (1999, p. 9) notes that corruption is a "symptom that something has gone wrong in the management of the state" and that "institutions designed to govern the interrelationships between the citizen and the state are used instead for personal enrichment and the provision of benefits to the corrupt." This definition allows classifying as corruption a plethora of acts ranging from "low-level" corruption, such as payments to obtain licenses or benefits, payments to avoid delay in obtaining a public service, and payments for relief from government regulation, taxes, or custom duties, to "high-level" corruption, such as payments to win major procurement contracts or concessions from the government, payments to retain monopoly power, or payments to pass laws or to get a favorable interpretation of the laws.

The starting point for my analysis of the impact of judicial checks on corruption is the assumption that once they acquire a position of trust, public office holders may abuse power, i.e., take actions that are not congruent with the interests of voters.[1] Persson et al. (1997) identify two mechanisms designed to align the interests of public officials and voters: the electoral process and separation of powers. The electoral process is a way of disciplining public officials by denying them the right to make decisions in the future, while separation of powers serves to control and limit the power of public officials while

[1] This assumption can be motivated by appealing to the theory of political agency as formulated by Barro (1973), Ferejohn (1986), Persson et al. (1997), and Maskin and Tirole (2004). The theory focuses on the divergence of interests between voters (principals) and their political representatives (the agents).

in office. According to Persson et al. (1997), separation of powers, and particularly the institution of checks and balances, limits abuse of power by creating conflicts of interest between the legislative and the executive, or by requiring agreement of both branches in the law-making process. A central result of Persson et al. (1997) is that, under appropriate checks and balances, separation of powers improves the accountability of public officials.[2]

For the separation of power model of governance to function properly, it must ensure the division of power between all three branches of government: the executive, the legislative and the judiciary. Montesquieu (1748, p.155) writes "it has eternally been observed that any man who has power is led to abuse it; he continues until he finds limits…So that one cannot abuse power, power must check power." This thinking influenced the writers of the United States Constitution, who acknowledged that "there can be no liberty where the legislative and the executive powers are united in the same person or body of magistrates, or if the power of judging be not separated from the legislative and executive powers" (Madison 1788, p.263). Within this governance model, the Anglo-American institution of checks and balances attributes a special role to the judiciary.

[2] Landes and Posner (1975) put forth a different argument that has similar implications. They develop a theory of the independent judiciary in an interest group perspective. Under their model, interest groups make wealth transfers to legislators in return for favorable legislation. Since the wealth transfers are larger when legislation lasts beyond the term of the enacting legislature, politicians have incentives to find methods of increasing the permanency of laws. Establishing an independent judiciary, which makes it more costly for future regimes to change existing policies, is one such method.

According to Hayek (1960), there are two ways in which the judiciary provides checks and balances: judicial independence and constitutional review. First consider judicial independence. Hayek (1960, p.210) writes "Rules must not be made with particular cases in mind, nor must particular cases be decided in the light of anything but the general rule…This requires independent judges who are not concerned with any temporary ends of government." La Porta et al. (2004) point out that judicial independence is especially important in cases where the government is itself a litigant or in lawsuits where one of the litigants is politically connected and the executive wants the court to favor its ally.

Independent judges are free of political pressure exercised by the executive, the legislative or the public and thus free to implement an impartial judgment without fear of retribution. Susan Rose-Ackerman (1999, p. 151) notes that:

> A politically dependent judiciary can facilitate high-level corruption, undermine reforms, and override legal norms. When the judiciary is part of the corrupt system, the wealthy and the corrupt operate with impunity, confident that a well-placed payoff will deal with any legal problems. […]Business deals may be structured inefficiently to avoid encounters with the judicial system, and ordinary people may be systematically taken advantage of because they lack access to an impartial system of dispute resolution. Bidding wars may develop in which parties on opposing sides compete in making payoffs.

The above arguments, and the fact that the states mirror the separation of power model at the federal level, allow me to form my first testable hypothesis. *States or nations that confer judges relatively greater judicial independence experience lower corruption.*

Next consider constitutional review. Constitutional review is designed to reinforce citizens' guarantees against the law-making power of the legislature. As La Porta et al. (2004, p.447) note, both "the executive and the legislature may enact policies

and pass laws that benefit themselves, democratic majorities, or allied interest groups." By means of constitutional review, these policies can be declared unconstitutional by the court if they are in conflict with the legal code or with the constitution itself.[3] However, constitutional review becomes a less effective check as the constitution becomes less rigid. If the legislature of a state can as easily alter the state constitution as it writes new laws, then it has much wider latitude than the legislature of a state that has a rigid constitution. Furthermore, in a government where the judiciary exercises a reliable check on the other branches, policies cannot be implemented unless all separate bodies agree, which makes use of corrupt practices to pass a law very costly. I thus derive my second testable hypothesis. *States or nations where constitutions are more rigid, i.e., it is more costly to propose amendments from a legislative perspective, should experience lower corruption.*

[3] The foundation for exercising judicial review in the United States is considered to be *Marbury v. Madison* 5 U.S. 137 (1803), a decision pronounced by Chief Justice John Marshall.

CHAPTER FOUR

EVIDENCE FROM THE UNITED STATES

In order to test my hypotheses, I have to make a decision about how to measure corruption. This is an unsettled issue in the literature. Typically, researchers use either survey-based measures or measures derived from data on criminal convictions. Both types of measures have their drawbacks. Survey-based measures are clearly subjective. Thus, one can always question their accuracy. There is no way to know whether the participants in the survey are biased, or whether they are sufficiently knowledgeable to express an informed opinion.

Convictions-based measures, on the other hand, are clearly a noisy proxy for the true number of corrupt officials. Not every corrupt official is exposed, tried, and convicted for his or her corrupt acts. Previous studies that use convictions-based measures simply ignore this fact. In this paper, I develop an empirical specification that explicitly recognizes the difference between the unobserved number of corrupt officials and the observed number of convictions. My approach is presented below.

4.1. Empirical Strategy

Let n_i be the number of corrupt government officials in state i. The value of n_i is inherently unobservable. Suppose, however, that some of these officials are revealed to be corrupt through the judicial process (i.e., indicted and convicted for corrupt acts). To model this process, I assume that every corrupt official faces some risk of being revealed as corrupt. Specifically, I assume that each official is revealed to be corrupt with some

probability p_i that does not vary across individuals *within* a given state. This allows me to express the number of officials revealed to be corrupt in state *i* as

$$y_i = \sum_{j=1}^{n_i} c_j, \tag{1}$$

where c_j is equal to one with probability p_i and zero with probability $1 - p_i$. In other words, I treat the observed number of corrupt officials in state *i* as the outcome of n_i independent Bernoulli trials with the probability of success (conviction for corrupt acts) equal to p_i in each trial.

The next step is to specify the distribution of n_i. As a starting point, I consider a specification in which n_i is assumed to have a Poisson distribution with parameter μ_i. This is a logical starting point because it would be reasonable to consider a Poisson model for n_i if I could somehow observe this variable.[4] It also has the advantage of being very tractable because it implies that the distribution of y_i is Poisson with parameter $\lambda_i = p_i\mu_i$ (see section 1.1.4 of Cameron and Trivedi, 1998). Hence, I obtain a model in which the expected number of officials convicted for corrupt acts is just the expected number of corrupt officials multiplied by the probability of being revealed as corrupt through the judicial process.

The final step is to specify how p_i and μ_i vary across states. I assume that

$$\ln p_i = \delta + \alpha x_i, \text{ and} \tag{2}$$

$$\ln \mu_i = \beta z_i, \tag{3}$$

[4] Unlike the classical linear regression model, my model assigns a non-zero probability at non-negative integer values only. This reflects the discrete nature of the dependent variable: number of corruption convictions.

where x_i is a vector of covariates that I believe should capture variation in law enforcement effectiveness across states (per capita expenditures on police, per capita number of prosecutors, etc.) and z_i is a vector of covariates that I believe should capture variation in the level of corruption across states (judicial independence, constitutional review, racial fractionalization, etc.).[5] The final specification is:

$$\ln \lambda_i = \delta + \alpha x_i + \beta z_i \tag{4}$$

Some might object to this specification by arguing that μ_i is likely to depend on p_i, i.e., the number of officials who engage in corrupt acts is likely to depend on the probability of being convicted and punished. To see that this does not necessarily cause a problem, suppose I change the specification for μ_i as follows:

$$\ln \mu_i = \beta z_i + \gamma \ln p_i \tag{5}$$

This yields a complete specification of the form:

$$\ln \lambda_i = \delta^* + \alpha^* x_i + \beta z_i, \tag{6}$$

where $\delta^* = \delta(1 + \gamma)$ and $\alpha^* = \alpha (1 + \gamma)$. Since we would expect γ to be negative, the result is to reduce the magnitude and potentially change the sign of the coefficients in the specification for p_i. Although I may be less likely to find significant effects associated with the covariates in x_i under these circumstances, allowing μ_i to depend on p_i, does not alter the expected sign of the covariates z_i, and it is these variables that are of primary interest in my analysis.

[5] Notice that I do not include a constant in the specification for μ_i because it cannot be identified separately from δ. Similarly, I do not constrain p_i to lie between zero and one because its scale cannot be identified separately from the scale of μ_i.

This Poisson model is useful for illustrating my general approach to the estimation problem. However, it neglects unobserved heterogeneity, which may be problematic. I will therefore use a more general specification for the empirical analysis in the paper. Instead of assuming that n_i has a Poisson distribution with parameter μ_i, I assume that it has a Poisson distribution with parameter $\mu_i v_i$ where v_i is a random unobserved heterogeneity term due to specification error such as unobserved omitted exogenous variables. With v_i given, the previous discussion implies that the conditional distribution of y_i is Poisson with parameter $\lambda_i = p_i \mu_i v_i$. To complete the specification, I assume that v_i has a gamma distribution and integrate out to obtain the marginal distribution of y_i (see section 4.2.2 of Cameron and Trivedi, 1998). It is negative binomial with mean $m_i = p_i \mu_i$.

4.2. Models

La Porta et al. (2004) look at the impact of judicial independence and constitutional review on economic and political freedom across countries by estimating two linear regression models. The first model examines the effect of judicial independence measures, and the second examines the effect of constitutional review measures. I use a similar strategy to analyze the corruption data. First, I estimate a negative binomial regression model that examines the effect of judicial independence on corruption convictions. Next, I estimate a negative binomial regression model that examines the effect of constitutional review on corruption convictions. I conduct the

analysis using data for 49 states for the years 1996-2005.[6] In each case, the dependent variable is the number of public officials (local, state, and federal) convicted in federal court of a corruption-related crime, i.e., a crime involving abuse of public trust by government officials.

4.2.1. Judicial Independence

To estimate a negative binomial model, I need to specify how the number of corruption convictions in state *i* is related to the judicial independence measures, the law enforcement effectiveness measures, and the covariates used as control variables. This is accomplished by specifying the mean of the negative binomial distribution, m_i. I use the following specification for the mean:

(7) $$\ln m_i = \ln(\textit{Full Time Government Employees})_i + \beta_0 + \beta_1 \ln(\textit{Judge Pay/Public Official Pay})_i + \beta_2(\textit{Merit Plan Selection})_i + \beta_3(\textit{Other Selection})_i + \beta_4(\textit{Term Length})_i + \beta_5 \ln(\textit{FBI Agents})_i + \beta_6 \ln(\textit{Police protection})_i + \beta_7(\textit{Racial Fractionalization})_i$$

Note that I use the number of *Full Time Government Employees* as the exposure variable for the model.[7] My choice of variables to measure judicial independence reflects a number of considerations. Article 3 of the United States Constitution provides for an independent judicial branch.[8] However, significant variation exists across states

[6] I exclude the state of New Mexico from my analysis because data on the number of corruption convictions was not available for all of the years 1996 to 2005.

[7] That is, the logarithm of *Full Time Government Employees* is used as an explanatory variable but its coefficient is constrained to equal one. This has the same effect as dividing the number of corruption convictions by the number of full time government employees.

[8] Article 3 states that "Judges, both of the supreme and inferior courts shall hold their offices during good Behavior, and shall at stated Times, receive for their Services, a Compensation, which shall not be

pertaining to the three major constituents of judicial independence: remuneration of judges, method of selection, and term length.[9] I exploit this variation in my empirical analysis. Four variables, *Judge Pay/Public Official Pay, Merit Plan Selection, Other Selection* and *Term Length* are used to account for the independence of the state judiciary. *Judge Pay* and *Term Length* pertain to the chief justice of the court of last resort in each state, while *Merit Plan Selection* and *Other Selection* relate to the selection of all judges of the Supreme Court.

The remuneration variable, *Judge Pay/Public Official Pay*, is expected to be negatively correlated with the number of corruption convictions per capita. Common observation tells us that judges' monetary rewards often do not approach the salaries they could earn in other jobs, such as practicing as private lawyers or even teaching as university professors. Susan Rose-Ackerman (1999) notes that the independence of judges is seriously threatened when they are underpaid and work under conditions much worse than lawyers and their assistants. Inadequate pay decreases the expected cost of accepting bribes. Judges' pay, relative to that of the average public official, provides an indication of the importance attached to the integrity of the judiciary.

There are five distinct procedures used to select judges across the United States: partisan election, nonpartisan election, legislative appointment, governor appointment, and an appointment-election hybrid named merit plan selection. There are six states in which judges run as members of a political party, 15 states in which the elections are

diminished during their Continuance in Office." However, the United States Constitution does not speak to the organization and structure of the judiciary at the state level.

[9] Feld and Voigt (2003) use these three variables along with others, such as case allocation rules, stability of institutional arrangements within which courts operate or requirement of publishing the decisions of courts, in order to construct an index of *de jure* judicial independence across 71 countries around the world.

nonpartisan, i.e., judges do not reveal their political affiliation,[10] and seven states in which judges are selected by appointment of the governor or of the legislature. This leaves 21 other states in which judges are selected by merit plan. These methods of judicial selection did not change very much across states over the 1996-2005 period.[11]

I will briefly explain some of the main aspects of these selection methods below. Hanssen (2004) presents a history of the origins and evolution of judicial selection methods after the American Revolution. He argues that the first state constitutions made judges highly accountable to legislatures, the heroes of the Revolution, which were regarded as "more reliable representatives of the people." This was soon to be changed as it became apparent that a government dominated by the legislature needs an effective third party to monitor and limit legislative abuses. State constitutions were rewritten providing for judicial elections (circa 1850) intending to protect the courts from the legislature and thus to make them more independent. Judicial partisan elections also proved to be disappointing since they were subject to manipulation, and thus there was a movement towards nonpartisan election (circa 1910) and the merit plan (1913). Hanssen (2004, p.431) concludes that "Each new procedure was developed in order to increase the independence of state judges and was then superseded by a newer procedure, owing in large part to unanticipated agency problems."

[10] A Supreme Court decision, *Republican Party of Minnesota v. White 536 U.S. 765(2002)* ruled that the requirement of judges not to discuss political issues is unconstitutional, and thus gave judges the right to tell voters about their positions on specific political and legal issues that might come before them.

[11] In 2000, Arkansas adopted Amendment 80 which changed the judicial selection method from partisan to nonpartisan elections. Furthermore, in 2002, North Carolina passed the Judicial Campaign Reform Act which established nonpartisan elections for Supreme Court judges effective 2004. However, these changes do not affect the significance of the results.

Partisan elections embody an inherently political process by requiring judges to run for office in the same way as politicians. This may force judges to solicit campaign contributions from special interest groups, political parties and even lawyers or possible litigants. This results in dependent judges who may feel obliged to be responsive to the wishes of those who contributed to their election.

Merit selection[12] was proposed both as a means of separating judges from politics and as a way to call attention to professional criteria for selecting judges, such as qualifications, experience, education, training and age. Under this procedure, a nominating commission comprised of both lawyers and non-lawyers present the governor with a list of nominees from which to select an appointee. When the stated term expires, usually after a year, the judge stands for reelection with no party affiliation and no opponent. The judge who is retained serves the prescribed term of office. It seems reasonable to believe that judges selected through this process will have more time to spend on the matters that are brought before them than judges who stand for election.

There is a general consensus in the existing literature that judges selected through partisan elections are the least independent, while judges selected through the merit plan procedure are the most independent, i.e., insulated from political pressure. A number of previous studies provide evidence pointing to the inferiority of selection through partisan elections.[13] Thus, Hall (1987), in a Louisiana case study, shows that electoral incentives

[12] Merit selection was endorsed by the ABA in 1937. It is also called the "Missouri plan," Missouri being the first state to adopt it in 1940.

[13] Criticism of judicial election dates back to 1835, when Alexis de Tocqueville (1954, p. 289) wrote: "Some other state constitutions make the members of the judiciary elective, and they are even subjected to frequent reelections. We venture to predict that these innovations will sooner or later be attended with fatal

discourage judges from dissenting on highly controversial issues. Hall (2001) finds that, when deciding on death penalty cases, elected judges who have views contrary to those of the voters and the court majority, tend to vote with the majority rather than dissent, to strategically minimize electoral opposition. Tabarrok and Helland (1999) find evidence that partisan judicial elections are associated with larger trial awards on average, especially so in decisions against out of state businesses, supporting their argument that partisan elected judges have an incentive to redistribute wealth from out-of-state defendants (nonvoters) to in-state plaintiffs (voters). Hanssen (2002), using a sample of 37 state courts, argues that merit plan procedures render judges more independent of political pressure, which leads to more disputes that litigate rather than settle. Specifically, he finds that merit plan selection is associated with 18% to 32% more filings in state supreme courts between 1985 and 1994. Besley and Payne (2003) show that there are fewer employment discrimination filings per capita in states in which judges are appointed, and Sobel and Hall (2007) show that the partisan nature of elections is the primary reason for lower judicial quality in states that use elections to select their judges.[14]

Following Hanssen (2004), I create three dummy variables for *Merit Plan Selection*, *Other Selection* (legislative appointment, governor appointment, or nonpartisan election), and *Partisan Election Selection*. I use the *Partisan Election Selection* dummy as baseline, i.e., it is not included in the model. For considerations described above it

consequences; and that it will be found out at some future period that by thus lessening the independence of the judiciary they have attacked not only the judicial power, but the democratic republic itself."

[14] To measure the quality of judicial systems, Sobel and Hall (2007) use a survey-based index of state legal liability systems conducted by the United States Chamber of Commerce.

follows that the signs for the coefficients on the two other selection variables should be negative, suggesting that, by switching to selection procedures that endow judges with greater independence, states should lower the corruption level.

The variable *Term Length* measures the period of time in years for which the chief justice of the states' Supreme Court is initially selected.[15] Alexander Hamilton (1788, p.413) notes that "nothing can contribute so much to [judiciary's] firmness and independence, as permanency in office." Still, only the state of Rhode Island grants life tenure to judges. Massachusetts and New Hampshire allow judges to serve until the age of 70. There are two reasons in favor of lengthier judicial terms. The first is that longer terms shield judges from political pressure and electoral accountability. The second is the opportunity for human capital accumulation: arbitrary discretion in courts is more likely to be avoided if justices have experience and a sound knowledge of legal rules and precedents. Based on these arguments I expect a negative correlation between *Term Length* and my dependent variable.

I include two variables to capture the variation in law enforcement effectiveness across states, which accounts for the probability that crimes will be detected. These variables are the number of *FBI agents* in place and state and local government expenditures on *police protection.* A larger number of FBI agents per capita or higher expenditures on police protection per capita are expected to increase the efficiency of uncovering criminal behavior and deterring corrupt activities, thus one might hypothesize

[15] I also fitted the model using the term length of all judges at the Supreme Court level. This change did not affect the significance of the results.

that the sign for the coefficients on both these variables should be negative.[16] However, under the generalization presented in section 4.1., equation (6), the sign for the coefficients on the law enforcement variables is ambiguous.

Due to the small number of observations I am reluctant to include numerous control variables. However, one variable that has been consistently shown to influence corruption is *Racial Fractionalization*. The literature suggests that ethnic or racial heterogeneity increases corruption or reduces people's desire to oppose corruption. Glaeser and Saks (2004) argue that if a political leader allocates resources to the ethnic/racial group to which he belongs, members of that group will continue to support him, even though he is corrupt. Other arguments in the same line are that (i) as ethnic heterogeneity increases governments are less efficient, thus the quality of public goods falls and political freedom is lower [Mauro (1995), Easterly and Levine (1997), La Porta et. Al (1999)] or (ii) increased ethnic or racial heterogeneity leads to conflict, and thus slows economic development and indirectly increases the level of corruption (Treisman, 2000). I follow the approach of Glaeser and Saks (2004) and compute an index of racial fractionalization using the formula: $1-\Sigma s_i^2$, where s_i is the racial share (white, black, Asian, Hispanic, other). The literature mentioned above suggests that the sign on the *Racial Fractionalization* measure should be positive.

[16] We may observe a larger number of FBI agents per capita in one state versus another because that state places an emphasis on law enforcement. However, the higher number of FBI agents per capita could also represent a response to a higher level of criminal activity. The same argument is brought by Campbell et.al (2008) who examine the influence of corruption on a state's choice on eminent domain restrictions: more corrupt governments would be unlikely to restrict their own power, but with more corrupt local officials state policymakers may be under greater pressure to attack the eminent domain abuse. The authors find no relation between corruption rate and the decision of a state to update its eminent domain laws after the Kelo decision.

4.2.2. Constitutional Review

To examine the impact of constitutional review on the expected number of corruption convictions, I replace the judicial independence measures with measures of constitutional rigidity. This yields the following specification for the mean of the negative binomial distribution:

(8) $\ln m_i = \ln(\textit{Full Time Government Employees})_i + \beta_0 + \beta_1(\textit{Legislative Amendments})_i + \beta_2(\textit{Legislative Amendments squared})_i + \beta_3(\textit{Initiative})_i + \beta_4(\textit{Convention})_i + \beta_5\ln(\textit{FBI Agents})_i + \beta_6\ln(\textit{Police protection})_i + \beta_7(\textit{Racial Fractionalization})_i$

As in the case of judicial independence, my choice of variables to measure constitutional rigidity reflects a number of considerations. There are three major methods used to amend or revise state constitutions over the past years: legislative amendments, constitutional initiatives, and constitutional conventions.[17]

Legislative amendments are constitutional amendments proposed by the legislature, including amendments proposed by a constitutional revision commission. Legislatures in all states are allowed to propose amendments and every state except Delaware requires that constitutional amendments proposed by the legislature be submitted to the voters for final approval or rejection. Historically, this is the principal method for initiating amendments. State legislatures proposed 974 constitutional amendments over the 1996-2005 period. This accounted for 85.5% of the proposed

[17] I do not include constitutional commissions in my analysis. Constitutional commissions are advisory bodies established to assist the governor, the legislature or a convention on constitutional matters. The Utah Revision Commission is the only commission established on a permanent basis since 1977. Other commissions that were created and operated over the 1996-2005 period were Alabama Citizens' Constitution Commission (2003), Florida Constitution Revision Commission (1998-2000), California, Nebraska, and New Mexico Constitution Revision Commission (1996-1998) (source: The Book of the States, various years).

constitutional changes and 90.8% of those adopted. I include in my model the variable *Legislative Amendments,* which represents the percentage of votes required in the state legislature to propose constitutional amendments. In states that make it less costly to change the constitution, i.e., those which require simple majority as opposed to supermajorities, legislatures are more likely to enact amendments that benefit themselves or special interest groups. On this matter, Anderson et al. (1990, p. 90) write:

> …although amending the constitution is more costly and time-consuming than enacting legislation, a constitutional provision generally provides a more durable form of protection to an interest group than is possible through simple legislative action.

Since in a checks and balances system the strength of the political majority would be offset by judicial review I expect a negative relationship between the variable *Legislative Amendments,* which is also a proxy for constitutional rigidity, and corruption. However, I do not necessarily expect a linear relation between the percentage of legislative votes that is required for proposing amendments and constitutional rigidity. Any supermajority vote, such as 60% or 67% represents a much higher hurdle than a simple majority vote, but there may be a diminishing marginal effect from requiring the approval of more than 60% of the legislators. Therefore I include both this variable and its square in the model to capture nonlinear effects.

The constitutional initiative process, available in 18 states, allows citizens to propose amendments to the constitution, without the consent of their elected representatives. Among the 18 states, 16 have the direct initiative and two (Massachusetts and Mississippi) have the indirect initiative. The direct initiative allows a proposed

measure to be placed on the ballot after a specific number of signatures have been obtained on a citizen petition, while the indirect initiative requires submitting the measure to the legislature for a decision prior to placing it on the ballot.[18]

The importance of the initiatives process in the United States has been documented in studies by Romer and Rosenthal (1979), who see initiatives as the key to breaking the legislature's monopoly on making policy proposals, which is likely to result in different policy outcomes, Kalt and Zupan (1990), who argue that initiatives may eliminate informational asymmetries between voters and their representatives, Matsusaka (1992), who emphasizes that in the presence of information imperfections, initiatives can lead to policy outcomes distinct from those the legislature would choose, and Matsusaka (1995), who shows that states with initiatives reduce government spending, shift the spending from state to local governments, and adopt revenue structures that are more dependent on fees and less on taxes. In addition, Matsusaka (2004) finds that initiatives serve the interests of the many rather than the few. He argues that (i) initiatives provide voters with choices, hence they are not forced to accept the policies implemented by the legislature, and (ii) even though interest groups and wealthy individuals rely on initiatives to promote their interests, the ability of voters to sort out bad policies from good policies overturns the balance in the favor of the majority. Similar to the judicial review, the initiatives process provides a check on the legislature by allowing citizens to overturn policies contrary to their interests. Therefore I expect a negative sign on *Initiative*.

[18] This information comes from the Book of the States, 2006.

The constitutional convention is a method of drafting a new constitution or revising an existing one. No convention has assembled during the period of time studied, 1996 through 2005. Specifically, the last convention convened in 1986, in Rhode Island. The variable *Convention* is a dummy for the states that provide for conventions in the constitution (40 states in total). Since the convention is a method for making constitutional changes, states that provide for conventions have less rigid constitutions, ceteris paribus. Therefore my hypothesis predicts that this variable should have a positive effect on corruption.

The same set of control variables is used here as in the preceding model relating corruption to judicial independence.

4.3. Data

The corruption data were obtained from the Department of Justice's "Report to Congress on the Activities and Operations of the Public Integrity Section." I combine the information published in the 1999-2005 reports to determine the total number of convictions by state for a ten-year period, 1996-2005. The crimes that are investigated and reported by the Public Integrity Section include election crimes such as vote fraud, campaign-finance violations, and political shakedowns, conflicts of interest, such as misconduct proscribed by one of the federal conflict of interest statutes, or obstruction of justice. Table 1 and Table 2 present the ten states that have the most convictions and the ten states with the least corruption convictions per state government employee and per

state resident, respectively, over the entire sample period. Descriptive statistics for all variables are reported in Table 3.

Table 1. States with Most and Least Corruption Convictions per State Government Employee

Most Convictions		Fewer Convictions	
State	Convictions per 1000 government employees	State	Convictions per 1000 government employees
North Dakota	1.390	Vermont	0.327
Louisiana	1.186	South Carolina	0.323
Hawaii	1.181	Colorado	0.301
Mississippi	1.096	Utah	0.292
Florida	0.979	Minnesota	0.237
Montana	0.978	Kansas	0.232
Pennsylvania	0.968	New Hampshire	0.221
Kentucky	0.944	Iowa	0.153
Illinois	0.916	Oregon	0.107
Ohio	0.893	Nebraska	0.100

Note: Total corruption convictions over the years 1996-2005 per 1,000 full time government employees.

Table 2. States with Most and Least Corruption Convictions per State Resident

Most Convictions		Fewer Convictions	
State	Convictions per 100,000 residents	State	Convictions per 100,000 residents
North Dakota	0.845	South Carolina	0.189
Louisiana	0.735	Washington	0.173
Mississippi	0.711	Colorado	0.156
Hawaii	0.648	Utah	0.153
Alaska	0.605	Kansas	0.148
Montana	0.573	Minnesota	0.132
Kentucky	0.518	New Hampshire	0.110
South Dakota	0.491	Iowa	0.092
Florida	0.472	Nebraska	0.063
Ohio	0.469	Oregon	0.054

Note: Total corruption convictions over the years 1996-2005 per 100,000 state residents.

Table 3. Descriptive Statistics

Variable	Description	Obs.	Mean	Std. Dev.	Min	Max	Source
Corruption Convictions	Number of local, state, and federal public officials convicted in federal court of a corruption related crime (total)	49	181.898	214.847	11	812	USDOJ
Ln(Judge Pay/ Public Official Pay)	Remuneration of the chief justice of the state court of last resort divided by the average pay of public officials in the state	49	1.182	0.134	0.920	1.498	NCSC
Merit Plan Selection	Dummy variable equals 1 if the chief judge of the state court of last resort is appointed according to the merit plan procedure	49	0.428	0.500	0	1	AJS
Other Selection	Dummy variable equals 1 if the chief judge of the state court of last resort is selected by nonpartisan elections, gubernatorial appointment, or legislative appt.	49	0.448	0.502	0	1	AJS
Partisan Election Selection	Dummy variable equals 1 if the chief judge of the state court of last resort is selected by partisan election	49	0.122	0.331	0	1	AJS
Term Length	The length of term of Supreme Court chief justice(in years)	49	7.102	6.596	1	30	AJS & BOS
Legislative Amendment	Legislative votes required for approval of proposed legislative amendments (percent)	49	0.597	0.073	0.51	0.75	BOS
Initiative	Dummy variable equals 1 if the state constitution allows for initiative	49	0.367	0.487	0	1	BOS
Convention	Dummy variable equals 1 if the state allows constitutional conventions	49	0.816	0.391	0	1	BOS
Racial Fractionalization	Racial heterogeneity measure	49	0.285	0.138	0.055	0.645	U.S. Census
Ln(Police Protection)	State and Local Government expenditures on police protection per capita (in thousands)	49	5.140	0.254	4.529	5.717	U.S. Census

Continued on the next page

Table 3 (continued)

Variable	Description	Obs.	Mean	Std. Dev.	Min	Max	Source
Ln(FBI agents)	Number of FBI agents per 100,000 residents, by state	49	3.125	0.549	1.722	4.309	US D.O.J.
Full-time Government Employees	Number of full time government employees, by state	49	305205.6	324463	35725.7	1671374	U.S. Census
Population	Population by state, in thousands	49	5731.391	6277.93	496.437	34180.87	U.S. Census
Northeast Region	Dummy variable equals 1 for the states in the Northeast region of US	49	0.204	0.407	0	1	U.S. Census
Ln(GSP per capita)	Gross State Product per capita	49	10.382	0.171	10.026	10.856	U.S. Census
High School	Percent state residents who completed high school or more	49	83.749	4.076	76.057	90.285	U.S. Census
Urban Population	Percent state residents who live in urban area	49	71.625	15.051	38.179	94.443	U.S. Census
Percent 65 or older	Percent state residents with the age of 65 or older	49	12.641	1.888	5.283	17.703	U.S. Census
Unemployment Rate	Unemployment rate	49	4.691	0.868	2.91	7.02	U.S. Census

Note: Data are averaged over the years 1996 – 2005.
USDOJ: United States Department of Justice
NCSC: National Center of State Courts
AJS: American Judicature Society
BOS: The Book of the States

The main focus of the econometric model is on the existence of significant relationships between corruption and (i) the variables that measure the degree of judicial independence, or (ii) the measures of constitutional rigidity. Since the independent variables exhibit little variation over time, I use the average of these variables over the period 1996-2005. The dependent variable is total corruption convictions during the same

period. I use total rather than average corruption convictions to avoid having to deal with fractional values in the negative binomial model. This is innocuous since averaging the dependent variable would only change the magnitude of the coefficients, not their statistical significance.

Figure 1 and 2 present histograms of the number of corruption convictions. The data are strongly skewed to the right, thus OLS regressions are clearly inappropriate.

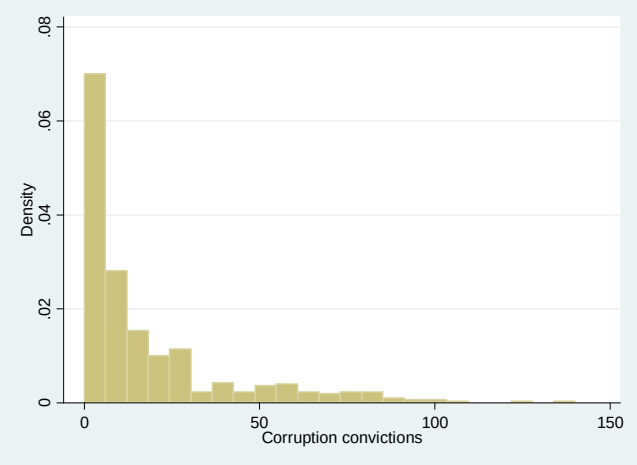


Figure 1. Distribution of corruption convictions (490 observations from 1996-2005).

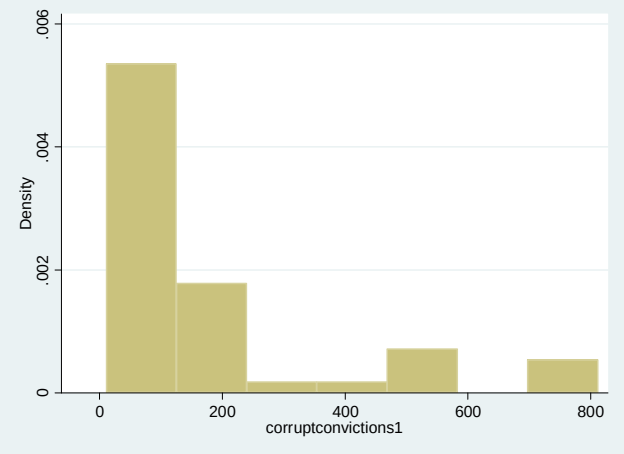


Figure 2. Distribution of corruption convictions (49 observations. Averaged values over 1996-2005).

Since I am examining count data, it might seem natural to start by fitting a Poisson model. However, this model has the property of equidispersion (equality of mean and variance). Table 4, which presents a detailed description of the dependent variable, shows that the variance of the *Corruption Convictions* variable is about 255 times greater than the mean. This leads me to believe that the Poisson model is inappropriate.

Table 4. Detailed Description of the *Corruption Convictions* Variable

Corruption convictions (totals by state)

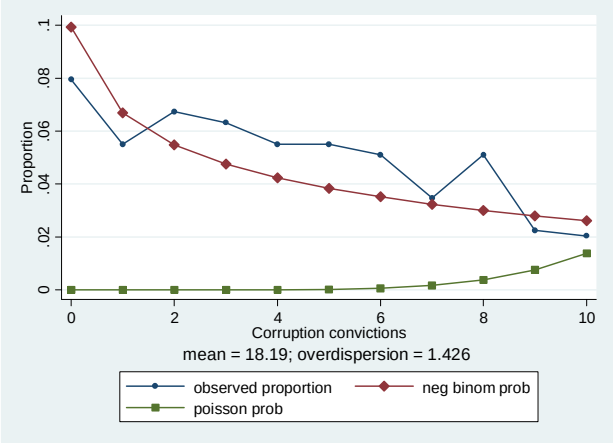
	Percentiles	Smallest		
1%	11	11		
5%	14	12		
10%	19	14	Obs.	49
25%	40	19	Sum of Wgt.	49
50%	95	Largest	Mean	181.898
75%	209	570	Std. Dev.	214.8472
90%	569	759	Variance	46159.3
95%	759	793	Skewness	1.721
99%	812	812	Kurtosis	4.938

To reinforce this argument, I perform a test for overdispersion by estimating an auxiliary regression (Cameron and Trivedi 2005, p.671) and conducting a one-sided t-test for the slope coefficient. The results, which are reported in Table 5, reject the equality of the mean and variance. In Figure 3, I graph the *Corruption Convictions* variable against a Poisson distribution with the same mean and a Negative Binomial distribution with the same mean and variance. The negative binomial distribution is clearly a better fit to the data.

Table 5. Test of Overdispersion

	Z_Corruption
	OLS regression, no constant
Lambda_Corruption	1.754***
	(3.06)
F-statistic	9.38
Number of Observations	49

Notes: The null hypothesis is no overdispersion. I test this hypothesis by estimating an auxiliary simple regression model with no intercept. The dependent variable is $((Y_i-\mu\_hat_i)^2-Y_i)/\mu\_hat_i$ and the independent variable is μ_hat_i . No overdispersion implies that the slope coefficient is zero. I report the estimated slope and the t-statistic for the one-sided test in parentheses. *** indicates significant at the 1 % level. Lambda_Corruption (μ_hat_i) represents the estimates of the variance of the dependent variable, *Corruption Convictions* (Y_i), after fitting the model using a Poisson regression. Z_corruption was constructed as $((Y_i-\mu\_hat_i)^2-Y_i)/\mu\_hat_i$.



Note: 490 observations over 1996-2005.

Figure 3. Observed number of corruption convictions against a Poisson distribution with the same mean and a Negative Binomial distribution with the same mean and variance.

Based on the above arguments and for reasons detailed in section 4.1, I conduct my analysis using a generalized negative binomial model. This is just a generalization of the negative binomial regression which allows the variance of the dependent variable to be a function of explanatory variables. The corruption data come from four different regions of the United States (Northeast, Midwest, South, and West). Since these regions

differ among themselves in many aspects, and especially on the basis of population density, it is reasonable to believe that the variance could be different depending on the region. To allow for this possibility I investigated specifications in which the variance of the dependent variable is explained by regional dummies. Based on the estimation results, it appears that the Northeast region has a substantially lower variance than the other regions (the coefficients for the other regions are not statistically significant). Therefore I include a Northeast dummy in the variance equation for all models considered.

4.4. Estimation Results

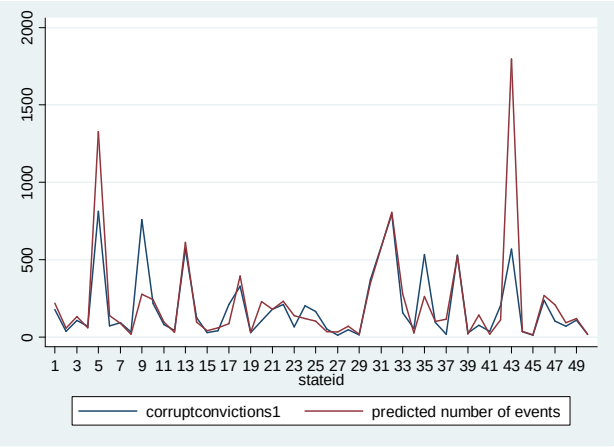
4.4.1. Judicial Independence

Table 6 reports the observed total number of corruption convictions by state for the ten-year period 1996-2005. For comparison, it also reports the number of convictions predicted by the judicial independence model. It is clear that the model explains a substantial fraction of the state-level variation in corruption convictions. The correlation between the observed and predicted numbers of convictions is 0.77, and the p-value for a test of the null hypothesis that the observed and predicted numbers of convictions are independent (i.e., Spearman rank correlation test) is zero to five decimal places (the Spearman rank correlation coefficient is 0.88). This is also clear from Figure 4, which plots the observed and estimated convictions by state.

Table 6. Observed and Predicted Number of Corruption Convictions

State	Observed Convictions	Predicted Convictions	State	Observed Convictions	Predicted Convictions
Alabama	177	218	Montana	52	35
Alaska	38	55	Nebraska	11	33
Arizona	106	131	Nevada	46	69
Arkansas	68	59	New Hampshire	14	17
California	812	1327	New Jersey	371	346
Colorado	70	137	New York	793	806
Connecticut	92	87	North Carolina	156	278
Delaware	33	18	North Dakota	54	26
Florida	759	276	Ohio	533	261
Georgia	217	240	Oklahoma	95	98
Hawaii	81	96	Oregon	19	114
Idaho	43	30	Pennsylvania	528	523
Illinois	569	611	Rhode Island	25	20
Indiana	125	98	South Carolina	76	142
Iowa	27	39	South Dakota	37	17
Kansas	40	59	Tennessee	206	112
Kentucky	210	86	Texas	570	1797
Louisiana	328	393	Utah	35	38
Maine	27	29	Vermont	12	14
Maryland	105	228	Virginia	235	267
Massachusetts	178	178	Washington	103	206
Michigan	209	231	West Virginia	69	92
Minnesota	65	137	Wisconsin	109	119
Mississippi	202	119	Wyoming	19	15
Missouri	164	100			

Notes: Average observed number of corruption convictions over 1996-2005 vs. number of corruption convictions predicted by the generalized negative binomial model with judicial independence measures. The correlation between observed and predicted numbers of convictions is 0.77. The p-value for a test of the null hypothesis that the observed and the predicted number of convictions are independent (i.e., Spearman rank correlation test) is zero to five decimal places. The Spearman rank correlation coefficient is 0.88.



Note: 49 observations. Averaged values over 1996-2005.

Figure 4. Observed number of corruption convictions and number of convictions predicted by the Generalized Negative Binomial model, by state.

Next, consider the estimation results for the judicial independence model presented in Table 7. In general, the results are consistent with my hypothesis that states where judges are more independent experience lower levels of corruption. The estimated coefficients for *Judge Pay/Public Official Pay*, *Merit Selection* and *Other Selection* have the correct sign and they are all statistically different from zero at the 1% significance level. The variable *Term Length* also has the correct sign but is not significant at standard levels.

For the variables that are statistically significant, the marginal effects are substantial. First consider the two dummy variables, *Merit Plan Selection* and *Other Selection*. The estimates indicate that replacing the partisan election method of selecting judges with the merit plan method would decrease the number of corruption convictions by approximately 95 over a ten-year period. Similarly, a change from a partisan election selection method to nonpartisan election, gubernatorial or legislative appointment would

decrease the number of corruption convictions by approximately 75 over a ten-year period. Second, if the ratio of judge pay to public official pay increases by 10% the expected number of corruption convictions decreases by approximately 18.4 over a ten-year period.

The results with respect to the controls for law enforcement effectiveness are mixed. The coefficient on the variable measuring state and local expenditures on police protection per capita has a negative sign but is not statistically significant. The coefficient on the variable *FBI agents* is significant at the 5% significance level and has a positive sign.

Although the *Racial Fractionalization* variable does not play a role in my hypothesis the coefficient has the sign expected based on the results of previous studies, suggesting that by increasing racial heterogeneity by one percentage point the number of corruption convictions increases by approximately 2.3 over a ten-year period.

4.4.2. Constitutional Rigidity

Now consider the results on constitutional review presented in Table 8. Once again the results are consistent with my hypothesis that states with more rigid constitutions should experience less corruption. The coefficients for the variable *Legislative Amendments* and its square are both significant at the 1% level. *Legislative Amendment* has a negative sign and its square has a positive sign. To properly interpret this finding I need to look at the combined effect of these variables on predicted corruption levels. The combined effect implies that as the required percentage of votes for approval of amendments increases, corruption decreases. Most of this effect is

attributable to the change from a simple majority to a supermajority of 60%. The effect of going from a supermajority of 60% to one of 67% is not nearly as large.

The coefficient on the dummy variable for *Initiative* is significant at the 1% level and has the predicted sign. The estimate indicates that changing the constitution to allow for voter initiatives should reduce the number of corruption convictions by approximately 24 over a ten-year period. The coefficient on the dummy variable for *Convention* is also significant at the 1% level. Its sign is not as predicted, however. According to my hypothesis, a more rigid constitution should reduce corruption, which corresponds to a positive sign on the *Convention* variable. The negative sign may indicate that the provision for constitutional convention actually acts as a check on the power of legislature. Susan Rose-Ackerman (1999) mentions the importance of the public as a check on the arbitrary exercise of power by the government. In 14 of the 40 states that allow conventions, voters can reject a convention call. It follows that in order to issue a successful convention call, the amendments brought to the constitution have to benefit the majority of voters.

The results for the law enforcement variables are similar to those reported in Table 7. The estimated coefficients on the variable *FBI agents* and on the variable measuring state and local expenditures on police protection have the same signs as before and are statistically significant at the 10% level and the 1% level, respectively. Also, the estimated coefficient for the control variable *Racial Fractionalization* is positive and significant at the 1% level, as expected.

Table 7. Effect of Judicial Independence on Corruption in the United States

Variables	Dependent Variable Corruption Convictions	
	Generalized Negative Binomial	
Exposure variable	Full Time Government Employees	
	Coeff. (z)	Marginal Effects (*dy/dx*)
Ln(Judge Pay/Public Official Pay)	-1.722***	-184.546***
	(-3.57)	(-3.43)
Merit Plan Selection	-0.915***	-95.085***
	(-10.02)	(-11.62)
Other Selection Procedure	-0.714***	-75.395***
	(-9.12)	(-9.61)
Term Length	-0.001	-0.191
	(-0.44)	(-0.44)
Ln(FBI Agents)	0.209**	22.494**
	(2.48)	(2.40)
Ln(Police Protection)	-0.179	-19.207
	(-0.61)	(-0.60)
Racial Fractionalization	2.139***	229.281***
	(3.19)	(2.99)
Constant	-5.089***	-
	(-3.07)	-
lnalpha		
Northeast Region	-13.707*	-
	(-1.76)	-
Constant	-1.154***	-
	(-4.72)	-
Log-likelihood	-250.053	-
LR chi2(7)	29.35	-
Number of Observations	49	-

Notes: {***, **,*} indicates significant at 1, 5, and 10 percent level, respectively.

Table 8. Effect of Constitutional Review on Corruption in the United States

Variables	Dependent Variable Corruption Convictions	
	Generalized Negative Binomial	
Exposure variable	Full Time Government Employees	
	Coeff. (z)	Marginal Effects (*dy/dx*)
Legislative Amendment	-19.768***	-2220.682***
	(-3.00)	(-3.10)
Legislative Amendment squared	15.589***	1751.213***
	(2.82)	(2.91)
Initiative	-0.219***	-24.000***
	(-3.53)	(-3.53)
Convention	-0.404***	-52.015***
	(-7.37)	(-7.39)
Ln(FBI Agents)	0.162*	18.212*
	(1.79)	(1.79)
Ln(Police Protection)	-0.810***	-91.043**
	(-3.83)	(-3.44)
Racial Fractionalization	2.618***	294.167***
	(4.69)	(4.33)
Constant	2.026	-
	(0.89)	-
lnalpha		
Northeast Region	-15.343***	-
	(-6.73)	-
Constant	-1.112***	-
	(-4.58)	-
Log-likelihood	-251.866	-
LR chi2(7)	25.72	-
Number of Observations	49	-

Notes: {***, **,*} indicates significant at 1, 5, and 10 percent level, respectively.

4.5. Robustness

As a robustness check I fit both models a second time using state population as the exposure variable rather than the number of full-time government employees. The results are presented in Table 9, column 1, for the judicial independence model and Table 10, column 1, for the constitutional review model. In general, the results are very similar to those reported in Table 7 and Table 8. To further address the robustness of my results, in an unreported regression I fit the data by allowing the coefficient on the exposure variable, full-time government employees, to vary from unity. This does not affect the significance or the sign of the estimates.[19]

I also fit a single model that includes both measures of judicial independence and measures of constitutional review. The downside of this estimation is that the number of covariates is large relative to the sample size. Nonetheless, the variables measuring judicial independence maintain their significance. Among the measures of constitutional rigidity, only the *convention* variable has a statistically significant z-score. The p-value for a test of the null hypothesis that all the judicial independence and constitutional rigidity variables can be excluded from the model is zero to five decimals places, while the p-values for tests that exclude only the judicial independence measures or only the constitutional rigidity measures are 0.006 and 0.039, respectively. This confirms the robustness of the general findings from the separate models.

Some might wonder whether my findings regarding the relation between judicial independence and corruption are indicative of a more general relation between judicial

[19] The estimated coefficient for ln(full time government employees) is -0.123 (with a z-score of -1.73) for the judicial independence model and 0.049 (with a z-score of 0.97) for the constitutional review model.

independence and crime. To investigate this hypothesis, I estimated linear regressions with crime rate per capita as the dependent variable and the same independent variables that entered the negative binomial regressions. The results of this analysis look very different from those using corruption as dependent variable, with little evidence of a statistically significant relation between crime rates and any of the judicial independence or constitutional rigidity measures. The one variable that is consistently significant is *racial fractionalization*.

A general source of concern in analyzing count data is the existence of excess zeros. However, Table 4 shows that there are no values of zero for my dependent variable, *Corruption Convictions*. In fact, looking at the dataset by years from 1996-2005, the variable *Corruption Conviction* has the value of zero only in about 8 % of the data.

Another potential concern is that corruption and judicial independence or constitutional review are determined by factors omitted from the model and thus my estimates are the result of spurious correlation. To assess the impact of including additional controls, I ran all the regressions again with variables added to account for the levels of income, education, and unemployment by state, as well as for the percentage of state residents that live in an urban area and are 65 years or older. Earlier studies, such as Glaeser and Saks (2004), Meier and Holbrook (1992), have found these variables to have significant effects on corruption levels across states. The inclusion of these control variables does not affect the significance of my results. These results are reported in Table 9, columns 2 and 3, for the judicial independence model, and Table 10, columns 2 and 3, for the constitutional review model.

Table 9. Effect of Judicial Independence on Corruption: Robustness Check

Variables	Dependent Variable Corruption Convictions		
	Generalized Negative Binomial		
Exposure variable	State Population	Full Time Government Employees	
	[1]	[2]	[3]
	Coeff. (z)	Coeff. (z)	Coeff. (z)
Ln(Judge Pay/Public Official Pay)	-1.817***	-1.317**	-1.082**
	(-3.74)	(-2.44)	(-2.19)
Merit Plan Selection	-0.673***	-0.927***	-0.609***
	(-7.35)	(-9.40)	(-5.21)
Other Selection Procedure	-0.543***	-0.627***	-0.427***
	(-6.97)	(-7.97)	(-3.70)
Term Length	-0.001	-0.012***	-0.003
	(-0.46)	(-3.02)	(-0.80)
Ln(FBI Agents)	0.336***	0.264***	0.249***
	(3.98)	(2.77)	(3.01)
Ln(Police Protection)	-0.229	0.151	-0.194
	(-0.79)	(0.60)	(-0.71)
Racial Fractionalization	2.358***	-	2.468***
	(3.54)	-	(4.05)
Ln(GSP per capita)	-	0.825**	-
	-	(1.99)	-
High School	-	-0.062***	-
	-	(-3.01)	-
Unemployment Rate	-	-	-0.082
	-	-	(-1.15)
Percent 65 or older	-	-	0.109***
	-	-	(3.51)
Constant	-1.381	-10.138***	-7.275***
	(-0.83)	(-2.65)	(-4.66)
lnalpha			
Northeast Region	-20.823***	-17.355***	-35.279***
	(>100)	(-11.04)	(>100)
Constant	-1.119***	-1.116***	-1.445***
	(-4.60)	(-4.57)	(-5.99)
Log-likelihood	-250.927	-250.626	-242.350
LR chi2	30.77	28.20	44.75
Number of Observations	49	49	49

Notes: {***, **,*} indicates significance at 1, 5, and 10 percent level, respectively.

Table 10. Effect of Constitutional Review on Corruption: Robustness Check

Variables	Dependent Variable Corruption Convictions		
	Generalized Negative Binomial		
Exposure variable	State Population	Full Time Government Employees	
	[1]	[2]	[3]
	Coeff. (z)	Coeff. (z)	Coeff. (z)
Legislative Amendment	-13.096**	-27.976***	-18.842**
	(-1.92)	(-3.42)	(-2.00)
Legislative Amendment squared	10.376*	22.947***	15.306**
	(1.80)	(3.33)	(1.92)
Initiative	-0.220***	-0.180***	-0.218***
	(-3.50)	(-2.74)	(-3.32)
Convention	-0.297***	-0.512***	-0.361***
	(-5.27)	(-6.76)	(-3.47)
Ln(FBI Agents)	0.285***	0.095	0.245**
	(3.26)	(0.99)	(1.96)
Ln(Police Protection)	-0.416**	-0.107	-0.684
	(-2.20)	(-0.29)	(-1.44)
Racial Fractionalization	2.123***	2.125***	1.507***
	(4.26)	(3.50)	(2.36)
Ln(GSP per capita)	-	-0.873*	-0.560
	-	(-1.97)	(-0.98)
High School	-	-0.007	-
	-	(-0.37)	-
Unemployment Rate	-	-	0.093
	-	-	(1.06)
Urban Population	-	-	0.011*
	-	-	(1.83)
Constant	1.501	10.754**	5.460
	(0.67)	(2.24)	(0.83)
lnalpha			
Northeast Region	-18.140***	-16.715***	-16.568***
	(-30.92)	(-23.26)	(-13.41)
Constant	-1.212***	-1.186***	-1.206***
	(-5.13)	(-4.93)	(-5.11)
Log-likelihood	-248.446	-249.662	-247.634
LR chi2	35.73	30.13	34.19
Number of Observations	49	49	49

Notes: {***, **,*} indicates significance at 1, 5, and 10 percent level, respectively.

Of course, it always possible that other unobserved factors account for the relation between corruption and the judicial independence and constitutional rigidity measures. The measures might be correlated with policies that reduce corruption, they might reflect endogenous selection of public officials into different states, or they might be affected by the level of corruption. If this is the case, then it does not necessarily follow that increasing judicial independence and constitutional rigidity will reduce corruption. Nonetheless, my results suggest that investigating whether we can deter corruption by promoting judicial independence would be a worthwhile policy endeavor.

4.6. Conclusions

In the United States system of government, judicial oversight provides an important check on the abuse of power by the legislative and executive branches. I investigate whether two distinct components of the oversight function — judicial independence and constitutional rigidity — are related to a specific type of abuse of power by government officials: corruption in public office. Specifically, I use data for 49 states over 1996-2005 to develop measures of judicial independence and constitutional rigidity and examine their impact on corruption convictions.

Unlike previous studies, I develop an econometric specification that recognizes the distinction between the observed number of convictions for corruption and the unobserved number of corrupt officials. I show that by including variables that pick up differences in law enforcement effectiveness across states, I should be able to use convictions data to draw valid inferences about the underlying level of corruption. In

general, I find that both judicial independence and constitutional rigidity are significant predictors of corruption. First, in states where judges have a greater degree of independence (higher remuneration, merit plan selection, or longer terms), there is less corruption. Second, in states that have more rigid constitutions (larger legislative majorities required to propose constitutional amendments), there is less corruption. These findings complement existing evidence from cross-country studies that judicial independence and constitutional review are predictors of freedom.

The policy implications of my analysis are relatively straightforward. There is mounting evidence from the international arena that high levels of corruption limit investment, retard economic growth, lead to ineffective government, and create economic inefficiencies and inequalities. My findings suggest that constitutional and judicial reform could play a significant role in reducing the prevalence of corruption in developing economies around the world. This conclusion is tentative, however, because of endogeneity concerns. Further work will be required to establish firm recommendations in this regard. The next chapter, which provides evidence on the relation between corruption, judicial independence, and constitutional rigidity using country-level data, is intended as a first step in this process.

CHAPTER FIVE

EVIDENCE FROM ACROSS COUNTRIES

Researchers do not have many options when deciding how to measure corruption at the country level. There is no international database of convictions for corruption by country. As a result, the literature relies on survey-based measures. There are, however, several different sources of corruption indicators. Rather than choose one indicator, I examine the three indicators that are used most frequently in other studies.

5.1. Empirical Specifications

Transparency International, the World Bank, and the Political Risk Service Group are the three main sources of country-level corruption data. Each organization publishes an index that provides a rank ordering of countries from least to most corrupt. The exact methodology used to construct the index varies from one organization to another. I provide the details after discussing the empirical specifications. Like most of the literature, I use linear regression methods to investigate differences in corruption across countries. Since data availability varies across indices, I conduct my analysis on cross-sections of between 37 to 165 countries for various years between 1995 and 2005. I then extend my analysis to panels of data with cross-sectional and time-series observations for 1998 to 2005.

5.1.1. Judicial Independence

To examine the effect of judicial independence on corruption in a cross section of countries, I estimate the following regression models:

(1) $Corruption_i = \beta_0 + \beta_1(Judicial\ Independence)_i + \beta_2 \ln(GDP\ per\ capita)_i + \beta_3(Education\ Index)_i + \beta_4(Percent\ Protestant)_i + \beta_5(Ethnic\ Fractionalization)_i + \varepsilon_i$

(2) $Corruption_i = \beta_0 + \beta_1(Judicial\ Independence)_i + \beta_2 \ln(GDP\ per\ capita)_i + \beta_3(Education\ Index)_i + \beta_4(Percent\ Protestant)_i + \beta_5(Ethnic\ Fractionalization)_i + \beta_6 \ln(Government\ Size)_i + \beta_7(Common\ Law)_i + \beta_8(Developing\ Country)_i + \varepsilon_i$

I consider three measures of judicial independence: two survey-based indices derived from the Economic Freedom of the World Report published by the Fraser Institute and from the Political Constraint Index Dataset, and an index based on the legal foundations as found in the legal documents of a country, constructed by La Porta et al. (2004).

My choice of control variables is based on the previous literature on the determinants of corruption. Even though there is no commonly agreed upon empirical model to explain corruption, previous studies, such as La Porta et al. (1999), Treisman (2000), Adsera et al. (2000), Lederman et al. (2001), La Porta et al. (2004), and Waisman (2005), almost always include economic, cultural, and socio-demographic variables in their analysis. I follow the literature and account for the robustness of my estimation by controlling for a number of country characteristics.

The first three controls measure the impact of economic development: the log of the gross domestic product per capita, an education index and a dummy variable for developing countries. In general, previous studies (Treisman, 2000, Waisman, 2005) argue that developing countries are more affected by corruption than developed ones, and

that richer and more educated societies have lower levels of corruption as more educated and richer voters are more willing and able to monitor and expose public officials when they violate the law.

The fourth control measures the percentage of the country's population that is from a Protestant tradition. Previous studies suggest that a country's religious tradition might influence the costs of corrupt activities. According to La Porta (1999), Protestant countries, as opposed to Catholic or Muslim countries, are less interventionist and should display better government performance due to higher ethical standards of politicians in office.

The fifth control is a measure of ethnic divisions within a country. The literature suggests that ethnic heterogeneity increases corruption or reduces people's desire to oppose corruption. In ethnically heterogeneous societies, there are more opportunities for redistribution within the group that comes to power, which is often interested in adopting policies to restrict the freedom of those outside the ruling group, and to limit the production of public goods (La Porta et al., 1999). Thus, if a political leader allocates resources to the ethnic group to which he belongs, members of that ethnic group continue to support him, even though he is corrupt (Glaeser and Saks, 2004).

The sixth control is a measure of government size. Government size has an ambiguous effect on corruption. On the one hand, larger governments may imply (i) lesser bureaucratic delay, thus less rent-seeking, and (ii) higher wages for public officials, thus lower incentives to accept bribes. On the other hand, larger governments suggest more inefficiencies and opportunities for rent-seeking.

The seventh control is a dummy variable for countries with a common law legal system. The idea is that the effectiveness of a country's legal system affects the probability of getting caught and convicted of corruption. La Porta et al. (1999) suggest that common law systems, as opposed to civil law systems, offer a greater protection of property rights and are more effective due to the willingness of judges to follow procedures, which increases the chances of exposing corruption.

To further check the robustness of my results, I include three other control variables in the panel data specifications: the log of investment as share of the gross domestic product, an index of freedom of the press, and a dummy variable for countries with a federal structure. Higher investment leads to economic development and thus less corruption. Press freedom is important as it results in better informed voters and improved transparency, thus increasing the accountability of public officials. The effect of the federal structure on corruption could go in either direction. Some argue that competition between jurisdictions leads to more honest and efficient government (Weingast, 1995), while others suggest that there are greater opportunities for corruption in a decentralized political system because one needs to influence only one segment of the government or because there is more interaction between private individuals and public officials (Banfield, 1979).

5.1.2. Constitutional Review

To examine the effect of constitutional review on corruption, I replace the judicial independence measure with an index of constitutional review. This yields the following regression models:

(3) $Corruption_i = \beta_0 + \beta_1(Constitutional\ Review)_i + \beta_2 \ln(GDP\ per\ capita)_i + \beta_3(Education\ Index)_i + \beta_4(Percent\ Protestant)_i + \beta_5(Ethnic\ Fractionalization)_i + \varepsilon_i$

(4) $Corruption_i = \beta_0 + \beta_1(Constitutional\ Review)_i + \beta_2 \ln(GDP\ per\ capita)_i + \beta_3(Education\ Index)_i + \beta_4(Percent\ Protestant)_i + \beta_5(Ethnic\ Fractionalization)_i + \beta_6 \ln(Government\ Size)_i + \beta_7(Developing\ Country)_i + \varepsilon_i$

My measure of constitutional review is an index created by La Porta et al. (2004). The set of control variables used in the preceding models relating judicial independence to corruption is used here as well.

5.2. Data

As noted earlier, the literature on corruption at the country level relies on indices of "perceived" corruption, which are almost always criticized for being subjective. However, as Treisman (2000) points out, the various organizations that administer surveys to construct cross-country ratings of corruption use very different methodologies and, still, the indices derived are highly correlated, suggesting that they do measure something very similar. Table 11 presents the correlations between the three corruption indicators used in my analysis: the Corruption Perceptions Index compiled by Transparency International (*Corruption TI*), the Control of Corruption Index compiled by researchers at the World Bank (Kaufman et al., 2007) (*Corruption World Bank*), and the International Country Risk Guide (ICRG) Corruption Index compiled by the Political Risk Survey Group (*Corruption PRS*).

Table 11. Correlation Coefficients between Corruption Indicators

	Corruption TI	Corruption World Bank	Corruption PRS
Corruption TI	1.000	-	-
Corruption World Bank	0.965	1.000	-
Corruption PRS	0.824	0.822	1.000

The main corruption indicator, *Corruption TI*, provides data on extensive perceptions of corruption within countries. It is a composite index, computed as the average of surveys from up to 14 sources originating from 12 independent institutions. These surveys are based on the views of business people, risk analysts, journalists, and the general public, and contain questions about the "spread and amount of corruption in public and private business, the likeliness to demand special and illegal payments in high and low levels of government, the degree of misuse of public power for private benefits, the frequency of cases of corruption for politicians, public officials, policemen, and judges, or improper practices, such as bribing or corruption, in the public sphere," etc.[20] This index ranges from zero (highly corrupt) to 10 (highly clean). I reversed the scale to range from zero (highly clean) to 10 (highly corrupt). Table 12 ranks the ten most corrupt and the ten least corrupt countries based on this index. According to *Corruption TI*, the least corrupt country in my sample is Denmark, with an average score of 0.38, and the most corrupt is Bangladesh, with a score of 8.52. The United States has an average score of 2.41.

[20] A detailed description of the methodology for the Corruption Perceptions Index is available at: http://www.transparency.org/policy_research/surveys_indices/cpi.

Table 12. Countries with Highest and Lowest Corruption Scores According to the *Corruption TI* Index

Most Corrupt		Least Corrupt	
Country	Score	Country	Score
Bangladesh	8.52	Denmark	0.38
Nigeria	8.47	Finland	0.40
Myanmar	8.25	New Zealand	0.53
Haiti	8.24	Iceland	0.60
Chad	8.20	Sweden	0.77
Angola	8.10	Singapore	0.83
Paraguay	8.09	Canada	1.12
Azerbaijan	8.06	Netherlands	1.16
Cameroon	8.00	Norway	1.18
Congo Dem. Republic	7.97	Switzerland	1.21

The *Corruption World Bank* index measures "the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests" (Kaufman et al., 2007, p. 4). This index aggregates a large numbers of polls of experts and cross-country surveys of residents from 32 separate data sources constructed by 30 different organizations worldwide. The authors use a more precise aggregation technology, i.e., an unobserved components model, than the methodology used for the other existing indices of corruption, i.e., simple average. The index takes values ranging from -2.5 (most corrupt) to 2.5 (least corrupt). I have rescaled it to range from zero (least corrupt) to one (most corrupt). In my sample, the least corrupt country according to *Corruption World Bank* is Finland with an average score of 0.017, while the most corrupt one is Somalia with an average score of 0.829. The United States has, on average, an index of corruption of

0.162. Table 13 presents the ten most corrupt and the ten least corrupt countries according to this index.

Table 13. Countries with Highest and Lowest Corruption Scores According to the *Corruption World Bank* Index

Most Corrupt		Least Corrupt	
Country	Score	Country	Score
Somalia	0.829	Finland	0.017
Afghanistan	0.826	Singapore	0.038
Congo Dem. Republic	0.812	Denmark	0.042
North Korea	0.796	New Zealand	0.043
Haiti	0.789	Iceland	0.051
Myanmar	0.787	Sweden	0.058
Iraq	0.777	Switzerland	0.066
Liberia	0.769	Norway	0.069
Nigeria	0.749	Netherlands	0.076
Angola	0.746	United Kingdom	0.089

The *Corruption PRS* index represents an assessment, by international experts, of bureaucratic and political corruption. The index accounts for both the financial corruption that takes the form of demands for special payments and bribes connected with import or export licenses, tax assessments, loans etc., and the corruption that takes the form of "nepotism, job reservations, 'favor-for-favors', secret party funding, and suspiciously close ties between politics and business (Political Risk Survey Group)." The *Corruption PRS* index ranges from zero (highly corrupt) to six (highly clean). I reversed the scale to range from zero (highly clean) to six (highly corrupt). Based on this index, the least corrupt country in my sample is Finland, with a score of zero, while the most corrupt is Congo Democratic Republic with an average score of 5.13. The United States has an

average score of 1.78. Table 14 ranks the ten most corrupt and the ten least corrupt countries based on this index.

Table 14. Countries with Highest and Lowest Corruption Scores According to the *Corruption PRS* Index

Most Corrupt		Least Corrupt	
Country	Score	Country	Score
Congo Dem. Republic	5.13	Finland	0.00
Somalia	5.00	Sweden	0.12
Niger	4.93	Denmark	0.17
Sudan	4.79	Netherlands	0.24
Myanmar	4.79	Iceland	0.28
Iraq	4.79	Canada	0.35
Nigeria	4.61	New Zealand	0.71
Liberia	4.36	Luxembourg	0.75
Russia	4.34	Norway	0.83
Zimbabwe	4.33	Switzerland	0.95

To measure the level of judicial independence across countries I use three types of indicators. I report the correlations between these indicators in Table 15.

Table 15. Correlation Coefficients between Judicial Independence Indicators

	Judicial Independence (I)	Judicial Independence (II)	Judicial Independence (III)
Judicial Independence (I)	1.000	-	-
Judicial Independence (II)	0.573	1.000	-
Judicial Independence (III)	0.396	0.408	1.000

The main judicial independence variable, *Judicial Independence (I)*, was compiled by the World Economic Forum Organization, and published in the Economic

Freedom of the World Report by the Fraser Institute. This measure is based on the World Economic Forum's annual Executive Opinion Survey whose goal is to obtain accurate information about country specific attributes that are not well recorded in quantitative sources. The respondents to the Survey are typically a company's CEO or a member of its senior management. This Survey provides the basis for a comparative assessment on a global basis, this being facilitated by interviewing a large number of senior business leaders and by ensuring that the sample in each country is not biased in favor of any particular business group. Moreover, to check their consistency, the survey responses are compared to hard data, when available, which shows that the quantitative sources and the Survey results are positively correlated.

The *Judicial Independence (I)* index is based on the following question: "Is the judiciary in your country independent from political influences of members of government, citizens, or firms? (1 = no – heavily influenced, 7 = yes – entirely independent)." The question's wording has varied slightly over the years. The index has been rescaled to range from zero (heavily influenced judiciary) to 10 (entirely independent judiciary). Table 16 reports the ten countries with the highest and lowest levels of judicial independence, respectively. According to *Judicial Independence (I),* in my sample, the country with the most independent judiciary is Finland, with an average score of 9.1, while the country with the least independent judiciary is Haiti, with an average score of 0.2. The United States has an average score of 7.6.

Table 16. Countries with Most and Least Independent Judiciaries According to Judicial Independence (I) Index

Most Independent		Least Independent	
Country	Score	Country	Score
Finland	9.1	Haiti	0.2
Denmark	9.0	Nicaragua	0.8
Netherlands	9.0	Venezuela	1.0
Germany	9.0	Paraguay	1.1
Australia	8.9	Burundi	1.3
New Zealand	8.9	Chad	1.4
United Kingdom	8.7	Ecuador	1.4
Switzerland	8.5	Kyrgyzstan	1.5
Norway	8.5	Bolivia	1.8
Israel	8.5	Peru	1.9

The next judicial independence measure, *Judicial Independence (II),* comes from the Political Constraint Index Dataset[21] (POLCON). POLCON defines the existence of an independent judiciary by the joint existence of a POLITY score on executive constraints (XCONST) of at least three, i.e., slight to moderate limitations on the executive authority, and an ICRG score on Law and Order of at least four, i.e., a relatively strong law and order tradition. As noted in the POLCON Codebook (Henisz, 2005), the variable XCONST refers to "the extent of institutionalized constraints on the decision-making powers of chief executives. Such limitations may be imposed by any accountability groups. In Western democracies these are usually legislatures. Other kinds of accountability groups are the ruling party in a one-party state […] and, in many states, a strong, independent judiciary. The concern is therefore with the checks and balances between the various parts of the decision-making process." Slight to moderate limitations

[21] The POLCON Dataset is available at http://www-management.wharton.upenn.edu/henisz.

on the executive authority (or an XCONST score of three) implies that there are some real but limited restraints on the executive.

According to the International Country Risk Guide, the Law and Order index reflects the "degree to which the citizens of a country are willing to accept the established institutions to make and implement laws and adjudicate disputes. This index ranges from zero to six, with high scores indicating "sound political institutions, a strong court system, and provision for an orderly succession of power," and low scores indicating "a tradition of depending on physical force or illegal means to settle claims (Political Risk Service Group)." The *Judicial Independence (II)* measure is binary, zero indicates a dependent judiciary and one indicates an independent judiciary. For example, all countries in the OECD except Mexico have an independent judiciary according to this measure.

The third measure of judicial independence, *Judicial Independence (III)*, comes from La Porta et al. (2004). Unlike the previous survey-based measures, the authors use information that originates from a country's legal documents to create this index. Thus, they collected information from David (1973) as well as from countries constitutions. The index was computed as the normalized sum of (i) the tenure of Supreme Court judges, (ii) the tenure of administrative court judges, and (iii) a case law variable. The variables tenure of Supreme Court judges and tenure of administrative court judges each takes the value of two, if tenure is life-long, one, if tenure is more than six years, and zero, if tenure is less than six years. The variable case law takes the value of one, if judicial decisions in a given country are a source of law and the value of zero otherwise.

According to *Judicial Independence (III),* countries such as Finland, Germany, Australia, United Kingdom, United States, Norway, Israel, etc., have a highly independent judiciary, each with a score of one, while Algeria, Vietnam, Cuba, and Iraq have a highly dependent judiciary, each with a score of zero.

The measure of constitutional review comes from La Porta et al. (2004) and is based on information from Maddex (1995). The authors computed this index as the normalized sum of (i) a judiciary review index and (ii) a rigidity of the constitution index. The judiciary review index measures the extent to which judges at the Supreme or Constitutional Court have the power to review the constitutionality of laws in a given country, and takes three values: two, if there is full review of the constitutionality of laws, one if there is limited review, and zero if there is no review of the constitutionality of laws. According to this measure, countries such as Iran, Iraq, Libya, New Zealand, etc. have a score of zero, i.e., no review of the constitutionality of laws, while countries such as United States, Norway, India, Iceland, etc. have a score of two, i.e., full review.

The rigidity of the constitution index measures, on a scale of one to four, how hard it is to change the constitution in a given country. As La Porta et al. (2004) note, one point each is given if the approval of the majority of the legislature, the chief of state, and a referendum is necessary to change the constitution and an additional point each is given if a supermajority in the legislature is needed, i.e., more than 66 % of votes, if both houses of the legislature have to approve, if the legislature has to approve the amendment in two consecutive legislative terms, or if the approval of a majority of the state legislature is required. According to this measure, countries such as Japan, Iceland,

Nigeria, Netherlands, and Thailand have a relatively rigid constitution, while countries such as Iran, Iraq, Israel, and United Kingdom have a relatively less rigid constitution. United States has a score of three.

Descriptive statistics for all variables are reported in Table 17. Most of the variables used as controls are self-explanatory, but the following need additional clarification. *Ethnic Fractionalization* is a measure of the diversity of ethnic groups within a country. To construct this measure, I used data from the CIA World Fact book and followed Glaeser and Saks (2004). The formula used to compute the index is $1-\Sigma s_i^2$, where s_i are the ethnic shares within a country. The *Freedom of the Press* index is produced by the Freedom House and uses the Article 19 of the Universal Declaration of Human Rights[22] as criterion. The index ranges from zero (best) to 100 (worst) and draws on surveys from a variety of sources, such as correspondents overseas, staff and consultant travel, the findings of human rights and press freedom organizations, specialists in geographic and geopolitical areas, and domestic and international news media. The level of press freedom in each country is examined by looking at three broad categories: (i) the legal environment, i.e., the laws and regulations that could influence media content, (ii) the political environment, i.e., the degree of political control over the content of news media, and (iii) the economic environment, i.e., the structure of media ownership, transparency and concentration of ownership, etc.

[22] Article 19 of the Universal Declaration of Human Rights states: "Everyone has the right to freedom of opinion and expression; this right includes freedom to hold opinions without interference and to seek, receive, and impart information and ideas through any media regardless of frontiers."

Table 17. Descriptive Statistics of Cross-Country Data

Variable	Description	Obs.	Mean	Std. Dev.	Min	Max	Source
Corruption TI	Corruption Perception Index reported by Transparency International	1209	5.451	2.364	0.000	9.600	TI
Corruption World Bank	Aggregate corruption index published by Kaufmann et al. (2007)	1476	0.504	0.204	0.000	0.916	World Bank
Corruption PRS	Index of corruption reported in the International Country Risk Guide	1218	2.999	1.275	0.000	6.000	PRS-ICRG
Judicial Independence (I)	Index of judicial independence reported by the Fraser Institute	812	5.280	2.398	0.200	9.800	WEFO
Judicial Independence (II)	Binary measure of judicial independence: 0 indicates a dependent judiciary and 1 indicates an independent judiciary	1634	0.411	0.492	0.000	1.000	POL CON
Judicial Independence (III)	Index of judicial independence created by La Porta et al. (2004)	69	0.748	0.315	0.000	1.000	LaPorta et al. (2004)
Constitutional Review	Index of constitutional review created by La Porta et al. (2004)	71	0.564	0.275	0.000	1.000	LaPorta et al. (2004)
ln(Real GDP Per Capita)	Real GDP per capita (base year: 2000)	2044	8.508	1.177	5.139	10.834	PWT 6.2
Education Index	Education index based on the adult literacy rate and the combined primary, secondary, and tertiary gross enrollment ratio	2088	0.787	0.182	0.255	0.993	HDI, UN
Ethnic Fraction.	Ethnic heterogeneity measure	2124	0.331	0.261	0.000	0.923	CIA World Factbook
Percent Protestant	% of population with a Protestant religious tradition	2208	12.810	21.231	0.000	97.800	LaPorta et al. (1999)

Continued on the next page

Table 17. (continued)

Variable	Description	Obs.	Mean	Std. Dev.	Min	Max	Source
ln(Government Size)	General government spending as percentage of total consumption	2044	3.039	0.474	0.727	4.364	PWT 6.2
Common Law	Dummy = 1 for countries with a common law legal systems as opposed to civil law legal systems	1176	0.326	0.469	0.000	1.000	LaPorta et al. (1999)
Developing Country	Dummy = 1 for developing countries as reported by the World Bank Global Development Network Growth Database	2256	0.787	0.409	0.000	1.000	World Bank
ln(Investment)	Investment share of GDP	2040	2.454	0.640	0.000	3.991	PWT 6.2
Freedom of the Press Index	Freedom of the Press Index reported by the Freedom House	2184	46.570	24.694	0.000	100.000	Freedom House
Federal	Dummy = 1 for countries with a federal structure	1176	0.173	0.378	0.000	1.000	Treisman (2000)
Democratic	Dummy = 1 if the country has a democratic regime	540	0.259	0.439	0.000	1.000	Treisman (2000)

TI: Transparency International
PRS-ICRG: Political Risk Services-International Country Risk Guide, Table 3B: Political Risk Components, 2006
Fraser Institute: Gwartney, J., R. Lawson, and W. Easterly: Economic Freedom of the World, 2007 Annual Report
WEFO: World Economic Forum Organization
POLCON: Political Constraint Index Dataset
HDI, UN: Human Development Indicators, United Nations
PWT 6.2: Heston, Allan, Robert Summers and Bettina Aten, Penn World Table 6.2, Center for International Comparisons of Production, Income and Prices at the university of Pennsylvania, September 2006.

5.3. Results

The main focus of the econometric specifications is on the existence of significant relations between corruption and judicial independence or constitutional review. Along with the *Corruption TI* index, Transparency International reports the standard deviations of the corruption ratings: the greater the standard deviation, the greater the differences of perceptions of a country among the sources. In my analysis, I estimate Weighted Least Squares (WLS) regressions, with the weights being the reciprocals of the standard deviations of the *Corruption TI* index.[23]As Treisman (2000) points out, this weighting places an emphasis on those scores where the respondents in the surveys gave more similar ratings than on those where the ratings were more divergent. In addition, the *Corruption World Bank* index of each country is measured with different conditional variances, reported by Kaufamn et al. (2007). Once again, to correct for heteroskedasticity, I estimate Weighted Least Squares (WLS) regressions. The weights are the reciprocals of the standard deviations of the *Corruption World Bank* index. To check the robustness of my results, I also fit the data using OLS with White heteroskedasticity-corrected standard errors.

Tables 18a through 18c present the results of year by year regressions of the judicial independence measures (I), (II), and (III) on *corruption TI*, respectively, and Table 18d shows the effect of constitutional review on *corruption TI*. To check the sensitivity of my results to the way the variables of interest are measured, in Tables 19a, 19b, 20a, and 20b, I report the results of cross-sections regressions of judicial

[23] Transparency International does not report the standard errors of the Corruption TI index for the years 2004, 2005, and 2006.

independence measures (I) and (II) on the other two corruption indicators, *corruption World Bank* and *corruption PRS*, respectively. In presenting the results, I always consider three distinct specifications. The first equation contains only the main variables, the second specifications adds four control variables, (1) ln(GDP per capita), (2) education index, (3) ethnic fractionalization, and (4) percent protestant, and the third specification includes further controls, (5) ln(government size), (6) developing country, and (7) common law.

In presenting the results, I do not include the coefficients on the control variables. The results with respect to controls vary among regressions. However, I generally find that corruption is lower in richer countries and in countries that have a higher percent of population that is of Protestant religion tradition. Moreover, consistent with my hypotheses, I find that corruption is lower in countries with common law legal systems and is higher in developing countries. Surprisingly, the coefficient on the education index variable and the one on the ethnic fractionalization variable are significant and have the correct sign only in about 60% of the regressions, while the coefficient on the variable measuring the government size is insignificant in most regressions.

Next, consider the estimation results for the judicial independence indicators. The empirical results are consistent with my hypothesis that countries that have a relatively more independent judiciary experience lower corruption levels, ceteris paribus. Table 18a shows the results of year by year regressions of judicial independence (I) on *corruption TI*. I report the results of WLS and OLS regressions for the years 1995 and 2000 to 2003, and the results of OLS regressions for 2004 and 2005. The number of observations

increases considerably over time, from 40 observations in 1995 to 112 observations in 2005. With no controls, the estimated coefficients are all significant at the 1% level of significance, suggesting that, on average, judicial independence is associated with lower corruption scores. For example, for the year 2002, an increase of one point in the judicial independence index (e.g., from Ghana, with a score of 5.2, to Greece, with a score of 6.2) reduces corruption by 0.9 points (approximately to Hungary or Cost Rica levels), ceteris paribus. When I add the first set of control variables to these regressions, the coefficient estimates decrease in magnitude by approximately 40% but they remain statistically different from zero at the 1% significance level. Adding the second set of control variables further shrinks the parameter estimates and also reduces the number of observations available for each year, but the coefficients remain statistically significant at the 1% level.

Table 18b shows the results of WLS and OLS cross-section regressions of judicial independence (II) on *corruption TI* for the years 1998 to 2004. Once again the estimated parameters are statistically significant at the 1% significance level. For example, without controls, for the year 2002, an independent judiciary reduces corruption by 4.2 points, on average. Adding the controls in Panel B does not change the significance of my results, but decreases the coefficients on the judicial independence variable. Again, for the year 2002, countries with an independent judiciary (the United States) have, on average, a corruption score that is 1.18 points lower than countries with a dependent or influenced judiciary (Albania). These results are, in general, robust to the inclusion of more controls in Panel C. The coefficients on the judicial independence variable have the expected sign

and are significant at the 1% level for the years 2002 to 2004. For the years 1998, 2000, and 2001, the parameter estimates have the correct sign, but are not statistically significant, and for 1999 the coefficient has the predicted sign and is significant at the 5% level.

Table 18c and 18d report the effect of judicial independence (III) and of constitutional review on corruption. As discussed in section 5.2., these measures come from La Porta et al. (2004). Data are only available for one year, 1995, which restricts the number of observations to 37, especially given that 1995 was the first year when the *corruption TI* was released. Nonetheless, the findings regarding judicial independence support my hypothesis. In Table 18c, the coefficient estimates are significant at the 1% level regardless of the specification used and suggest that an increase in judicial independence from zero (China) to one (the United States) reduces the corruption index by 2.52 (roughly to Spain) (Panel B).

Table 18a. Effect of Judicial Independence (I) on *Corruption TI*

	Dependent Variable											
	Corruption TI											
	1995		2000		2001		2002		2003		2004	2005
	WLS[1]	OLS[2]	WLS[1]	OLS[2]	WLS[1]	OLS[2]	WLS[1]	OLS[2]	WLS[1]	OLS[2]	OLS[1]	OLS[1]
	A. No Controls											
JI (I)	-1.178***	-0.917***	-0.906***	-0.901***	-0.783***	-0.799***	-0.981***	-0.821***	-1.145***	-0.861***	-0.836***	-0.824***
	(-35.80)	(-15.28)	(-22.90)	(-11.45)	(-30.25)	(-14.83)	(-54.15)	(-14.66)	(-63.70)	(-16.47)	(-16.00)	(-15.85)
Cons.	11.524***	10.711***	10.10***	10.15***	8.937***	9.147***	9.771***	9.401***	10.53	9.747***	9.371***	9.517***
	(42.75)	(21.02)	(38.44)	(19.52)	(54.47)	(30.09)	(89.45)	(33.82)	(94.45)	(37.02)	(42.22)	(42.08)
Obs.	40	40	61	61	77	77	91	91	100	100	108	118
R^2	-	0.72	-	0.68	-	0.68	-	0.68	-	0.72	0.69	0.69
	B. With Controls - 1											
JI (I)	-0.637***	-0.616***	-0.464***	-0.465***	-0.362***	-0.344***	-0.403***	-0.389***	-0.597***	-0.458***	-0.442***	-0.410***
	(-8.25)	(-4.91)	(-7.26)	(-6.11)	(-9.20)	(-6.57)	(-11.64)	(-8.27)	(-15.62)	(-8.95)	(-8.78)	(-7.09)
Cons.	22.646***	22.167***	18.03***	19.90***	22.34***	21.16***	23.12***	18.92***	23.63***	18.22***	17.30***	16.49***
	(9.76)	(8.93)	(18.87)	(10.7)	(21.49)	(13.51)	(36.79)	(20.62)	(35.82)	(19.49)	(19.20)	(17.20)
Obs.	39	39	60	60	75	75	89	89	97	97	105	112
R^2	-	0.82	-	0.86	-	0.87	-	0.87	-	0.87	0.85	0.84
	C. With Controls - 2											
JI (I)	-0.276**	-0.572**	-0.306***	-0.357***	-0.259***	-0.288***	-0.262***	-0.287***	-0.216***	-0.351***	-0.394***	-0.353***
	(-2.32)	(-2.51)	(-3.85)	(-3.17)	(-4.91)	(-4.26)	(-6.12)	(-5.08)	(-4.30)	(-5.40)	(-5.92)	(-5.73)
Cons.	16.968***	20.968***	10.90***	13.87	17.95***	16.91***	13.90***	14.67***	16.54***	14.02***	13.49***	12.50***
	(4.42)	(3.63)	(5.53)	(5.36)	(10.01)	(7.28)	(10.25)	(9.29)	(12.20)	(10.02)	(8.97)	(8.23)
Obs.	39	39	60	60	73	73	86	86	87	87	88	87
R^2	-	0.84	-	0.88	-	0.89	-	0.9	-	0.91	0.89	0.89

Notes: The table presents the results of WLS and OLS regressions. The WLS regressions use as weights the reciprocals of the standard deviations of the *Corruption TI* index (not available for 2004 and 2005). The OLS regressions results are based on robust standard errors. In panel A the independent variable is judicial independence (I). In panel B the independent variables are (1) judicial independence (I), (2) ln(GDP per capita), (3) education index, (4) ethnic fractionalization, and (5) percent protestant. In panel C the independent variables are (1) judicial independence (I), (2) ln(GDP per capita), (3) education index, (4) ethnic fractionalization, (5) percent protestant, (6) ln(government size), (7) developing country, and (8) common law. All variables are defined in Table 17. The numbers in parenthesis are the estimated z-statistics and t-statistics, respectively. {***,**,*} indicates significant at 1, 5 and 10 percent level, respectively.

Table 18b. Effect of Judicial Independence (II) on *Corruption TI*

	Dependent Variable												
	Corruption TI												
	1998		1999		2000		2001		2002		2003		2004
	WLS[1]	OLS[2]	WLS[1]	OLS[2]	WLS[1]	OLS[2]	WLS[1]	OLS[2]	WLS[1]	OLS[2]	WLS[1]	OLS[2]	OLS[1]
	A. No Controls												
JI (II)	-3.182***	-2.408***	-3.480***	-2.630***	-2.836***	-2.624***	-3.274***	-2.647***	-4.218***	-2.790***	-4.570***	-2.706***	-2.741***
	(-18.25)	(-6.32)	(-23.53)	(-7.22)	(-20.85)	(-6.98)	(-25.99)	(-7.06)	(-44.27)	(-7.80)	(-58.28)	(-7.47)	(-8.19)
Cons.	6.953***	6.837***	7.237***	6.944***	7.178***	6.875***	7.009**	6.920***	7.415***	6.997***	6.710***	6.937***	7.041***
	(49.17)	(33.29)	(70.42)	(39.13)	(73.07)	(36.50)	(71.69)	(35.36)	(100.68)	(46.95)	(129.94)	(50.12)	(57.21)
Obs.	83	83	95	95	88	88	90	90	101	101	129	129	138
R^2	-	0.20	-	0.30	-	0.28	-	0.29	-	0.35	-	0.34	0.36
	B. With Controls - 1												
JI (II)	-0.890***	-0.738**	-1.259***	-0.881***	-0.861***	-0.762***	-0.779***	-0.708***	-1.186***	-0.937***	-2.587***	-0.981***	-1.119***
	(-4.09)	(-2.62)	(-6.49)	(-3.66)	(-4.83)	(-3.28)	(-4.94)	(-2.99)	(-9.90)	(-4.19)	(-25.57)	(-4.39)	(-5.14)
Cons.	21.106***	19.882***	19.381***	18.841***	18.798***	19.575***	22.242***	20.822***	25.241***	20.101***	20.221***	18.430***	17.214***
	(24.68)	(13.39)	(25.72)	(14.86)	(29.63)	(16.73)	(33.36)	(17.19)	(47.48)	(17.87)	(56.68)	(19.68)	(18.73)
Obs.	82	82	93	93	85	85	88	88	99	99	121	121	129
R^2	-	0.77	-	0.79	-	0.82	-	0.83	-	0.83	-	0.78	0.76
	C. With Controls - 2												
JI (II)	-0.322	-0.218	-0.604**	-0.466*	-0.143	-0.312	-0.192	-0.286	-0.594***	-0.463*	-0.748***	-0.607**	-0.748***
	(-1.40)	(-0.83)	(-2.54)	(-1.91)	(-0.59)	(-1.21)	(-1.02)	(-0.99)	(-3.79)	(-1.88)	(-4.13)	(-2.49)	(-2.90)
Cons.	13.972***	14.200***	13.280***	14.170***	13.251***	14.625***	17.749***	16.706***	15.700***	16.104***	16.992***	14.889***	13.653***
	(9.71)	(8.33)	(8.51)	(8.02)	(8.40)	(7.52)	(12.01)	(9.48)	(12.45)	(10.56)	(12.87)	(10.47)	(9.37)
Obs.	81	81	82	82	75	75	82	82	89	89	92	92	93
R^2	-	0.85	-	0.86	-	0.87	-	0.87	-	0.88	-	0.88	-

Notes: The table presents the results of WLS and OLS regressions. The WLS regressions use as weights the reciprocals of the standard deviations of the *Corruption TI* index (not available for 2004). The OLS regressions results are based on robust standard errors. In panel A the independent variable is judicial independence (II), i.e., JI (II). In panel B the independent variables are (1) JI (II), (2) ln(GDP per capita), (3) education index, (4) ethnic fractionalization, and (5) percent protestant. In panel C the independent variables are (1) JI (II), (2) ln(GDP per capita), (3) education index, (4) ethnic fractionalization, (5) percent protestant, (6) ln(government size), (7) developing country, and (8) common law. All variables are defined in Table 17. The numbers in parenthesis are the estimated z and t-statistics, respectively. {***,**,*} indicates significant at 1, 5 and 10 percent level, respectively.

The results on constitutional review are presented in Table 18d. With no controls, the effect of constitutional review on corruption is negative as predicted by my hypothesis and statistical significant at the 1% level. However, adding the controls to the estimation changes the sign of the coefficient on constitutional review, which becomes positive and maintains its significance.

The specification in Panel C of Table 18d contains both judicial independence and constitutional review measures. While the coefficient on the judicial independence index remains negative, as expected, and significant at the 1% level, the coefficient on the constitutional review index has the opposite sign from the one predicted by my hypothesis. In their study, La Porta et al. (2004) show that constitutional review is a guarantee of political freedom measured by indices of democracy, human rights and political rights, but *not* of economic freedom, measured by (i) an index of property rights based on a country's degree of legal protection of private property, (ii) number of procedures, i.e., the number of different steps that a start-up has to comply with in order to obtain legal status, (iii) an employment laws index based on a country's level of worker protection through labor and employment laws, and (iv) government ownership of banks in 1995, i.e., the share of assets of the top 10 banks in a given country owned by the government of that country in 1995. This suggests that it may be possible to reconcile the findings from the cross-country analysis with the evidence for the United States by gaining a better understanding of the relation between political freedom and economic freedom.

Table 18c. Effect of Judicial Independence (III) on *Corruption TI*

	Dependent Variable	
	Corruption TI	
	WLS[1]	OLS[2]
	Coeff.	Coeff.
	(z)	(t)
	A. No Controls	
Judicial Independence (III)	-7.307***	-4.041***
	(-31.38)	(-3.25)
Constant	8.471***	7.303***
	(39.92)	(7.86)
Observations	38	38
R^2	-	0.16
	B. With Controls - 1	
Judicial Independence (III)	-2.524***	-2.027*
	(-4.46)	(-1.87)
Constant	28.064***	27.157***
	(11.34)	(7.23)
Observations	37	37
R^2	-	0.76
	C. With Controls – 2	
Judicial Independence (III)	-1.681***	-2.037***
	(-2.79)	(-2.04)
Constant	12.809**	24.818***
	(2.51)	(3.15)
Observations	37	37
R^2	-	0.77

Notes: The table presents the results of WLS and OLS regressions. The WLS regressions use as weights the reciprocals of the standard deviations of the *Corruption TI* index. The OLS regressions results are based on robust standard errors. In panel A the independent variable is judicial independence (III). In panel B the independent variables are (1) judicial independence (III), (2) ln(GDP per capita), (3) education index, (4) ethnic fractionalization, and (5) percent protestant. In panel C the independent variables are (1) judicial independence (III), (2) ln(GDP per capita), (3) education index, (4) ethnic fractionalization, (5) percent protestant, (6) ln(government size), and (7) developing country. All variables are defined in Table 17. The numbers in parenthesis are the estimated z-statistics and t-statistics, respectively. {***,**,*} indicates significant at 1, 5 and 10 percent level, respectively.

Table 18d. Effect of Constitutional Review on *Corruption TI*

	Dependent Variable	
	Corruption TI	
	WLS[1]	OLS[2]
	Coeff.	Coeff.
	(z)	(t)
	A. No Controls	
Constitutional Review	-1.308***	1.645
	(-6.01)	(0.81)
Constant	2.959***	3.110***
	(19.952)	(2.39)
Observations	38	38
R^2	-	0.02
	B. With Controls - 1	
Constitutional Review	1.869***	1.515*
	(6.54)	(1.88)
Constant	31.62***	21.172***
	(17.25)	(8.29)
Observations	37	37
R^2	-	0.75
	C. With Controls - 2	
Judicial Independence (III)	-3.066***	-2.978***
	(-6.33)	(-3.14)
Constitutional Review	1.200***	1.889**
	(4.43)	(2.39)
Constant	26.021***	28.373***
	(10.47)	(7.76)
Observations	37	37
R^2	-	0.75

Notes: The table presents the results of WLS and OLS regressions. The WLS regressions use as weights the reciprocals of the standard deviations of the *Corruption TI* index. The OLS regressions results are based on robust standard errors. In panel A the independent variable is constitutional review. In panel B the independent variables are (1) constitutional review, (2) ln(GDP per capita), (3) education index, (4) ethnic fractionalization, and (5) percent protestant. In panel C the independent variables are (1) judicial independence (III), (2) constitutional review, (3) ln(GDP per capita), (4) education index, and (5) ethnic fractionalization. All variables are defined in Table 17. The numbers in parenthesis are the estimated z-statistics and t-statistics, respectively. {***,**,*} indicates significant at 1, 5 and 10 percent level, respectively.

To check the sensitivity of these findings to the selection of corruption and judicial independence measures, I fit the data using two other corruption indicators, *corruption World Bank* and *corruption PRS*. In Tables 19a and 19b I consider *corruption*

World Bank as my measure of corruption. Table 19a shows the results of WLS and OLS cross-section regressions for the years 2000 to 2005. The number of observations varies from 61 in 2000 to 119 in 2005. Once more, the effect of the judicial independence (I) measure is significant at the 1% level and has the predicted sign. Without controls, for example, for the year 2002, the estimates suggest that, everything else constant, an increase in judicial independence of one point reduces the corruption index by 0.075 units. The regressions in panels B and C introduce the same control variables used in the specifications reported in Tables 18a-b. The results are similar with those from the previous findings. Even though the estimates get smaller once I introduce additional controls, they all remain significant at the 1% level and have the predicted sign in all the regressions. Moreover, the parameter estimates do not change considerably depending on the estimation technique, but the z-statistics are smaller in the WLS regressions.

Table 19b shows the effect of the judicial independence (II) measure on *corruption World Bank*. The estimates without controls are all significant at the 1% level and have the expected signs. Except for the year 2000, for which the coefficient on judicial independence is not statistically significant, adding the controls in Panel B does not affect the significance or the sign of the estimates. The second set of controls has a different impact on the results. The 1998 and 2000 coefficient estimates become statistically insignificant, while the significance of the 2000 estimates decreases to the 10% level. The 2003 and 2004 estimates are statistically significant at the 1% level.

The results with regard to the *corruption PRS* indicator are presented in Tables 20a and b. Once again the estimates are consistent with my previous findings.

Table 19a. The Effect of Judicial Independence (I) on *Corruption World Bank*

	Dependent Variable									
	Corruption World Bank									
	2000		2002		2003		2004		2005	
	WLS[1]	OLS[2]	WLS[1]	OLS[2]	WLS[1]	OLS[2]	WLS[1]	OLS[2]	WLS[1]	OLS[2]
	A. No Controls									
JI (I)	-0.080***	-0.079***	-0.075***	-0.075***	-0.076***	-0.077***	-0.075***	-0.075***	-0.073***	-0.074***
	(-8.68)	(-14.04)	(-10.76)	(-15.74)	(-11.50)	(-18.50)	(-12.01)	(-16.51)	(-12.47)	(-17.55)
Cons.	0.870***	0.855***	0.825***	0.823***	0.827***	0.834***	0.808***	0.807***	0.825***	0.833***
	(14.58)	(22.15)	(21.16)	(35.06)	(22.56)	(37.29)	(24.26)	(39.73)	-25.95	(42.62)
Obs.	63	63	96	96	102	102	109	109	119	119
R^2	-	0.64	-	0.65	-	0.72	-	0.67	-	0.70
	B. With Controls - 1									
JI (I)	-0.042***	-0.038***	-0.036***	-0.036***	-0.040***	-0.041***	-0.037***	-0.037***	-0.037***	-0.038***
	(-2.96)	(-6.48)	(-3.53)	(-7.34)	(-3.94)	(-8.55)	(-4.11)	(-8.14)	(-4.10)	(-7.71)
Cons.	1.981***	1.982***	1.822***	1.742***	1.667***	1.601***	1.706***	1.624***	1.562***	1.479***
	(7.09)	(13.64)	(9.35)	(12.90)	(9.76)	(15.55)	(11.08)	(16.99)	(10.15)	(15.64)
Obs.	62	62	94	94	99	99	105	105	113	113
R^2	-	0.89	-	0.85	-	0.87	-	0.86	-	0.85
	C. With Controls - 2									
JI (I)	-0.036***	-0.031***	-0.032***	-0.033***	-0.036***	-0.036***	-0.035***	-0.035***	-0.033***	-0.034***
	(-1.95)	(-4.39)	(-2.64)	(-6.16)	(-2.87)	(-6.69)	(-2.95)	(-6.28)	(-2.89)	(-6.83)
Cons.	1.578***	1.627***	1.391***	1.379***	1.330***	1.325***	1.377***	1.370***	1.405***	1.398***
	(3.16)	(7.07)	(3.96)	(9.63)	(4.27)	(10.96)	(4.54)	(11.23)	(4.71)	(11.26)
Obs.	61	61	87	87	87	87	88	88	87	87
R^2	-	0.9	-	0.91	-	0.91	-	0.90	-	0.91

Notes: The table presents the results of WLS and OLS regressions. The WLS regressions use as weights the reciprocals of the standard deviations of the *Corruption World Bank* index. The OLS regressions results are based on robust standard errors. In panel A the independent variable is judicial independence (I). In panel B the independent variables are (1) judicial independence (I), (2) ln(GDP per capita), (3) education index, (4) ethnic fractionalization, and (5) percent protestant. In panel C the independent variables are (1) judicial independence (I), (2) ln(GDP per capita), (3) education index, (4) ethnic fractionalization, (5) percent protestant, (6) ln(government size), (7) developing country, and (8) common law. All variables are defined in Table 17. The numbers in parenthesis are the estimated z-statistics and t-statistics, respectively. {***,**,*} indicates significant at 1, 5, and 10 percent level, respectively.

Table 19b. The Effect of Judicial Independence (II) on *Corruption World Bank*

	Dependent Variable									
	Corruption World Bank									
	1998		2000		2002		2003		2004	
	WLS[1]	OLS[2]	WLS[1]	OLS[2]	WLS[1]	OLS[2]	OLS[1]	WLS[2]	OLS[1]	WLS[2]
	A. No Controls									
JI (II)	-0.234***	-0.235***	-0.246***	-0.251***	-0.261***	-0.264***	-0.257***	-0.269***	-0.273***	-0.274***
	(-7.52)	(-8.19)	(-8.61)	(-8.52)	(-9.58)	(-8.82)	(-9.95)	(-8.94)	(-10.91)	(-9.34)
Cons.	0.616***	0.617***	0.611***	0.612***	0.613***	0.610***	0.610***	0.609***	0.622***	0.620***
	(27.11)	(44.45)	(31.38)	(46.86)	(34.00)	(48.81)	(36.17)	(48.72)	(37.19)	(49.73)
Obs.	163	163	164	164	164	164	165	165	165	165
R^2	-	0.31	-	0.35	-	0.38	-	0.38	-	0.40
	B. With Controls - 1									
JI (II)	-0.079**	-0.080***	-0.051	-0.095***	-0.117***	-0.120***	-0.121***	-0.126***	-0.122***	-0.124***
	(-2.10)	(-4.22)	(-1.19)	(-5.03)	(-3.62)	(-5.92)	(-3.98)	(-6.50)	(-4.08)	(-6.32)
Cons.	1.620***	1.521***	1.409***	1.499***	1.624***	1.491***	1.574***	1.456***	1.597***	1.463***
	(10.94)	(21.49)	(4.04)	(21.11)	(12.35)	(18.20)	(12.64)	(18.57)	(12.94)	(18.27)
Obs.	147	147	94	148	151	151	148	148	148	148
R^2	-	0.72	-	0.75	-	0.72	-	0.73	-	0.73
	C. With Controls - 2									
JI (II)	-0.030	-0.033	-0.068	-0.053***	-0.074*	-0.078***	-0.091**	-0.093***	-0.087**	-0.090***
	(-0.61)	(-1.58)	(-1.61)	(-2.65)	(-1.82)	(-3.68)	(-2.33)	(-4.74)	(-2.26)	(-4.35)
Cons.	1.302***	1.341***	1.886	1.418***	1.441***	1.463***	1.349***	1.370***	1.345***	1.341***
	(3.66)	(11.41)	(6.57)	(11.82)	(4.58)	(10.44)	(4.56)	(10.44)	(4.57)	(9.77)
Obs.	94	94	94	94	95	95	93	93	93	93
R^2	-	0.86	-	0.89	-	0.88	-	0.88	-	0.87

Notes: The table presents the results of WLS and OLS regressions. The WLS regressions use as weights the reciprocals of the standard deviations of the *Corruption World Bank* index. The OLS regressions results are based on robust standard errors. In panel A the independent variable is judicial independence (II). In panel B the independent variables are (1) judicial independence (II), (2) ln(GDP per capita), (3) education index, (4) ethnic fractionalization, and (5) percent protestant. In panel C the independent variables are (1) judicial independence (II), (2) ln(GDP per capita), (3) education index, (4) ethnic fractionalization, (5) percent protestant, (6) ln(government size), (7) developing country, and (8) common law. All variables are defined in Table 17. The numbers in parenthesis are the estimated z-statistics and t-statistics, respectively. {***,**,*} indicates significant at 1, 5, and 10 percent level, respectively.

Table 20a. The Effect of Judicial Independence (I) on *Corruption PRS*

	Dependent Variable			
	Corruption PRS			
	2000	2001	2002	2003
	Coeff.	Coeff.	Coeff.	Coeff.
	(t)	(t)	(t)	(t)
	A. No Controls			
Judicial Independence (I)	-0.358***	-0.319***	-0.377***	-0.369***
	(-5.95)	(-6.60)	(-9.35)	(-9.24)
Constant	4.700***	4.443***	5.189***	5.151***
	(12.61)	(16.08)	(25.23)	(23.89)
Observations	61	82	94	98
R^2	0.37	0.38	0.53	0.50
	B. With Controls - 1			
Judicial Independence (I)	-0.158**	-0.072	-0.190***	-0.215***
	(-2.22)	(-1.15)	(-4.46)	(-4.28)
Constant	8.751***	10.804***	8.687***	7.648***
	(6.19)	(8.58)	(7.96)	(7.18)
Observations	60	80	92	95
R^2	0.56	0.57	0.65	0.57
	C. With Controls - 2			
Judicial Independence (I)	-0.163*	-0.123*	-0.157***	-0.177***
	(-1.83)	(-1.73)	(-3.06)	(-3.26)
Constant	8.032***	9.628***	6.336***	5.078***
	(2.87)	(5.24)	(4.95)	(4.15)
Observations	59	77	86	86
R^2	0.58	0.64	0.77	0.75

Notes: The table presents the results of OLS regressions based on robust standard errors. In panel A the independent variable is judicial independence (I). In panel B the independent variables are (1) judicial independence (I), (2) ln(GDP per capita), (3) education index, (4) ethnic fractionalization, and (5) percent protestant. In panel C the independent variables are (1) judicial independence (I), (2) ln(GDP per capita), (3) education index, (4) ethnic fractionalization, (5) percent protestant, (6) ln(government size), (7) developing country, and (8) common law. All variables are defined in Table 17. The numbers in parenthesis are the estimated t-statistics. {***,**,*} indicates significant at 1, 5 and 10 percent level, respectively.

Table 20b. The Effect of Judicial Independence (II) on *Corruption PRS*

	Dependent Variable					
	Corruption PRS					
	1998	1999	2000	2001	2002	2003
	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.
	(t)	(t)	(t)	(t)	(t)	(t)
	A. No Controls					
Judicial Independence (II)	-1.276***	-1.301***	-1.272***	-1.226***	-1.274***	-1.217***
	(-6.36)	(-6.81)	(-6.82)	(-6.56)	(-7.02)	(-6.49)
Constant	3.510***	3.571***	3.622***	3.752***	4.101***	4.006***
	(27.28)	(30.16)	(33.98)	(34.24)	(52.00)	(47.17)
Observations	126	134	135	135	135	135
R^2	0.24	0.26	0.26	0.25	0.29	0.27
	B. With Controls - 1					
Judicial Independence (II)	-0.519**	-0.613***	-0.647***	-0.621***	-0.686***	-0.669***
	(-2.60)	(-3.29)	(-3.56)	(-3.36)	(-4.56)	(-4.17)
Constant	5.729***	5.788***	6.273***	6.719***	7.144***	7.256***
	(7.94)	(8.27)	(8.94)	(8.80)	(10.02)	(10.54)
Observations	115	122	123	123	126	122
R^2	0.46	0.47	0.50	0.46	0.51	0.48
	C. With Controls - 2					
Judicial Independence (II)	-0.439*	-0.566**	-0.526**	-0.401*	-0.378**	-0.257
	(-1.93)	(-2.41)	(-2.21)	(-1.74)	(-2.23)	(-1.42)
Constant	6.525***	6.733***	7.029***	6.882***	6.317***	5.302***
	(4.85)	(4.42)	(4.48)	(4.56)	(5.56)	(4.46)
Observations	90	92	92	92	93	91
R^2	0.55	0.56	0.57	0.58	0.72	0.68

Notes: The table presents the results of OLS regressions based on robust standard errors. In panel A the independent variable is judicial independence (II). In panel B the independent variables are (1) judicial independence (II), (2) ln(GDP per capita), (3) education index, (4) ethnic fractionalization, and (5) percent protestant. In panel C the independent variables are (1) judicial independence (II), (2) ln(GDP per capita), (3) education index, (4) ethnic fractionalization, (5) percent protestant, (6) ln(government size), (7) developing country, and (8) common law. All variables are defined in Table 17. The numbers in parenthesis are the estimated t-statistics. {***,**,*} indicates significant at 1, 5, and 10 percent level, respectively.

In Table 20a, I present the result of OLS cross-sections regressions for the years 2000 to 2003. With controls, the coefficient estimates are significant at the 1% percent level and have the predicted sign. When I add the first set of controls, some of the coefficients on the judicial independence variable maintain their signs but become less significant: for the year 2000, the coefficient is significant at the 5% level, for 2001, the coefficient is insignificant, and for 2002 – 2003, the coefficients remain significant at the 1% level. Adding the second set of controls does not change much the significance of my results: the years 2000-2001 are still significant at the 10% level, while 2002-2003 are significant at the 1% level. For the year 2002 for example, the estimates suggest that an increase in judicial independence of one point (from Malawi, with a score of six, to Ireland, with a score of seven) reduces the corruption index by 0.15 (roughly to the United States level), on average. Table 20b shows the results on judicial independence (II). Without controls and with the first set of controls, the coefficient estimates have the expected sign and are significant at the 1% level. When I add the second set of controls, the coefficients became slightly smaller in magnitude and significant at the 5% level (years 1999, 2000, and 2002) or 10% level (years 1998 and 2001).

Overall, it appears that the relation between judicial independence and corruption is robust to the way corruption and judicial independence levels are measured, to the estimation technique, and in general to the inclusion of various control variables.

5.4. Additional Robustness Checks

This section extends my analysis of the effect of judicial independence on corruption to panels of data with cross-sectional and time-series observations for 1998 to 2005. Tables 21 through 23 report the results of pooled OLS, WLS, and panel data regressions using *corruption TI*, *corruption World Bank*, and *corruption PRS*, respectively, as dependent variables, and judicial independence (I), (II), and controls as independent variables. One of the key issues when considering panel data regressions is the choice of estimator. I believe that the "between" estimator would best fit my models, since this estimator captures the cross-country information in the data. Moreover, my variables of interest, as well as many of the controls, exhibit very little variation over time. Therefore, the information content of the data corresponds to a great extent to the cross-country variation in the data.

For completeness I also report the results of “random effects” and “fixed effects” estimations. The presence of time invariant independent variables in the specification makes it difficult to use a “fixed effects” model. To facilitate this, I decompose every time variant variable in the model into two variables: *average(s)* and *delta(s)*. *Average* is just the mean of each variable over the sample period, by country, while *delta* is the difference from the mean. I then fit a random effects model on all *averages* and *deltas* along with the variables that do not vary over time. The coefficients I obtain should equal the coefficients that would be estimated separately by the "between" estimator and the "fixed-effects" estimator, respectively. Table 21 reports the results of panel regressions of both judicial independence measures on *Corruption TI* for the years 2000-2005 and 1998-

2004, respectively. With or without controls, the coefficient estimates are significant at the 1% level and have the predicted sign. In Table 22, the dependent variable is replaced by the *Corruption World Bank* index. The results look similar to those presented in Table 21, except for the "fixed effects" estimator, for which the coefficient estimates are not significant. This is no surprise since, as I mentioned above, most of the information contained in the data comes from the cross-country variation. The results presented in table 23 are very similar to those in table 22. The parameter estimates are significant at the 1% level and have the sign predicted by my hypothesis, except for the "fixed effects" estimator. These additional robustness checks provide further evidence in support of my hypothesis that judicial independence is associated with lower corruption levels.

Table 21. Effect of Judicial Independence on *Corruption TI*: Pooled OLS, WLS, and Panel Estimations

	Dependent Variable							
	Corruption TI							
Independent Variable	Judicial Independence (I)					Judicial Independence (II)		
	2000 - 2005					1998 - 2004		
	OLS[1]	WLS[2]	BE[3]	FE[4]	RE[5]	OLS[1]	WLS[2]	BE[3]
	A. With Controls - 1							
Judicial Independence	-0.400***	-0.452***	-0.447***	-0.053**	-0.123***	-1.077***	-1.637***	-1.375***
	(-18.23)	(-23.03)	(-8.34)	(-2.57)	(-6.16)	(-11.58)	(-24.40)	(-5.37)
Constant	17.996***	23.967***	16.498***	16.496***	17.849***	19.148***	22.567***	16.954***
	(31.04)	(54.26)	(20.26)	(20.68)	(24.93)	(36.38)	(70.91)	(16.01)
Observations	473	289	538	538	538	582	480	582
R^2	0.87	-	0.87	0.02	0.82	0.81	-	0.81
	B. With Controls - 2							
Judicial Independence	-0.315***	-0.249***	-0.388***	-0.063***	-0.097***	-0.587***	-0.659***	-0.753***
	(-12.25)	(-10.26)	(-5.87)	(-3.02)	(-4.80)	(-5.80)	(-8.33)	(-2.91)
Constant	14.576***	15.172***	13.332***	13.403***	13.756***	15.752***	14.781***	16.304***
	(17.98)	(16.89)	(8.27)	(8.29)	(10.35)	(19.94)	(21.34)	(8.03)
Observations	445	284	481	481	481	540	457	540
R^2	0.90	-	0.90	0.03	0.87	0.87	-	0.89
	C. With Controls - 3							
Judicial Independence	-0.317***	-0.284***	-0.377***	-0.063***	-0.096***	-0.597***	-0.727***	-0.753***
	(-12.58)	(-11.72)	(-5.56)	(-2.98)	(-4.65)	(-5.82)	(-9.06)	(-2.82)
Constant	15.324***	17.524***	13.112***	13.028***	14.110***	15.997***	15.612***	16.249***
	(16.82)	(19.23)	(7.19)	(6.94)	(10.21)	(17.20)	(20.84)	(6.97)
Observations	442	321	478	478	478	540	457	540
R^2	0.90	-	0.90	0.05	0.87	0.87	-	0.89

Notes: The pooled OLS regressions results are based on robust standard errors. The pooled WLS regressions use as weights the standard deviations of the perceived corruption levels. Using panel data, I report the "between estimation" results, and the results of estimations with fixed effects and random effects. In panel A the independent variables are (1) judicial independence, (2) ln(GDP per capita), (3) education index, (4) ethnic fractionalization, and (5) percent protestant. In panel B the independent variables are those included in panel A plus (6) ln(government size), (7) developing country, and (8) common law. In panel C the independent variables are those included in panel B plus (9) ln(investment), (10) federal, and (11) freedom of the press index. All variables are defined in Table 17. The numbers in parenthesis are the estimated t-statistics and z-statistics, respectively. {***,**,*} indicates significant at 1, 5 and 10 percent level, respectively.

Table 22. Effect of Judicial Independence on *Corruption World Bank*: Pooled OLS, WLS, and Panel Estimations

	Dependent Variable							
	Corruption World Bank							
Independent Variable	Judicial Independence (I)					Judicial Independence (II)		
	2002 - 2005					2002 - 2004		
	OLS[1]	WLS[2]	BE[3]	FE[4]	RE[5]	OLS[1]	WLS[2]	BE[3]
	A. With Controls - 1							
Judicial Independence	-0.038***	-0.037***	-0.042***	-0.001	-0.007***	-0.136***	-0.131***	-0.148***
	(-16.18)	(-7.16)	(-8.51)	(-0.65)	(-3.28)	(-10.57)	(-6.36)	(-6.33)
Constant	1.532***	1.634***	1.512***	1.512***	1.661***	1.331***	1.477***	1.334***
	(21.25)	(15.55)	(19.98)	(20.39)	(23.17)	(24.16)	(16.32)	(14.64)
Observations	358	358	411	411	411	376	376	376
R^2	0.86	-	0.86	0.00	0.80	0.74	-	0.74
	B. With Controls - 2							
Judicial Independence	-0.032***	-0.031***	-0.040***	-0.000	-0.006***	-0.085***	-0.080***	-0.096***
	(-12.41)	(-5.04)	(-7.49)	(-0.10)	(-3.08)	(-7.45)	(-3.27)	(-4.31)
Constant	1.358***	1.366***	1.328***	1.359***	1.370***	1.502***	1.488***	1.543***
	(20.13)	(7.34)	(9.77)	(9.92)	(10.99)	(15.71)	(7.03)	(8.65)
Observations	323	323	349	349	349	251	251	251
R^2	0.91	-	0.92	0.00	0.87	0.89	-	0.90
	C. With Controls - 3							
Judicial Independence	-0.031***	-0.030***	-0.037***	-0.000	-0.006***	-0.080***	-0.076***	-0.089***
	(-12.57)	(-4.79)	(-7.01)	(-0.05)	(-2.89)	(-6.87)	(-3.03)	(-4.00)
Constant	1.251***	1.279***	1.188***	1.213***	1.240***	1.367***	1.405***	1.400***
	(14.81)	(6.19)	(8.00)	(8.04)	(9.71)	(12.15)	(5.93)	(6.96)
Observations	320	320	346	346	346	251	251	251
R^2	0.91	-	0.92	0.02	0.89	0.90	-	0.90

Notes: The OLS regressions results are based on robust standard errors. The pooled WLS regressions use as weights the standard deviations of the perceived corruption levels. Using panel data, I report the "between estimation" results, and the results of estimations with fixed effects and random effects. In panel A the independent variables are (1) judicial independence, (2) ln(GDP per capita), (3) education index, (4) ethnic fractionalization, and (5) percent protestant. In panel B the independent variables are those included in panel A plus (6) ln(government size), (7) developing country, and (8) common law. In panel C the independent variables are those included in panel B plus (9) ln(investment), (10) federal, and (11) freedom of the press index. All variables are defined in Table 17. The numbers in parenthesis are the estimated t-statistics and z-statistics, respectively. {***,**,*} indicates significant at 1, 5 and 10 percent level, respectively.

Table 23. Effect of Judicial Independence on *Corruption PRS*: Pooled OLS and Panel Estimations

	Dependent Variable					
	Corruption PRS					
Independent Variable	Judicial Independence (I)				Judicial Independence (II)	
	2000 - 2003				1998 - 2003	
	OLS[1]	BE[3]	FE[4]	RE[5]	OLS[1]	BE[2]
	A. With Controls - 1					
Judicial Independence	-0.179***	-0.187***	-0.066	-0.159***	-0.656***	-0.624***
	(-6.09)	(-3.77)	(-1.41)	(-4.50)	(-8.12)	(-3.23)
Constant	7.639***	7.669***	7.607***	7.539***	5.924***	6.047***
	(10.78)	(9.52)	(9.40)	(9.38)	(15.11)	(7.64)
Observations	297	327	327	327	620	620
R^2	0.61	0.62	0.11	0.57	0.49	0.57
	B. With Controls - 2					
Judicial Independence	-0.145***	-0.180**	-0.060	-0.138***	-0.487***	-0.387*
	(-4.39)	(-3.24)	(-1.24)	(-3.61)	(-5.26)	(-1.87)
Constant	6.033***	6.568***	6.249***	5.817***	6.024***	6.456***
	(6.77)	(4.83)	(4.52)	(4.18)	(8.67)	(3.82)
Observations	286	308	308	308	492	492
R^2	0.68	0.75	0.11	0.66	0.61	0.71
	C. With Controls - 3					
Judicial Independence	-0.141***	-0.161***	-0.052	-0.127***	-0.394***	-0.259
	(-4.50)	(-2.90)	(-1.06)	(3.29)	(-4.36)	(-1.24)
Constant	4.824***	5.209***	4.516***	4.906***	4.577***	4.716**
	(4.66)	(3.46)	(2.93)	(3.25)	(5.77)	(2.63)
Observations	284	306	306	306	492	492
R^2	0.68	0.77	0.13	0.67	0.63	0.74

Notes: The OLS regressions results are based on robust standard errors. The panel regressions use the between estimation method. In panel A the independent variables are (1) judicial independence, (2) ln(GDP per capita), (3) education index, (4) ethnic fractionalization, and (5) percent protestant. In panel B the independent variables are those included in panel A plus (6) ln(government size), (7) developing country, and (8) common law. In panel C the independent variables are those included in panel B plus (9) ln(investment), (10) federal, and (11) freedom of the press index. All variables are defined in Table 17. The numbers in parenthesis are the estimated t-statistics and z-statistics, respectively. {***,**,*} indicates significant at 1, 5 and 10 percent level, respectively.

5.5. Conclusions

The development of several country-level corruption indicators in the 1990s made it possible to study the causes and consequences of corruption, and numerous authors have done so over the last 15 years. Previous empirical studies focused less on the legal environment, and mainly on aspects related to the political, economic, cultural, and socio-demographic environment of each country. This research addresses the importance of judicial checks and balances in predicting corruption levels. Using cross-sections of data for various years between 1995 and 2005, I investigate empirically the effect of judicial independence and constitutional review on corruption. I find strong support in favor of my hypothesis that higher judicial independence is associated with lower corruption levels, ceteris paribus. To eliminate suspicions that survey-based indicators do not accurately measure the variables of interest, I conduct the empirical analysis using three distinct sets of corruption and judicial independence indicators. In general, the estimation results are not sensitive to the way corruption is measured.

There is always the possibility that my analysis is affected by endogeneity, i.e., there may be unobserved country characteristics that affect both institutional design and corruption outcomes. Nonetheless, it is encouraging that my results are generally consistent with my hypotheses concerning the relation between corruption and characteristics of the legal system. Further work and estimations with suitable instrumental variables will be required to establish firm policy implications regarding the effect of judicial independence or constitutional review on corruption.

CHAPTER SIX

CONCLUSIONS

Judicial oversight provides an important check on the abuse of power by the legislative and executive branches. I investigate the relation between two distinct components of the oversight function — judicial independence and constitutional rigidity — and a specific type of abuse of power by government officials: corruption in public office. I carry out my analysis using measures of corruption derived from criminal convictions data and measures of corruption derived from survey data. In the case of the former, I propose a new empirical strategy that explicitly recognizes the distinction between the unobserved number of corrupt officials and the observed number of convictions for corruption. I show that by including variables that pick up differences in law enforcement effectiveness across states, I should be able to use convictions data to draw valid inferences about the underlying level of corruption.

The findings from my analysis of United States data are clear cut. Differences in judicial independence and constitutional rigidity at the state level in the United States explain a substantial portion of the observed variation in the number of corruption convictions across states. First, in states where judges have a greater degree of independence (higher remuneration, merit plan selection, or longer terms), there is less corruption. Second, in states that have more rigid constitutions (larger legislative majorities required to propose constitutional amendments), there is less corruption. The findings from my analysis of cross-country data are less compelling. Nonetheless, it is

clear that higher judicial independence is associated with lower corruption levels, ceteris paribus.

These finding have potentially important policy implications. There is mounting evidence from the international arena that high levels of corruption limit investment, retard economic growth, lead to ineffective government, and create economic inefficiencies and inequalities. My results suggest that judicial reforms could play a significant role in reducing the prevalence of corruption in developing economies around the world. This conclusion is tentative, however, because of endogeneity concerns. Further work will be required to establish firm recommendations in this regard.

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