

Democracy, Inequality, and Corruption: Theory and Cross-National Evidence*

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Corruption is increasingly recognized as an important obstacle for development, and many studies have explored its causes, mostly using cross-national quantitative analyses. Despite numerous cross-national studies, however, our understanding of the causes of corruption is still very limited. The direction of causal effects is often unclear, and causal mechanisms are even more ambiguous. In particular, with regard to the causal effects of democracy and economic inequality on corruption, which is the focus of this study, previous cross-national studies have not clearly established causal directions and mechanisms. In order to overcome the weaknesses of previous studies in sorting out causal directions and mechanisms, it is important to clearly present a plausible theory and theory-based hypotheses before testing them empirically.

In this book, I pay special attention to the effect of economic inequality on corruption in the context of democratic institutions. Political institutions can affect the incentives and opportunities for corruption on the part of politicians and bureaucrats, as well as the ability of the public to select, monitor, and sanction corrupt officials. Democratic institutions, such as competitive elections and checks and balances, should in principle reduce corruption compared to autocratic institutions. However, existing cross-national studies do not indicate any simple relationship between democracy and corruption. I argue that the effect of democracy on corruption is tempered by economic inequality, because high inequality can inhibit proper functioning of democratic institutions of accountability. At low levels of inequality, democratic institutions should reduce corruption. At high levels of inequality, however, the effect of democratic institutions on corruption may be nil or even negative.

I propose two major causal mechanisms linking inequality to corruption through democratic institutions. First, I argue that inequality increases the probability of powerful private interests capturing the policy-making and policy-implementing processes. Capture of legislative and

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bureaucratic processes and erosion of state autonomy can be achieved through influence (i.e.: legal lobbying and connections) or corruption (i.e.: illegal means such as bribery). Second, I argue that inequality increases the prevalence and persistence of clientelistic politics, inhibiting the development of programmatic politics. Clientelism typically involves various forms of electoral corruption, such as vote-buying. Clientelistic politicians are more likely to engage in corruption during the policy-making process in order to recoup large campaign expenses and to further mobilize clientelistic resources for subsequent elections. Clientelism also involves the provision of patronage jobs in the public sector in exchange for electoral support. Patronage appointment is a form of corruption in breach of the meritocratic recruitment principle. It further increases corruption during the policy implementation process because clientelistic bureaucrats are more likely to seek promotion via patronage than via merit.

Furthermore, the effect of economic inequality on corruption will be more pronounced in democracies than in dictatorships. This is because democratic elections are more prone to clientelism, and democratic policy processes are more vulnerable to capture by special interests than their authoritarian counterparts are. Since authoritarian regimes typically avoid holding competitive elections or only permit elections within manipulative scope, there are weaker grounds for clientelistic politics. Then, since authoritarian policy processes are centralized in the dictator, there is less scope for capture. In other words, the effect of democracy on reducing corruption depends on inequality because inequality increases the likelihood and degree of clientelism and capture.

In order to rigorously consider the effects of economic inequality on clientelism and capture in democracies, I will elaborate my theoretical arguments using the principal-agent-client model of corruption. The literature on corruption has typically understood corruption as a principal-agent problem. While this model is important in understanding corruption, considering perversion of the principal-agent relationship into patron-client relationship and the role of third party clients in the principal-agent framework will shed important insights on clientelism and capture. I will first examine why clientelism and capture are major threats to democratic accountability mechanisms, as based on the principal-agent-client model of corruption. I will then explain why economic inequality increases the likelihood of capture and clientelism. It is important to note that the effect

of inequality on corruption in democracies might demonstrate a vicious cycle of mutual reinforcement wherein high levels of corruption are likely to maintain high inequality.

After presenting my theoretical arguments and hypotheses about why the effect of democracy on corruption control decreases with inequality, I will conduct cross-national quantitative analysis to test the hypotheses. In particular, I will discuss some important issues in measuring corruption, and I will utilize instrumental variables to address pervasive problems of endogeneity. My cross-national analysis in this chapter provides convincing evidence for the main hypothesis and supports the sub-hypotheses on causal mechanisms.

1. Principal-Agent-Client Model of Corruption: Clientelism and Capture as Major Threats to Democratic Accountability

Corruption is commonly defined as “misuse of public office for private gain” (Rose-Ackerman 2008; Treisman 2007). The principal-agent model is often used to explain the phenomenon of corruption, where the principal is the public and the agent is the public official, who betrays the principal by serving her own interests at the expense of the public interests (Klitgaard 1988; Rose-Ackerman 1978). This perversion occurs because in the principal-agent relationship, there is a problem of informational asymmetry. The agent may abuse her discretionary power and exploit her informational advantage vis-à-vis the principal, and it is costly for the principal to monitor the behavior of the agent. An extension of the model is a principal-agent-client model, wherein the agent interacts on the principal’s behalf with a client (Klitgaard 1988). The agent may betray the principal (or the public interest) and collude with a client for her own private interests. For example, a tax official may abuse her discretionary power to reduce taxable income for a taxpayer in return for a bribe.

Corruption as an Agency Problem

There are multiple layers of principal-agent relationships in the political system. In a democracy, these can be thought of as a chain that runs from voters to politicians to bureaucrats. The president can be viewed as the agent of the people or of his coalition. Ministers are agents of the president. Bureaucrats in each ministry are agents of the minister. In each layer of the

principal-agent relationship, the principal delegates her power to the agent, but the agent can abuse her discretionary power, exploiting her informational advantage vis-à-vis the principal. Corruption is understood as an agency loss problem, in which politicians or bureaucrats betray their principal in order to reap private gain at the expense of public interest. Furthermore, two distinct types of corruption result from the many layers of principal-agent relationships: political corruption during the policy-making process and bureaucratic corruption during the policy implementation process.

Scholars have extensively analyzed the conditions under which agency loss is most common. This will depend on the extent of information asymmetry and the incentive structures of the principal-agent relationship. Lack of transparency in political and administrative procedures will increase the problem of information asymmetry and opportunities for corruption. Wide discretionary power on the part of public officials may increase opportunities for corruption. Furthermore, the probability of detection and the degree of punishment will affect the expected cost of corruption. Hence, the degree of corruption will be determined not only by incentives and opportunities for corruption by the agent, but also by the ability of the principal to monitor and sanction the corrupt behavior of the agent.

Clientelism, Adverse Selection, and Corruption

While the problem of agency loss is important in understanding corruption, I argue that the problem of adverse selection is equally significant. If corrupt or corruption-prone individuals are selected into public office in the first place, they are much more likely to incur agency loss once in office. Given the same opportunity and incentive structures—such as the expected material benefit and cost of corruption—psychological and reputational costs may be lower for corrupt or corruption-prone officials than for honest officials. In order to control corruption effectively, it is important to both select high-quality agents for office and provide monitoring mechanisms for those in office. In other words, reducing both adverse selection and agency loss will reduce corruption.

Democracies and dictatorships differ in how they select politicians. In democracies, competitive elections, as a vertical accountability mechanism, enable the public to select candidates and hold politicians accountable. In dictatorships, people can hold the regime accountable only through popular revolts, which are very difficult because of collective action problems and very costly because of the risk of repression. Therefore, it is not surprising that democracies are less corrupt than dictatorships on average.

Nonetheless, there are large variations in the level of corruption both among democracies and dictatorships. Although many dictatorships are corrupt, not all are. Some scholars and politicians, notably Lee Kuan Yew, former Prime Minister of Singapore, argue that authoritarian regimes are superior to democracies in controlling corruption and achieving economic growth (Zakaria 1994). Singapore is an often-cited case of authoritarian regime with a reputation of non-corruption, but it is really an exceptional case, as a vast majority of dictatorships have high levels of corruption. In dictatorships, the preferences of the dictator seem to be crucial in determining the political will for curbing corruption. Perhaps external constraints could considerably influence the preferences of dictators, although dictators might be less constrained by domestic politics than democratic leaders (Kang 2002).

There are much larger variations in corruption among democracies than among dictatorships. A large part of the democratic variation in corruption may be explained by the mode of electoral competition (i.e.: whether elections are contested via programmatic competition or clientelistic competition). In many democracies, endemic clientelism undermines programmatic politics and therefore inhibits elections as an accountability mechanism. Clientelism is contrasted with programmatic redistributive politics, which “redistribute resources from classes of non-beneficiaries to classes of beneficiaries, but within a class of beneficiaries, any people who qualify cannot be excluded.” Clientelistic benefits are “only available on condition that the client complies by providing political support” (Stokes 2009).

The selection of politicians in democratic elections can be complicated through the corrupt act of clientelism during the electoral process. The *principal-agent* relationship between the public (voters) and the politicians is converted into a *patron-client* relationship based on clientelism. In

the principal-agent relationship, politicians are supposed to represent the public interest or broad interests of their coalitions, and the voters are supposed to hold them accountable through elections. In clientelistic politics, however, the voters become clients of the politicians, who act as the patron. The voters support their patron in elections, and the patron rewards the clientele with particularistic benefits, such as cash, gifts, and the promise of jobs in the public sector. Thus, clientelism corrupts both the voters and politicians. The voters, who are supposed to be the principal but have turned into clients, and the politicians, who are supposedly the agent of their constituents but have become their patron, are engaging in corrupt exchanges. Hence, corrupt politicians are more likely to be elected through corrupt electoral process.

Clientelism undoubtedly increases adverse selection, but it can also increase agency loss. The demand for clientelistic resources will increase the incentives for politicians to divert state resources or raise funds through illicit means (Chang and Golden 2006; Kitschelt 2007; Magaloni 2006; Singer 2009). Singer (2009) finds that clientelism is significantly associated with illegal fundraising and high-level corruption, although clientelism is not significantly associated with petty bureaucratic corruption. Clientelism also undermines the ability of citizens to hold corrupt public officials accountable and fosters a culture of impunity. Since the voters' primary concerns are particularistic benefits rather than universal or broad benefits (such as provision of public goods or policies that help broad constituency), voters may continue to support corrupt politicians only if the latter continues to provide the former with various particularistic benefits. Corrupt politicians are therefore more likely to survive subsequent elections under clientelistic competition than under programmatic competition. Corrupt incumbents can maintain public support by buying off voters. Likewise, political reform candidates will find it hard to garner sufficient support when clientelistic mobilization dominates elections (Manzetti and Wilson 2007).

Beyond the link between clientelism and adverse selection of politicians, clientelism creates adverse selection problems not only for politicians but also for bureaucrats. Clientelism encourages politicians to provide patronage jobs in the public sector in exchange for support. In the chain of principal-agent relationships, politicians work simultaneously as the agent of the

voters and the principal of the bureaucrats. The voters do not select the bureaucrats, but the politicians do. In a presidential system, the president typically appoints ministers and high-level officials. Ministers appoint other officials in the central government, and governors and mayors appoint officials in provincial and local governments. Although many countries have established a system of career civil service to ensure meritocratic recruitment of civil servants, this is not always the result. The appointment authorities of the president, ministers, governors, and mayors are often abused to make patronage appointments. Whether these politicians have been elected through clientelistic competition or programmatic competition will have important consequences on the mode of bureaucratic recruitment and promotion. Those who have been elected via clientelistic competition are more likely to use bureaucratic appointments for clientelistic purposes. In addition, other politicians, such as members of the parliament, have a variety of means to influence those who have appointment authorities. Hence, clientelistic politicians may try to influence bureaucratic recruitment and promotion for clientelistic purposes even when they do not directly have appointment power.

Under clientelism, it has been observed that patronage jobs in the public sector are often exchanged for votes. The concept of patronage is closely related to clientelism, but the two concepts are distinct from each other. Patronage can be defined narrowly as the “exchange of a public sector job for political support,” while clientelism includes not only jobs but also other benefits (Robinson and Verdier 2003). Patronage can be more broadly defined as the “use of resources and benefits that flow from public office,” while clientelism includes the additional use of private resources (Hicken 2011). Robinson and Verdier (2003) explain why patronage often takes the form of employment in the public sector. A job is selective and reversible and thus ties the utility of a voter to the political success of a particular politician over time. When politicians find it difficult to make credible commitments to voters with broad public policies, patronage employment will be an attractive means of redistributing targeted goods to their supporters. Where clientelism is prevalent, meritocratic recruitment of bureaucrats is hindered by political pressure for patronage jobs. Thus, clientelism creates adverse selection problem not only for elected offices but also for appointed offices.

The adverse selection of bureaucrats will also increase to agency loss. Politicians are required to monitor and sanction bureaucrats in order to effectively counteract corruption. However,

clientelistic politicians are not likely to perform this jobs effectively and in an impartial manner. Corrupt politicians may demand kickbacks from government employees given patronage jobs or even develop corruption networks with them (Rose-Ackerman 1999, 137; Gingerich 2004). Bureaucrats who have acquired their jobs through patronage are also likely to seek promotion via patronage and thus have incentives to engage in corruption to support and reward their patrons (Hodder 2009). Weberian bureaucracy, and in particular meritocratic recruitment, is found to be closely associated with lower corruption and higher economic growth (Evans and Rauch 1999; Rauch and Evans 2000; Dahlstrom et al. 2009). It is evident that bureaucracies with rampant patronage appointments will have high levels of corruption because patronage itself is considered a kind of corruption, and it encourages further bureaucratic corruption.

The Problem of the Corrupt Client and Elite Capture

Another neglected issue in the existing corruption literature is the problem of the corrupt ‘client’, or the ‘supply’ side of corruption (Wu 2005). The literature has mostly focused on the ‘demand’ side of corruption, or corrupt behavior of the public officials as ‘agents’ of the public. Although the client can be a victim of extortion by public officials, corruption often takes place as a mutually beneficial transaction between corrupt public officials and their clients. Typically, a favor and a bribe are exchanged between them; the exchanges can be initiated by the official or by the client. Recent research on corruption in Nigeria, based on the in-depth interviews of thirty-two founders/CEOs of entrepreneurial firms, however, found that entrepreneurs were active perpetrators of bribery more frequently than they were victims of corrupt government agents (Ufere et al., 2012). Also, studies of Russia and other transition economies found that many firms were actively engaging in corruption “to shape the rules of the game to their own advantage” (Hellman, Jones, Kaufmann 2000; Iwasaki and Suzuki 2007). This finding illustrates the need for more attention on the supply side of corruption.

There are diverse kinds of clients for politicians and bureaucrats. The clients of bureaucrats include individual citizens, groups, and firms who receive various benefits and subsidies from the government; pay taxes, fees and tariffs to the government; and are regulated by the government. Private actors may offer bribes to bureaucrats to receive preferential treatment, avoid or reduce taxes, or circumvent regulations. The clients of politicians are usually those

individuals, organizations, and businesses who want to exert influence on the formulation and implementation of government policies. The bulk of these clients seek to enhance their own private interests, although there can be public interest groups and individuals, as well. Some clients may attempt to exert influence purely by providing the politicians with relevant information about the policy issue of interest. Other clients may attempt to buy influence by providing the politicians with legal campaign contributions or even illegal contributions or bribes.

Incentives for private sector clients to engage in corruption are often associated with rent-seeking opportunities with regard to government's economic policies. Entrepreneurs may seek rents in various forms of licenses and subsidies, such as tax expenditures, underpriced credit, and foreign exchange that are all associated with industrial policies. They may lobby for protection from foreign and domestic competition to in order to continue enjoying monopoly rents.

Corrupt transactions can turn into collusive relationships over time. This implies that corruption may result in systematic capture of a public agency. A regulatory agency may be captured by an industry that the agency is supposed to regulate. Legislators, the legislature, bureaucrats, and bureaucratic agencies may be captured by powerful private interests. The most concerning form of capture is the risk of "elite capture" or state capture by the wealthy elite. This is what Hellman, Jones, and Kaufmann (2000) call a "capture economy." Under elite capture, policy-making and policy-implementing processes are significantly distorted by powerful private interests. The wealthy elite can employ two means of capture: influence and corruption. Hellman, Jones, and Kaufmann (2000) distinguish between influence and state capture in regard to firm behavior. According to their definition, *state capture* addresses firms shaping and affecting the rules of the game *through private payments* to public officials and politicians, while *influence* means taking the same action *without recourse to payments*. My definition combines what Hellman, Jones, and Kaufmann call state capture, or capture by corrupt means, and what they call influence, or capture by legal means. Thus, state capture is defined as "powerful private interests shaping and affecting formulation of the rules of the game through legal (influence) and illegal (corruption) means." State autonomy means the absence of state capture.

While state capture typically involves high-level political corruption (i.e.: the capture of politicians or legislative process) and bureaucratic corruption (i.e.: the capture of a bureaucratic agency or bureaucratic process), it can take place without corruption and purely through influence. Indeed, the most powerful players in the private sector are more likely to be able to capture the policy process using their influence, while the less powerful players will be compelled to rely more on corruption in order to compensate for smaller influence. Hence, capture by the powerful interests will spread corruption among the entire private sector. The businesses will not only engage in political and bureaucratic corruption to buy favors from politicians and bureaucrats but also in corporate corruption. Corporate governance and accounting will likely become opaque and irregular with more frequent signs of illicit political contributions, bribes, illegal profits, and tax evasion. State capture, in turn, will advantage the elite, maintaining or even further increasing inequality.

In summary, in the principal (voters) – agent (politicians and bureaucrats) – client (the private sector) relationship, corruption can be thought of as a betrayal of the principal by the agent, who abuses her power for private gain by exploiting informational asymmetry. Controlling corruption requires the effective monitoring and sanctioning of politicians and bureaucrats, as the existing literature has recognized. However, the principal should prevent corrupt agents from being selected *ex ante*, and then monitor and sanction them *ex post*. While it is important to structure incentives in a way that minimizes the agent's conflict of interest and effectively monitors the behavior of the agent, it is perhaps even more important to select honest agents in the first place. Unfortunately, democratic election processes dominated by clientelism encourage adverse selection of politicians and bureaucrats. Clientelism converts the principal-agent relationship between voters and politicians into a patron-client relationship. Clientelism corrupts both voters and politicians during the electoral process. Then, corrupt politicians corrupt not only the politics (i.e.: policy-making process) but also the bureaucracy (i.e.: policy-implementing process). Thus, clientelism will not only lead to electoral corruption but also high-level political corruption and rampant bureaucratic corruption. Also, we need to consider the supply side of corruption, and in particular the capture by powerful private interests. The capture of politics and bureaucracy by powerful interests not only involves influence (i.e.: legal lobbying and connections) but also high-level political and bureaucratic corruption. It further increases the incentives of the entire

corporate sector to engage in corruption, thus increasing corporate corruption, as well. Clientelism and capture are two major risks for corruption in democracies.

Furthermore, clientelism and capture may reinforce each other. Clientelistic politicians and bureaucrats are likely to be more vulnerable to capture than programmatic politicians and bureaucrats recruited via meritocratic means because of the former's need for clientelistic resources. Also, captured politicians are more likely to rely on clientelism than non-captured politicians are because the former will find it difficult to promote the interests of the captor with programmatic politics.

2. Democracy, Inequality, and Corruption

The principal-agent-client model of corruption suggests that clientelism and capture are major threats to democratic accountability mechanisms. I argue that economic inequality increases corruption in democracies by fostering clientelism and capture. Let me first begin with a brief review of literature on clientelism and capture.

Inequality as a Cause of Clientelism

Above, I considered the link between clientelism and corruption, demonstrating that clientelistic politics leads to corruption through both adverse selection and agency loss. Here, I consider what causes clientelism to thrive instead of programmatic politics, introducing inequality as the previously overlooked explanatory variable.

Scholars have considered a variety of factors that cause clientelism. First, Keefer (2007) and Keefer and Vlaicu (2008) argue that younger democracies are more prone to clientelism because it takes time for political parties to build policy reputations. Politicians in younger democracies will find it hard to make credible pre-electoral commitments to voters. Hence, they are likely to rely on patron-client relationships to mobilize support rather than to engage in programmatic competition. It is notable that young democracies are substantially more corrupt on average than mature democracies. Cross-national studies have found that long-established democracies are

significantly less corrupt, but young democracies are not (Treisman 2000, 2007; You and Khagram 2005). An important reason why young democracies suffer from high levels of corruption is probably the tendency of widespread clientelism, or the difficulty of developing programmatic politics.

Second, some scholars have argued that political institutions, such as electoral system, can influence clientelism. Candidate-centered electoral systems tend to encourage cultivation of a personal vote and thereby clientelistic competition, compared to party-centered electoral systems, such as closed-list proportional representation (Carey and Shugart 1995; Hicken 2007). In particular, electoral rules that encourage intraparty competition will create great incentives for clientelistic competition. Many cross-national studies have examined the relationship between electoral system and corruption, and some studies have found that district magnitude is associated with lower corruption (Panizza 2001; Persson, Tabellini, and Trebbi 2003). This is perhaps because smaller districts are more prone to clientelistic mobilization. It is easier for candidates to build and maintain clientelistic networks and to buy off voters in smaller districts.

Third, the level of socioeconomic development—including variables such as income, urbanization, and education—may explain the differences in clientelism. Students of clientelism agree that poor, rural, and uneducated voters are more prone to clientelism than middle-class, urban, and educated voters. In particular, the demand for and susceptibility to vote-buying and other forms of clientelism is fueled by poverty (Brusco, Nazareno, and Stokes 2004; Calvo and Murillo 2004; Hicken 2011; Kitschelt and Wilkinson 2007; Scott 1972; Stokes 2009; Weitz-Shapiro 2012). As incomes rise, the cost of vote-buying will rise while the marginal benefit to a voter will decline. Charron and Lapuente (2010) suggest that lower income societies are likely to over-value immediate consumption, such as patronage jobs and direct cash, through clientelistic exchange. Likewise, lower income societies will more likely under-value long-term investments in administrative capacity, such as developing a meritocratic recruitment system and fighting favoritism and corruption. Charron and Lapuente further argue that the relationship between democracy and the quality of government is conditional on economic development. Democratization of rich countries will produce better quality of government, including lower corruption, but democratization of poor countries will lead to worse quality of government, including higher corruption. Urbanization may have an impact on candidate strategy independent of the income effects (Ramseyer and Rosenbluth 1993; Shugart and Nielson 1999; Bloom, Craig,

and Malaney 2001). Traditional patron-client networks, largely based on landlord-tenant relationship, are strong in rural areas, but it is difficult to create patron-client relationships in urban areas. Educational attainment may also influence electoral strategies because more educated voters are less prone to clientelism and vote-buying. Uneducated and poor citizens may discount the future and therefore prefer direct, clientelistic exchanges over indirect, programmatic linkages (Kitschelt 2000, 857).

Although the literature on clientelism generally agrees that the poor are prone to clientelism, it does not have to be that way. If the poor are well-informed and well organized, and if there is a strong political party that represents the interests of the poor, the poor will support that party, allowing programmatic competition to develop. Hence, poverty or low levels of economic development should not necessarily produce clientelistic politics. In the real world, however, the poor are typically ill-informed and disorganized. These challenges make it hard for the poor to overcome the collective action problem. Individuals will more likely make the rational choice to seek particularistic benefits in return for their political support (i.e.: vote-selling) instead of supporting the collective benefit for the public at large. This is especially true in the absence of a powerful political party that not only advocates for the interests of the poor but also has realistic chances of taking power or participating in the governing coalition.

In this regard, poverty is not the only challenge to collective action problems; high inequality is a major obstacle. Higher inequality means that a larger proportion of the population will be poor, and hence the poor will face more difficult problems of collective action due to the larger number of group members. Higher inequality also means greater relative poverty, and hence the poor will lack resources to invest in collective action. The historical experiences of social democracy in Europe show that it typically requires a large size of middle class to develop a powerful social democratic party. The poor alone cannot make a powerful political party, and they need to make a coalition with the middle class. Economic inequality leads to political inequality because all but the most affluent citizens lose subjective sense of efficacy at high levels of inequality. Without the sense of efficacy, the vast majority of the poor do not actively participate in politics (Solt 2008). For poor individuals at high levels of inequality, it is rational to pursue particularistic benefits from politicians in return for their votes.

In addition, at higher levels of inequality, the elite will have greater incentives to prevent the development of programmatic politics and to rely on clientelistic mobilization to secure support. At high levels of inequality, programmatic competition is likely to strengthen leftist parties that will jeopardize the elite interests. Hence, the rich have incentives to buy votes from the poor and to curb programmatic competition. Clientelism thus becomes an attractive political strategy for the elite in situations of high inequality, as Robinson and Verdier (2003) argued. This strategy signifies an attempt to make the vote of the large poor population meaningless in order to maintain the status quo of elite domination (Solt 2008). In an empirical study of electoral fortunes of the left in Latin America, Debs and Helmket (2010) finds that the probability of the left candidate to be elected was lower at higher levels of inequality, using 110 elections in eighteen Latin American countries from 1978 to 2008. This is presumably because the rich bribed poor voters to avoid redistribution. Thomas Markussen's (2010) empirical study of South India shows evidence for a strong association between economic inequality and political clientelism.

Inequality also increases the prevalence of patronage in bureaucratic recruitment and promotion because clientelism typically involves the provision of patronage jobs in the public sector (Calvo and Murillo 2004). Once meritocratic principles are violated by patronage appointments, bureaucratic promotion is also likely to be affected by patronage and political interference. In addition, the rich may also directly participate in politics and penetrate the bureaucracy through political appointments. The relative value of elected and appointed offices for the rich will be higher as inequality increases because the importance of political influence and discretionary bureaucratic power increases as their stake in redistributive politics increases. It is not just the political market but also bureaucratic recruitment and promotion that are corrupt. Bureaucratic penetration by the rich, in turn, will further increase patronage appointments and promotions. For example, Ziblatt (2009) finds evidence that land inequality led to penetration of local institutions by landed elites in the late 19th-century Germany. Thus, inequality will increase adverse selection of both politicians and civil servants.

Inequality as a Cause of Capture

In addition to clientelism, capture is another major threat to democratic accountability mechanisms, and capture can also be caused by inequality. Inequality increases the probability of state capture by powerful private interests. Capture of the legislature, the judiciary, and the administration by powerful private interests has the power to render democratic control mechanisms powerless.

Acemoglu and Robinson (2008) proposed a model of “captured democracy,” in which de jure political power of citizens is offset by de facto political power of the elite based on lobbying, bribery, and the use of extralegal force. “Captured democracy” is more likely at higher levels of inequality because of higher stakes and greater expected returns for the elite from controlling politics. Also, higher inequality will increase redistributive pressures, and politicians will promise more redistribution even when programmatic competition is limited and clientelistic practices are prevalent. In such circumstances, the rich have more incentives to corrupt and capture government, as You and Khagram (2005) suggest. The wealthy will try to bribe politicians in order to reduce taxes and costly regulations; they will also try to bribe bureaucrats to obtain preferential treatment. At high levels of inequality, the extremely wealthy people are very few in society. They are more likely to overcome collective action problems because of their relatively small number and abundance of resources. The capture by the powerful private interests may explain why higher inequality does not lead to higher redistribution, even among rich countries.

Todd Mitton (2008) suggests that higher economic concentration is associated with greater monopoly power and that those monopolistic firms exert greater political power to induce distortionary policies favorable to their own interests. He finds that countries with higher economic concentration had higher entry costs for new firms and weaker antitrust policy, which is presumably evidence for capture. Economic concentration was also associated with more burdensome regulation and weaker rule of law, which suggests that only the powerful firms are able to circumvent costly regulation. Other firms have to make side payments in order to circumvent regulation. Kathy Fogel (2006) finds that higher inequality was associated with greater oligarchic family control of the economy, lower shareholder rights, and less strict

accounting disclosure rules. This is evidence that powerful family-controlled business groups in high-inequality economies exert their political influence to shape rules of the game in their favor, weakening investor protection and maintaining opaque corporate governance. Another interesting finding is the significant effect of corporate governance on the level of corruption, with standard controls including democracy and economic development (Wu 2005). Both the efficacy of corporate boards in representing outside shareholders and the quality of accounting practices were found to be significantly associated with the level of corruption. Taking Fogel's (2006) and Wu's (2005) findings together, it can be inferred that higher inequality is associated with greater oligarchic family control and worse corporate governance, which in turn is associated with higher corruption.

Inequality and Corruption in Democracies and Dictatorships

The above review of literature on clientelism and capture suggests that high inequality will increase clientelism and capture in democracies. Clientelism will directly increase petty electoral corruption and encourage political corruption. Clientelism will also increase patronage in bureaucratic recruitment, which will increase bureaucratic corruption. Capture will involve high-level political and bureaucratic corruption, and it will spread corporate corruption.

In addition, the effectiveness of anti-corruption agencies and various reform measures in democracies is likely to be weaker as inequality increases. In democracies, politicians should show responsiveness to popular demand for anti-corruption reform, but the reforms could be rhetorical or genuine depending on the political will of the top leadership and the strength of civil society. Effectiveness of the prosecution and of various oversight agencies may also depend on the political will and civil society. Anti-corruption measures will be more effective when the monitoring capacity of the civil society is higher, but that capacity is likely to be lower at higher levels of inequality. The middle class is more likely than the poor to actively organize and monitor the malfeasance of politicians and high-level public officials. The relative size of the middle class tends to be larger in lower-inequality countries. Also, clientelism and capture will make genuine anti-corruption reform difficult to occur and sustain. Clientelism creates incentives for politicians to resist genuine anti-corruption reforms, and clientelistic politicians may try to

make anti-corruption measures toothless and ineffective (Geddes 1994; Singer 2009). Powerful private interests may also resist anti-corruption reforms if these reforms jeopardize their ability to capture the state. This discussion begs the question: What is the effect of economic inequality on corruption in dictatorships? Inequality may not be a significant factor for corruption in dictatorships because the causal mechanisms proposed above are more relevant for democracies. Since authoritarian regimes typically do not hold competitive elections, there is less scope for clientelistic politics. Since authoritarian policy processes are centralized in the authoritarian ruler or ruling party, there is less scope for capture. However, many dictatorships often hold elections—even if they are not truly competitive—as a mechanism to legitimize their rule. Authoritarian regimes usually manipulate electoral rules, limit the abilities of opposition candidates to campaign, and rely on coercion, intimidation, and fraud in elections. But many soft authoritarian regimes or illiberal electoral democracies combine clientelistic mobilization, or “competitive clientelism,” with intimidation and fraud (Gandhi and Lust-Okar 2009). To the extent that authoritarian regimes hold some degree of competitive elections, inequality could increase the clientelism employed during elections in these regimes as well. Considering all things together, we can expect that the effect of inequality on corruption in *liberal democracies* will be higher than that in *illiberal electoral democracies*, which in turn will be higher than that in *dictatorships*.

General Hypotheses

Based on the above discussion, I will explore the following main hypothesis (H1) about the effect of democracy and economic inequality on corruption and three sub-hypotheses (MH1-MH3) about causal pathways through which inequality increases corruption in democracies.

H1: In democracies, corruption increases with inequality. In other words, the effect of democracy on reducing corruption is negatively associated with the level of economic inequality.

Mechanism Hypothesis 1 (MH1): High inequality increases clientelism (electoral corruption) and thereby political corruption (corruption during the policy-making process).

Mechanism Hypothesis 2 (MH2): High inequality increases patronage appointments in bureaucracy and thereby bureaucratic corruption (corruption during the policy implementation process).

Mechanism Hypothesis 3 (MH3): High inequality increases state capture by the powerful private interests and thereby corporate corruption.

In addition, the following hypothesis (H2) is a corollary to the main hypothesis (H1). The two hypotheses (H1 and H2) are like two sides of the same coin.

H2: The effect of economic inequality on corruption in *liberal democracies* will be higher than that in *illiberal electoral democracies*, which in turn will be higher than that in *dictatorships*.

3. Data and Methods

There are numerous cross-national analyses of the causes of corruption, but the results often differ depending on the data and methodology. In particular, the reliability and accuracy of cross-national measures of corruption has been a subject of unresolved controversy. Therefore, it is important to understand the issues in measuring corruption and the pros and cons of various available data on corruption.

Measuring Corruption

It is inherently difficult to measure corruption because most corrupt acts are conducted secretly. Objective measures of corruption, such as the number or proportion of corruption convictions or newspaper articles on corruption, may reflect the rigor and effectiveness of the judicial system or the freedom of the press rather than the actual level of corruption. Hence, it is often argued that measures of perceived corruption are actually more reliable than objective measures of corruption for cross-national comparison. Perceived measures of corruption, however, are subjective by definition and are hence prone to bias and errors.

A lot of empirical research on the causes and consequences of corruption has been facilitated by the availability of the cross-national measures of perceived corruption, such as Transparency International's Corruption Perceptions Index (CPI) and Kaufmann, Kraay, and Mastruzzi's (2012) Control of Corruption Indicator (CCI). Both CPI and CCI are composite indexes of perceived corruption, aggregated from multiple sources and based on expert assessments or surveys of business people and households. Proponents of these measures note that there are high inter-correlations among the sources and argue that aggregation can help reduce measurement error. Another perceived measure of corruption widely used by scholars is the Political Risk Service Group's International Country Risk Guide (ICRG) index of corruption. The ICRG index of corruption is one of the many indicators of investment risks that are commercially provided to international investors. One advantage of this index is that the data has been available for a relatively long period of time since 1984, and there have been attempts to conduct panel data regressions using the data. However, Johanne Lambsdorff (1995), architect of the CPI, raised doubt about the reliability of the ICRG index. He noted that it measures *political risks* rather than *degrees* of corruption. The CPI has not included the ICRG measure as a source because of this concern. However, the reduction of measurement error due to the aggregation of multiple sources of data may not be as robust as expected because the sources are not perfectly independent (Knack 2006). Since the CPI is widely publicized, it is likely to influence the ratings by other agencies, which, in turn, become the sources of the CPI in subsequent years. Knack (2006) found some evidence that the ICRG index was readjusted to conform more closely to the CPI. The correlation between the ICRG and CPI in June 2001 was only .72, but it rose to .91 with the massive recalibration by ICRG in November 2001. This evidence of interdependence between CPI and ICRG implies a circularity problem for CCI, which uses ICRG as a source. This also raises a problem with longitudinal data analysis using the ICRG data.

Measurement error is a particularly serious concern for the purpose of trend analysis. Although the correlation between CPI and CCI for any given year is close to one (typically, $r = 0.97$ or 0.98) and the correlations between their source data are also generally very high, the correlation between change in CPI and change in CCI is not very high. When I correlated the change in the CPI and CCI over the one-year or two-year period, I found that the correlation was usually insignificant and that the sign was even negative in some cases. When I compared changes in CPI and changes in CCI over longer time spans of three years or more, the

correlations became modestly higher and statistically significant. Two correlations demonstrate that the variations across time within these countries contain a lot of noise: the extremely high correlations between various years of CPI and CCI along with the low (and even negative) correlations between yearly changes in CPI and changes in CCI. Although both CPI and CCI are constructed based on various surveys and country ratings by experts, there are some differences in their selection of sources and countries in the data. For the CPI, countries are included if three or more sources of data are available. The CCI includes every country for which at least one source data is available. Each year, different sources of data can be used for the same country, and the addition of new source data or the removal of previously used source data can change the CPI score of a particular country. This can happen even when all the common sources of data do not change their ratings of that country. Also, TI has strived for methodological improvement each year. As Lambsdorff (2007) noted, year-to-year changes of a country score may not only result from the changing perception of a country but also from a changing sample and methodology. Moreover, people's perceptions can be volatile. Even when a country's real level of corruption remains the same, the media exposure of corruption scandals can fluctuate and public perceptions will be affected accordingly. Then, yearly variation will reflect the fluctuation in perceptions rather than the true change in corruption levels. In addition, the CPI, as well as its source data, may be affected by economic performance (Donchev and Ujhelyi 2007). For example, the CPI for Argentina was 5.2 in 1995 when its economy performed well. By 2002, however, the Argentine economy was in ruins and its CPI score plummeted to 2.8. The CPI on Argentina might have declined not because corruption increased but because the poor performance of the economy convinced the observers that corruption must be higher than they thought it had been (Seligson 2006). There is a concern that systemic bias in favor of rich countries in the cross-national measures of corruption may lead to overestimation of the effect economic development has on corruption in OLS regressions.

This discussion reveals some pitfalls in the cross-national "perceived" measures of corruption such as the CPI and the CCI. In order to solve the potential biases in the perceived measures of corruption, a promising method of measuring "experience" of corruption has been developed. For example, TI's annual Global Corruption Barometer (GCB) surveys have asked the respondents about their experience of bribery since 2004. The new approach has been partly inspired by crime-victimization surveys. Criminologists have long recognized the unreliability of

official crime rates and developed crime-victimization surveys, which are widely believed to provide a more accurate tally of crime rates (Seligson 2006). Micro-surveys of the experience of corruption were also successfully used to elicit information about firms' extra payment or bribery payment (Reinikka and Svensson 2006). One concern about experience surveys is the possibility of underreporting. Individuals may not honestly report their experiences of corruption out of the fear of possible legal trouble. Focus-group research, however, has shown that an underreporting problem exists but is surprisingly limited, according to Seligson (2006). Another critique of this survey approach is that it measures only low-level corruption and misses high-level corruption. Special caution is required about the survey methodology and the exact wording of the questionnaire because different methodology (i.e.: face-to-face survey versus phone survey) and different question wordings can produce different results with different degrees of underreporting. In fact, experience survey data also suffers from large measurement errors. The GCB surveys of bribery experience show substantial yearly fluctuations within countries, which are likely largely due to measurement errors rather than actual yearly changes in bribery.

Measures of perceived and experienced corruption have different characteristics. Cross-national measures of perceived corruption, such as the CPI and CCI, largely represent the views of experts and businesspeople. These views are not necessarily based on their direct experience and can be influenced by media reports and other information. The CPI and CCI are likely to reflect high-level corruption rather than petty corruption. On the other hand, data from the experience of bribery surveys are likely to reflect the petty corruption experienced by ordinary people rather than high-level corruption. Fortunately, the two measures correlate highly. The correlation between the GCB data on the public experience of petty bribery and the CPI or CCI is quite strong, with $r=0.62$ or $r=0.63$. The correlation becomes even higher if logarithm of GCB bribery is used, with $r=0.8$ for both CPI and CCI. Such high correlations confirm that the perceived measures of corruption, such as CPI and CCI, substantially reflect the actual levels of corruption experienced by the people.

These correlations also imply that there is a very high correlation between petty corruption and grand corruption. Political systems that are very corrupt at the level of day-to-day transactions are also highly corrupt at the top (Seligson 2006). Therefore, both the measures of perceived corruption and experienced corruption are useful and reliable if we pay close attention

to the small differences across countries and small variations over time within countries. Various measures of perceived and experienced corruption can also be supplementary. However, substantial noise in the yearly variations within countries of both perceived and experienced measures of corruption requires special caution in regard to longitudinal data analysis. The correlation between CPI 1995 and CPI 2012 is 0.94, and that between CCI 1996 and CCI 2011 is 0.89, which indicates that perceived corruption is variable and changes very slowly over time in most countries.

Another problem presented by using composite indexes such as CPI and CCI is that they lack a precise definition of the corruption they measure. The source data used for these indexes lack conceptual precision, and the aggregation of multiple sources further compounds the conceptual problem. Hence, if researchers need measures for different types of corruption, they should look at individual indicators of corruption or survey data on responses to specific questions. For example, the GCB experience of bribery may largely reflect petty bureaucratic corruption. If one is interested in cross-national measures for political, judicial, and corporate corruption, World Economic Forum's annual surveys of business people provide useful data. These surveys include some questions on different types of corruption and have found that the perceived levels of different corruption types are closely correlated with the CPI and CCI. In particular, corporate corruption is very highly correlated with both CPI and CCI at more than 0.9, while the correlation between perceived political corruption and CPI or CCI is around 0.8.

Some researchers have used the official statistics of corruption convictions for the study of corruption in the United States (Alt and Lassen 2003). Perhaps official statistics on prosecution or conviction of corruption can be better used for cross-time comparison within a country than for cross-national comparison. There is too much variation across countries in the rigor and effectiveness of judicial system, as well as the legal definition of corruption, to compare official statistics on corruption. This problem is largely solved in regard to within-country analysis, and there is usually substantial information on over-time changes in the efforts and effectiveness of the anti-corruption agencies, as well as the political will to fight corruption.

In summary, both perceived and experienced measures of corruption contain large measurement error. Yearly variations are likely to contain more noise than real changes in actual

level of corruption. Short-run changes in perceived corruption are likely to correlate with other determinants such as economic performance, and thus are less likely to be useful, but high correlations between measures for perceived corruption and those for experienced corruption suggest that both kinds of measures are reliable to a considerable extent. Considering the high correlation between CPI or CCI scores for the earliest available year and the latest year and the reliability issues regarding the ICRG index, I will not conduct panel data analysis. Since no single measure of corruption is perfect, this study will use a variety of available data, including measures of both perceived and experienced corruption.

Data

In my analysis of cross-national patterns of corruption and inequality across levels of democracy, I rely on the large dataset compiled by the Quality of Government Institute at University of Gothenburg (Teorell et al. 2011). The QoG Standard Dataset provides data on a range of indicators of government quality, including many political, economic, social, and geographic variables. I use its cross-section data for circa 2002 (version 6Apr11).. I supplement it with some additional data on corruption, inequality, and instrumental variables from other sources.

As measures of corruption, I use the CPI, CCI, ICRG, TI's Global Corruption Barometer (GCB) surveys, and the World Economic Forum's Executive Opinion Surveys. Since data on some important variables are not available for years after 2002 in the dataset, I use the average values of CPI and CCI for the five-year period between 2002 and 2006 instead of single-year data. Since the levels of corruption for most countries change little for a five-year period (the correlation between CPI 2002 and CPI 2006 is 0.96, and the equivalent for CCI is 0.94), and short-term variations may contain more measurement errors than real changes, averaging will help reduce measurement error. The CPI scores can range between zero (most corrupt) and ten (least corrupt), and a higher value counterintuitively represents a lower level of corruption. The CCI scores have a mean of zero and a standard deviation of one, and a higher value represents a better control of corruption, or a lower level of corruption.

Next, I use the ICRG indicator for quality of government (ICRG_QoG), which is the mean value for the ICRG variables "Corruption", "Law and Order" and "Bureaucracy Quality," scaled

0-1. Higher values indicate higher quality of government. The QoG dataset does not provide data for component variables because the PRS Group makes them available only for purchase.¹ I also use data on experience with bribery from TI's Global Corruption Barometer (GCB) surveys (GCB_Bribery) as a measure of petty bureaucratic corruption. GCB_Bribery is the percentage of respondents whose family member has paid a bribe to any public officials during the last year, averaged for every survey done for each country from 2004 to 2010/2011. As measures for political corruption and corporate corruption, I use data from the World Economic Forum's Executive Opinion Surveys. Three questions ask about the extent of irregular payments in government policy-making, the prevalence of illegal political donations, and the policy consequences of legal political donations. I use the average value for these responses to represent political corruption. These questions were asked in 2002, 2003, 2004, and 2006. Corporate corruption is denoted by the average evaluation of the corporate ethics displayed in firms in the country, compared with other countries in the world, averaged for 2003 and 2006. The response values for the questions on political and corporate corruption range between one (among the worst in the world) and seven (among the best in the world).

In addition to the measurement challenges discussed regarding corruption, there are many issues with regard to conceptualization and measurement for the two key explanatory variables, democracy and economic inequality.² In order to robustly identify the effect of democracy and inequality on corruption, I use several measures of democracy and economic inequality. As a measure of democracy as a dichotomous variable (democracy vs. dictatorship), I use data created by Cheibub, Gandhi and Vreeland (2010).³ I also constructed a three-category measure of

¹ The component variables can be purchased at <http://www.countrydata.com>. Law and Order measures the strength and impartiality of the legal system, as well as popular observance of the law. Bureaucratic quality measures the strength and expertise to govern without drastic changes in policy or interruptions in government services. High quality bureaucracy tends to be somewhat autonomous from political pressure and to have an established mechanism for recruitment and training (QoG Standard Dataset Codebook 2011).

² Regarding the issues in conceptualizing and measuring democracy, see Munck and Verkuilen (2002). Regarding the issues in measuring income inequality, see Deininger and Squire (1996).

³ Coded 1 if democracy, 0 otherwise. "A regime is considered a democracy if the executive and the legislature is directly or indirectly elected by popular vote, multiple parties are allowed, there is de facto existence of multiple parties outside of regime front, there are multiple parties within the

democracy: *liberal democracy*, *illiberal electoral democracy*, and *dictatorship*. *Liberal democracies* are countries which the Freedom House assigns “Free” status⁴. *Illiberal electoral democracies* are countries wherein multiple parties win seats in the legislature, and multiple parties compete in the executive elections based on Beck et al.’s (2001) database of political institutions⁵ but which do not qualify as “Free” countries according to the Freedom House. *Dictatorships* are countries that fall short of illiberal electoral democracy. As measures of democracy as a continuous variable, I use the Polity IV Combined Score (Marshall and Jaggers 2002) and the Freedom House’s political rights score.⁶ The Combined Polity Score ranges between -10 (strongly autocratic) and +10 (strongly democratic). I converted the Freedom House’s score (between one and seven) so that a higher score may represent a freer society. I also use the Freedom House index of Press Freedom, which ranges from zero (least free) and 100 (most free).⁷ Lastly, I use “Years of electoral democracy” from data created by Treisman (2007).

legislature, and there has been no consolidation of incumbent advantage (e.g. unconstitutional closing of the lower house or extension of incumbent’s term by postponing of subsequent elections). Transition years are coded as the regime that emerges in that year” (QoG Standard Dataset Codebook 2011).

⁴ Freedom House labels countries “Free”, “Partly Free”, or “Not Free” according to the average of their political rights and civil liberties scores. “Free” countries should have an average score between 1 and 2.5. Both political rights and civil liberties score range between 1 (most free) and 7 (least free).

⁵ Electoral democracies are defined as countries that score at least 6 in both legislative index of political competitiveness and executive index of political competitiveness in the database of political institutions constructed by Beck et al. (2001) and Keefer (2009).

⁶ “Political rights enable people to participate freely in the political process, including the right to vote freely for distinct alternatives in legitimate elections, compete for public office, join political parties and organizations, and elect representatives who have a decisive impact on public policies and are accountable to the electorate” (QoG Standard Dataset Codebook 2011).

⁷ The press freedom index is computed by adding three (four) component ratings: Laws and regulations, Political pressures and controls, and Economic Influences (and Repressive actions). Until 2000, “Repressive actions” was a fourth component of the index, but since 2001, such violations within the respective “Political pressures” and “Economic influences” categories are treated as cases of actual political or economic pressure on the content of information (QoG Standard Dataset Codebook 2011). The original score ranges from 0 (most free) to 100 (least free), but I converted it so that a higher score represents a freer press.

This variable denotes the number of consecutive years since 1930 the country had been an electoral democracy as of 2000, as classified by Beck et al. (2001).⁸

As a measure of income inequality, I primarily use the “Estimated Household Income Inequality” from data provided by the University of Texas Inequality Project (Galbraith and Kum 2003, 2004; Galbraith 2009). Galbraith and Kum (2004) estimate GINI coefficients for gross income inequality through an equation whereby income gini in the Deininger and Squire (1996) high quality dataset is regressed on a measure of manufacturing pay inequality. They argue that this measure has better comparability both across countries and over time. I also use the Gini index of income inequality from the World Income Inequality Database compiled by the United Nations University (UNU-WIDER, version WIID2c). The Gini index varies theoretically from zero (perfectly equal distribution of income) to 100 (the society’s total income accrues to only one person/household unit).⁹

In order to test sub-hypotheses on the causal mechanisms, I require cross-national measures of political clientelism, patronage in bureaucracy, and state capture by the private sector. Studies of clientelism have been constrained by the lack of reliable cross-national data until recently. Fortunately, I was able to obtain Herbert Kitschelt’s (2013) new dataset on the democratic accountability and linkages, which is based on expert surveys of eighty-eight countries about various features of clientelistic and programmatic politics. The surveys were conducted in 2008 and 2009, and members of the Duke Democracy Project, including Singer (2009), have presented some papers using the data.¹⁰ For patronage versus meritocracy in bureaucracy, there exist two available cross-national datasets. Rauch and Evans (2000) constructed data on bureaucratic

⁸ Treisman’s (2007) definition of electoral democracy is slightly different from mine (See footnote 4). He defines electoral democracies as those with a 6 or higher on Beck et al.’s (2001) Executive Index of Electoral Competitiveness (QoG Standard Dataset Codebook 2011). Thus, he does not consider Legislative Index of Electoral Competitiveness in his definition of electoral democracy.

⁹ Gini coefficients for income inequality can be based on different definitions of income, such as gross income and net income. Hence, cross-national comparison should be conducted with care. The UTIP data for estimated household income inequality is based on gross income, but the UNU-WIDER data are based on a variety of income and population concepts.

¹⁰ The full dataset of the Democratic Accountability and Linkages Project has not been released as of June 2013, but it will be released soon.

structure for thirty-five developing countries. Recently, Dahlstrom et al. (2010) at the Quality of Government Institute created another dataset on bureaucratic structure for fifty-two countries around the world, based on a web survey of 528 country experts. I use their index of professionalization of bureaucracy, which ranges between one and seven, and a higher value indicates a more professionalized and less politicized public administration.¹¹ Regarding state capture, currently available cross-national data exists only for twenty-two transition economies, which was created by Hellman, Jones, and Kaufmann (2000). Their “capture economy index” is based on the 1999 Business Environment and Enterprise Performance Survey (BEEPS) data on how much firms’ business is affected by the sale of parliamentary votes on laws and presidential decrees to private interests, the sale of court decisions and illicit political contributions by private interests, etc.

Instrumental Variables

For regression analysis, I first employ ordinary least squares (OLS) regressions. Then, I use instrumental variable regressions in order to address the concerns of reverse causality in the relationship between inequality and corruption (Gupta et al. 2002; Li et al. 2000), as well as measurement error. Specifically, OLS regressions may overestimate the effect of inequality because of reverse causality. Hence, I need some instrumental variables that are strongly correlated with inequality but are not directly correlated with corruption other than indirectly through inequality. Also, economic development is known to be influenced by corruption (Mauro 1995; Kaufmann and Kraay 2002), so OLS regressions may overestimate the effect of economic development on control of corruption. Since inequality and economic development are correlated with each other, overestimation of economic development effect could lead to underestimation of inequality effect. Hence, per capita income as an indicator of economic development needs to be instrumented, as well.

¹¹ Dahlstrom et al.’s (2010) professionalization index is based on the following four questions: When recruiting public sector employees, do the skills and merits of the applicants decide who gets the job? When recruiting public sector employees, do the political connections of the applicants decide who gets the job? Does the top political leadership hire and fire senior public officials? Are senior public officials are recruited from within the ranks of the public sector?

Another problem is the large measurement error in income inequality. It is well-known that income inequality is poorly measured in comparison to aggregate income. The measurement error in an independent variable that makes the estimated OLS effect be biased toward zero if the measurement error is uncorrelated with the dependent variable or the unobserved explanatory variable. This is called attenuation bias (Wooldridge 2000, 294-296). Relatively precise measure of per capita income and imprecise measure of income inequality can cause the OLS-estimated effect for per capita income to be overestimated and that for inequality to be underestimated. Instrumental variables can help alleviate the bias caused by measurement error in inequality.

I use two instruments for inequality. First, I use “mature cohort size” as an instrument for inequality, following You and Khagram (2005). Higgins and Williamson (1999) show that “mature cohort size” (ratio of the population forty to fifty-nine years old to the population fifteen to sixty-nine years old) is a powerful predictor of inequality, both across countries and within the United States. Because “fat cohorts” tend to get low rewards, when these fat cohorts lie at the top of the age-earnings curve (or when the mature cohort is fat), earnings inequality is reduced. When the fat cohorts are old or young adults, earnings inequality is augmented. In addition, I use “wheat–sugar ratio” as another instrument for inequality, following Easterly (2007). Engermann and Sokoloff (2002) argued factor endowments such as the exogenous suitability of land for wheat versus sugarcane were a central determinant of inequality across Americas. Easterly (2007) shows that the wheat-sugar ratio, defined as the log of $[(1+\text{share of arable land suitable for wheat}) / (1+\text{share of arable land suitable for sugarcane})]$, is a powerful predictor of inequality across countries. The data for these instrumental variables are taken from You and Khagram (2005) and Easterly (2007).

As instruments for per capita income, I use “distance from the equator” (calculated as the absolute value of latitude) and the “prevalence of malaria index.” Distance from the equator is strongly correlated with the level of economic development, but latitude is unlikely to be directly correlated with corruption.¹² Gallup and Sachs (2000) demonstrated that malaria prevalence is a strong determinant of economic development but that malaria is very geographically specific and minimally affected by economic development.

¹² Treisman (2007) used “distance from the equator” as an instrument for economic development.

4. Cross-National Evidence

Let me start by comparing three types of political regimes (liberal democracies, illiberal electoral democracies, and dictatorships) across three levels of inequality (low, medium, and high) to see if there are systematic differences in the level of corruption. Table 2.1 displays the average CPI (Corruption Perceptions Index, average for 2002-2006), or perceived freedom from corruption, by political regime type and income inequality (both for 2002 or closest year available). Here, the measure of income inequality was taken from UTIP data for estimated household income inequality (in Gini index), and high-inequality and low-inequality countries are those for which the Gini index is at least a half standard deviation higher or lower than the mean. Recall that a higher value of CPI denotes a lower level of corruption. The number of countries in each cell is in parenthesis.

[Table 2.1 About here]

The average CPI for sixty-eight liberal democracies (5.47) is much higher than that for fifty-six illiberal electoral democracies (2.73), as well as that for thirty-seven dictatorships (3.27). It is notable, however, that illiberal electoral democracies are perceived to be slightly more corrupt than dictatorships. Perhaps the introduction of elections without full democratization does increase perceived corruption rather than reduce it. Regardless, the effect of democracy on corruption seems to vary depending on the level of inequality. Among the countries with low inequality, liberal democracies (average CPI =6.84) tend to be much less corrupt than illiberal electoral democracies (average CPI=4.24) and dictatorships (average CPI=3.63). Thus, liberal democracy seems to make a big difference among the low-inequality countries. At low levels of inequality, the effect of illiberal electoral democracy is not certain.¹³

Among the countries with medium inequality, liberal democracies (average CPI=4.63) tend to be substantially less corrupt than illiberal electoral democracies (average CPI=2.60) and dictatorships (average CPI=3.07), but illiberal electoral democracies are slightly more corrupt

¹³ Although electoral democracies (N=6) are on average slightly less corrupt than dictatorships (N=2) among the low-inequality countries, we cannot be certain about that because of the small sample size.

than dictatorships. Although liberal democracy has a significantly positive effect on controlling corruption among the medium-inequality countries, illiberal electoral democracy seems to have a slightly negative effect.

Among the high-inequality countries, both liberal democracies (average CPI=2.98) and illiberal electoral democracies (average CPI=2.64) are slightly more corrupt than dictatorships (average CPI=3.87). Democracy seems to have a negative effect on controlling corruption among the high-inequality countries. The table suggests that the effect of democracy on controlling corruption varies depending on the level of inequality, being positive and large at low levels of inequality but slightly negative at high levels of inequality. In particular, illiberal electoral democracy is associated with higher corruption among the medium- and high-inequality countries. The overall pattern is consistent with the main hypothesis (H1) that the effect of democracy on reducing corruption is negatively associated with the level of inequality.

We can read the table in another way. The average CPI for thirty-nine low-inequality countries (6.21) is much higher than that for sixty-one medium-inequality countries (3.46), which in turn is slightly higher than that for thirty-nine high-inequality countries (3.14). Thus, countries with low levels of income inequality tend to be perceived as significantly less corrupt. But the correlation between inequality and corruption seems to vary depending on the political regime type. Within liberal democracies, the average CPI for countries with low income inequality is 6.84, that for countries with medium inequality is 4.63, and that for countries with high inequality is 2.98. Thus, higher inequality is significantly associated with higher corruption among liberal democracies. Within illiberal electoral democracies, the average CPI for countries with low income inequality is 4.24, that for countries with medium inequality is 2.60, and that for countries with high inequality is 2.64. Thus, high inequality and medium inequality do not make a difference among illiberal electoral democracies, and only low inequality seems to be associated with low corruption. Among dictatorships, the average CPI for the countries with low inequality (3.63), that for countries with medium inequality (3.07), and that for countries with high inequality (3.87) are not very different from each other. Thus, inequality does not show any relationship with corruption among dictatorships. The overall pattern shows that higher inequality tends to be strongly associated with higher corruption in liberal democracies and

weakly correlated in illiberal electoral democracies, but that inequality does not matter in dictatorships, consistent with the hypothesis 2 (H2).

Conducting the most straightforward empirical analysis yields similar results. Using various measures of democracy, table 2.2 presents the results of OLS regressions of corruption on democracy, income inequality (Gini index measured by UTIP), and the level of economic development (natural logarithm of per capita GDP from Heston, Summers and Aten 2009). The table shows that income inequality is significantly negative and economic development is significantly positive for perceived freedom from corruption (CPI), but the significance of democracy effect depends on the measure of democracy. Cheibub et al.'s measure of democracy as a dichotomous variable (democracy or dictatorship) and Polity IV combined score as a continuous variable (-10 to +10) are statistically insignificant, when income inequality and economic development are accounted for. However, the three-category measure of democracy (liberal democracy=2, illiberal electoral democracy=1, and dictatorship=0), Freedom House's political rights score (1 to 7) and freedom of the press index (1 to 100), and consecutive years of electoral democracy (0 to 70) are significantly associated with higher CPI (lower levels of perceived corruption), controlling for income inequality and economic development. When I added an interaction term between democracy and income inequality, the interaction term was significantly negative regardless of the democracy measure. This indicates that democracy is more strongly associated with freedom from corruption at lower levels of inequality, consistent with the main hypothesis (H1). This also indicates that in democracies (or in more democratic countries or older democracies), inequality is more strongly associated with corruption. In particular, column four presents direct evidence supporting hypothesis 2 (H2) that the effect of inequality on corruption in *liberal democracies* is higher than that in *illiberal electoral democracies*, which in turn is higher than that in *dictatorships*. The interaction term between democracy and per capita income is also significant. Democracy effect on control of corruption seems to be higher in richer countries, as well as in more equal countries.

[Table 2.2 About here]

These results are robust to changes in the measures of corruption used. Table 2.3 displays the same patterns as columns eleven and twelve in Table 2.2 (with consecutive years of electoral

democracy and UTIP's estimated household income inequality as the key independent variables), using various measures of corruption (Control of Corruption Indicator, ICRG_QoG, GCB_Bribery, Political corruption, and Corporate corruption) as the dependent variable. Older democracies, more equal countries, and richer countries are significantly less corrupt, regardless of the measure of corruption. The only exception is that the duration of democracy is not significantly associated with perceived political corruption. These results provide partial evidence for sub-hypotheses (H1.1-1.3) that inequality increases political corruption, bureaucratic corruption, and corporate corruption, especially in democracies. In addition, the interaction term between the age of electoral democracy and income inequality is significantly negative for most measures of corruption, except for experience of bribery from TI's Global Barometer Survey (GCB_Bribery).¹⁴ This indicates that the effect of democracy duration varies depending on the level of income inequality. Specifically, the effect of democratic longevity turns out to be positive for perceived freedom from political corruption at low levels of income inequality (Gini<41.7), but it becomes negative as inequality increases more highly. Thus, perceived political corruption, as well as other types of corruption, tend to decrease over time in low-inequality democracies, but they tend to increase over time in high-inequality countries. Note that the interaction term between the age of democracy and per capita income is also significant for Control of Corruption Indicator and ICRG index of Quality of Government, but it is not significant for GCB experience of bribery, political corruption, and corporate corruption.

[Table 2.3 About here]

Thus far, the OLS results show that democracy is strongly associated with lower corruption and that inequality is strongly associated with higher corruption, and they have demonstrated this having used a variety of measures for democracy and corruption. In order to address the concerns about reverse causality and measurement error, I employ instrumental variables for inequality and economic development, as I noted above. Table 2.4 presents the results of the instrumental variable regressions in comparison with OLS results, using consecutive years of electoral democracy as the measure of democracy and CPI as the dependent variable. Two

¹⁴ The signs of the coefficients in regressions of Bribery (regressions three and eight) are opposite to those in other regression results because a higher value of Bribery represents a higher level of corruption, contrary to other measures of corruption.

measures of income inequality (UTIP and UNU-WIDER) are used, and they are instrumented by “Mature cohort size” and “Wheat-sugar ratio.” Per capita income is instrumented by “Distance from the equator” (absolute value of latitude) and “Malaria index.” All the instrumental variable regressions pass the over-identification test, implying that we cannot reject the hypothesis that these instruments are uncorrelated with the error term of the second stage regressions.

[Table 2.4 About here]

The instrumental regression results align with the previous finding that income inequality is significantly and strongly associated with corruption. However, per capita income loses significance as a predictor of corruption. Comparison of OLS and IV regression results shows that coefficients for inequality are larger in magnitude from IV regressions than from OLS regressions, while coefficients for per capita income are smaller from IV regressions. When the UTIP measure of gross income inequality is used, the coefficient for inequality is -.0601 from OLS regression (model 1) and -.2901 from IV regression (model 2). Although the coefficient for per capita income was large (0.8596) and highly significant from the OLS regression (model 1), it effectively becomes nil (-.0840) from the IV regression (model 2). The IV regression indicates that a one standard deviation (6.7) increase in UTIP income gini is associated with 0.86 standard deviation (1.94) decrease in CPI, while the effect of per capita income is nil.¹⁵ With the UNU-WIDER measure of inequality, the coefficient for inequality is much larger in magnitude from the IV regression (-.1014 in model 6) than from the OLS regression (-.0326 in model 5). But the coefficient for per capita income from IV regression (.3196) is much smaller than that from OLS regression (.8461).¹⁶ These results suggest that OLS regressions overestimated the effect of economic development because of reverse causality and underestimated the effect of inequality because of measurement error. Also, the IV results are consistent with the finding of Kaufmann

¹⁵ Precisely speaking, the IV regression (model 2) indicates that a one standard deviation (1.2) increase in natural logarithm of GDP per capita is associated with statistically insignificant 0.04 standard deviation (0.1) decrease in CPI.

¹⁶ According to the IV regression (model 6), a one standard deviation (10.2) increase in WIDER income gini is associated with 0.47 standard deviation (1.03) decrease in CPI, while a one standard deviation (1.2) increase in natural logarithm of GDP per capita is associated with statistically insignificant 0.16 standard deviation (0.38) increase in CPI.

and Kraay (2002) that causation runs exclusively from corruption to economic underdevelopment, not from economic underdevelopment to corruption. Note that the coefficients for democracy are also slightly higher from IV regressions than from OLS regressions.

Comparison of OLS and IV estimates of interaction terms also shows an interesting pattern. The coefficients for interaction terms between democracy and inequality are larger in magnitude when instruments are used, but the coefficients for interaction terms between democracy and income become smaller with the use of instrumental variables. When the UTIP measure of inequality is used, the coefficient for the interaction term between democracy and inequality is larger in magnitude from the IV regression (-.0046 in model 4) than from the OLS regression (-.0027 in model 3). But the coefficient for the interaction term between democracy and per capita income is smaller from the IV regression (-.0060 in model 4) than from the OLS regression (.0160 in model 3). Although the interaction term between democracy and inequality is not significant at ten percent level in the IV regression, it is close to significance with a p-value of 0.119. This indicates that ten additional years of democracy is associated with a 0.9 point increase in CPI on average for a low-inequality country with UTIP gini of thirty, but the age of democracy has no effect on CPI for a high-inequality country with UTIP gini of fifty.¹⁷ When WIDER measure of inequality is used, the coefficient for the interaction term between democracy and inequality from the IV regression (-.0019 in model 8) is larger in magnitude than that from the OLS regression (-.0012 in model 7). But the coefficient for the interaction term between democracy and per capita income from the IV regression (.0105 in model 8) is smaller than that from the OLS regression (.0204 in model 7). While the interaction term between democracy and per capita income loses significance in IV regression, the interaction term between democracy and inequality is highly significant. Thus, instrumental variable regressions indicate that the effect of democracy on control of corruption does not significantly depend on the level of economic development but significantly depends on the level of inequality.

Next, I conducted a series of robustness checks, controlling for various causes of corruption as identified in the extant literature. The results of these tests show that the significance of both

¹⁷ UTIP gini has a mean of 44.9 and a standard deviation of 6.7 in the sample of 146 countries. The minimum is 28.96 and the maximum is 64.25.

duration of democracy and income inequality survives any control that is introduced. This stands true whether CPI or GCB_Bribery are used as the dependent variable. But many of these causal factors turn out to be insignificant for corruption when duration of democracy, income inequality, and economic development are accounted for. For example, various measures of presidential versus parliamentary system and electoral systems (i.e.: plurality versus proportional representation, closed list versus open list, and district magnitude) turned out to be insignificant once duration of democracy, income inequality, and economic development were accounted for.¹⁸ Interestingly, the “proportion of women in parliament” was significant even when the duration of democracy, inequality, and per capita income were taken into account.¹⁹ Economic freedom was significantly associated with freedom from corruption (higher CPI), and both the number of procedures and time required to start a new business were negatively associated with freedom from corruption (lower CPI). However, the cost of starting a new business was not significant.²⁰ Trade openness and ethno-linguistic fractionalization were insignificant once the duration of democracy, income inequality, and economic development were accounted for.²¹

Next, let me test the three sub-hypotheses (MH1 through MH3) on the causal mechanisms through which inequality inhibits the democratic accountability mechanisms. I have proposed that inequality increases clientelism in elections and thereby political corruption, patronage in bureaucratic recruitment and thereby bureaucratic corruption, state capture by the private sector

¹⁸ Regime type (presidential, assembly-elected presidential, or parliamentary system), mean district magnitude, plurality or proportional representation (for the House seats), and closed lists (or open lists for proportional representation) from the Beck et al.’s (2001) Database of Political Institutions, as compiled in the QoG Standard Dataset, were used.

¹⁹ “Women in parliament” from both the IPU data and World Development Indicators data was significant.

²⁰ Both Fraser Institute’s “economic freedom of the world index” and Heritage Foundation’s “business freedom index” were significant. The data for the number of procedures, time, and cost required to start a new business are from Djankov et al. (2002).

²¹ I experimented with three measures of trade openness: total trade as a percentage of GDP from Penn World Table (version 6.3), measures from the World Development Indicators data, and trade freedom from the Heritage Foundation. All of these measures of trade openness were insignificant.

and thereby corporate corruption, and the difficulty and ineffectiveness of anti-corruption reforms.

In order to more rigorously test the mechanism hypothesis on clientelism, I first examine whether inequality has causal effect on clientelism. Table 2.5 presents the results. The OLS and IV regressions (columns 1 and 2) both show that inequality has highly significant effect on clientelism, but economic development (per capita income) loses significance in IV regression. When I introduced interaction terms (column 3), the interaction term between the duration of democracy and inequality is highly significant, but the interaction between democracy and per capita income is not significant. This suggests that the effect of age of democracy on clientelism does not depend on economic development but on income inequality, although economic development has an independent effect on clientelism regardless of democratic duration. The IV regression with interaction terms produce all the insignificant coefficients due to large standard errors. I also introduced poverty (% population living on less than \$2.00 a day), education (secondary school enrollment), and urbanization (% urban population) as controls, considering that these were suggested as factors affecting the extent of clientelism.²² All these factors have high, simple correlations with clientelism. But as Table 2.5 shows, only poverty maintains significance when democracy, inequality, and economic development are accounted for. However, income inequality remains highly significant for clientelism regardless of the factor being controlled for. In particular, income inequality is still significantly associated with clientelism even when both poverty and per capita income are controlled for.²³ Duration of democracy is still significant when education or urbanization is controlled for, but it loses significance when poverty is included. Also, per capita income loses significance when education is controlled for. Overall, the results presented in Table 2.5 indicate a strong causal effect of inequality on clientelism.

²² The data for urban population and population living on less than \$2.00 a day are from the World Bank's World Development Indicators data, and secondary education enrollment is from the UNESCO data. These data have also been compiled in the QoG dataset.

²³ Poverty (population living on less than \$2.00 a day) and economic development (natural log of per capita GDP) are strongly correlated with each other at $r=0.85$.

[Table 2.5 About here]

Next, I test whether the effect of inequality on corruption runs through clientelism. Table 2.6 shows how the coefficients for inequality from OLS regressions of CPI and Political corruption change when clientelism is included. Note that clientelism is significant for both CPI and “political corruption”, consistent with Singer (2009). The coefficients for inequality become smaller in magnitude (from -.0849 in column 1 to -.0289 in column 2; from -.0592 in column 5 to -.0361 in column 6) and less significant when clientelism is introduced. The coefficients for interaction term between democracy and inequality also become smaller in magnitude and less significant (from column 3 to column 4, and from column 7 to column 8) when clientelism is introduced. These results indicate that the effect of inequality on CPI and political corruption runs at least partially through clientelism, considering inequality has a strong causal effect on clientelism.

[Table 2.6 About here]

Next, I test the hypothesis on causal mechanism through meritocratic bureaucracy; inequality increases patronage through clientelism and patronage increases bureaucratic corruption. Table 2.7 shows that income inequality is significantly negatively associated with “professional bureaucracy” (Dahlstrom et al.’s data), or the absence of patronage. This, in turn, is strongly associated with lower overall corruption (CPI) and bureaucratic corruption (percentage of respondents whose family members have bribed public officials during the last year). The reduction of the coefficient for inequality from column 1 to column 2 suggests that the effect of inequality on patronage runs partially through clientelism. Also, there is some evidence that the effects of inequality on CPI and GCB_Bribery run through clientelism and patronage (columns 3-5 and 6-8). Unfortunately, IV regressions for the models presented in Table 2.7 produced all insignificant coefficients due to large standard errors. Although I have not fully solved the endogeneity issue here, the overall pattern from the OLS regressions supports the second mechanism hypothesis on patronage in bureaucracy.

[Table 2.7 About here]

Since the data on “Capture economy index” is available for only twenty-two transition economies, it was not possible to rigorously test the mechanism hypothesis through capture. Table 2.8 presents evidence that inequality is significantly associated with capture across the transition countries but that income per capita is not (column 1). Although both capture and inequality are significantly correlated with both CPI and “corporate corruption”, capture is no longer significant for CPI or “corporate corruption” when inequality is included. This prohibits us from concluding that the effects of inequality on CPI and Corporate corruption run partially through capture. Small sample size and lack of representativeness of the sample further prevent us from drawing any form of conclusion. But the data still suggests that inequality significantly increases the risk of elite capture.

Lastly, I find strong evidence that inequality and corruption mutually reinforce each other in a vicious or virtuous circle when I compare the correlation between inequality and corruption by duration of democracy. Figure 2.1 displays four separate scatter plots of income inequality (Gini on X-axis) and corruption (CPI on Y-axis) by the age of electoral democracy. The countries in the first box (Duration=0) are dictatorships; those in the second box have been electoral democracies for ten years or less; those in the third box (Duration=2) between eleven and thirty years; those in the fourth box (Duration=3) over thirty years. Among dictatorships, there is no significant relationship between inequality and corruption. Among electoral democracies, the relationship between inequality and corruption tends to become stronger as the age of democracy increases. The fitted line gets steeper in the scatter plots for older democracies. In particular, among the countries with more than thirty years of electoral democracy, those countries tend to be concentrated toward the left-top (low inequality and low corruption) or the right-bottom (high inequality and high corruption) of the fitted line. This seems to support that countries converge into either of the two equilibria as the age of democracy increases, either in a virtuous circle of low inequality and low corruption or in a vicious circle of high inequality and high corruption.

[Figure 2.1 About here]

A similar pattern appears when I compare the correlation between inequality and clientelism by the duration of democracy. Figure 2.2 displays four separate scatter plots of income inequality on the X-axis and clientelism on Y-axis by the age of electoral democracy. The figure strongly suggests only those countries with low inequality tend to reduce clientelism in the long run.

[Figure 2.2 About here]

In summary, through a variety of quantitative analysis presented above, I provide convincing cross-national evidence supporting the main hypothesis (H1) that the causal effect of democracy on reducing corruption decreases with inequality, while successfully addressing the issues of endogeneity using instrumental variables. I also provide supporting evidence for the related hypothesis (H2) that the effect of inequality on corruption in liberal democracies is higher than that in illiberal electoral democracies, which is in turn higher than that in dictatorships. In addition, I find evidence that inequality and corruption mutually reinforce each other, in a vicious or virtuous circle, in democracies. Regarding the causal mechanisms through which inequality affects corruption, I find strong evidence that high inequality causes persistence of clientelism, which in turn is associated with higher political corruption. I find evidence that inequality is associated with the prevalence of patronage in bureaucracy, and thereby with bureaucratic corruption. I also find some partial evidence that inequality is associated with capture and corporate corruption at least within the sample of twenty-two transition economies. However, I have been unable to fully test all the causal pathways addressing the issue of endogeneity because of data limitations. The purpose of conducting a comparative historical investigation in the subsequent chapters is to supplement the cross-national analysis. I will try to test not only the main hypothesis (H1) and its corollaries (H2 and H3) but all three sub-hypotheses on causal mechanisms (H1.1-H1.3) through a comparative historical analysis of Korea, Taiwan, and the Philippines.

Tables and Figures

Table 2.1 Perceived freedom from corruption (CPI) by income inequality and regime type

Regime Type	Liberal	Electoral	Dictatorships	Unknown	Total
Inequality	CPI	CPI	CPI	CPI	CPI
	(N)	(N)	(N)	(N)	(N)
Low (Gini below 41.5)	6.84 (30)	4.24 (6)	3.63 (2)	4 (1)	6.21 (39)
Medium (Gini 41.5-48.2)	4.63 (23)	2.6 (26)	3.07 (12)	-	3.46 (61)
High (Gini over 48.2)	2.98 (8)	2.64 (16)	3.87 (14)	2.1 (1)	3.14 (39)
Unknown (Gini missing)	5.19 (7)	2.19 (8)	2.53 (9)	5.82 (3)	3.48 (27)
Total	5.47 (68)	2.73 (56)	3.27 (37)	4.71 (5)	4.03 (166)

Table 2.2 Effects of democracy and income inequality on CPI, using various measures of democracy

Measure of democracy	Democracy dummy		Liberal/electoral democracy		Polity score	
	(1)	(2)	(3)	(4)	(5)	(6)
Democracy	0.0169 (0.2385)	-3.7123 (2.4286)	0.2921 * (0.1598)	-1.9011 (1.7241)	0.0142 (0.0195)	-0.1426 *** (0.1656)
Income inequality	-0.0857 *** (0.0186)	-0.0205 (0.0257)	-0.0790 *** (0.0177)	0.0257 (0.0256)	-0.0801 *** (0.0193)	-0.0312 * (0.0185)
Democracy*Inequality		-0.0600 * (0.0345)		-0.0561 ** (0.0231)		-0.0064 ** (0.0027)
Per capita income	1.1399 *** (0.0987)	0.7626 *** (0.1388)	1.1138 *** (0.0989)	0.5041 *** (0.1392)	1.0970 *** (0.0977)	0.9296 *** (0.1154)
Democracy*Income		0.7542 *** (0.2111)		0.5380 *** (0.1189)		0.0516 *** (0.0136)
Constant	-2.0156 (1.2879)	-1.9372 (1.2322)	-2.4390 * (1.2704)	-2.0872 (1.4464)	-1.9459 (1.2800)	-2.9244 ** (1.0559)
N	137	137	135	135	129	129
R-squared	0.6316	0.6827	0.6475	0.7152	0.6205	0.6732
Measure of democracy	FH Political rights		FH Press freedom		Years of electoral democracy	
	(7)	(8)	(9)	(10)	(11)	(12)
Democracy	0.1481 ** (0.0616)	-1.0860 * (0.6215)	0.0222 *** (0.0056)	-0.0848 (0.0587)	0.0345 *** (0.0061)	-0.0137 (0.0655)
Income inequality	-0.0735 *** (0.0172)	0.0121 (0.0287)	-0.0617 *** (0.0159)	0.0369 (0.0409)	-0.0601 *** (0.0146)	0.0006 (0.0148)
Democracy*Inequality		-0.0153 * (0.0085)		-0.0014 * (0.0008)		-0.0027 *** (0.0006)
Per capita income	1.0494 *** (0.1024)	0.1497 (0.2138)	0.9737 *** (0.1043)	0.0616 (0.2383)	0.8596 *** (0.1069)	0.6721 *** (0.0961)
Democracy*Income		0.2154 *** (0.0453)		0.0185 *** (0.0041)		0.0160 *** (0.0050)
Constant	-2.3015 (1.1980)	0.7195 (2.2114)	-2.8276 ** (1.1441)	0.7494 (2.7160)	-1.3861 (1.2178)	-2.2999 ** (1.1387)
N	137	137	137	137	135	135
R-squared	0.6462	0.6793	0.6718	0.7130	0.7226	0.7976

Notes: Robust standard errors are in parentheses. *, **, and *** denote significance at the level of 10 percent, 5 percent, and 1 percent, respectively. The same applies to subsequent tables.

Table 2.3 OLS regressions of corruption, using various measures of corruption

Measure of corruption	CCI		ICRG		Bribery		Political		Corporate	
	(1)		(2)		(3)		(4)		(5)	
Years of democracy	0.0146 ***		0.0025 ***		-0.0107 ***		0.0049		0.0141 ***	
	(0.0026)		(0.0006)		(0.0033)		(0.0042)		(0.0027)	
Income inequality	-0.0298 ***		-0.0078 ***		0.0539 ***		-0.0234 *		-0.0227 ***	
	(0.0080)		(0.0014)		(0.0092)		(0.0125)		(0.0084)	
Per capita income	0.4231 ***		0.0863 ***		-0.4947 ***		0.3353 ***		0.3504 ***	
	(0.0550)		(0.0100)		(0.0675)		(0.0997)		(0.0574)	
Constant	-2.6398 ***		0.0604		4.8116 ***		1.9770 *		1.8622 ***	
	(0.6917)		(0.1179)		(0.8164)		(1.1753)		(0.6858)	
N	140		119		97		113		113	
R-squared	0.7084		0.7145		0.7904		0.3488		0.6733	
With interaction effect:	(6)		(7)		(8)		(9)		(10)	
Years of democracy	-0.0170		-0.0082		0.0110		0.0598		0.0468	
	(0.0441)		(0.0083)		(0.0556)		(0.0505)		(0.0317)	
Income inequality	-0.0115		-0.0044 ***		0.0512 ***		0.0265 *		0.0062	
	(0.0076)		(0.0012)		(0.0113)		(0.0161)		(0.0090)	
Democracy*Inequality	-0.0007 *		-0.0001		0.0000		-0.0025 ***		-0.0014 ***	
	(0.0004)		(0.0001)		(0.0005)		(0.0005)		(0.0003)	
Per capita income	0.3553 ***		0.0654 ***		-0.4721 ***		0.2387 **		0.2955 ***	
	(0.0549)		(0.0109)		(0.0693)		(0.0959)		(0.0545)	
Democracy*Income	0.0063 **		0.0015 **		-0.0023		0.0046		0.0026	
	(0.0031)		(0.0007)		(0.0043)		(0.0038)		(0.0024)	
Constant	-2.8070 ***		0.1038		4.7218 ***		0.7182		1.1266 *	
	(0.6662)		(0.1145)		(0.8769)		(1.2826)		(0.6086)	
N	140		119		97		113		113	
R-squared	0.7453		0.7529		0.7920		0.5244		0.7367	

Table 2.4 Effects of democracy and income inequality on CPI, using instrumental variables

Measure of inequality	UTIP Estimated income gini (2002)				
	(1) OLS		(2) IV	(3) OLS	(4) IV
Years of democracy	0.0345 ***		0.0405 ***	-0.0137	0.2840
	(0.0061)		(0.0125)	(0.0655)	(0.2569)
Income inequality	-0.0601 ***		-0.2901 ***	0.0006	-0.1165
	(0.0146)		(0.0818)	(0.0148)	(0.1018)
Democracy*Inequality				-0.0027 ***	-0.0046
				(0.0006)	(0.0029)
Per capita income	0.8596 ***		-0.0840	0.6721 ***	0.2976
	(0.1069)		(0.3749)	(0.0961)	(0.2988)
Democracy*Income				0.0160 ***	-0.0060
				(0.0050)	(0.0154)
Constant	-1.3861		16.7450 ***	-2.2999 **	5.8783
	(1.2178)		(6.2146)	(1.1387)	(6.6508)
N	135		95	135	95
R-squared	0.7226		0.4852	0.7865	0.7001
Over-id test p-value			0.7958		0.9223
Measure of inequality	UNU-WIDER income gini (2002)				
	(5) OLS		(6) IV	(7) OLS	(8) IV
Years of democracy	0.0441 ***		0.0558 ***	-0.1142 *	0.0175
	(0.0066)		(0.0084)	(0.0612)	(0.1251)
Income inequality	-0.0326 ***		-0.1014 ***	0.0053	-0.0101
	(0.0108)		(0.0231)	(0.0118)	(0.0240)
Democracy*Inequality				-0.0012 **	-0.0019 **
				(0.0005)	(0.0009)
Per capita income	0.8461 ***		0.3196	0.6207 ***	0.4657 ***
	(0.1325)		(0.2168)	(0.1177)	(0.1439)
Democracy*Income				0.0204 ***	0.0105
				(0.0049)	(0.0103)
Constant	-2.8749 **		4.2154 *	-2.2691 *	-0.4912
	(1.3064)		(2.4671)	(1.1727)	(1.6639)
N	141		110	141	110
R-squared	0.7649		0.7014	0.8200	0.8164
Over-id test p-value			0.8754		0.4064

Note: Income inequality was instrumented by “Mature cohort size” and “Wheat-sugar ratio.” Per capita income was instrumented by “Distance from the equator” (absolute value of latitude) and “Malaria index.” Interaction terms are instrumented by interaction terms between the age of democracy and these instruments.

Table 2.5 The OLS and IV regressions of clientelism

	(1)	(2) IV	(3)	(4) IV	(5)	(6)	(7)
Poverty (below \$2/day)					-0.0070 (.0026)***		
Secondary enrollment						-0.0024 (.0027)	
Urban population (%)							-0.0016 (.0043)
Years of democracy	-0.0078 (.0024)***	-0.0067 (.0046)	-0.0125 (.0356)	0.0825 (.1253)	0.0055 (.0033)	-0.0074 (.0023)***	-0.0074 (.0023)***
Income inequality	0.0412 (.0105)***	0.1095 (.0325)***	0.0093 (.0112)	0.0602 (.0522)	0.0226 (.0076)***	0.0419 (.0104)***	0.0439 (.0107)***
Democracy*Inequality			0.0010 (.0003)***	0.0000 (.0012)			
Per capita income	-0.2127 (.0712)***	0.0264 (.1706)	-0.1787 (.0763)**	-0.0306 (.1829)	-0.4389 (.1064)***	-0.1390 (.0876)	-0.1739 (.0937)*
Democracy*Income			-0.0034 (.0027)	-0.0089 (.0087)			
Constant	3.3502 (.9594)***	-1.7922 (2.6536)	4.3537 (.9686)***	0.7743 (3.6787)	6.1224 (1.0836)***	2.8414 (.9086)***	2.9706 (1.0126)***
N	70	70	70	70	54	78	78
R-squared	0.6788	0.4405	0.7398	0.6750	0.4250	0.6627	0.6601

Table 2.6 The effect of inequality and clientelism on corruption

Dependent variable:	Corruption Perceptions Index				Political corruption			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Clientelism		-1.3292 (.2844)***		-0.9440 (.3112)***		-0.5748 (.1586)***		-0.3390 (.1816)*
Years of democracy	0.0391 (.0079)***	0.0267 (.0082)***	-0.0185 (.0867)	-0.0250 (.0845)	0.0178 (.0038)***	0.0127 (.0040)***	0.0345 (.0499)	0.0305 (.0504)
Income inequality	-0.0849 (.0226)***	-0.0289 (.0240)	-0.0072 (.0278)	0.0036 (.0315)	-0.0592 (.0131)***	-0.0361 (.0131)***	-0.0090 (.0166)	-0.0062 (.0177)
Democracy*Inequality			-0.0023 (.0008)***	-0.0014 (.0008)*			-0.0017 (.0005)***	-0.0013 (.0005)**
Per capita income	0.8899 (.2210)***	0.6806 (.1868)***	0.7354 (.2423)***	0.6175 (.2245)***	0.0462 (.1095)	-0.0533 (.1001)	0.0211 (.1182)	-0.0285 (.1190)
Democracy*Income			0.0151 (.0069)**	0.0112 (.0066)*			0.0049 (.0040)	0.0036 (.0039)
Constant	-0.9356 (2.5497)	2.8857 (2.1707)	-2.6674 (2.9221)	0.9469 (2.8286)	5.5557 (1.3369)***	7.3227 (1.2266)***	3.7391 (1.5085)**	5.1378 (1.6818)***
N	78	78	78	78	79	79	79	79
R-squared	0.7828	0.8352	0.8314	0.8523	0.5709	0.6326	0.6571	0.6743

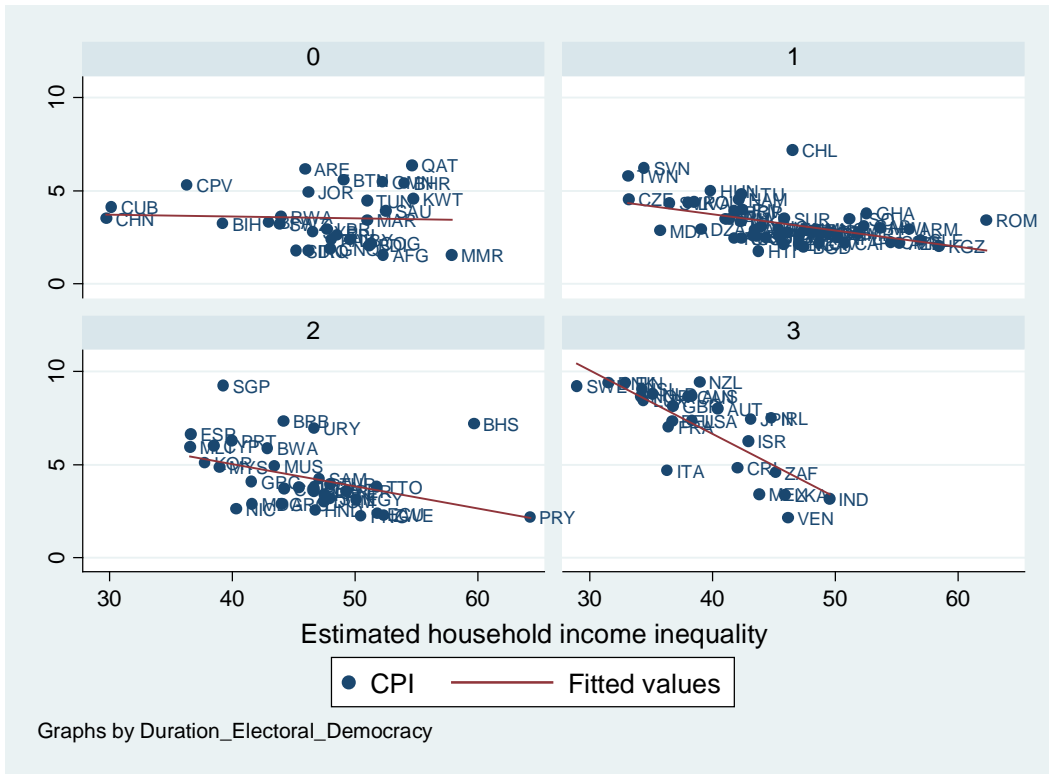
Table 2.7 The effect of inequality on bureaucracy and corruption

Dependent variable:	Professional		Corruption Perceptions Index			GCB_Bribery		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Professional bureaucracy					0.8880 (.2546)***			-0.3924 (.1378)***
Clientelism		-1.2923 (.2412)***		-3.0727 (.3362)***	-1.9251 (.4253)***		1.2115 (.2133)***	0.7054 (.2508)***
Inequality	-0.0551 (.0242)**	0.0494 (.0384)	-0.2444 (.0583)***	0.0042 (.0416)	-0.0397 (.0318)	0.1057 (.0247)***	0.0079 (.0223)	0.0266 (.0158)
Constant	6.5424 (.9389)***	5.7182 (1.0876)***	15.5136 (2.3474)***	13.5542 (1.2281)***	8.4765 (1.9536)***	-2.4581 (.9835)**	-1.6989 (.6188)***	0.5793 (1.1204)
N	39	39	39	39	39	39	39	39
R-squared	0.0959	0.4595	0.3489	0.7293	0.8082	0.3230	0.6210	0.6968

Table 2.8 The effect of inequality on capture and corruption

Dependent variable:	Capture		Corruption Perceptions Index		Corporate corruption		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Capture		-0.0485 (.0205)**		-0.0187 (.0174)	-0.0206 (.0099)*		-0.0057 (.0115)
Inequality	0.7174 (.2420)***		-0.0955 (.0186)***	-0.0830 (.0218)***		-0.0334 (.0113)***	-0.0285 (.0130)**
Income per capita	0.8139 (5.3997)						
Constant	-13.6538 (54.1748)	4.4483 (.5746)***	6.9238 (.7873)***	6.8379 (.7719)***	4.2709 (.2047)***	5.0357 (.3746)***	4.9801 (.3729)***
N	22	21	21	21	20		20
R-squared	0.2674	0.2063	0.4308	0.4541	0.2384	0.3821	0.3921

Figure 2.1 The association between inequality and corruption, by duration of democracy



Note: Duration of electoral democracy variable takes the value of 0 for dictatorships, 1 for countries with up to ten consecutive years of electoral democracy, 2 for countries with between 11 and 30 consecutive years of electoral democracy, and 3 for countries with more than 30 consecutive years of electoral democracy. Each box displays the scatter plots of estimated household income inequality for 2002 from UTIP data on the X axis and average CPI for 2002-2006 on the Y axis.

Figure 2.2 The association between inequality and clientelism, by duration of democracy

