Governance Review Paper

J-PAL Governance Initiative

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TRANSLATING RESEARCH INTO ACTION

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Executive Summary

Governments around the world spend billions of dollars annually to provide basic services and development programs aimed at improving the lives of those living in poverty. At the same time, a large number of foundations and international aid organizations channel their development dollars through government-run programs. But the effectiveness of such public spending is often compromised by a number of connected factors: policies that do not reflect the needs or wishes of the people, leakages due to corruption, lack of community participation, and poor oversight of public spending.

Despite the crucial importance of good governance for development, many questions about how to effectively improve governance remain unanswered. Researchers working on field experiments to evaluate programs and policies can provide crucial insights to policymakers on how to improve governance. The value of experimental evidence is likely to be particularly high when it provides clear tests of hypothesized channels of influence.

As a response to this need, this governance review paper summarizes empirically rigorous evidence on governance issues in low-income countries and identifies new directions for research. The objective is twofold: to provide information about how to improve participation in the political and policy processes and reduce leakages in public programs, and to identify gaps in the governance literature which researchers within the Governance Initiative (GI) will seek to fill.

The literature review began with the Co-Chairs of GI identifying research areas that have been influential in the field of governance in the economic and political science literature. Within these areas the research team did an extensive keyword search in the top economics and political science journals and reviewed the papers. Sources for the keyword search included journals in economics and political science, and unpublished working papers presented at conferences or available through universities and top research centers.

From this range of publications, we selected the subset of papers that presented empirical evidence on the topic of governance and addressed the issue of causal relations in what we judged to be a reasonably effective way, given modern standards of empirical work. The main criteria for inclusion in the governance review paper were that the papers should present studies that provide empirical evidence on the causes and consequences of poor governance in low-income countries, based on a "rigorous empirical identification strategy." We included both randomized and non-randomized studies and made particular effort to include studies that provide causal evidence on why poor governance exists and persists, and what can be done about it. This reflects the ultimate focus of GI on supporting empirical research. That said, papers that provide a theoretical rationale for empirical tests were prioritized.

This literature review seeks to provide clear guidelines to improve governance on developing countries and highlights open research questions on these issues. As the work under GI progresses and more gaps are filled, the governance review paper will be updated to reflect the latest research on the drivers of good governance.

What Do We Mean by Governance?

We recognize that the term "governance" means different things to citizens, researchers, and policymakers; indeed, there is great diversity in the research domains that are considered governance research. We will not attempt to capture all such areas in this governance review paper, nor attempt to build false links between them. Rather, we cast the problem of good governance as a two-part principal-agent problem. In the first part of the problem, the principals are the citizens, who vote to elect as their agents, politicians, whose job is to enact policies that are in line with the voters' interests. In the second part of the problem, politicians become principals themselves, who must in turn work with their agents, civil servants, and other service providers to actually implement those policies.

In the developing world, both of these links–the link between the electorate and the politicians they select, and the link between stated government policy and the civil servants that enforce it–are frequently weak. When citizen control over politicians is weak, the results can range from politicians directing state resources to connected firms (e.g. Khwaja and Mian 2005) to politicians implementing programs that in their original design are cost-effective, but in the presence of corruption are not (e.g. Olken 2006). When control over civil servants is weak, the results can range from public works officials stealing funds (e.g. Olken 2007) to teachers and nurses who rarely show up to work (e.g. Kremer el al 2005 and Banerjee et al 2008).

This governance review paper focuses on each of these principal-agent problems in turn as key areas of research. First, how can citizens exercise greater control over politicians and policy through elections and participatory institutions? Second, which incentive schemes and institutional features can encourage civil servants to do their jobs properly, without leakages?[1] In each of these areas, we review the state of knowledge as it exists today and, in doing so, identify what we believe are the key gaps in knowledge and priority areas for research.

Citizen Influence over Policymakers

The first step of the principal-agent problem we consider is how citizens influence government decision-making. Citizens can participate in democracies as voters, leaders, community members, or representatives of groups, such as unions. While participation is widely considered a primary means of empowerment in democratic societies, there is little empirical evidence on how participation actually influences policy, and how any such policy changes impact the lives of citizens. We begin by examining the open questions on the impact of participation, and then turn to questions about how best to improve participation in meaningful ways.

The Impact of Citizen Participation

[1] Corruption is widely understood as "the misuse of public office for private gain." For our purposes, we use the word corruption as "incidents where a bureaucrat (or an elected official) breaks a rule for private gain." This broader definition would include the most obvious type of corruption – a bureaucrat taking an overt monetary bribe in order to bend a rule, but also encompass more nuanced forms of bureaucratic corruption including nepotism to favor a family member rather than issue a competitive bid. We use the word "leakages" to not only include this broad definition of corruption, but also to include other acts that are sometimes not seen as corruption, but nevertheless lead to a loss of public funds or create inefficiencies in the delivery of public goods and services. Examples include unauthorized absenteeism of government staff while still collecting a paycheck, needless delays in providing public services, and a lack of sufficient effort towards final outcomes.

The presumption of democratic governance is that citizen participation in decision-making processes –as voters, politicians, and members of local communities– makes the electorate and polity more representative of the society, aligns policies better with citizens' preferences, and ultimately results in better outcomes for the citizenry. We examine potential impacts of citizen participation on three dimensions: policy choices, economic growth, and citizen satisfaction.

1. Impact on Policy

Participation as voters: The most basic question about participation is this: Does increasing the share of the electorate of a given group mean that policy preferences better reflect that group's preferences? While an answer to this question in the affirmative seems intuitive, and while evidence from the expansion of suffrage in developed countries many years ago suggests so, the fact that there has long been universal suffrage in many countries without corresponding improvements for disadvantaged groups makes rigorously answering this question challenging.

Increased participation by citizens can also be achieved by decentralizing government to allow more local decision-making. The public finance theory of decentralization, dating in economics back to Tiebout (but on some level back to the debates surrounding the U.S. Constitution in the late 18^{th} century) suggests that decentralization is optimal if there is substantial preference heterogeneity, limited spillovers across jurisdiction, and limited economies of scales. Beyond this, there is an argument that having government closer to the people results in better citizen monitoring of politicians. The limited evidence we have on decentralization in the developing world supports several of these predictions: there is some suggestive evidence that local elections in China, for example, limited the enforcement of unpopular policies, though there is evidence this channel is less effective when there is substantial heterogeneity within the population. Developing a better understanding of the advantages and downfalls of the empirical impacts of decentralization is an important area for future research.

Participation as leaders: A second mechanism for ensuring that the preferences of marginalized groups are translated into policy is to directly ensure their presence as leaders by instituting electoral quotas that guarantee a minimum number of elected positions to such groups. This is one of the few areas influencing participation where we do, indeed, have rigorous evidence. Research using random allocation of quotas demonstrates that leader identity influences policy outcomes: quotas do shift policy outcomes to favor the priorities of the disadvantaged groups. Quota-induced exposure to leaders from initially underrepresented groups can also change voters' willingness to elect candidates from these groups, even when the seat is no longer reserved. The efficiency consequences of such quotas and their impacts on long-run candidate entry and party dynamics remain important areas for research. More broadly, we know from both micro- and macro-evidence that leaders matter, but we know relatively little about what makes for good and bad leaders.

Community participation as monitors: A third type of participation is that of communities in the monitoring process. We have several randomized studies in this area, but no clear pattern has yet emerged in the results. For example, community monitoring was amazingly effective in health centers in Uganda, completely ineffective for education in India, and effective only under some circumstances in limiting corruption in road building in Indonesia. Evidence suggests that details about the design of community participation programs and the context in which they are implemented are critical factors in determining whether and how these programs affect final outcomes. Which mechanisms influence the success of community monitoring, and how those mechanisms are determined by contexts and conditions, remain important questions for future work.

2. Impact on Growth

While it is difficult to assess the impact of greater participation on policy, it is even more difficult to establish a relation between increased participation in decision-making and economic growth. Not surprisingly, the evidence here is mixed. While some argue poor countries can implement good policies regardless of their institutional arrangement, others suggest that democratization is associated with higher growth. Similarly, the macro institutions literature demonstrates that historical choice of institutions casts a long shadow over current policies and limits the influence of citizen participation and voting. According to this view, the introduction of democracy per se is unlikely to influence growth. Overall, the channel of influence from citizen participation to growth, which the macro literature has been unable to clearly identify, is an important area for future research.

3. Impact on Satisfaction

Irrespective of the impact on policy outcomes, an alternative justification for democratic forms of governance is that it leads to greater satisfaction in the citizenry about the government. Recent experimental literature confirms this idea: improved citizen participation in decision-making processes increases citizens' satisfaction, regardless of whether policy actually changes. On the other hand, evidence collected in the context of electoral quotas for women in India suggests that citizens' satisfaction can reflect their biases about who are appropriate leaders rather than measure leader performance. These results might lead us to ask how information about policy outcomes influences citizen satisfaction with the process, and what the links between leader performance and satisfaction are.

Key Open Questions:

From our review of the literature, we have identified the following as particularly fruitful questions for ongoing research:

<u>*Participation and Policy*</u>***:***

As Voters

- *Does decentralization of policy making change (i) the nature of citizen participation, (ii) policy outcomes, and (iii) electoral accountability?*
- *How do voters trade off preferences for competent or honest politicians with redistributive preferences? How can institutional design and information about available policies alter these trade-offs?*

As Leaders:

- *Which qualifications or characteristics of leaders influence the efficiency of policy making?*
- *How do selection procedures influence leader choice and therefore policy?*

As Community Members:

- *How does the institutional structure of community monitoring determine its impact on policy?*
- *Are some programs and policies more amenable to being monitored by the community vs. others?*

<u>*Participation and Growth:*</u>

- *Does greater democratization increase growth?*
- *How do leaders influence growth outcomes?*

<u>*Participation and Citizen Satisfaction:*</u>

- *Does information about policy outcomes influence citizen satisfaction with the process?*
- *Are attitudes toward leaders influenced by performance information?*
- *What are the links between leader performance and satisfaction outcomes?*

What Determines Citizen Participation? The Role of Institutions, Demographics, and Information

A growing literature suggests that weak institutions have been an important colonial legacy for many low- income countries. Elite capture of democratic institutions can create a barrier between citizen participation and actual policies, impede economic growth, and damage people's satisfaction with the process. The public's belief that certain influences—weak institutions, demographic factors, and limited information flow—will constrain the positive impacts of citizen participation may lead to a general skepticism that it is a viable way to improve governance.

1. Electoral Malpractice and Entry Barriers:

In many low-income countries, the colonial legacy has led to weak democratic institutions. These weak institutions can undermine voter participation by creating high barriers to entry in politics and by allowing for electoral malpractices, including vote buying, voter violence, and false voter registration. Undermined voter participation in turn leads to selection of poor quality politicians, reduces incentives for elected politicians to perform well, and creates a disconnect between voter preferences and implemented policies. The limited evidence we have suggests that these problems may be severe—a recent study of Nigerian voters, for example, found that almost 20 percent had experienced vote-buying and 10 percent had experienced electoral violence. There is even less evidence on how to ameliorate these problems–there are a few randomized experiments that examine ways of reducing barriers to voter registration, and one experiment on reducing electoral violence in Nigeria–but these barriers remain an important area for future research.

2. Demographics:

Ethnic diversity can constrain political participation due to mistrust of candidates who might distribute public goods to other groups or areas. Most studies show a negative relation between ethnic diversity and local investment, public good provision and, ultimately, growth. However, a concern with this literature is the researchers' limited ability to control for unobservable regional characteristics that vary alongside ethnic diversity. Similarly, there are mixed results from research on impact of gender, education, and socioeconomic factors on political participation and whether policy can change this impact. Finally, there is some evidence that the salience of these identities can be manipulated. For instance, in parts of sub-Saharan Africa, identification with ethnic groups increases during election time, causing voters to focus more on candidates' ethnic identity than their qualifications or past performance.

3. Information:

Limited information can exacerbate the negative impacts of weak institutions and ethnic diversity. When citizens lack information about candidate quality or achievement, they may be forced to vote based on observable characteristics such as ethnicity and gender, which in turn may reduce electoral accountability (in terms of, say, competence). The extent to which prospective information provided by electoral campaigns impacts participation is unclear, however experimental evidence shows that retrospective information on politician performance provided by independent sources can increase voter participation and electoral accountability. Yet we still know little about how parties and other political actors respond to greater information availability, and how disclosure laws should be structured to avoid biasing voters against incumbent candidates.

Key Open Questions:

<u>Institutions</u>:

- *How can elite capture of electoral processes be constrained in low-income settings?*
- *What are the strategic responses of political actors to transparency initiatives during elections?*

<u>Demographics</u>:

- *When and how does ethnic diversity worsen collective action and policy making?*
- *How can institutional design reduce the impact of demographic identities?*
- *How does institutional design of elections and community programs influence entry?*

<u>Information</u>:

- *How do parties and other political actors respond to greater information disclosure?*
- *How should disclosure laws be structured? Is there an anti-incumbency bias built into such laws?*
- *Does the form of information provision influence voter responsiveness?*

Improving Government Effectiveness and Reducing Leakages

Although anecdotal evidence suggests that poor quality government services, as well as outright corruption, are a significant governance concern in the developing world, there are remarkably few reliable estimates of the actual magnitude of leakages from the public sector, and the credible estimates we have are surprisingly heterogeneous. Moreover, just knowing the magnitude of leakages does not inform us about how serious the problem is from an economic perspective–the efficiency costs may exceed the extent of direct losses in several ways. Poor quality government services, leakages and corruption can raise the marginal tax rate of firms; decrease business activity; raise the marginal costs of public funds, making certain government projects economically unviable; or undo the government's ability to correct externalities, thus leading to inefficient outcomes. Effective policies to improve government services, reduce leakages, and mitigate corruption must ensure not only that they solve the direct problem, but that they do so in a way that increases economic efficiency and is sustainable in the long run.

How bad is the Problem, Really?

Despite frequent discussion of the issue, there is surprisingly little hard data on the quality of government service provision, and in particular leakages and corruption. Due to the difficulty in measuring illegal activity, until recently, most estimates of corruption were based on surveys of perceptions of corrupt activity. Evidence suggests that these estimates are often inaccurate due to the inability of most people to estimate fraudulent quantities of inputs in public projects, heterogeneous impacts of people's educational and other characteristics, and the lack of information or a free press.

Economists have increasingly focused on direct measures of leakages. A variety of empirical methods have been developed, including surveys of bribe payment, direct observation of corrupt activity, comparisons of reported versus actual expenditures or inputs used in government projects, and estimates from market inference. While several credible estimates have emerged, there is still relatively little hard data compared with other development indicators. For example, virtually all countries have regular measurements of government expenditure, GDP, manufacturing, education, health, etc. compiled on a regular basis at the provincial level, and even finer levels of detail. But our knowledge about leakages is still limited to a few cases, with little meaningfully comparable data across countries.

The data that exist suggest a strong negative relationship between income levels and the extent of leakages. However, the causality could go in either direction: it is very difficult to say if low corruption leads to economic growth, or high income levels reduce the amount of corruption in a country. Even among countries at similar income levels, or within countries, there is still a marked amount of heterogeneity in corruption levels. For example, a study in Uganda estimated a leakage rate of 87 percent in education block grants; a study in Indonesia showed that missing expenditures in a road project averaged 24 percent of the total cost of the road; while in Mozambique bribes represented 14 percent of total shipping costs for standard containers. Similarly, in a study of six countries, absenteeism rates for health workers ranged from 25 percent in Peru to 40 percent in India. Likewise, within India, teacher absenteeism ranged from 15 percent in Maharashtra to 42 percent in Jharkhand.

Key Open Questions:

- *How much corruption would we measure if we could construct an unbiased sample?*
- *Why does corruption appear lower in richer countries?*
- *What prevents corrupt officials and political leaders from extracting even larger amounts?*
- *Are some government functions or programs more susceptible to leakages, and if so, why?*

Does Corruption Matter?

1. Impact on Firms:

It is theoretically possible that corruption simply represents a transfer of money from governments to bureaucrats, and does not necessarily reduce economic efficiency. However, empirical evidence suggests otherwise. At the firm level, the cost of paying bribes can be regarded as an additional tax that may distort the way that businesses choose to operate. Research in Uganda suggests that bribes may have as much as three times more negative impact on firms' growth than do taxes. Moreover, indirect effects, such as uncertainty surrounding corruption, can also result in inefficient decisions as firms change their production choices to avoid areas or activities with high corruption. However, the evidence we have on this topic is very limited, and more rigorous evidence of the efficiency cost of corruption on firms is needed.

2. Impact on Governments:

Leakages have efficiency consequences for government programs via two channels. First, the theft of government resources increases the costs of providing goods and services. Governments may therefore provide less of and significantly lower quality of potentially important services, because the net cost of providing these services is excessive. Second, leakages can create indirect costs if corrupt officials change the structure of programs to make corruption easier and more concealable. These increasingly convoluted programs may induce inefficiencies, which could potentially be larger than the direct cost of the lost funds themselves.

3. Impact on Correcting Externalities:

Governments structure laws and penalties to correct externalities like the need to keep overloaded trucks and untrained drivers off the road. But if people can bribe police officers or judges instead of paying fines, and if the relationship between the bribe they need to pay and the activity the government wishes to prevent is flatter than under the official law[2], then the threat of punishment is diminished and people have less incentive to obey the law. Another example would be bribery to bring in (cheaper) counterfeit or out-of-date medicines. This raises the important question of whether governments can or should adjust their behavior to achieve the desired outcomes, despite the presence of corruption.

4. Impact on Individuals:

Part of the cost to individuals comes indirectly from the impacts described above–the changes to firm behavior, the reduced efficacy of government service provision, and government's reduced ability to correct externalities. Corruption and leakages can also affect individuals directly, with the impact disproportionally distributed in society.

Key Open Questions:

- *What is the impact of corruption on firm performance, and why is the impact of corruption higher than the impact of taxes?*
- *Does corruption cause governments to re-optimize expenditures? If so, do governments shift into lower corruption sectors (to avoid distortions) or higher corruption sectors (to maximize rents)?*
- *How do the bribes people have to pay to police, judges, etc. depend on the official penalty functions? Given this knowledge, how can the government design the official law to best achieve its desired ends in the presence of corruption?*

How Can Leakages be Minimized and Government Performance Improved?

Understanding the determinants of leakages and their relative impact is essential to devising policies to reduce corruption. Key determinants include civil servant incentives and the structure of the

[2] A flatter relationship means that as the "value" of the offense increases, the bribe increases less than the official fine does.

bureaucracy, external factors (technology, transparency and judicial corruption), and long-term anti-corruption policy.

1. Civil Servant Incentives and the Structure of Bureaucracy:

Economic theory tells us that corruption is shaped by the incentive structure faced by individual bureaucrats, including methods of selection, compensation, monitoring (probability of detecting corruption), punishment for the corrupt, and incentives for better performance. Despite the importance of these channels, there is relatively little evidence on how they affect actual performance, particularly with respect to selection of civil servants, wage levels, and output-based incentives.

Monitoring (including government audits) and punishments have been shown in a small number of studies to be effective at reducing corruption, even in a highly corrupt environment where those doing the monitoring are themselves susceptible to corruption. Yet we know little about whether monitoring by government auditors would work in the long term if they had more of an opportunity to form corrupt relationships with those being monitored. Evidence on the efficacy of community-based monitoring is mixed, and we do not fully understand why it works in some cases but not in others. Combining monitoring and well-defined outcomes with explicit monetary incentives could also be effective in reducing leakages, though there is little evidence on this. An important challenge is how to determine optimal incentive structures in cases where the policy output is hard to observe. For example, in the case of police officers, where the goal is to discriminate between the innocent and the guilty, a reward system based on the number of citations issued would not effectively incentivize accuracy.

Changing the structure of a bureaucracy can also reduce corruption and improve positive outcomes via two channels. Simplified regulations lead to decreased opportunities for corruption and can lead to increases in new businesses and wage employment. Economic theory also suggests that setting up structures to encourage competition between bureaucrats can drive down corruption levels, though there is little rigorous evidence testing for this idea. Understanding how these strategic interactions affect the welfare of those trying to access public goods is a key question for governance research.

2. External Factors:

Another approach to tackling corruption is to change external factors that are beyond an individual civil servant's control–for example, using technology to ensure that certain procedures are followed, or by increasing the transparency of their activities to provide information quickly and accurately to supervisors or other stakeholders.

Technology: A variety of programs using technology for monitoring purposes (GPS systems, cameras, biometric captures and wireless transmission of data) are currently being piloted in the developing world. However, evidence suggests that these technologies are only as effective as the systems which process their information. If there are weak incentives based on the information returned, or the incentive scheme is poorly designed, then technology can have little effect on corruption. More research is necessary to examine how the effectiveness of these technologies changes when they are used on a larger scale, and what pitfalls must be avoided in implementation.

Transparency: Transparency can also enable citizens to do a better job at monitoring the performance of the government and civil servants. Recent micro-level studies have suggested that freedom-of-information provisions and information on entitlements of citizens can increase investments in public goods and access to public benefits. However, more transparency may not have a beneficial impact. For example, making information about politicians publicly available could undermine privacy and discourage qualified candidates from participating in politics. Despite the focus of so much international advocacy on macro-transparency, there is very little academic literature on how increased transparency at a high level on issues such as the public budget and natural resource extraction will impact politicians and the policies they choose to implement.

Judiciary: Judicial corruption poses a tremendous challenge because the judiciary is a key component in the efforts to fight all other types of corruption. If judges or prosecutors are corrupt, then it will be difficult to impose punishments (other than administrative sanctions) against other corrupt officials, since they can bribe the prosecutors or judges and avoid punishment. Judicial corruption can also have important efficiency implications for civil contract enforcement. If judges are bribable, then in the event of disputes, contracts will be awarded to the party that is able to bribe more. Despite the importance of judicial corruption, there is very little rigorous literature on the topic either in terms of its consequences or how to control it. Indeed, there is relatively little empirical literature on courts in developing countries at all, with most focusing on the effect of delays.

3. Anti-Corruption Policy in the Long Run

Much of the evidence in the governance literature pertains to the short-run effects of anti-corruption measures. But there is ample evidence that suggests that the long-run impacts could be quite different. For example, it could take corrupt officials time to learn how to manipulate a new system. Alternatively, a new, less corrupt group of civil servants may gradually select into a less corrupt system. More research is needed into exactly how these systems can evolve over a period of years so that anti-corruption policies and systems persist in the long run.

Key Open Questions:

<u>*Civil Servant Incentives*</u>*:*

Compensation, Selection and Other Incentives

- *Do higher wages reduce corruption? If so, is it due to selection effects, efficiency wages, or because honesty is a normal good?*
- *When are government enforcers (auditors, police, prosecutors, anti-corruption staff) effective at reducing corruption, and when do they themselves become corrupt and only add to the problem?*
- *Are there multiple equilibria in corruption due to differing circumstances? If so, what causes these, and can temporary corruption crackdowns have permanent effects?*
- *Can output-based incentives for government officials such as police and tax inspectors reduce corruption, or will they lead to over-enforcement and extortion?*
- *What are the possible selection and promotion criteria to reduce the propensity of civil servants to be corrupt?*
- *How can community-monitoring programs be designed to be more effective in monitoring civil servants? Why do they work in some cases but not others?*

- *Can non-financial motivations, such as shame, intrinsic motivation, and mechanisms to internalize the greater good, reduce corruption?*

Structure of Bureaucracy:

- *Can changing the structure of the bureaucracy to encourage competition between government officials lower bribes?*
- *What is the nature and extent of the trade-off between the need for regulation and lower corruption?*

External Factors:

Technology

- *Can using technology to reduce the discretion of government agents reduce corruption?*
- *Can using technology as a monitoring tool reduce corruption?*
- *Can using technology as an information-sharing tool reduce corruption?*

Transparency

- *Does transparency encourage government officials to be less corrupt?*
- *Does transparency enable citizens to monitor more effectively?*
- *What types of information releases are more effective in reducing leakages?*

Judiciary

- *What are the impacts of judicial corruption on economic efficiency?*
- *How can the extent and effects of judicial corruption be measured?*
- *What approaches work best in reducing the levels and efficiency costs of judicial corruption?*

Anti-Corruption Policy in the Long Run:

- *How can corruption be effectively combatted in the long run?*
- *How can the impacts of anti-corruption programs be made to persist in the long run?*
- *How can clean governance and anti-corruption values be made intrinsic among civil servants?*

1. Introduction: A Principal-Agent Approach to Governance

Governments around the world spend billions of dollars annually to provide basic services and development programs aimed at improving the lives of those living in poverty. At the same time a large number of foundations and international aid organizations channel their development dollars through government-run programs. But the effectiveness of such public spending is often compromised by a number of connected factors: policies that do not reflect the needs or wishes of the people, leakages due to corruption, lack of community participation, and poor oversight of public spending.

Until recently, there was little quantitative evidence about the extent of corruption and its consequences, especially on program effectiveness, even though it is widely accepted that effective public service delivery requires "clean" governments (Acemoglu 2010). Several factors make empirical evidence on the causes and consequences of poor governance in low-income countries difficult to obtain. First, the illegal nature of many corrupt activities means that data on the extent of misgovernance is often hard to gather. Second, obtaining causal evidence on why poor governance persists requires the researcher to disentangle the channels of influence, which is often difficult to determine. Similarly, it is challenging to measure the extent or intensity of participation and its true impact. For example, how do we know if observed voter choices reflect people's true electoral preferences, or choices limited by poor information about politician performance?

The feasibility and relevance of policy-oriented research on governance, therefore, depends on researchers' ability to address these challenges. Recent advances in data collection, which include improved methods of quantifying corruption, now enable researchers to collect sophisticated measures of misgovernance (Fisman and Wei 2004, Olken 2007 and Olken 2009). Furthermore, the use of field experiments allows researchers to directly provide causal evidence on the drivers of good governance.

Despite the crucial importance of good governance for development, and the recent advances in the literature, most questions about how to effectively improve governance remain unanswered. There is also a need to build a better bridge between field experiments and underlying economic theories, using trials to test theoretical predictions and thereby strengthening our theoretical understanding of the issues underlying good governance and service delivery.

As a response to this need, this governance review paper summarizes empirically rigorous evidence on governance issues in low-income countries and identifies new directions for research. The objective is to provide information about how to improve participation in the political and policy process and reduce leakages in public programs, and to identify gaps in the governance literature which researchers within the Governance Initiative will seek to fill.

The literature review began by the Co-Chairs of GI identifying research areas that have been influential in the fields of governance in the economic and political science literature. Within these areas the research team did an extensive keyword search in the top economics and political science journals and reviewed the papers. Sources for the keyword search included journals in economics and political science and unpublished working papers presented at conferences or available through universities and top research centers.

From this, we selected the subset of papers that presented empirical evidence on the topic and addressed the issue of causal relations in what we judged to be a reasonably effective way given modern standards of empirical work. The main criteria for inclusion in the governance review paper were that the papers should present studies that provide empirical evidence on the causes and consequences of poor governance in low-income countries based on a 'rigorous empirical identification strategy'. We included both randomized and non-randomized studies and made particular effort to include studies that provide causal evidence on why poor governance exists and persists, and what can be done about it. This reflects the ultimate focus of GI on supporting empirical research. That said, papers that provide a theoretical rationale for empirical tests were prioritized.

This literature review seeks to provide clear guidelines to improve governance on developing countries and highlights open research questions on these issues. As the work under GI progresses and more gaps are filled, the governance review paper will be updated to reflect the latest research on the drivers of good governance.

We recognize that the term "governance" means different things to citizens, researchers and policymakers; indeed, there is great diversity in the research and policy domains with respect to the definition of governance, and no strong consensus for a single definition of governance has been reached yet. For example, the World Bank has defined governance differently over time. An early definition described governance as "the manner in which power is exercised in the management of a country's economic and social resources for development" (World Bank 1992). Later, a broader definition described governance as "rules, enforcement mechanisms, and organizations" (World Bank 2002). Along this line, a more recent definition described it as "the manner in which public officials and institutions acquire and exercise the authority to shape public policy and provide public goods and services" (World Bank 2007).

In this governance review paper we will not attempt to capture all such areas, nor attempt to build links where no natural links exist between areas. Further, we will not follow a particular operational definition of governance. Rather, we will cast the problem of good governance as a two-part principal-agent problem. In the first part of the problem, the principals are the citizens, who vote to elect as their agents politicians, whose job is to enact policies that are in line with the voters' interests. In the second part of the problem, politicians, in turn, become principals themselves, who then must work with their agents, civil servants, and other service providers to actually implement those policies.

In the developing world, both of these links—the link between the electorate and the politicians they select, and the link between stated government policy and the civil servants that enforce it—are frequently weak. When citizen control over politicians is weak, the results can range from politicians directing state resources to connected firms (e.g., Khwaja and Mian 2005) to politicians implementing programs that in their original design are cost-effective, but in the presence of corruption are not (e.g., Olken 2006). When control over civil servants is weak, the results can range from public works officials stealing funds (e.g., Olken 2007) to teachers and nurses who rarely show up to work (e.g., Kremer el al, 2005 and Banerjee et all 2008).

Given this framework, this governance review paper tackles the subset of governance issues we believe are most theoretically and practically fertile, focusing on two key links: improving voter control over politicians and policy, and improving the incentives for civil servants to do their jobs properly without corruption.

2. Participation and Governance

The period since the mid-1970s has witnessed a significant democratization of governance structures across the globe, a fact that is often described as the “third wave of democratization” (Huntington 1991). Using subjective political freedom indicators, electoral archives, and historical resources in 174 countries from 1960-2005, Pappianou and Siouronus (2008) identify the third wave of democratization as being associated with 63 incidents of permanent democratic transitions, 3 reverse transitions from relatively stable democracy to autocracy and 6 episodes of small improvements in representative norms (borderline democratizations). By the end of the analyzed period democracy was the most common de jure institution of governance.

Democratization of governance structures at the country level has been accompanied by growing decentralization of policy-making powers to local elected government (Bardhan and Mookherjee 2006). There has also been a significant interest, by governments and NGOs, in requiring direct community participation in public good provision and monitoring of service delivery.

Informed by these observations, this governance review paper focuses on citizen participation along three dimensions: as political actors in democracies, as leaders, and as members (residents) of local communities. Greater citizen participation across all three dimensions is widely considered a key form of citizen empowerment. Here, we examine the evidence on whether, and how, such empowerment influences policy outcomes and citizen satisfaction. Throughout, we highlight research priorities.

We divide our review into two sections. We start with the impacts of participation, where we consider participation in three arenas—voting, leadership and community membership. Next we examine the determinants of participation, where we consider the influences of three sets of factors: institutions, demographics, and information.

2.1. Impacts of Participation

The presumption of democratic governance is that citizen participation in decision-making processes can influence, and possibly improve, public good provision and redistribution. Beyond its direct impacts on citizen well-being, the form of resource redistribution may also influence economic growth.

Here, we focus on the impacts of citizen participation on three sets of outcomes: policy outcomes (public policies and service delivery), economic growth and citizen satisfaction. Under each outcome we discuss the likely impact of participation along three dimensions—voting, leadership and community membership.

2.1.1. Impact on Policy Outcomes

A. Voter Participation

A first set of papers evaluate the policy impact of voter participation by examining whether variations in the demographic composition of the electorate and, therefore, the mix of redistributive preferences among voters influences policy making in democracies. Here, much of the evidence comes from studies of suffrage extension in rich countries (Miller 2008 and Lott and Kenny 1999). Exploiting cross-state variation in the timing of female suffrage Miller (2008) showed that within a year of female suffrage local public health spending increased by 35 percent and child mortality fell by 8 to 15 percent.

However, since most low-income countries instituted universal suffrage at the time of adopting democratic governance, we lack such direct evidence for low-income countries. A potential source of indirect evidence comes from the greater delegation of policy powers to elected local governments in many low-income countries. If shifting policy powers from bureaucrats to elected local officials increases effective voter participation in the policy making process, then we can use periods of decentralization to obtain insights.

While very few studies compare policy outcomes pre- and post- decentralization, those that do typically report improved representation of voter preferences. Faguet (2004) compared expenditure in public investment projects before and after the decentralization reform in Bolivia and found that decentralization increased public investment in 8 of the 10 analyzed sectors, especially in areas (e.g. education), where the needs (e.g. illiteracy) were higher. Similarly, Foster and Rozensweig (2001) evaluated the consequences of local democratization and fiscal decentralization in India and found that a shift toward democracy made villages 15 percent more likely to have a paved road, 80 percent more likely to have public irrigation facilities and 22 percent more likely to have a secondary school. Moreover, the nature of change in public good provision reflects underlying demographics. Decentralization in villages with more landless households increased investments in paved road, which favors labor, and reduced investment in public irrigation, which augments land rents.

These papers focus on the redistributive consequences of greater citizen participation, and attribute the change to differences in the set of citizen preferences being represented. Yet the connection between group characteristics and policy preferences is often inferential and we lack direct causal evidence on how the economic status of voters influences policy outcomes. Our evidence base on the links between the distribution of citizen preferences and the quality of policy making is also weak. Existing evidence suggests that greater citizen participation in policy making processes can create winners and losers. For instance, Beaman et al (2011) use data from village meetings in India to show that men and women differ in their preferences over public goods. Thus, the welfare implications of changing the extent of citizen participation are ambiguous.

We should expect the net welfare impact to be positive if the population is relatively homogenous, in terms of economic and ethnic characteristics. In such settings, the main influence of increasing citizen participation should be greater electoral accountability of the representatives. Some suggestive evidence on the net effect comes from Fisman and Gatti (2002). Using cross-country data they find that countries with greater decentralization have less corruption. The clearly endogenous nature of the data—less corrupt countries may be more likely to decentralize—implies that we cannot draw firm conclusions. However, it does raise the possibility that increased electoral accountability improves average governance practices. More recent micro-evidence on how the congruence of local preferences strengthens the impact of citizen participation comes from Martinez-Bravo et al (2010). They examine the impact of local elections on leaders' accountability in rural China. The introduction of elections at the local level, even in the context of an authoritarian regime, decreased the enforcement of unpopular policies like the one-child policy and land expropriation, and increased the provision of appropriate public goods at the village level.

Would similar results be obtained in ethnically diverse environments, such as those in sub-Saharan Africa? There are theoretical reasons to believe they may not. Padró I Miquel (2007) developed a framework to analyze political accountability when societies are ethnically divided and institutionally weak. Corrupt leaders may be elected if their supporters fear even greater extraction from the opposition groups. Thus, the fear of an equally inefficient leader that favors another ethnic group is sufficient to reduce electoral accountability. Banerjee and Pande (2009) suggest a different channel: voters with strong ethnic preferences may choose to trade off politician corruption against the ethnic identity of the politician. However, the severity of such trade-offs and whether they can be reduced by designing institutions and providing information needs more research.

Open Research Questions:

- *Does decentralization of policy making change (i) the nature of citizen participation (ii) policy making and (iii) electoral accountability?*
- *How do voters trade off preferences for competent or honest politicians with redistributive preferences? How can institutional design and information about available policies alter these trades-offs?*
- *Does greater voter participation lead to more emphasis on populist policies?*

B. Leader Choice

Voters are likely to care about at least two dimensions of a politician's quality: honesty or competence, and policy preferences. The reason for caring about the first is obvious. The second is less obvious. In a median voter model of politics, elected leaders implement the policies favored by a majority of voters, hence legislator identity should be irrelevant to policy outcomes. A large empirical literature, however, contradicts this assumption and documents a clear link between a politician's policy preferences and implemented policies.

Here, an important source of evidence is the use of electoral quotas in order to provide representation for historically disadvantaged groups in representative democracies. In the case of ethnic minorities, Pande (2003) exploits rule-induced variation in quota incidence to show that greater presence of ethnic minorities in Indian state legislature increases targeted transfers to these groups. At the village level, Besley et al (2005) report similar evidence. In the case of women, Chattopadhyay and Duflo (2004) exploit random assignment of gender quotas for council head position in India to show the reservation policy increased the provision of goods aligned with female preferences, such as drinking water and roads. In Beaman et al (2011) the authors show that female leadership increases participation by female villagers in village meetings which (consistent with arguments in the previous section) suggests that leadership effects on policy may also reflect greater participation by certain groups. Thus, there is clear evidence that the choice of leaders will directly impact policy choices.

At the macro level, Jones and Olken (2005) also provide further evidence that leaders influence policy outcome, mainly though monetary policy. In their study, an exogenous change on leadership, measured by the death of a leader while in office, is associated with changes in the level of inflation. There is, however, less convincing evidence on the effect of leaders on fiscal and trade policy.

Whether leader preferences also influence the efficiency of policy making (e.g. by reducing corruption) is less clear. One reason is that it is difficult to know ex ante what individual traits predict performance. One characteristic that the literature has examined is education level of politicians. In a cross-country study, Besley and Reynal-Querol (2009) find democratic elections deliver leaders who are 25 percent more likely to be highly educated. In terms of impact, Besley et al (2009) show more educated leaders generate more growth. The transition from a college-educated to an uneducated leader reduces growth by 1.7 percentage points per year over a 5-year post-transition period. There is also some evidence that voters care about leader education. Banerjee et al (2010) conducted a field experiment in which voters were given information about politician characteristics. They found that this information caused voters to favor relatively more educated candidates (on this also see section 4.2.2). However, more evidence on the channels of influence is needed.

Finally, evaluating the efficiency trade-offs (if any) in selecting leaders depends on the supply of politicians. Specifically, do voters find that politicians who share their redistributive preferences are less qualified? If so, does this reflect strategic placement of candidates by parties? Tracing the pathways from these questions to final policy outcomes is an area where more research would be welcome.

Open Research Questions:

- *Which qualifications or leader characteristics influence the efficiency of policy making?*
- *Do more competent or honest politicians care more or less about redistributive preferences?*
- *How do selection procedures influence leader choice and, therefore, policy? What are the implications for disclosure laws?*
- *What types of policies are most affected by leader qualifications?*

C. Community Participation

Government programs have long incorporated mechanisms for local oversight, but there is little evidence on the effectiveness of these programs. Community participation is attractive because it offers solutions to many problems commonly associated with centrally administered services and projects. Local communities may have better information on what goods and services are needed than outsiders, and are in a better position to recognize and quickly respond to inefficiency or corruption in implementation. Citizens who actually stand to benefit from services have better incentives to make sure they are implemented correctly, so locals may do a better job of monitoring and taking action when services are poor or corruption occurs. And if services are run or projects implemented by local workers and officials, then their peers may have a better chance of ensuring honesty through social sanctions.

A recent body of experimental evidence has begun examining the impacts. Banerjee et al (2010) found that 92 percent of villagers in rural Uttar Pradesh in India were not even aware of the existing Village Education Committee (VEC), which supposedly monitored teachers and administrators. Working with the community on monitoring tools that revealed just how little children were learning at school, and informing the community of their rights to push for change prompted no increase activity by the community, no increased teacher effort and no improvement in education outcomes.

In contrast to this, Bjorkman & Svensson (2010) found that informing Ugandan citizens of the dismal state of local health service delivery and holding meetings between citizens and health workers to agree on "action plans" significantly reduced provider absenteeism, increased utilization, and improved health. One possible reason for the striking difference between the results from these two similar projects is that in Uganda, specific action plans were agreed upon, while in India the community was encouraged to develop their own approach to addressing the problem. Indeed, when the program in India gave a subset of communities training in how to hold remedial tutoring sessions for local children, many volunteered and reading scores in the communities rose. Not only were concerned individuals in the community given something specific they could do to make a difference, the solution (remedial reading camps) did not rely on cooperation from the government teachers.

In Kenya, community oversight went even further—communities were given money to hire additional teachers on short term contracts. In some ways these local teachers looked similar to the para-teachers for which VECs in India are nominally responsible. But in the Kenya program, power over the contract and money for the teachers clearly rested with the school committees and the NGO behind the program. These additional teachers performed much better than regular teachers—showing up more and achieving higher test scores. Training of the school committees improved results further.

Although some of these results show community monitoring can have a positive impact, it is still possible that alternative mechanisms are more effective on monitoring and in turn improving outcomes. Olken (2007)—also discussed in more detail in Section 3.2.3 below—compared additional community participation with the alternative of strengthened centralized oversight and monitoring. To address the possibility of elite capture and corruption in local road projects in Indonesia some communities were told that their project would be externally audited while in others community monitoring was enhanced. The threat of central audit was more effective in reducing corruption—although it was also more expensive—than community monitoring. Again, however, the details matter: when community monitoring was organized through schools it was more effective than when organized through village leaders.

Another possibility for the differing success of community monitoring programs, and one which is linked to our earlier discussions on the impacts of voter participation, is that differences in demographic make-up influence the relative success of community monitoring. In a follow-up paper, Bjorkman and Svensson (2010) find that the treatment effects of community monitoring were significantly larger in communities that were more homogenous in terms of ethnicity and income. However, we have limited evidence on how big the effects of preference diversity are on the possibilities of community monitoring.

Similarly, Khwaja (2009) argues that inequality, social fragmentation, and lack of leadership in the community have adverse consequences for the performance of community managed projects. However, he provides examples of successful community-maintained infrastructure projects in Pakistan, which suggests that in low social capital communities, outcomes can be improved by designing projects with fewer appropriation risks, lower complexity, and more equitable distribution of project return and by investing in simpler and existing projects.

Other studies examine community-based programs which seek to directly strengthen economic development and political representation. Gugerty and Kremer (2008) study whether outside funding strengthens community organizations or simply affects the composition of these groups. They exploit a random phase-in introduction of a program that provided funding to women's community associations in rural Kenya and found that outside funding had only little impact on agricultural outcomes. Instead, funding changed the membership and leadership in the communities, weakening the role of the disadvantaged in favor of younger and more educated women. This is further evidence that institutional design can influence how community-based programs work and their impact on economic outcomes.

Open Research Questions:

- *How does the institutional structure of community monitoring influence its impact on policy? What are the channels of influence?*
- *Are some programs and policies more amenable to being monitored by the community vs. others?*

2.1.2. Impact on Growth

A. Voting

The macro evidence on whether democracy, or generally better institutions, cause growth is mixed. We also lack evidence on the direct effects of voter turnout on growth. The literature is largely reduced form, and has focused on examining how broad measures of democratic institutions influence growth. It is fair to say that the existing evidence base is largely inconclusive. Glaeser et al (2004), for instance, argue that most indicators used to measure the impact of institutions on income or growth and the respective econometrics techniques are flawed. In many cases, they suggest poor countries can implement good policies regardless of their institutional arrangement.

A large macro institutions literature (largely associated with Daron Acemoglu and Jim Robinson) argues against this conclusion. This literature has made use of historical variation in the nature of colonization to demonstrate that the historical choice of institutions casts a long shadow over current policies and limits the role of citizen participation and voting. For instance, Acemoglu et al (2001) and Acemoglu and Johnson (2005) show that the colonialism-related differences between countries that cause variation in expropriation risk (e.g. Nigeria versus Chile for high and low expropriation, respectively) can explain sevenfold difference on income. Under this view the introduction of de jure institutions of democracy per se is unlikely to influence growth. In contrast, Papaioannou and Siourounis (2008) exploit democratic transitions to examine the economic impact of countries that move from autocracy to more consolidated representative institutions. Their estimates suggest that on average democratizations are associated with a 1 percent increase in annual per capita growth. However, they are unable to provide evidence on the channels of influence. More generally, Pande and Udry (2005) argue that the very limited sources of variation in colonial experience at the macro level constrain our ability to use cross-country regressions to identify channels of influence.

An older macro and even more reduced form literature, has sought to directly quantify the relationship between inequality and growth (Persson and Tabellini 1996). One possible channel through which democratization in unequal societies can reduce growth is by excessive redistribution (if the median income is far below the mean). This, in turn, reduces the work incentives faced by the more educated and richer voters (Forbes 2010). However, countering this is the possibility that redistribution helps reduce the adverse impact of credit market imperfections on growth outcomes. Overall, the macro literature that has sought to estimate the reduced form relationship between inequality and growth has yielded very mixed results (Banerjee and Duflo 2003).

Open Research Question:

- *Does greater democratization of decision-making processes influence growth? What are the channels of influence?*

B. Leader Choice:

Changes in national leadership are sometimes mentioned as a factor that can explain sharp variations on economic growth across countries. Jones and Olken (2005) study whether changes in national leadership which are associated with leader deaths (and are, therefore, more exogenous) influence growth. They use variation in national leaders due to natural or accidental cause as an exogenous change on leadership to estimate the effect of leader quality on growth rates. Their results show that a one standard deviation increase in leader quality increases growth rates by 2.1 percentage points per year in autocratic regimes but produce no effect on democratic regimes.

At some level this is puzzling, since micro-evidence shows that a change in the group identity of leaders alters redistributive outcomes. One possibility is that the average transition at the time of leader death leaves the group characteristics and policy preferences of leaders unaffected. However, this is clearly an area where we would like to see more research.

Certainly the evidence suggests that voters believe that leader choice within democracies matters for efficiency. In section 2.2.3 we discuss results from field experiments in Brazil and India where voters were provided information about leader corruption and performance, respectively. In both cases, we observe significant improvement in voter ability to select leaders.

Open Research Question:

- *How do leaders influence growth outcomes?*

C. Community Participation

We did not find any research on the implications of community participation (as monitors or otherwise) for growth outcomes. We encourage research on this question.

2.1.3. Impact on Citizen Satisfaction

A. Voters

Much of the policy emphasis on democratic forms of governance reflects the belief that democratic policy making is the fairest form of governance, and one that leaves citizens the most satisfied. Certainly recent experimental evidence that examines citizens' preference for direct democracy in Indonesia suggests that this is the case.

In Olken (2010) Indonesian villages were randomly assigned to choose development projects either by representative-based meetings or by direct plebiscites. Plebiscites substantially increased citizen satisfaction and perceived legitimacy of policy outcomes. The use of plebiscites, however, had very limited to no impact on project choice.

Given this, it is striking that the plebiscites increased by 21 percentage points the likelihood that citizens would state that the project choice was either very much or somewhat in accordance with their wishes; by 18 percentage points citizens' belief that they would benefit either very much or somewhat from the project; and by 10 percentage points citizens' belief that they would use the project personally. There is no evidence that this reflects higher transfers to voters in any other form; taken together the evidence strongly suggests that the increased ability to participate explains most of the reported satisfaction.

Open Research Questions:

- *Is citizen satisfaction with democratic process independent of actual policy choices?*
- *How does information about policy outcomes influence citizen satisfaction with the process?*

B. Leaders

A large body of survey evidence suggests that voters prefer competent leaders. In India, Beaman et al (2009) exploit random assignment of gender quotas for leadership positions on a village council to first show that women leaders perform at least as well as male leaders. They then use the random variation in mandated exposure to female leaders across village councils to examine whether exposure to female politicians influences voters' future behavior. Electoral data show that, compared to councils with no previous reservation policy, women in councils no longer reserved were twice as likely to stand for and win positions if the positions had been reserved for women in the previous two elections.

To determine whether the electoral gains were related to voters updating their beliefs about the effectiveness of female leaders, the paper presents two types of evidence—vignette and speech evidence—in which the gender of the leader described (or heard) was randomly varied and evidence from implicit association tests (which investigated villager stereotypes regarding the association of women with domestic jobs and men with leadership jobs) was examined. The evaluation gap in vignettes disappears in currently or previously reserved villages. Similarly, IAT-based measures of gender-occupation stereotypes show that exposure to female leaders through reservation increased the likelihood that male villagers associated women with leadership activities (as opposed to domestic activities).

Corroborative evidence comes from Bhavnani (2009), who examined similar questions in an urban setting: municipal councilor elections in Mumbai. He found that the probability of a woman winning office conditional on the constituency being reserved for women in the previous election is approximately 5 times the probability of a woman winning office if the constituency had not been reserved for women. He finds suggestive evidence that an important channel was party officials learning that women can make effective leaders and win elections. However, returning to the West Bengal setting, the authors also found that explicit attitudes towards female leaders remain unchanged and significantly more negative than those towards male leaders.

On one level, these results are reassuring as they suggest that voters are willing to update their beliefs about the likely performance of politicians drawn from different groups. However, they also suggest that typical perception-based survey measures of satisfaction may not be correlated with either the performance of the group being evaluated and, indeed, voters own willingness to select leaders from that group. In effect, Duflo and Topalova (2004) compare objective measures of the quantity and quality of public goods with information on how villagers evaluate the performance of male and female leaders in India. They show residents of villages headed by women were on average less satisfied in spite that the quantity and quality of public goods provided were as high as in non-reserved villages. Duflo and Topalova suggest two likely explanations for this finding. First, new leaders are often judged less favorably than established leaders (women leaders are generally poorer, less experienced, less educated and less literate). Second, villagers generally expect women to be less effective and these priors adjust slowly. In both cases, the results suggest women start with a disadvantage when running for political positions.

One important take away from this literature is the importance of measuring actual policy outcomes in order to interpret the policy implications of attitude based measures of performance.

Open Research Questions:

- *Are attitudes towards leaders influenced by performance information?*
- *What are the links between leader performance and satisfaction outcomes?*

C. Community Participation

We failed to find any literature on how community participation in non-electoral processes (such as monitoring service delivery) influences satisfaction. We encourage research on this topic.

2.2. What Determines Participation?

The existing evidence suggests that increased democratization of governance structures typically improves the representation afforded to its citizens. However, the evidence on whether democracies deliver efficient (and appropriate) policy outcomes is mixed.

In addition, many worry that democratic policy making is particularly prone to elite capture in low-income countries. Much of the skepticism surrounding the use of citizen participation as a way of improving governance in these settings reflects a general concern that weak institutions, electoral malpractice and limited information flows constrain the type and impacts of participation such that the political elite largely determine policies.

If correct, this view would suggest that increasing participation in low-income settings may neither improve governance outcomes nor improve the policy representation afforded to economically and socially disadvantaged groups.

This motivates our focus on the determinants of participation in low-income settings. We ask what forces constrain the type of participation (and therefore its ability to influence policy) in low-income settings and the implications for public policy. We organize the section in terms of three characteristics of low-income settings that are often considered key constraints on participation: institutions, demographics (and preferences) and information flows. For each characteristic we first ask how each influences participation in a way that leads to worse governance outcomes. Next, we discuss the evidence (and open areas of research) on how policy innovations can either change the fundamentals or mitigate their impacts.

2.2.1. Institutions and Participation

A. Impact of Weak Institutions: Electoral Malpractice and Entry Barriers

A large institutions literature shows significantly greater expropriation risk in low-income countries. The literature also identifies the colonial history of many of these countries as an important reason. The basic argument is that colonial powers set up institutions that helped them extract resources, and these institutions form the backbone of current institutions in these countries (Sokoloff and Engerman 2002; Acemoglu et al 2001 and Acemoglu and Johnson 2005).

A first key mechanism through which weak institutions can undermine the nature of voter participation is by allowing electoral malpractice. There are two channels through which electoral malpractice can worsen policy outcomes: worse politician selection and reduced incentives for politicians to perform. Direct evidence on whether vote-buying worsens leader selection and therefore policy outcomes remains scant. There is, however, indirect evidence that electoral malpractice reduces the quality of elected officials and reduces the representation afforded to the relatively poor.

Golden and Tiwari (2009) use Indian data to show that parties are more likely to list criminal candidates if they are on the cusp of winning or losing, hence face a great deal of uncertainty ex ante. It is likely that a benefit of fielding criminal candidates is that they are more likely to engage in electoral malpractices. However, it is also possible that more competitive elections reflect, for instance, significant ethnic divides in the population and the latter is correlated with candidate criminality. More structured evidence on this issue comes from Acemoglu et al (2009). They use the case of Colombia to test the hypothesis that a desire to maintain electoral malpractice caused the state to allow non-state groups (such as the paramilitary) to flourish. They show that areas with high paramilitary presence have, on average, a 14 percentage points higher vote share for third parties—which are often and widely recognized to be directly or indirectly associated with the paramilitaries. Moreover, the candidate favored by the paramilitary had, on average, an 11 percent higher vote share than the competing candidate in areas with high paramilitary presence. A third piece of evidence comes from Baland and Robinson (2008). They hypothesize that the introduction of the secret ballot in Chile should reduce the electoral power of the landed elite (who earlier controlled the workers' vote). Consistent with this they show that the right-wing bias (in electoral outcomes) in areas with greater land inequality is reduced after the introduction of a secret ballot. Before the introduction of the secret ballot, localities where the share of workers in the total number of voters was greater by one standard deviation, exhibited 6.1 percent higher vote share for right-wing parties. This difference disappeared after the introduction of the secret ballot. However, much of this evidence remains indirect; there is significant need for more research on whether and how weak institutions increase electoral malpractices.

Another example of weak institutions that is often suggested is higher entry barriers in politics. For instance, many suggest that political processes are more prone to elite capture in low-income settings. Dynastic politics is often considered an important correlate of this. However, the evidence base is thin. The most prominent published research on this is Dal Bo et al (2008). They consider elections for the U.S. Congress, and show that greater incumbency is correlated with a significantly higher chance of having a relative enter Congress in the future than legislators who barely lost their first reelection. A similar result is found in the context of a developing country. Rossi (2009) uses a natural experiment to test the hypothesis of self-perpetuation on power in Argentina. With the return of democracy and the formation of the Congress in 1983, the duration of elected legislators' terms was randomly allocated, with half of the legislators elected for two years term and the remaining for four years term. The results show that having a longer tenure in Congress significantly increases the probability of having a relative enter Congress in the future by approximately 8 percent.

However, none of these papers examine whether political dynasties are worse for governance outcomes. Ex ante, the effect could go either way. Olson (1993), for instance, has argued that in environments with weak institutions, dynastic politicians may be more willing to undertake policies that have limited short-term benefits but significant long-term benefits. Thus long-term investment and growth outcomes may improve. It is clear that there is need for more research here.

Elite control can also undermine the role of participatory processes in developing countries. In Sao Tome and Principe Humphreys et al (2006) studied whether a participatory approach to decision-making was vulnerable to manipulation by political elites. In their study, the leaders who moderated a public consultation process to discuss policy priorities were assigned randomly to groups throughout the country. The results of the study showed a strong influence of the leaders in the outcome of the deliberation. Groups were more likely to prioritize investment that reflected the preferences of their leader. This result suggests that the way these participatory processes are structured matters. However, the study does not necessarily provide evidence against participatory processes as the study is not able to compare the final outcomes with and without them.

Some of the most famous evidence on how the poor and less educated are more susceptible to vote-buying comes from the era of urban machines in the United States. Drawing a comparison between the political process in the (at the time) new nations such as Malaysia and the Philippines and the urban political machines in U.S. cities, such as the Tweed machine in 19th-century New York or the Dawson machine in 20th-century Chicago, Scott (1969) argued that the most fundamental quality shared by the mass clientele of the machines was poverty. More recently, Stokes (2005) shows that machine politics in Argentina target the poorer and Blaydes (2006) reports similar evidence for Egypt. Further, Blaydes (2006) shows that in Egypt, illiterates turned out at more than twice and sometimes at three times the rate of literates in the 2000 and 2005 parliamentary and 2005 presidential elections. She argues that this turnout difference reflects greater vote-buying among the poor in Egypt.

A first hypothesis is that the immediate cash benefits of vote-selling is high for the poor—within this view, democratic governance in low-income settings will always be susceptible to corruption of voters (Stokes 2005). Yet it is also the case that the poor are often the group that suffers the most from low-quality service delivery. This would suggest that it is relatively expensive for the poor to sell votes. A second possibility is that the poor are more easily intimidated.

In a survey of Nigerian voters, Bratton (2008) documents that almost 20 percent of Nigerians are personally exposed to vote-buying and almost 10 percent experience electoral violence. He finds that political intimidation was not correlated with income, gender or other demographic characteristics, suggesting violence is a general condition that affects individuals equally during election time. On the other hand he finds vote-buying is correlated with income and education. Poor voters were more likely to encounter a politician who offered to buy their vote, while educated people were less likely to be approached by politicians with a vote-buying offer.

This could either reflect the pure income effect discussed above or that the possibility that these practices are sustained by reciprocal beliefs. Thus, if low-income settings are characterized more by informal institutions and norms of reciprocity, then vote-buying may persist. Combining individual survey information on vote-buying experienced in a 2006 municipal election in Paraguay with measures of reciprocity obtained from lab experiments carried out in 2002, Finan and Schechter (2010) find that reciprocal individuals more likely to experience vote-buying (a one standard deviation increase in the measure of reciprocity is associated with an 8.1 percentage point increase in the likelihood of experiencing vote-buying as well as a 12.9 percentage point more likely to vote for the party from which they have accepted a good). This evidence suggests that social preferences may help sustain vote-buying practices. To the extent that reciprocal relationships are more important in low-income settings we may infer that it is easier to sustain vote-buying among the poor.

B. Can Policy Reduce the Impact of Weak Institutions?

But even when elections look clean and fair while in progress, there are other types of pre-election irregularities--such as voter registration fraud--that can negatively impact political participation. Ichino and Schundeln (2010) conduct a randomized field experiment deploying domestic observers during a 13-day voter registration period in the 2008 general elections in Ghana. The results show that the observers can help reduce this problem through a direct effect on the electoral area they were deployed and a spillover effect on the whole constituency. The increase in voter registration from 2004 to 2008 was, on average, 3.5 percentage points smaller in electoral areas with observers. Further, the spillover effect meant that the increase in the number of registered voters was 4.1 percentages points smaller in electoral areas in constituencies with at least some electoral areas covered by registration observers than electoral areas in constituencies with no registration observers. This evidence suggests that policies aimed at controlling fraud during elections can fail if they push misconduct to less visible stages of the election process. Whether a more comprehensive strategy for monitoring before, during, and after elections can be more successful at reducing irregularities is an interesting area for future research.

Open Research Questions:

- *How can elite capture of electoral processes be constrained in low-income settings?*
- *What are the strategic responses of political actors to transparency initiatives during elections?*

2.2.2.Demographics and Participation

A. The Role of Demographics

In evaluating governance, demographic concerns in low-income countries typically relate to ethnic diversity. Using cross-country data, Easterly and Levine (1997) found a strong negative relation between ethnic diversity and public good provision, political stability, and long-run growth. According to them, Africa's high ethnic fragmentation explains a significant part of the low levels of schooling, political instability, underdeveloped financial systems, government deficits and insufficient infrastructure among other determinants of long-run growth. Using data from US cities, metro areas and urban counties, Alesina, Baqir and Easterly (2000) showed that spending on productive public goods such as education, roads and sewers is inversely related to ethnic fragmentation. They hypothesize that in settings where ethnic groups are polarized, and where politicians have ethnic constituencies, the share of spending that goes to public goods will be low. Representatives of interest groups with an ethnic base are likely to value only the benefits of public goods that accrue to their groups, and discount the benefits for other groups, either because ethnic groups have different preferences or because the ethnic group's utility for a given public good is lower if the other groups use it.

It is likely that in low-income settings an important reason why ethnic diversity limits economic development and political participation is an inability to overcome public good free rider problems due to monitoring and enforcement limitations across ethnic groups. Consistent with this thesis, Miguel and Gugerty (2005) find that ethnic diversity is negatively related to local funding of primary schools and community water wells in western Kenya, because ethnically diverse communities have lower contributions at public fundraising events. Their estimates show that a change from complete ethnic homogeneity to the average school ethnic diversity leads to a drop in school funding equal to 20 percent of mean local school funding per pupil, and this relationship is robust to socioeconomic, geographic, and demographic controls. In addition, ethnic diversity is associated with poor maintenance of wells—areas with average levels of ethnic diversity are 6 percent less likely to have functioning water wells than homogenous areas—which suggest that ethnic diversity may have implications for collective actions beyond school funding.

Another possibility is that ethnic fragmentation undermines cooperation in the provision of public goods. In Uganda, Habyarimana et al (2007) conducted a field experiment where a number of experimental games were used to compare patterns of play among co-ethnic and non-co-ethnic groups. The results of the study suggest that successful public goods provision in homogenous ethnic communities can be attributed to a strategy selection mechanism: in similar settings, co-ethnics are more likely to play cooperatively, plausibly due to the threat of social sanction.

However, one continuing concern with this literature is researchers' limited ability to control for unobserved regional characteristics, which vary alongside ethnic diversity. In settings where recent migration has been high, results often look different. Glennerster et al (2010) provide some counter-evidence from Sierra Leone, one of the world's poorest and most ethnically diverse countries. Using historical ethnic composition measures from the 1963 Sierra Leone Population Census as instrumental variables for current ethnic diversity to address the endogeneity problem created by migration, their paper finds no correlation between local ethnic diversity and local public goods or collective action outcomes, such as road maintenance, community group membership, trust, and school funding and staffing.

Other demographic characteristics which have been found to directly influence political participation and politician selection include gender and education. Using household and village survey data from South India, Besley et al (2005) study who participates in village meetings called by elected local governments, and whether these meetings have an influence on beneficiary selection for welfare programs. The results show that an individual is more likely to attend a Gram Sabha meeting if that person is literate (3 percent), male (19 percent) and landless (3 percent)[3]. Higher participation turned out to influence the allocation of resources. Landless individuals in a village that held a Gram Sabha were 7 percent more likely to received targeted benefits. The results suggest that this type of opportunity for political participation can help improve the targeting of resources towards the neediest groups.

Along these lines, the political science literature has also examined how socioeconomic factors influence political participation with mixed results. In a cross-sectional study for democratic countries, Blais and Dobrzynska (1998) find that election turnout increases with the level of a country's income and literacy rate. Using survey data from Uganda, Bratton (1999) suggests gender is a greater influence on political participation than socioeconomic status. In Latin America, Fornos et al (2004) find that, unlike institutional and political variables, socioeconomic variables are unrelated to turnout.

B. Can Policy Reduce the Impact of Demographics?

While ethnicity can influence political participation and public good provisions, there is also evidence that ethnic identities increase during election time, reinforcing the initial relation. Eifert et al (2010) collect data from ten public opinion surveys in Africa and find evidence that ethnic identities in Africa are strengthened during periods of political competition. On one hand these results suggest that playing the ethnic card could be an efficient instrument for politicians to mobilize voters. On the other hand, the higher level of ethnic identity could be explained by voters reacting to the belief that public good provision is concentrated in the ethnic group of the ruling party. In both cases elections might be strengthening the negative effect of ethnicity on political accountability (Padró I Miquel 2007), and corruption (Banerjee and Pande 2009).

[3] The Gram Sabha is a meeting of all adults who live in a common area. Anyone who is 18 years old or more and who has the right to vote is a member of the Gram Sabha.

However, as suggested by the evidence provided by Eifert et al (2010), a plausible interpretation of the results is that electoral competition creates fluctuations in ethnic saliences that are correlated with the timings of elections. It is very possible that this reflects strategic behavior by political parties. As we discuss in the next section, limited information about candidate qualifications and performance may be an important reason why ethnicity (or other group characteristics) become dominating forces in elections in low-income (and low-information) settings. Research on how institutional design or choices of policies can neutralize the greater salience of ethnicity at election times would be opportune.

An example of how institutions can be designed in specific response to such challenges is provided by Khwaja (2008). He analyzes community-maintained infrastructure projects in Pakistan and provides evidence that even communities with low social capital can succeed in collective tasks, if the tasks are well-designed. The result shows the improvement of project performance in communities that lack social capital can be addressed by designing projects that face fewer appropriation risks, lower complexity, and more equitable distribution of project return and by investing in simpler and existing projects.

Open Research Questions:

- *When and how does ethnic diversity worsen collective action and policy making?*
- *How can institutional design reduce the impact?*
- *How does institutional design of elections and community programs influence entry?*
- *How can more committed or qualified candidates be encouraged to stand for elections?*
- *How can people be encouraged to be more involved in community participation?*

2.2.3. Information Flows and Participation

A. The Role of Information

Limited information about how elections work, the roles and responsibilities of elected representatives, and politician characteristics may pose severe constraints on voter participation in low-income settings. This is a direct implication of principal-agent models of politics.

Individual income and levels of political knowledge show significant positive correlation. In addition, access to sources of information (such as newspaper, radio and TV ownership) also shows a steep income gradient.

Limited information about politician quality can cause the poor to place weight on more easily observed markers of a politician's policy preferences (e.g. the politician's gender or ethnic identity). Parties and other political players, in turn, may exploit these informational asymmetries to underperform. This would suggest that policy interventions, such as audits and information campaigns, can increase electoral accountability. As reviewed in section 2.2.1, this view predicts that improvements in the information available to voters can directly reduce electoral malpractices.

A first set of papers have examined the role of mass media in enabling citizens to monitor incumbent behavior, and in using this information in voting decisions. Brunetti and Weder (2003) examine whether cross-country variation in corruption is influenced by freedom of the press, as measured by an index provided by Freedom House. They find that an improvement of 46 points in the press freedom indicator (the move of the average country to full press freedom) leads to 1 point decrease in corruption (measured on a 0-6 scale with mean of 3.4).

Media studies from low-income countries also support this hypothesis. Using variation in government responsiveness across states and time—as measured by public food distribution and calamity relief to weather-related shocks and the degree of development of mass media—Besley and Burgess (2002) find that a 10 percent weather-related drop in food production leads to a 1 percent increase in public food distribution in states that are at the median newspaper circulation per capita, as well as a 2.28 percent increase in states that are in the 75th percentile. However, this literature is largely unable to distinguish the channels of influence.

A recent body of evidence based on randomized and natural experiments has made significant advance in disentangling channels of influence. These studies are aimed at answering two types of questions. First, how do voters react to information about politician performance? And second, does information about the importance of voting and how policy is made influence voter behavior?

B. Learning About Politicians

(i) Learning Through Electoral Campaigns

In places with low media penetration and low levels of education, in-person political campaigns become an important vehicle through which voters learn about politicians.

Wantchekon (2003) randomized the form of political campaigns in eight non-competitive districts of Benin (four were incumbent-dominated and four opposition-dominated) during Benin's national election, and examined whether voters favor clientelism per se, and whether this, in turn, increases ethnic voting. In each district two villages were randomly chosen for treatment. In treatment villages the incumbent and challengers were assigned different campaign messages. While both campaigns focused on the same issues, which included education, health care and development, the public good campaign stressed the issue as part of a national program, while the clientelist campaign also stressed the issue as a specific project to transfer government resources to the region. The clientelist message also highlighted the candidate's ethnic affiliation. In control villages candidates continued to use their typical campaign, which combined elements of the clientelist and public goods campaign. The results show a positive and significant clientelist treatment effect: a 15 percentage point average increase in vote share of candidates using clientelist speeches in the Southern region; up to a 17 percentage point increase for opposition candidates; and a negative and significant public policy effect on incumbent candidate's vote share—up to 24 percentage point lower vote share for public policy speeches in the Northern region of Benin. While the paper's main finding is that voters respond positively to clientelist campaign messages, it cannot say much about the type of signal related to politician quality that voters expected to extract from the treatment.

The follow-up paper using the 2006 presidential elections attempted to shed some light on these questions. It examined whether the institutional form of campaigning influences the credibility of campaign promises and, therefore, voter responsiveness (Wantchekon 2009). In treatment villages, politicians used policy platforms devised through expert consultation, and amended in "informed townhall meetings" in which parties described their platforms and then amended them based on voter feedback. Control villages received the traditional election campaign where politicians delivered a mixture of targeted or clientelist promises and no town hall meeting. Villages that were exposed to programmatic campaigns witnessed a 7.3 percentage point increase in turnout, while candidates using programmatic speeches had a larger vote share (6 percentage point), though the statistical significance of the difference is unclear.

How likely it is that information, rather than motivation, drove the impact of the campaign? The author presents evidence that voters in treatment villages were better informed about the candidates and the problems facing the country. Yet it may still be that higher turnout largely reflects motivational aspects of the campaign. It may also be that voters responded positively to politicians' willingness to engage in deliberation rather than to the message itself. Finally, the fact that vote-buying was restricted (by design) in the experimental villages affords yet another explanation for why candidate vote shares were influenced.

The findings of these papers clearly demonstrate the malleability of voter behavior. However, they also underline real difficulties with interpreting the impact of treatments which seek to inform voters prospectively about leader behavior. In environments with limited policy commitment the credibility of campaign promises is likely low. Hence, it is unclear whether differences in political campaigns should cause voters to update their priors and in which direction.

(ii) Learning About Past Incumbent Performance

A second set of papers examining how voters use information on incumbent performance afford tighter tests of the information hypothesis. Such tests build on a key prediction of the political agency model—that voters should use retrospective voting to ensure electoral accountability. Two recent papers provide experimental evidence which supports this prediction.

Ferraz and Finan (2008) use a natural experiment from Brazil in which the federal government began to select municipalities at random to audit their expenditures of federally-transferred funds, and compare the electoral outcomes of municipalities audited before (versus after) the 2004 elections, with the same levels of reported corruption. Audit findings were made publicly available and disseminated to media sources. Their results show that the re-election probability for incumbents who committed two corruption violations in municipalities with pre-election audit was 7 percentage points (17 percent) lower than that of incumbents where audit findings were released after elections. The effects increase to almost 14 percentage points in municipalities with 3 violations associated with corruption. In all cases the comparison groups were municipalities where the audit reports were released after the election. These effects were more pronounced in municipalities where local radio was present to broadcast the information. Compared to municipalities audited after the elections, the audit policy decreased the likelihood of re-election by 11 percentage points among municipalities with one radio station and where two violations were reported.

Banerjee et al. (2010) also look at the role of disclosing information about incumbent performance in influencing a politician's re-election probability in the run-up to the Delhi municipal elections. They conduct a field experiment in conjunction with an NGO that used India's Right to Information Act to obtain disclosures on legislator spending, committee attendance, and participation in the legislature. The experiment provided slum dwellers in treatment polling stations with pre-election report cards on incumbent performance and candidate qualifications. Dwellers in control polling stations did not receive any pre-election cards. The intervention was associated with a 3.5 percentage point increase in turnout in treatment slums. For the median performing incumbent, the campaign had no impact on the vote share. However, for the best performing incumbent the treatment increased vote share by 7 percentage points. Voters exhibited sophistication in interpreting qualification information. If the incumbent moves from being the best-qualified candidate (in terms of education, assets and criminality) to the second-best candidate, his vote share was reduced by 6.2 percentage points. This provides evidence for the effect of the information campaign in influencing voter behavior.

Humphreys and Weinstein (2010) are conducting a field experiment in Uganda to test whether greater transparency influences voter response to information as well as politicians' behavior. They use random variation in exposure to scorecards produced by a local NGO. The scorecards provide information on initiatives undertaken by members of Uganda's parliament, and positions advocated by those members in plenary and committee sessions. The initial results suggest voters react to a politician's engagement in national politics and seem less influenced by ethnic ties or patronage politics. Initial results also show some evidence that politicians change their behavior as a response to exposure to scorecard information.

(iii) Learning Which Individuals Are Good Leaders: The Role of Gender Quotas

Voters may use performance of the incumbent to correct mistaken priors about the leadership quality of other individuals who share incumbent attributes. Changing stereotypes about groups is most likely to occur when the leader belongs to a group which is underrepresented in politics, one such group being women. We have discussed Beaman et al (2010) in Section 2.1.3, which shows how quota-induced representation influencing voter beliefs about the effectiveness of women leaders and, therefore, their future electoral behavior.

C. Learning About Policy Production Function

A second set of papers in the experimental literature on voter behavior has, in common with the US GOTV literature, focused on non-partisan information campaigns typically delivered by civil society organizations. Here again, a striking finding is the malleability of voter behavior. However, a key challenge faced by these papers is disentangling the role of motivation (or mobilization efforts) from learning in influencing voter behavior. We present three papers and how their experimental design seeks to disentangle channels of influence.

(i) *Lack of Information as a Barrier to Political Participation by Women*

What constrains female political participation in low-income countries? One view is that low levels of education and limited female labor force participation make women disinterested in the political process. Another view is that patriarchal systems constrain the political freedom women can enjoy. Both suggest a limited role for informational campaigns in increasing female participation in politics.

Evidence from a field experiment in rural Pakistan that informed female voters about the importance of politics provides evidence to the contrary (Gine and Mansuri 2010). Randomization occurred at the level of geographic clusters within a village and within treated clusters a random sample of households were randomly assigned to receive the awareness campaign via a door to door campaign. There were two treatment arms: one which focused on the relationship between electoral process and policy and the second which included an additional module on the significance of a secret ballot. Turnout increased by 12 percent for women in treatment clusters with similar-sized effects in the two treatments. The treatment, however, influenced women's ability to keep their voting decision secret—husbands in treatment areas were less able to predict their wives' voting decision.

(ii) *Electoral Malpractice as a Barrier to Voter Participation*

One of the more glaring examples of electoral malpractice is electoral violence. Can information about the importance of elections and enabling voters to coordinate actions (which may have been hindered by limited communications between voters) influence voter behavior and the incidence of electoral violence? Collier and Vicente (2008) examine these issues in the context of the 2007 Nigerian election which was marred by significant violence—during the two days of the Nigerian election, over 300 citizens were killed. The field experiment featured a campaign against political violence conducted by a major international NGO, ActionAid, which specializes in community participatory development. The campaign caused voters to report a 10 percent improvement in political freedom and an 11 percent decline in conflict within the local community. These improvements in citizen perception were accompanied by large but noisily estimated improvements in citizen willingness to directly take action as evidenced by their willingness to return the postcards.

The intervention also increased turnout by 7 percent, and in the presidential election this was associated with a decline in the vote share of the opposition candidate. The fact that the campaign had the effect of decreasing the vote share of the candidate associated with violence while the vote shares of the other two main presidential candidates were not significantly changed suggests that the campaign succeeded in transmitting information to voters about candidate characteristics.

(iii) *Changing Voter Preferences about Politician Quality through Non-Partisan Campaigns*

Banerjee et al. (2010) worked with an NGO in the North Indian state of Uttar Pradesh to evaluate the impact of two non-partisan campaigns. Treatment villages for the two campaigns were drawn from the same set of jurisdictions. The first campaign encouraged villagers not to vote along caste lines and instead to vote for the candidate who is best able to deliver development. The second campaign encouraged villagers not to vote for corrupt campaigns and again exhorted villagers to vote for the candidate best able to deliver development. The campaign message was delivered in treatment villages by a NGO team using multiple methods, a prominent one being a puppet show. The caste campaign increased turnout by 7.6 percent and the survey data shows a 9 percentage point decline in voting for the caste-preferred party. The paper also finds that the caste treatment reduced the incumbent vote share by 35 percentage points when the incumbent faced criminal charges, showing that declines in caste-based voting are related to the quality of politicians, since they cause voters to re-evaluate the trade-off between ethnic voting and criminality.

In contrast, the corruption campaign largely left voter behavior unaffected. One interpretation of the differing results of the two campaigns is voters' ability to interpret the campaign message. In an environment where corruption is the norm, voters are unable to translate broad messages about fighting corruption into concrete action regarding whom to vote for. This interpretation is consistent with the earlier findings that voters react to specific information about incumbent's corruption records.

Information campaigns that are directly targeted against electoral malpractices, or that reveal information about incumbent performance and qualifications, have been shown to be successful in reducing electoral malpractices. A first possibility is that reminding voters about how a secret ballot works can reduce the link between vote-buying and electoral outcomes. Vicente (2008) provides experimental evidence that information can reduce vote-buying. In Sao Tome and Principe he conducted a campaign where treatment areas were exposed to an information campaign against vote-buying. Areas exposed to the anti-vote buying campaign saw an 11 percent decline in the frequency and a 1.4 USD decline in the price of vote-buying.

Another possibility is that providing voters with information about the importance of elections and enabling voters to coordinate actions (which may have been hindered by limited communications between voters) can influence voter behavior and the incidence of electoral violence, one of the more glaring examples of electoral malpractice. Collier and Vicente (2008) examine these issues in the context of the 2007 Nigerian election which was marred by significant violence—over the course of the two-day election, over 300 citizens were killed. The field experiment featured a campaign against political violence conducted by a major international NGO, ActionAid, which specializes in community participatory development. The campaign caused voters to report a 10 percent improvement in political freedom and an 11 percent decline in conflict within the local community. These improvements in citizen perception were accompanied by large but noisily estimated improvements in citizen willingness to directly take costly actions in the form of visiting the post office to return postcards demanding more attention to countering voter intimidation.

The intervention also increased turnout by 7 percent, and in the presidential election this was associated with a decline in the vote share of the opposition candidate. The authors argue that these results suggest that electoral violence works by depressing turnout, since the campaign also had the effect of decreasing the vote share of the candidate associated with violence, while the vote shares of the other two main presidential candidates were not significantly changed by the campaign. This suggests that the campaign also succeeded in transmitting information to voters about candidate characteristics.

Finally, providing voters with information about incumbent performance and candidate qualifications may also lead to a reduction in electoral malpractices. Banerjee et al. (2010) look at the role of disclosing information about incumbent performance in influencing a politician's re-election probability in the run-up to the Delhi municipal elections. They conduct a field experiment in conjunction with an NGO which used India's Right to Information Act to obtain disclosures on legislator spending, committee attendance, and participation in the legislature. The experiment provided slum dwellers in treatment polling stations with pre-election report cards on incumbent performance and candidate qualifications. In addition to the treatment, slums witnessed a 19 percentage point decline in vote buying. However, identifying whether information disclosure led to a decline in vote-buying is difficult, since voters may have responded to better information by increasing the price at which they sell their vote. Alternatively, parties may be more wary of vote-buying in areas that had an NGO campaign.

Open Research Questions:

- *How do parties and other political actors respond to greater information disclosure?*
- *How should disclosure laws be structured? Is there an anti-incumbency bias built into such laws?*
- *Does the form of information provision influence voter responsiveness?*
- *What are the best ways to inform voters to elicit a change in their behavior or attitudes towards corruption, gender, ethnicity or politician underperformance?*

3. Impacts of Leakages: Magnitudes and Efficiency Costs

Corruption is widely understood as "the misuse of public office for private gain." For our purposes, we use the word corruption as "incidents where a bureaucrat (or an elected official) breaks a rule for private gain." (Banerjee et al 2009). This broader definition would include the most obvious type of corruption—a bureaucrat taking a bribe in order to bend or break a rule—but also encompasses more nuanced forms of bureaucratic corruption, including nepotism to favor a family member rather than issue a competitive bid. We use the word "leakage" to include not only this definition of corruption, but also other acts that are sometimes not seen as corruption but nevertheless lead to a loss of public funds or create inefficiencies in the delivery of public goods and services. Examples include unauthorized absenteeism while still collecting a paycheck, needless delays in providing services, and lack of effort towards final outcomes.

From an economic perspective, there are two basic issues we would like to address about the impacts of leakages: magnitude and efficiency costs. The first, which we examine in Section 3.1, is simply put: how large are leakages? Although anecdotal evidence suggests that leakages are rampant in the developing world and more prevalent in developing countries than in rich ones, there are remarkably few reliable estimates of the actual magnitude of leakages and corruption, and the credible estimates we review in Section 3.1.7 reveal a surprisingly high level of heterogeneity.

However, just knowing the magnitude does not tell us much about how serious the problem is from an economic perspective. After all, it is at least theoretically possible that corruption could just represent a transfer from one party (say, the government) to another party (say, bureaucrats), with little efficiency cost. In fact, if bureaucrats' official salaries were less than their market wage in expectation of the corrupt rents they would obtain—and there is evidence that this is indeed exactly what happens—there could be no net costs of corruption at all. In practice, however, the evidence we review in Section 3.2 suggests that the efficiency costs of corruption can be quite severe, as corruption may raise the marginal tax rate of firms, decrease business activity, raise the marginal costs of public funds, make certain government projects economically unviable, and undo the government's ability to correct externalities, leading to inefficient outcomes.

3.1. How large are leakages, really?

3.1.1. Perceptions

Until very recently, most estimates of corruption were based on surveys of perception. These perception surveys have the advantage of good coverage—it is much easier to ask someone's perceptions of corruption than to actually measure corruption directly. As such, they still form the basis of most cross-country corruption indices, such as Transparency International's Annual Corruption Perception Index (CPI) and the World Bank's Control of Corruption Index—although the latter incorporates very different aspects of corruption, ranging from the frequency with which firms make "additional payments to get things done," to the effects of corruption on the business environment, and finally to measuring "grand corruption" in the political arena, or the tendency for people to obtain positions of power based on patronage rather than level of ability. Perception-based measures were also used in some of the first empirical work in economics on corruption, such as Mauro's (1995) well known study of the relationship between corruption and growth, discussed in more detail below.

The challenge with perception-based measures is that they may not measure corruption accurately. Olken (2009) examines the reliability of corruption perceptions in a micro-environment: villagers' perceptions of the level of corruption in a local road building project. Olken asked villagers to assess the likelihood of corruption in the road project on a scale from 1 to 5. At the same time, he developed a much more detailed measure of the amount of corruption that was actually present in the road project by comparing the amount the village government spent on the road to the amount independent engineers estimated the road would actually cost to build (based on the amount of materials used, the local prevailing prices for materials, and so on). While villagers' perceptions do reflect actual corruption in the road project, the magnitude is quite weak: increasing the actual missing expenditures in the road project by 10 percent increases the probability a villager reports any corruption in the road project by just 0.8 percent.

Moreover, villagers' perceptions appear to be biased in two ways. First, villagers are much better at detecting marked up prices (i.e., overcharging for cement) than inflated quantities (i.e., billing for 1000 m3 of rocks but only delivering 800 m3)—and given this, it is not surprising that most of the corruption occurs by inflating quantities. This may account for the relatively low correlation between perceptions and actual corruption, since people must make an inference about the aspects of corruption they cannot perceive—which end up being where the bulk of corruption is usually hidden. Second, Olken shows that individual characteristics, such as one's education, have much more predictive power than actual corruption itself. If a perception survey has different compositions of people evaluating different projects (or countries), this could create systematic biases in the use of perception.

These types of biases could create problems in macro-level perception indices as well. For example, after the fall of Soeharto in 1998, many commentators perceived that corruption in Indonesia became worse. For example, Kuncoro argued that decentralization in the post-Soeharto era replaced "centralized corruption—one-stop shopping […] with a more fragmented bribe collection system." Many players at both the local and the national level started demanding bribes, and their failure to coordinate their bribe-taking behavior resulted in a higher total level of bribes. The worsening of perceptions of corruption was captured by the Transparency International Index—measured on a scale from 0 (highly corrupt) to 10 (highly clean)—which fell from a value of 2.0 in 1998 to 1.7 in 1999, and stayed at the same level in

2000. This may well have been the case, but another explanation is that the fall of Soeharto's dictatorship resulted in a free press. Unlike the press under the Soeharto regime, which was tightly restricted, the free press was newly able to report on allegations of corruption, which it did. It is therefore possible that perceptions of corruption rose even though actual corruption fell. For these types of reasons, economists have been moving to more direct measures of corruption whenever possible. Developing more direct measures of corruption not subject to these types of biases that are applicable across countries and contexts remains an important topic for future research.

3.1.2. Estimating Bribes: Survey Evidence

Perhaps the most direct way of measuring bribery is through the use of surveys of bribe-payers. In most contexts, there is relatively little stigma associated with paying bribes, and so in many cases bribery can be measured using surveys of firms or households. One notable example of this is Svensson (2003), who surveyed firms in Uganda and examined how much they paid in bribes. On average, firms in the survey report bribe payments of about 88 USD per worker, or about 8 percent of their total costs.

Since this type of survey-based measure of bribes is the most easily replicable, it is one of the only areas where consistent measurement is now being carried out across countries and over time. One key dataset is the International Crime Victim Surveys (ICVS) from 49 countries, in which individuals are asked whether any government official in that country has asked them or expected them to pay a bribe for his services during the previous year. Using this data, Mocan (2008) finds that income and education of the individual have positive impacts on the likelihood of being asked for a bribe in developing nations. The impact of these variables is not statistically significant for developed nations. Hunt (2004) uses the 1999 and 2000 data on bribes paid by individuals to public officials in 34 countries from the same source to examine the implications of trust networks. In her framework, a bond of trust may permit an implicit quid pro quo to substitute for a bribe, and this should reduce corruption. The results show that residents of small towns, long-term residents of an area, and residents of regions where a large share of the population is their own age are less likely to bribe. She interprets these results as being consistent with the idea that individuals who can easily form bonds of trust or are likely to be members of trust networks bribe less. The World Bank Enterprise Surveys (WBES)[4] have asked comparable questions about firms' informal gifts or payments in obtaining water, electricity, telephone connection, operating and import licenses, or obtaining construction-related contracts, meeting with tax officials, securing government contracts, and more generally "getting things done." This data is available in the main Enterprise Survey as well as in various types of surveys conducted under the umbrella of WBES such as the Indicator Survey and Informal Survey, and covers most low- and middle-income economies. As this type of data becomes more available we will be able to produce more reliable estimates of bribery over time and across countries.

[4] See https://www.enterprisesurveys.org for exact details on the number of countries and years available for each type of survey.

3.1.3. Estimates from Direct Observation

The best way to measure corruption is often to observe it directly. Needless to say, this is difficult, since corrupt officials rarely will let corrupt behavior be observed. Nevertheless, there are several notable examples of direct observation of corrupt activity. Perhaps the most famous example is the case of Montesinos in Peru, documented by McMillan and Zoido (2004). Montesinos, who was secret-police chief under President Alberto Fujimori in Peru, bribed judges, politicians and the news media to support the Fujimori regime. Remarkably, he kept detailed records, with signed contracts from those he bribed and videotapes of them accepting the bribes. After the fall of the Fujimori regime the contracts and videotapes became public, and McMillan and Zoido use them to estimate the cost of bribing various types of government officials. On average, they show that politicians received bribes ranging from 3,000 - 50,000 USD per month, depending on whether the politician was in the opposition party (higher) or Fujimori's party (lower), with judges receiving bribes of the same order of magnitude. The bribes to control the media were orders of magnitude larger—as much as USD 1.5 million per month for one television station's support.

Olken and Barron (2009) provide direct data on actual bribes in a more prosaic setting: the bribes truck drivers pay to police on their routes to and from the Indonesian province of Aceh. Over a nine month period, enumerators accompanied truck drivers on their regular routes, dressed as truck drivers' assistants, and simply noted the amounts that truck drivers paid each time they were stopped at a police checkpoint or weigh station. On over 300 trips, they observed more than 6,000 illegal payments. Usually the amount of each payment was small—averaging USD0.50 to USD1, sometimes in cash and sometimes in kind (such as a pack or two of cigarettes). In total, the illegal payments represented 13 percent of the marginal cost of the trip. By comparison, the salary of the truck driver was only 10 percent of the marginal cost of the trip.

Sequeira and Djankov (2010) use a similar methodology in Mozambique and South Africa, shadowing clearing agents who process customs for cargo as it passes through the ports. They find that, on average, bribes represent 14 percent of the total shipping costs for a standard container passing through the port of Maputo, Mozambique, and 4 percent of total shipping costs for a standard container passing through Durban, South Africa.

3.1.4.Estimating Graft: Estimation by Subtraction

The most common method for estimating graft is what we term estimation by subtraction. In this method, one obtains two measures of the same quantity, one measure before corruption takes place and one measure after corruption takes place. The estimate of corruption is the difference between the two measures.

One of the first estimates using this technique is the pioneering study by Reinikka and Svennson (2004). In their paper, they use what they term a Public Expenditure Tracking Survey (PETS) to track educational funds in Uganda. Specifically, they compare the amount of a special education block grant sent down from the central government and compare it to the amount of the block grant received by schools. They estimate a leakage rate of 87 percent. Once the results were publicized, a subsequent study found that the leakage rate fell to less than 20 percent. An important question in such an approach is the quality of recordkeeping: if schools have poor records, some of the money might not show up on the books even though it may have been received. Studying the importance of recordkeeping quality in PETS is an important issue for the replicability of this technique. Subsequent to this work, similar PETS studies have been carried out, largely by the World Bank, in a variety of contexts.[5]

Using a similar approach, Fisman and Wei (2004) measured tax evasion by comparing Hong Kong's reported exports and China's reported imports of the same products. The strategy allowed them to differentiate three different aspects of tax evasion: underreporting of unit value, underreporting of taxable quantities, and mislabeling of higher-taxed products as lower-taxed products. These calculations are then used to estimate the effect of tax rates in tax evasion. They found that higher-taxed products were associated with a forty percent higher median evasion rate.

Olken (2007) implements a related exercise in the case of rural road projects. Instead of using an expenditure tracking survey to estimate the amount received, he compares the official amount spent on the road to an independent engineering estimate of what the road actually cost to build, where engineers dug core samples of the roads to estimate materials quantities, did price surveys to estimate local prices, and interviewed villagers to estimate actual wages paid. Importantly, since some amount of materials naturally disappears during construction, Olken built several small "test roads" where he knew there was no corruption so that he could calibrate the metric so it would show zero corruption when, in fact, corruption was zero. Using this approach, Olken estimated that "missing expenditures"—the difference between what the village claimed the road cost and what the engineers estimated it actually cost—averaged about 24 percent of the total cost of the road.

[5] Public Employment Tracking Surveys have also been carried out in Albania, Cambodia, Chad, Macedonia, Papua New Guinea, Peru, Rwanda, Senegal, Sierra Leone, Tanzania, Ghana, and Honduras, as well as in Bangladesh, Madagascar, Mozambique, Nigeria and Zambia, where they focused on evaluating the quality of service delivery (dfid.co.uk). While we do not summarize all PETS surveys here, it is useful to examine several more in detail. Two PETS in Tanzania (1999 and 2001) tracked pro-poor expenditures in health and education at all levels. The 1999 PETS was carried out in forty-five primary schools and thirty-six health facilities, and indicated the diversion of a large portion of funds (about 57 percent in education and 41 percent in health care) disbursed by the center for non-wage education and health expenditures to other non-education sectors and also for personal gain. The 2001 PETS was implemented in 20 primary schools and 20 clinics and found substantial delays in disbursement of funds at all levels of the government. Delays were more pronounced in case of non-wage expenditures and in rural areas. Relative to Uganda, the impact on transparency mechanisms in the central government of the two surveys was not as significant. A third PETS in Tanzania focusing on disbursement of government funds for primary education in 2004 revealed an unnecessarily complex system of transferring funds, lack of information about entitlements at the headmaster and school committee levels. The 2000 Ghana PETS also focused on health and education was based on interviews with 40 district education officers and 40 district health officers, and a facility-level survey of a total of 119 primary schools, 79 junior secondary schools and 173 primary health clinics. The results showed that only 20 percent of non-wage public health expenditure and 50 percent of non-wage education expenditure reached the frontline facilities. The Honduras PETS (2000) was intended to diagnose and quantify ghost workers, absenteeism and job migration and the reasons that contributed to such phenomena in the health and education sectors. The survey found that 2.4 percent of the health and 3 percent of the education payroll were ghost workers. Absenteeism was particularly high for health workers: only 73 percent were present at work during the survey. The impacts of the PETS within the government are not really known and are an important direction for future work. (http://siteresources.worldbank.org/INTEMPOWERMENT/Resources/15109_PETS_Case_Study.pdf).

Another way of implementing this technique is to compare administrative data to a generally administered household survey. Olken (2006) uses this approach to estimate theft of rice from a program that distributed subsidized rice in Indonesia. Using this approach, he estimates that, on average, at least 18 percent of the rice cannot be accounted for, with greater amounts in ethnically heterogeneous and sparsely populated areas.

When examining corruption through price manipulations, one can compare an official price to the market price and use the difference as a measure of price manipulation. Hsieh and Moretti (2006) do this for a very famous case: corruption under the Iraqi Oil-For-Food program administered by the United Nations. Specifically, they compare the price received by Iraq for its oil to the going price for comparable oil on the world spot market and use a model of the market for oil trading to infer what share of that under-pricing was likely received by Saddam Hussein's regime. While the total amount of corruption they estimate is enormous—approximately USD 1.3 billion—it amounts to only about 2 percent of the total volume of oil sold.

Of course, not all price markups are corruption—they could simply reflect incompetence in obtaining good prices for the government, or a lack of incentives in the government sector to obtain the best prices. In the Italian case, Bandiera et al (2009) compare corruption with incompetence by examining the decision to switch to procurement through a centralized price agency rather than procuring by oneself. If price markups were due to corruption, those agencies paying the highest prices (the most corrupt) would be less likely to switch to the centralized procurement regime; if they are due to incompetence ("passive waste" in their terminology), those paying the high prices would be more likely to adopt centralized procurement. On average they estimate that 83 percent of the above-average prices in the Italian data they examine are due to "passive waste," and only 17 percent due to corruption. Of course, it is possible that in many other countries, the share due to corruption is much higher.

3.1.5. Estimating Other Types of Leakage from Surveys

Shirking by government employees can also be considered an important type of leakage. To examine this, Chaudhury et al (2006) conducted an innovative survey in 6 countries—Bangladesh, Ecuador, India, Indonesia, Peru, and Uganda—to examine the degree to which public sector teachers and health workers were not performing their job. To conduct the survey, surveyors showed up unannounced at government schools and health clinics during hours they were supposed to be open and simply counted attendance rates. Averaging across the countries in their sample, about 19 percent of teachers and 35 percent of health workers were absent. For primary school teachers, this ranged from a low of 11 percent absence in Peru to 27 percent absence in Uganda; for primary health centers, it ranged from 25 percent in Peru to 40 percent absence in India and Indonesia. The authors find lower rates of absence in richer countries and, looking within India, in richer Indian states—OLS regressions of absence on log of per capita GDP in the sample of countries and in Indian states surveyed revealed that a doubling in income is associated with a 5.8 percentage point and 4.8 percentage- point drop in absence rates respectively.

Although many would not consider this a form of corruption, it can be thought of as a type of leakage, as these public servants were not working a substantial fraction of the time for which they were paid.

Banerjee et al (2004) conducted a similar exercise for health workers in the state of Rajasthan and found comparable absence rates of 45 percent for medical personnel in sub-centers and aid posts, and 36 percent in the (larger) primary health centers and community health centers. In a snapshot of teacher absences across Indian states, Kremer et al (2005) find that 25 percent of teachers were absent from school, and only about half were teaching during unannounced visits to a nationally representative sample of government primary schools in India. Higher absence rates were concentrated in the poorer states.

3.1.6. Estimates from Market Inference

Finally, in some cases one can use the theory of market equilibrium, combined with data on market activity, to estimate the amount of corruption. In a pioneering study, Fisman (2001) applied this approach to estimate the value of political connections to Indonesian president Soeharto. Specifically, he obtained an estimate from a Jakarta consulting firm of how much each publicly traded firm was "connected" to Soeharto, on a scale of 0-4. He then estimated how much each firm's price moved when Soeharto fell ill to estimate how much the stock market assessed the value of those political connections. If the efficient markets hypothesis holds, then the change in stock market value surrounding these events captures the value of the political connection to the firm. Since investment bankers in Jakarta estimated that the total market would fall by 20 percent if Soeharto died, he can calibrate these estimates to estimate the total "value" of the connections to Soeharto. On net, for the most connected firms he estimates that about 23 percent of their value was due to Soeharto's connections.

The Fisman market approach is replicable in any case where one has data on firms' connections to prominent politicians and when the politician experiences health shocks. For example, Fisman et al (2006) has replicated the same approach for the United States, looking at the value of connections to former U.S. Vice President Dick Cheney, using shocks while he was a candidate and while he was in office. In a marked contrast with the Soeharto paper, he finds zero effect of Cheney's heart attacks on the value of Cheney-connected stocks.

Faccio (2006) pursues a similar approach using a large sample of countries—she examines political connections to 20,202 publicly traded firms in 47 countries. For each of these firms, she defines the firm as having a political connection if a board member or large shareholder is a politician (e.g., Member of Parliament or minister). She focuses on corporations where a previous board member and large shareholder becomes a politician. She finds that, on average, having a member of your board or large shareholder become a politician is associated with a 2.29 percent increase in the company's share value. Echoing the contrast between Soeharto in Indonesia and Cheney in the United States, when she splits the sample into countries with below and above average corruption levels (as measured by the World Bank perceptions index), she finds that the impact comes entirely from high corruption countries: in above median corruption countries, having a board member or large shareholder become a politician increases stock market value by 4.32 percent, but in below median corruption countries, having a board member or large shareholder become a politician has no impact on stock value.[6]

[6] Not all studies find zero effect of connections in wealthy countries. Faccio (2006), for example, finds that stock price of firms headquartered in the home town of politicians who died suddenly fell on average by -1.7 percent

Another approach to measuring corruption uses equilibrium conditions in the labor market. Specifically, one can use the fact that people in the public sector must, on the margin, be indifferent between their public sector job and alternative jobs in the private sector. If, controlling for their job opportunities, pay is lower in the public sector, the result could simply reflect a compensating wage differential. But if pay in the public sector is lower but consumption levels are the same, one could infer that the difference between pay and consumption in the public sector relative to the difference between pay and consumption in the private sector tells us something about how much those in the public sector are likely receiving in the form of bribes. Gorodnichenko and Peter (2007) perform this exercise using a household survey in Ukraine. They find that, controlling for education, hours of work, job security, fringe benefits, job satisfaction, and secondary employment, public sector workers received 24-32 percent less income than their private sector counterparts. Crucially, however, they have the same level of consumption and assets, suggesting that a large part of the gap must be made up in bribes. Aggregating across the economy they estimate that the total amount of the gap (and hence bribery) is between USD 460 million – USD 580 million, or about 1 percent of GDP.

3.1.7. So How Much Corruption Is There, Really?

Table 1 presents the magnitude of corruption estimated from all of the studies reviewed above, separated into estimates of graft (theft of government funds) and estimates of bribes.[7] The table shows the dramatic range. It also shows that, while a number of credible estimates have emerged, in some sense there is relatively little hard data when compared with other development indicators. For example, virtually all countries of the world have regular measurements of government expenditure, GDP, manufacturing, education, health, and so on, compiled on a regular basis at the provincial level or perhaps at even finer levels of detail. Compared to that benchmark, our knowledge about corruption is still limited to a few cases, with only the absence study of Chaudhury et al (2006), the political connection study of Faccio (2006), and the World Bank Enterprise surveys and Business Environment surveys creating meaningfully comparable data across countries.

The magnitudes of corruption raise several important questions. First, a striking correlation that comes up in a variety of datasets—from the perception indices to the absence study of Kremer el al (2005) to the Faccio (2006) and Fisman (2001) studies of the value of political connections to the Sequiera and Djankov (2009) comparison between ports in South Africa and Mozambique—is the strong negative relationship between income and corruption: as best we can measure it, richer countries in general appear less corrupt. The causality likely runs in both directions. It is easy to see how low corruption could cause countries to become rich if corruption hinders economic activity (Mauro 1995). However, the relationship in the other direction—that richer countries become less corrupt—is less

around the death of the politician. Jayachandran (2004), who uses the surprise event of Senator Jeffords leaving the Republican Party and tipping control of the U.S. Senate to the Democrats to show that a firm lost 0.8 percent of market capitalization the week of Jeffords' switch for every $250,000 it gave to the Republicans in the previous election cycle.

[7] We include estimates of the value of political connections in the graft category, under the idea that the value of those connections comes from the firm's ability to appropriate rents from the government due their connections, although one could easily categorize them separately instead.

obvious. On the one hand, certain types of income shocks, such as natural resource shocks, may lead to there being more rents to be expropriated and more corruption. For example, Caselli and Michaels (2009) present the case of oil revenues distributed to municipalities in Brazil, as a result of the large increase in Brazil's off-shore oil production in Brazil[8.] On the other hand, more complex business relationships may lead to demand for better government, and higher incomes may mean that countries have more resources to invest in cleaning up corruption. Triesman (2000) argues using geographic instruments for per-capita income that, at least in part, exogenously richer countries tend to be less corrupt, but understanding the mechanisms behind this relationship is an important open question.

Second, even among countries at similar income levels, and even within countries, there is still a marked amount of heterogeneity in corruption levels, as shown in Table 1. Understanding in more detail why corruption is high in some cases but low in others is an important question, one which will be explored in more detail in the subsequent sections.

Third, one issue with virtually all of the "hard" estimates of corruption discussed here is that they may suffer from selection bias in both directions. To the extent that measures of corruption depend on voluntary disclosure, such as surveys of bribery or disclosing links to politicians sitting on corporate boards, one might expect that corruption would be understated, as places where corruption is most severe might be less likely to disclose it. To the extent that researchers explicitly choose cases to study, corruption may be overstated, as researchers interested in corruption are not going to invest the time and energy necessary to develop a careful metric of corruption if they have a prior belief that they are not going to find much. Developing careful, rigorous metrics of corruption that are not subject to these types of selection bias is an important area for future research.

Finally, although there are some cases where corruption is substantial (e.g. the 87 percent of missing funds in Uganda or the 24 percent of missing construction expenditures in Indonesia), in many cases one is left wondering why corruption is not greater.

Open Research Questions:

- *How much corruption would we find if we could construct an unbiased sample?*
- *Why does corruption appear lower in richer countries?*
- *What prevents corrupt officials and political leaders from extracting even larger amounts?*
- *Are some government functions or programs more susceptible to leakages and why?*

3.2. Does Corruption Matter?

Although the previous section has shown that corruption is substantial in magnitude—whether in the form of bribes given to civil servants, graft from public expenditures, or public employees not showing up

[8] Complementing the results of Caselli and Michaels (2009), Monteiro and Ferraz (2010) find that royalty payments create a large incumbency advantage in the two elections that followed the oil windfall boom that benefited some Brazilian municipalities, but that this effect disappears in the medium-run, while Tabellini et al (2009) find that larger transfer to municipalities increased political corruption and reduced the quality of candidates for mayor.

to work—this does not necessarily answer the question of whether corruption actually has a negative impact on economic activity. Instead, one must test directly for whether corruption has efficiency costs.

For example, Gorodnichenko and Peter (2007) showed that, on average, public employees in Ukraine have the same consumption levels as their private sector counterparts, even though their salaries are 24-32 percent lower. Corruption in this case does not seem to be providing extra income to these public employees, as what the government pays them is reduced exactly to offset the amount they receive in bribes. Whether corruption "matters" for economic activity in this case does not depend on the amount of corruption: instead, the economic efficiency losses (or gains) from corruption depend on whether the deadweight loss imposed by the bribes they collect is greater than (or smaller than) the equivalent deadweight loss from taxation that would be needed to raise the revenue to pay the equivalent amount of money in salaries were corruption was eliminated.

More generally, corruption could have either efficiency costs or lead to efficiency gains. This section lays out the evidence thus far on three ways in which corruption may have aggregate efficiency costs: macro impacts, the costs imposed on firms, the costs imposed on government activity, and the costs imposed through the government's lack of ability to correct externalities.

3.2.1. Macro Impacts

The macro literature on corruption has tried to estimate the effect of corruption on macro variables like growth, investment and foreign aid, although the empirical strategy used in these types of studies is usually not very well identified. Most of these studies are cross-country comparisons that rely on international survey and perception-based indices to provide some evidence on the negative effect of corruption at the aggregate level. For example, in an early and very well-known study Mauro (1995) examined the effect of corruption on economic growth. He shows a negative correlation between corruption and investment and growth.

Also using a cross-country comparison and firm-level dataset, Javorcik and Wei (2009) studied the impact of corruption on foreign direct investment in emerging markets. Specifically, the study distinguishes two effects of corruption: a reduction in the volume of foreign direct investment and a shift on firm ownership structure. The results show corruption reduces inward foreign direct investment and shifts the ownership structure towards joint ventures, probably as a response to minimize the transaction cost of dealing with corrupt governments. Although foreigners could also reduce foreign aid as an instrument to correct misgovernment, Alesina and Weder (2002) provide evidence that corruption does not affect the allocation of foreign aid or debt relief.

While these studies—particularly the Mauro study—launched empirical work on the impacts of corruption, the challenge is that corruption is potentially endogenous, and finding credible instruments for corruption at the macro level is difficult. We therefore turn to micro evidence for more reliable estimates of the impact of corruption.

3.2.2. Impact on Firms

To estimate the efficiency cost of corruption on firm behavior, ideally one must know several things. First, one would like to estimate how corruption changes the effective marginal tax rate faced by firms. To the extent that bribery is used to reduce tax liabilities (e.g., bribing tax officials to reduce tax payments), one would expect the marginal bribe rate to probably be lower than the official marginal tax rate, so corruption reduces effective tax rates. On the other hand, if bribes are charged for other types of government activities, this could add to the effective marginal tax rate faced by firms.

Svensson's (2003) study of firm bribe-paying behavior in Uganda provides some clues that while there is a positive relationship between bribes and firm profits, it is very flat. Specifically, he estimates that that each USD 1.00 in firm profits per employee leads to about USD 0.004 in additional bribes paid, for a "marginal bribe rate" of 0.4 percent on profits. He also finds that each USD 1.00 in capital stock per employee leads to an additional USD 0.004 in additional bribes paid, representing an additional 0.4 percent "marginal bribe rate" on capital stock. Note that these are marginal rates: the average level of bribes is substantially higher, but bribes increase relatively weakly with profits and capital stock. If the only impact of corruption was to impose a tax of 0.4 percent on profits and 0.4 percent on capital, one might expect that the impact of corruption on firm activity would be quite modest. By way of comparison, the marginal tax rate on corporate profits for large corporations in the United States is 35 percent.

Note that the Svensson study does not answer the question of the impact of corruption on firms. Instead, it only establishes what their effective corruption tax rates are. Furthermore, there may be other factors ways in which corruption could affect firm behavior beyond the marginal tax rate. For example, many have argued that the uncertainty surrounding corruption makes it more costly than an equivalently-sized tax. Wei (2000), for example, makes this argument looking at foreign direct investment and measuring uncertainty through perceptions-based metrics. More recently, Malesky and Samphantharak (2008) examine the impact of changes in governors in Cambodia. Using survey data, they show that these changes are associated with increases in uncertainty about corruption, but reductions in actual corruption levels and decreased firm-level investment.

Sequeira and Djankov (2009) examine a different type of distortion: changes in the firm's production choices designed to avoid corruption. Specifically, they estimate the economic costs and distortions associated to corruption acts at two ports in Mozambique and South Africa by directly observing bribe payments to port and border post officials for a random sample of 1,300 shipments. The study calculates the difference in the amount of bribes paid between the two ports and between goods that experienced a tariff reduction and those that did not. The results show bribes are high, frequent and vary significantly across ports. Bribes can represent up to a 14 percent increase in total shipping costs for a standard container while accounting for a 600 percent increase in the monthly salary of a port official. Further, the study shows bribes do not only increase shipping cost but also impose high distortions on firms. Estimations suggest that even when accounting for distance and the urgency of the shipment among other variables, corruption is the strongest predictor of the choice of port. About 46 percent of South African firms located in regions in which overland costs to the port of Maputo are 57 percent lower go the long way around to Durban to avoid higher bribe payments. This represents a real efficiency loss: firms are willing to pay higher (real) trucking costs to avoid having to pay bribes in Mozambique.

Given that corruption could have both direct effects (through changing the effective marginal tax rate) as well as indirect effects (through uncertainty or other channels), it is necessary to examine the net impact of corruption on firm decisions directly. Fisman and Svensson (2007) perform this exercise in Uganda, using the same dataset as in Svensson (2003). They calculate both bribes and tax payments as a function of total firm sales, with bribes averaging 1.3 percent of sales and taxes averaging 8.5 percent of sales. They regress firm growth over a two year period on the bribe and tax rate, instrumenting for the bribe and tax rate with industry-by-location averages. They find that a 1 percentage point increase in bribes reduces annual firm growth by three percentage points. By comparison, a 1 percentage point increase in taxes reduces annual firm growth by 1 percentage point, so bribes have three times the negative impact of taxes on firm performance. They interpret the findings as showing that the negative impacts of bribes on firm activity are higher than the corresponding impacts of taxation—with substantially large magnitudes for both.[9]

While this study provides one data point on the relationship between bribes and firm growth, substantial work remains to be done. In these studies, bribe rates are not randomly assigned, and there is also no clear estimation of the marginal bribe rate and the impact of bribes on marginal tax rates. Ideally, one would have plausibly exogenous variation in corruption levels across jurisdictions, which could then be used to estimate the impact of different types of corruption on firm behavior. Finding such a change and linking it to firm behavior, seems an important next step in understanding the efficiency costs of corruption.

Corruption could also imply that firms lack even the opportunity to compete on contracts to provide public services because government officials set up their own companies to enjoy the lucrative contracts. Understanding how this dynamic results in overpriced contracts and the under-provision of products and services is also an important part of the future research agenda.

3.2.3. Impact on Government Provision of Goods and Services

Another way that leakages could have efficiency consequences is through their impact on government provisions of goods and services. This could happen in two ways. First, if leakage simply increases the cost of government goods and services, this could have an effect similar to raising the price of these goods and services. The efficiency loss would arise if projects that would be cost effective at the true costs are no longer cost effective once the costs of corruption are included, and hence are not done. Second, leakages could create additional efficiency costs through distortions. Corrupt officials usually cannot steal cash directly, as that would be easily detected; instead, they need to go through a variety of more convoluted procedures to extract rents. These convoluted procedures themselves may induce inefficiencies, which could potentially be larger than the direct cost of corruption itself. We explore both of these issues in turn.

[9] Although the level of this effect seems enormous, it is worth recalling that the bribe and tax rates are expressed as fractions of sales, not profits. Since profits are much smaller than sales, the implied bribe and tax rates on profits are much higher than those on sales, so the estimated impact of a 1 percentage point increase in a tax on profits would be substantially smaller than what they estimate. Nevertheless, the large magnitudes they estimate remain something of a puzzle.

(i) Price Effects

One way corruption may matter is if theft of government resources increases the cost of government activity, so that otherwise worthwhile government projects—such as redistribution schemes or public works projects—become non-cost effective. Olken (2006) examines this possibility in the context of a large Indonesian anti-poverty program that distributed subsidized rice to poor households. As described above, by comparing survey data to administrative data, Olken estimates that at least 18 percent of the rice was lost from the program.

To examine the costs of corruption here, Olken performs a welfare calculation of the benefits of the program, both as it was implemented and using a counterfactual with the same targeting of beneficiaries but without corruption. The estimates imply that the welfare losses from this "missing rice" may have been large enough to offset the potential welfare gains from the redistributive intent of the program, so that the program without corruption might have been cost effective but, in the presence of corruption, it likely was not. In this particular case, the government implemented the program anyway, so in a sense the efficiency costs from lost redistribution were not realized. However, the estimates imply that in many similar cases, governments may not find redistribution programs worthwhile given the costs of corruption.

The Olken study demonstrates that a maximizing government might not have wanted to pursue the rice program given the costs of corruption in the program. The open question, however, is whether governments do indeed endogenously adjust their composition of expenditures in response to the higher prices imposed by corruption. To demonstrate these types of inefficiencies, it would useful to show that if there was a shock to corruption that affected some sectors but not others, the government changed its composition of activities so that the quantity of activities where corruption declines increased. Note that this would be challenging to measure since we would be interested in measuring net quantities of corruption, not expenditures which include corruption—since if corruption on an activity declined, total expenditures on the activity (including corruption) could decline even though quantities could increase. We regard this question—of whether governments indeed optimize taking the price effects of corruption into account—as an important one for future research.

(ii) Distortions

Corruption may have another type of efficiency cost beyond the price effects discussed above. In particular, since corrupt officials need to hide their activity, they may introduce two types of distortions into the procurement of government activity. First, since corruption is secret, the government may not anticipate the amounts lost to corruption (in some ways, this is the countervailing force to the price effects discussed above). It may then effectively underfund some activities relative to its preferences, once the losses due to corruption are taken into account. Second, the need to keep corrupt activity secret could also introduce distortions, as procurement officials may substitute the types of goods that make hiding corruption easier. We discuss the evidence for both of these types of corruption in turn.

The first type of efficiency impact is the effective under-provision of government activities, since the government does not fully anticipate the impact of the losses due to corruption. As described above, Olken (2007) and Olken (2009) provide evidence for this type of efficiency loss in studies of perceptions vs. reality for rural roads in Indonesia. Since villagers are better able to detect corruption where prices are marked up (where there would only be a price effect), village officials instead hide their corruption by deflating quantities, i.e., they claim to procure enough rock, sand, and gravel to make a road that is 20cm thick but instead build a road that is only 15cm thick. Since the roads they build are thinner than official engineering guidelines, they will not last nearly as long, and will need to be replaced sooner. Although Olken was not able to directly detect this quicker rate of decay in the timeframe of his study, engineers estimate that the impact of the thinner-than-design roads on road lifespan is substantial enough to cause significant efficiency losses. Using a randomized design, Olken shows that reducing corruption in the program increases the thickness of the roads and brings them closer to engineering guidelines, reducing the efficiency losses.

Ferraz, Finan, and Moreira (2010) provide more direct evidence of the efficiency costs of corruption. They show that students in municipalities where corruption was detected in education have test scores that are 0.35 standard deviations lower than those without corruption, as well as higher dropout and failure rates. They demonstrate that higher corruption translates into lower quantities received: teachers in corrupt municipalities are 10.7 percentage points less likely to receive pedagogical training and less likely to have a computer or science lab. The study does not discuss the composition of school budgets, so it is hard to know if what the authors are picking up is price effects (there is less spending on schools because the government anticipates corruption) or distortions from corruption. One challenge in the study is that the level of corruption may be endogenous: while the authors control for other municipal characteristics, as well as corruption in other sectors and some indicators for school management practices, the level of corruption could be correlated with unobservable variables related to the quality of the school.

Examining leakages more broadly, Duflo, Hanna, and Ryan (2010) examine the impact of teachers' lack of attendance at schools. As described above, teacher attendance is a problem because it reduces a potentially key input of the learning process. In their study, their change incentives—coupled with monitoring—obtained a 21 percentage point lower rate of absenteeism, which led to a 0.17 standard deviation increase in student test scores. The results show that the lack of attendance was indeed translating into real education losses.

Another direct estimate of the efficiency costs due to distortion is the allocation of capital from state banks. Khwaja and Mian (2005) investigate whether politically connected firms, defined as those with a politician on their boards, obtain preferential lending. The results suggest politically connected firms receive 45 percent larger loans from government banks in spite of having a 50 percent higher default rates on these loans. Privately owned banks, on the other hand, show no such political bias. According to estimates, and assuming the default rates are equivalent to transfers from taxpayers, the deadweight loss due to corrupt lending is between 0.15 percent and 0.30 percent of GDP. When the effect of inefficient investment of politically connected firms is considered, an additional 1.6 percent of GDP is estimated to be lost each year due to preferential lending.

3.2.4. Impact on Correcting Externalities

A third way in which corruption may lead to inefficiency is if it lessens the government's ability to correct an externality. For example, if someone can bribe a police officer or judge instead of paying an official fine, the marginal cost of breaking the law is reduced from the official fine to the amount of the bribe. Even worse, if the police officer extracts the same bribe regardless of whether the person has broken the law, the marginal cost of breaking the law falls to zero and the law ceases to have a disincentive effect altogether.

Olken and Barron (2007) examined this possibility in their study of trucking in Aceh. Specifically, they examined what happens when these trucks stop at weigh stations. Overweight trucks are a classic example of an externality: the benefits to a trucker from loading on additional weight are concave, whereas the damage the truck does to the road rises to the 4th power with the truck's weight. For this reason, governments around the world weigh trucks and impose fines on trucks that are overweight.

Olken and Barron found that virtually all the trucks in our sample were substantially over the weight limits—and in fact, 42 percent of trucks were more than 50 percent over the legal weight limit. The data suggest that corruption at weigh stations is the likely culprit. Whereas according to the law all trucks more than 5 percent over the legal weight limit are supposed to be ticketed, immediately unload their excess cargo, and appear in court to face a fine, in fact virtually none of the trucks received an official ticket. Instead, virtually all paid a bribe. While more overweight trucks did pay higher bribes, this relationship was very flat, and even those trucks that were not overweight at all still had to pay a bribe. Corruption thus dramatically reduced the marginal cost of driving overweight, leading to more overweight trucks.

Bertrand et al (2007) examined a similar question in the context of drivers' licenses in India. Specifically, they randomly allocated applicants for driving licenses into three groups. The first group received a bonus if they obtained a driver's license quickly, the second group received free driving lessons and the third group served as the comparison group. The findings confirm an efficiency loss from corruption: many people who were completely unable to drive were able to obtain licenses by paying a fee to an agent–and, in fact, the fee charged by the agent was unrelated to one's ability to drive. This efficiency loss effect was greater among the group that received the bonus for quickly obtaining a driving license since they faced a higher incentive to bypass the official procedures. On the other hand, those who were randomly allocated to the driver's license training class and who were better drivers were able to obtain their license with lower payments on average, mostly because they avoided using agents and instead used the official channel.

The Bertrand et al (2007) and the Olken and Barron (2007) studies have very similar findings: in both cases, those who are doing the activity the government wishes to discourage (getting a license if you can't drive or having a truck that is overweight) do pay a higher cost that those who obey the laws. However, the marginal cost of breaking the law is much lower with corruption than it would be without corruption, so the net impact of corruption is to decrease the marginal cost of breaking the law and, thus, to decrease the effectiveness of the law.

These studies both raise an important question: given that corruption exists, how should the government structure the official laws so that the net of corruption marginal cost faced by citizens matches the government's true objective function? Put another way, if a sophisticated government knew there would be corruption at weigh stations, could they re-set the underlying fine schedule–which, after all, is the off-equilibrium punishment that determines the bribes that weigh station officials can extract–so that the net-of-corruption bribe schedule yields exactly the marginal cost curve they want? Studying this question—which would entail watching how corruption changes as the government changes the official cost schedule—is an important topic for future research in this area. It would also be informative to have evidence on this topic in sectors where the government is trying to correct externalities other than the transportation sector, such as criminal justice and environmental regulation.

3.2.5. Impact on Individuals

The final question is how corruption and leakages affect individuals. In part, the impact on individuals comes from all of the impacts described above: through the impact on firm behavior, through the efficacy of government service provision, and through the government's ability to correct externalities. But corruption and leakages can also affect individuals with the impact disproportionally distributed across society.

Hunt (2007) shows the negative distributional impact of corruption not by arguing that poor people expend a higher proportion of their income on bribes, but by stating that corruption can be an additional cost on the victims of misfortune—particularly crime victims. The study relies on an individual survey in Peru to show that misfortune increases victims' demand for public services, raising bribery indirectly. However, the study also shows that in many situations crime victims bribe more than other users who are not victims. Given the expense and disutility related to bribing, more corrupt governments would tend to aggravate the original problem faced by individuals in cases where they are vulnerable or more desperate for services.

3.2.6. Concluding Thoughts on Efficiency

The evidence in this section has demonstrated that the impacts of corruption and leakages on efficiency can be substantial. But it has also raised a number of important questions for new research.

One common theme that has emerged is that we know little about how governments respond endogenously to the presence of corruption. For example, if there are higher or lower rates of corruption in certain types of government spending, does it re-optimize spending as theory would predict, and does this re-optimization mitigate the efficiency costs of corruption? Or given that government rules to correct externalities are partially (but not completely) undone by corruption, does the government set official fines higher than they really want, knowing the official fines will not be implemented exactly? Understanding how the government responds to corruption is crucial to helping governments mitigate the efficiency losses from corruption in cases where it cannot be eliminated.

An issue on the flip side of this is the degree to which governments create regulations to maximize opportunities for corruption. An old hypothesis about corruption is that it actually increases efficiency, in the sense that it allows citizens to cut through red tape and allows bureaucracies to be more responsive to economic needs. The Bertrand paper provided suggestive evidence of that view, in that people who had a high need to get a license quickly were able to do so by using an agent. But the red tape itself may be endogenously created as a way to maximize the corrupt rents captured by bureaucrats, as suggested by Banerjee (1997). Understanding whether the red tape itself is an endogenous response is an important, unanswered question, and another form of inefficiency that merits further study.

Similar issues apply to the costs of corruption for firms. While the Fisman and Svenson (2007) study suggested that bribes were more costly for firms than equivalent amounts of taxes, the tax rate could also be endogenous to the level of corruption. Gordon and Li (2009), for example, suggest that the tax code of developing countries is endogenously shaped by the presence of tax evasion, as governments reallocate tax systems towards those areas that are less prone to corruption. However, whether marginal tax rates on firms are higher or lower in corrupt countries and therefore whether the net distortions taxes imply for firms is higher or lower in corrupt countries, is an open question for future research.

Open Research Questions:

- *What are the macro impacts of corruption?*
- *What is the impact of corruption on a firm's performance, and why is the impact of corruption on firms higher than the impact of taxes?*
- *Does corruption cause governments to re-optimize expenditures? If so, do governments shift into lower corruption sectors (to avoid distortions) or higher corruption sectors (to maximize rents)?*
- *How do the bribes people have to pay to law enforcement depend on the official penalty functions? Given this knowledge, how can the government design the official law to best achieve its desired ends in the presence of corruption?*
- *Does the nature of corruption and its impact vary across different socioeconomic groups?*

4. What Determines Corruption

4.1. The Incentives Bureaucrats Face

The previous sections have discussed the impact of corruption on economic outcomes. This section examines what we know about why corruption exists, and related to this, what can be done with it.

To organize ideas, we first examine a simple framework that models the perspective of an individual bureaucrat, following the ideas of Becker and Stigler (1974). This framework treats the gains from corruption (the bribe) as fixed and asks when corruption will be preferable to honesty. We then examine what happens when the optimal bribe is determined by the bureaucrat taking into account market forces, following the ideas of Shleifer and Vishny (1993). The subsequent sections discuss the empirical evidence to date along all of the dimensions suggested by the simple theoretical framework.

Suppose that the bureaucrat receives a wage w from the government and, if fired, can receive an outside option v. The bureaucrat can decide to be corrupt or honest. If he is corrupt, he is detected with probability p, is fired, and receives outside option v. If he is undetected, he receives his wage w plus the bribe b, less a dishonesty cost d. In equilibrium, he will be corrupt if and only if $w - v < \frac{1-p}{p}(b - d)$.

This simple framework suggests several avenues for reducing corruption. One could increase the returns to staying on the job (w), or, equivalently in this context, one could decrease the outside option (v) by increasing punishments. One could also increase the probability of detection (p).

One implication of this simple framework is that if there is heterogeneity in *d* among potential bureaucrats, there can be selection where those who are most likely to be corrupt (those who have the lowest dishonesty costs *d*) will self-select to be more likely to become bureaucrats. Suppose that *d* in the population is distributed uniformly from 0 to $\bar{d}$. If $\text{w-v} > \frac{1\text{-p}}{\text{p}}(\text{b})$, then nobody will be corrupt, regardless of their level *d*, and there is no reason that the distribution of *d* among bureaucrats will be different than the distribution of *d* in the population.

If, however, the above inequality does not hold, then people with low *d* will have a higher utility from becoming bureaucrats than those with high *d*, since they will be relatively more efficient at corruption, so depending on how the government allocates jobs we might expect to have more low *d* people among bureaucrats than in the population. This implies that corruption may be harder to combat than one might expect, since a corrupt system may attract those types of bureaucrats who are more prone to corruption. It also implies that the effect of a given anti-corruption policy (i.e., a vector (*w*,*p*)) will depend on past levels of anti-corruption policies, since those past policies will influence the selection of bureaucrats.

The simple framework thus far has treated the amount of the bribe, *b* as exogenous. In practice, however, the bribe *b* may be set by the bureaucrat to maximize his profits. Specifically, conditional on deciding to be corrupt, the bureaucrat will set his bribes to maximize his profits, which are the number of bribes he receives multiplied by the price, i.e. $q_i b_i$.[10] The key insight of Shleifer and Vishny (1993) is that the optimal solution depends on what other bureaucrats are doing and how they set prices. If a person needs permits from two different bureaucrats to complete a transaction, and both set prices independently, then each bureaucrat solves $\max_{b_i} Q\left(b_i + b_{-i}\right) b_i$, taking the other bureaucrat's bribe b_{-i} as given. In such a case, the total amount of the bribes $(b_1 + b_2)$ will be higher than if there had only been a single bureaucrat, and the total quantity will be lower. Conversely, if a consumer needs a single permit which can be obtained from either bureaucrat, they will compete against each other and reduce the bribe beyond what a single, monopolistic bureaucrat would charge. The key insight is that the bribes themselves may be a function of the structure of the bureaucracy, and that changing the nature of the organization may have important implications for the level of corruption.

This simple framework is, of course, quite stylized, but it highlights the important role that both the incentive structure faced by individual bureaucrats (be it compensation, monitoring, selection, or other incentives) as well as the bureaucratic organization may play in influencing the amount of corrupt behavior. This section discusses the evidence to date on each of these factors in turn.

4.1.1. *The Bureaucrat's Decision Problem: the Role of Compensation, Selection, and Other Incentives for Bureaucrats*

(i) Compensation

[10] To simplify the analysis, we will assume that conditional on being caught, the probability of being caught does not depend on the amount of the bribes or the quantity of bribes, though one could easily generalize the model to include these effects.

Despite the attention often given to civil service wages, there is relatively little evidence on their impact. Several cross-country studies find that higher public wages are associated with lower corruption, though these studies are essentially cross-sectional in nature. For instance, in a cross-section of 31 low-income countries, Van Rijkenghem and Weder (2001) find that a doubling of government relative to manufacturing wages is associated with only 0.5 point reduction in ICRG corruption index measured on a scale from 0 to 6. Meanwhile, Rauch and Evans (2000) find that the level of bureaucratic wages are significant in explaining only one of the five measures of bureaucratic performance, namely that a 1 standard deviation increase in salary is associated with an improvement of 0.5 standard deviation in the bureaucratic delay index measured on a range from 1 to 4.

With regard to more micro evidence, Di Tella and Schargrodsky (2004) test the efficiency wage idea by looking at a corruption crackdown in Buenos Aires hospitals' procurement departments. In the context of the model above, they examine the impact of increasing p, the probability of detection, and examine heterogeneous impacts on the prices paid for basic inputs based on the level of wages. They find that prices paid by hospitals for basic, homogeneous inputs decrease by 15 percent during the first 9 months of the crackdown, and following period prices increase, but remain 10 percent lower than those prevailing before the crackdown. During the first phase of the crack-down, when audit intensity can be expected to be maximal, higher wages have no effect on inducing lower input prices. Meanwhile, higher wages do have a negative effect in the last phase of the crackdown, when audit intensity can be expected to take intermediate values -the wage elasticity of input prices exceeds 0.2 (controlling for fixed effects).

Niehaus and Sukhtankar (2010) examine the theoretical idea that the rents from keeping one's job can deter corruption today in order to preserve tomorrow's opportunities. The rents they examine come from corruption, not wages. Specifically, they examine a setting where officials have two types of corruption available to them. In their setting, corruption is measured as the gap between official and actual quantities—including over-reporting of days and under-payment of wages in the Indian National Rural Employment Guarantee Act. They are able to identify the effect of future rents on the level of corruption today because the program features two types of projects; some projects pay fixed daily wages, while others pay piece rates. They examine how corruption in the two types of projects varies with anticipated rent-extraction opportunities using an exogenous increase in the wage rate for daily wage projects. Their results show an 80 percent reduction in the daily theft on piece rate projects in the period post-wage increase. Hence, when the opportunities for theft from daily wage projects increase, theft on piece rate projects goes down. In addition, they find reduced over-reporting of days worked on daily wage projects in areas where the proportion of future daily wage projects is higher.

While these various studies all suggest that there might be a relationship between the future returns to employment and the amount of corruption chosen, they are by no means dispositive, and this remains an important area for future research.

(ii) Monitoring and Punishments

One would expect from the simple framework above that increasing monitoring and would lead to lower levels of corruption. In practice, however, the very individuals tasked with monitoring and enforcing punishments may themselves be corruptible, so increasing monitoring may simply increase transfers from low-level officials to auditors. Moreover, just because people are audited does not necessarily mean that auditors will find enough evidence to actually impose a punishment, even if corruption was taking place. Understanding the degree to which additional monitoring can reduce corrupt behavior is thus an important area for empirical research.

Olken (2007), in the study of roads in Indonesia, examines this question by conducting a randomized experiment on auditing. Before villages began building road projects, some villages were randomly selected for a high audit intensity group, where they faced an audit by the government agency with 100 percent probability, as opposed to a 4 percent probability in the control group. Olken found substantial effects of the government audits, reducing corruption by 8 percentage points or about 30 percent from the baseline level. Interestingly, the audits revealed that there was substitution among alternative forms of corruption: although audits reduced missing expenditures, they led to increases in nepotism (i.e., the hiring of family members of the project leader or village officials to work on the project). One reason that the audits did not reduce corruption to zero was that, even though audits found problems in 90 percent of the villages they audited, the findings were typically administrative failures, such as improper receipts or a failure to receive the required number of competitive bids, rather than the direct evidence of corruption that would be needed for a criminal prosecution. Put another way, just because the probability of an audit was 100 percent does not imply that the probability of punishment, conditional on the presence of corruption, was 100 percent. Nevertheless, on balance, the results demonstrate that the traditional economic approach to fighting crime—increasing the expected cost of crime by increasing the probability of being caught—can play an important role in reducing corruption, even in a highly corrupt environment where those doing the monitoring are themselves potentially corruptible.

Another approach to providing monitoring—that does not involve a central auditor—is grassroots monitoring, where regular citizens are empowered to monitor their officials to prevent corruption. Olken's study also examined this by randomly allocating villages to receive more intensive community monitoring. This was done through two interventions, with different purposes. The first intervention involved inviting hundreds of villagers to attend local accountability meetings, to reduce elite control over which community members were involved in the monitoring. The second intervention involved distributing hundreds of anonymous comment forms throughout the village, in order to allow community members to voice concerns or complaints without fear of retaliation.

The results showed that increased community monitoring can be effective, but only when the free rider problem in monitoring is limited and when pains are taken to reduce elite capture. Specifically, the invitations intervention reduced theft of materials, but only for theft of wages (i.e., convincing villagers to work for free but billing the project for their work). One reason may be that if theft of wages was detected, the benefits would go to the small number of people who worked on the project and should have been paid; they therefore have a strong personal incentive to make sure this type of corruption did not occur. By contrast, if there was theft of materials, the benefits from detecting it would accrue to the village as a whole in the form of a better road, so the free rider problem may be more severe. With regard to anonymous comment forms, they were successful only when they were distributed via school children, not via the neighborhood government, as the neighborhood leaders channeled the forms towards preferred people who were more likely to support the elite in the project. One important take-away from the results is that for community participation to work, it is important to get the details right in terms of protecting people from retaliation, limiting the free rider problem, and preventing elite capture.

Bjorkman and Svensson (2010) examine a related community monitoring intervention in Uganda, in which local NGOs encouraged communities to be more involved in the state of health service provision. The NGOs facilitated village and staff meetings in which members of the communities discussed baseline information on the status of health service delivery relative to other providers and the government standard. They also encouraged community members to develop a plan identifying key problems and steps the providers should take to improve health service provision. They find that the community-based monitoring project increased the quality and quantity of primary health care provision. A year after the first round of meetings, treatment communities witnessed a significant improvement in health outcomes relative to communities assigned to the control group -0.14 z-score increase in the weight of infants and a 33 percent reduction in child mortality, as well as 20 percent higher utilization for general outpatient services. Changes in the quality and quantity of health services resulted from behavioral changes of the staff, as treatment practices, including immunization of children, waiting time, examination procedures, and absenteeism improved significantly in the treatment communities. One challenge with the study is understanding the mechanisms behind the effect—something in the community monitoring package of interventions was clearly effective, but why this package was effective while the Glennerster et al (2010) study of enhanced community monitoring in education described above was not is an important question for future research.

Ferraz and Finan (2008) examine the role of electoral sanctions as punishments. In their setting, small municipalities were randomly chosen to be audited by government auditors. They examine the impact of the timing of auditing on the probability that the mayor is re-elected. They find that, conditioning on the actual number of corruption violations found by the auditors, those audited before the election were less likely to be reelected than those who were audited after the election. The finding suggests an important complementarity between audits—which provide information about corruption—and electoral accountability.

Finally, electoral rules can also create mechanisms and incentives to increase political accountability. In a follow-up paper, Ferraz and Finan (2010,a) use the same audit report as that in Ferraz and Finan (2008) for municipalities that were audited prior to the 2004 municipal elections to test whether electoral accountability affects the corruption practices of incumbent politicians. They compare mayors serving in a first term (eligible for re-election) to mayors in their second term (non-eligible for re-election) to identify the effects of re-election as an incentive to avoid corruption. Using the share of total federal resources transferred to municipalities that are associated with fraud in the public procurement of goods and services, diversion of funds, and over-invoicing of goods and services as a measure of corruption, they find that mayors with re-election incentives are significantly less corrupt than mayors without re-election incentives. In terms of magnitudes, they estimate that in municipalities where mayors are in their first term the share of stolen resources is, on average, 27 percent lower than in municipalities where mayors were non-eligible for re-election. Although this result suggests a two-term period is more effective than a one-term period as an anti-corruption policy, it does not mean politicians should be re-elected indefinitely. Term limits could also produce benefits if politicians in the absence of the pressure of being re-elected have better incentives to implement socially optimal policies with a long-term horizon.

(iii) Selection

Although the simple framework above suggested that the selection of who chooses to become a bureaucrat is potentially important, there is relatively little evidence on this point. One related paper is Ferraz and Finan (2010, b). Although this paper does not examine leakage per se, it does examine the role of wages in inducing selection of politicians. To identify these effects, they use a 2000 constitutional amendment introduced a cap on the maximum salary that could be paid to local legislators in Brazil, which varied according to the municipality's population, and hence induced discontinuities in wages across municipalities. They find that higher salaries attract better candidates, though the effects are relatively modest—a 20 percent increase in wages only leads to a 0.2 increase in the average years of schooling and a 0.05 increase in the number of terms of experience. Higher wages also improve the performance of a politician while in office. A 20 percent increase in wages leads to an increase of 25 percent in the number of bills submitted, however. We regard evidence on selection of politicians and the impact on corruption and leakages as an important area for future work.

Selection based on propensity to be corrupt could also lead to multiple equilibria in corruption. In particular, as the framework above discussed, in a corrupt equilibrium the people who have the highest propensity to take advantage of corruption will disproportionately choose to become civil servants, which could make fighting corruption in the future more difficult—i.e. the same policies that effectively control corruption in a low-corruption country might not be enough to eliminate corruption in a high-corruption country, and in fact the same set of incentives might be consistent with both high and low corruption equilibria. Testing whether there are indeed multiple equilibria in corruption—for reasons of selection or for other reasons—is an important area for future work.

(iv) Incentives

The framework outlined above was implicitly a model in which the only way the principal can observe what the bureaucrat is doing is through monitoring. For many government activities, however, there are direct indicators of the agent's behavior. For example, it may be possible to monitor teachers' attendance or the test scores of the children in their classes; it may be possible to monitor the number of citations issued by a police officer; it may be possible to measure the amount of taxes collected by a tax inspector. In such cases, creating explicit incentives based on these outcomes—whether direct financial awards or more complex incentive schemes through promotions, assignments, and the like—may be an important approach to reducing leakages.

In all of these cases, however, these indicators are imperfect measures of the civil servants' objectives: we want teachers to help children learn, which is only imperfectly proxied by attendance (maybe they are not teaching) or test scores (maybe they are "teaching to the test"); we want citations issued only for those drivers who actually break the law, and not issued for those who do not; we want taxes collected when they are due but we do not want overzealous tax collectors collecting from those who do not owe. In understanding the importance of incentives, it is critical to deal with the so-called "multitasking" problem (Holmstrom and Milgrom, 1991) and ensure that the true goals of the principal are achieved, not just the ones that are incentivized.

There are several studies that suggest that incentives can be effective, though the results suggest that caution is in order. Duflo, Hanna, and Ryan (2010) show that incentives seem to work for teachers with good monitoring. They design a randomized experiment in which they varied the exposure to monitoring and financial incentives of teachers across 113 schools in rural Rajasthan. Teachers in treatment schools were exposed to daily monitoring (using cameras) and were remunerated based on a nonlinear function of their attendance, while teachers in the control group were neither monitored nor given financial incentives. They find that the program had an immediate and long-lasting effect on teacher attendance—the absence rates was 21 pp lower in treatment schools—and also led to 0.17 standard deviation improvement in test scores. To disentangle the effects of monitoring from financial incentives, the authors estimate a structural dynamic model of teacher labor supply using the daily attendance data in the treatment schools, and find that teachers respond to the financial incentives: our estimates suggest that the elasticity of labor supply with respect to the level of the financial bonus is between 0.20 and 0.30.

However, Banerjee et al (2008) provide a more cautionary tale of the impact of incentives, and show how over the medium term they can be undone. Specifically, they examine the effect of monitoring and financial incentives in improving attendance and effort of publicly employed nurses in rural health sub-centers in India. In collaboration with a local NGO, the attendance of nurses in treatment centers was monitored using time-clocks. The attendance data was then passed on to the government, which used the attendance data with a specific schedule of fines and punishments (introduced expressly for the program) to determine the wages of a given nurse. The program led to a substantial 27.9 percentage point increase in attendance in the first six months of the program. However, there was no impact over the subsequent six months. Their interpretation is that the local health administration deliberately undermined the incentive system by allowing nurses to a larger number of exempt days which were not subject to monitoring. The nurses also deliberately tampered with the unit/time stamping machines such that they could no longer be monitored. As a result, eighteen months after the program started, there was no difference between the absence rates in treatment and comparison centers (over 60 percent).

A second set of papers looks at the effect of performance pay for teachers on education outcomes. Muralidharan and Sundaraman (2009) find supporting evidence for the hypothesis that teacher pay incentives based on student performance improve educational outcomes. They conduct a randomized evaluation of a teacher incentive program implemented across a sample of government-run rural primary schools in the Indian state of Andhra Pradesh. Teachers in treatment schools were eligible to receive a bonus payment based on the improvement of the students' average test scores. Some schools were assigned to a group incentive treatment, in which teachers were paid a group bonus based on improvements in the school-level average test score, while other schools were assigned to an individual incentive treatment in which the teacher was paid an individual bonus based on improvement in the average test scores of his/her students. Their results show 0.26 and 0.16 standard deviation increase in students' math and language test scores, respectively, in schools where teachers were paid based on performance. However, while group and individual incentive schools performed equally well in the first year of the program, average test scores were 0.10 standard deviations higher in schools where teachers were given individual incentives relative to schools with group incentives by the end of second year of program.

In contrast, Glewwe et al (2010) show that performance pay for teachers may not be as effective, since it leads to an improvement in outcomes only along the measures that are used to compute the formula that determines pay. They analyze a randomized experiment carried out by a Dutch NGO in Kenya, in which teachers in treatment schools were eligible to receive in-kind prizes based on the school-average test scores in district exams with penalties for students missing the exam. They find that students in schools where teachers were eligible to receive prizes showed a 0.215 standard deviation increase in the score on the formula used to reward teachers in year 2 of the program. However, there was little evidence that rewarding teachers increased broad capital accumulation beyond the narrow formula used to allocate rewards, and the program did not seem to affect the probability of dropping out.

Outside education and health, there is little evidence on how incentives change the performance of bureaucrats. Kahn et al (2001) use tax reform instituted by the Brazilian government in 1989 to study the effect of performance-based wages for tax collectors, in an economy with widespread tax evasions. The reform offered a bonus to tax officials based on group and individual performance in finding and collecting taxes from tax evaders. They find that the growth rate of fine collection exhibits a break in 1989, and estimate that fine collections per inspection are 75 percent higher on average than what they would have been in the absence of the program, with substantial heterogeneity across regions. The authors do their best to provide evidence that the surge in tax collections post-1989 was due to the performance incentives provided by the tax reform, but since they do not have a control group, the evidence is suggestive but not conclusive. The tentative conclusion of this evidence is that there is room for incentives to succeed—see, for example, the studies of Duflo et al (2010) and Muralidharan and Sundaraman (2009)—but that caution must be taken to design the incentives well and prevent them from being undermined.

Finally, Banerjee et al (2009) examined the impact of training and frozen administrative transfers as an incentive mechanism to enhance police performance and improve public opinion towards the police. In eleven districts across Rajasthan 150 police stations were randomly assigned to receive in-service training at the Rajasthan Police Academy, including classes to improve the competence level and scientific techniques of investigating officers, and soft skills training such as communication, mediation, stress management and motivation for all the other personnel. In addition, administrative transfers that seemed to have adverse effects on personnel and their families were frozen for one and a half years. The results showed that increasing the number of trained officers from 0% to 100% raised the probability that crime victims were satisfied with police investigation by 31 percentage points (more than a twofold increase) and increased the probability of making an arrest during an investigation by 26%.

An important next step in this research is to examine cases such as tax and police work in greater detail. In these cases, the agent's task is very different from a teacher's, since the goal of the agent here is to discriminate between innocent and guilty (or those who deserve tax and those who do not). In these cases, the incentive would only reward total output (total citations or total taxes) but it would be hard to incentivize on accuracy, so the multitasking problem may be much more severe. Given the perceptions of rampant corruption in these sectors, however, this seems like an important area for future work.

A second important open question for incentives involves the use of non-monetary incentives. In many civil service systems, there are constraints that make the implementation of monetary incentives quite difficult. Instead, these systems use task assignment and rotations as incentive devices, where those who perform well are given choice tasks and assignments in the future, and vice-versa. We also anticipate that this will be an important dimension of future work.

Open Research Questions:

- *Do higher wages reduce corruption? If so, is it due to selection effects, efficiency wages, or because honesty is a normal good?*
- *When are government enforcers (auditors, police, prosecutors, anti-corruption commissions, etc) effective at reducing corruption, and when do they themselves become corrupt and only add to the problem?*
- *Are there multiple equilibria in corruption? If so, what causes this? And if so, can temporary corruption crackdowns have permanent effects?*
- *Can output-based incentives for government officials such as police and tax inspectors reduce corruption, or will they lead to over-enforcement and extortion?*
- *What are the possible selection and promotion criteria to reduce propensity of civil servants to be corrupt?*
- *How can community-monitoring programs be designed to make them more effective in monitoring civil servants?*
- *Can non-financial motivations, such as shame, intrinsic motivation, and mechanisms to internalize the greater good reduce corruption?*

4.1.2. The Market for Bribes: Changing the Structure of the Bureaucracy to Harness the Forces of Competition.

The previous section described an approach to corruption and leakages based on a principal-agent framework, focusing on how a principal—i.e., the government—can overcome best monitor its agents—civil servants. The key focus of analysis is therefore the strategic relationship between principal and agent. In other settings, however, strategic interactions between corrupt agents themselves become important. In this view, articulated by Shleifer and Vishny (1993), corrupt agents behave like profit-maximizing firms, and the level of corruption is determined not just by monitoring, but also by the structure of the "market" for bribes, the elasticity of demand for the officials' services, and the degree to which corrupt officials can coordinate with one another in setting prices. As outlined in the theoretical section above, depending on how the market is structured, these kinds of strategic interactions can either raise or lower the bribe amounts.

If a person needs to bribe multiple corrupt officials to perform a given task, Shleifer and Vishny argue that that the "double-marginalization" problem can arise. Specifically, if each agent does not fully internalize the effect of their bribes on other officials' bribe revenues, the total amount of bribes one would need to pay could be higher than if the agents had acted independently.

Olken and Barron (2009) use the data they collected on the bribes truck drivers pay to empirically test idea that market forces partially determine the level of corruption and specifically to test for this type of double-marginalization. They exploited the fact that, during the period studied, the number of checkpoints along one of the roads was reduced in accordance with a peace agreement signed earlier in the year. They used this change in market structure to estimate the elasticity of the average bribe paid with respect to the expected number of checkpoints. They show that the average price paid at checkpoints increases when the number of checkpoints declines, consistent with double-marginalization along a chain of vertical monopolies. The results provide evidence for the Shleifer-Vishny view that the market structure has an impact on the total amount of bribes charged, and more specifically, that price setting in this particular context is decentralized rather than centralized. These findings highlight the need to consider strategic interactions between corrupt agents themselves, in addition to interactions between principals and agents, in designing effective anti-corruption policy.

An implication of this view is that a policy reform that moves from having a large number of independent agents to a single agent may reduce corruption and increase economic efficiency. Bruhn (2008) uses the sequential implementation of a reform that simplified business entry regulations across municipalities in Mexico to estimate the economic effects of such reforms more convincingly than in cross-country data. Although the paper does not look at the effects of the reform on corruption directly, the results do show that simplified regulation leads to increased efficiency. She finds that the reform increased the number of registered businesses by 5 percent, which was accounted for by former wage earners opening businesses. Wage employment also increased by 2.2 percent as a result of the reform, while competition from new entrants decreased the income of incumbent businesses by 3 percent.

The flip side of strategic interactions between bureaucrats is that if bureaucrats are competing against one another, this could reduce the bribes paid and lead to lower bribes and more output.

One recent study that examines this is Burgess et al (2010), which explores this issue in the context of deforestation in Indonesia. In particular, the study explores a setting in which local district forestry officials can allow logging beyond the legal logging quota in exchange for bribes. The study shows that as the number of political jurisdictions increases, so that there are more bureaucracies with the potential to facilitate illegal logging in a province, logging rates increase and prices for wood fall, consistent with a model of Cournot competition between bureaucrats.

Despite the potential for competition between bureaucrats to reduce bribes, other than the Burgess et al (2010) study we know of no other evidence that examines how competition between bureaucrats works in practice. In the Burgess et al study, competition occurs only through the product market—each district chooses how much wood to extract and market forces—a common demand curve—determine how much they receive in rents. In many other settings, however, individual agents would be able to choose which bureaucrat to work with to obtain a service, and the bureaucrats might compete on price. This type of Bertrand competition could result in even larger impacts of competition than the Cournot competition studied by Burgess et al (2010). We regard studies examining Bertrand competition between agents as a first-order question for future work.

It is important to note that, in this context, competition leading to lower bribes is not necessarily socially optimal. In particular, it depends on what the government is trying to accomplish and whether the bribes are on top of, or instead of, official government fees. For example, in the case of deforestation studied by Burgess et al, bribes were to allow more logging than the government had deemed optimal (for example, for reasons of watershed protection or biodiversity protection). Competition meant lower bribes and greater quantities, which in this context meant more illegal logging, and hence greater social losses, than had there been less competition. On the other hand, in the case of the road checkpoints studied by Olken and Barron, traveling the road should have been free, so lower bribes would have meant greater road travel and greater efficiency. Understanding the welfare implications of these types of strategic interactions depends therefore on whether higher or lower bribes would increase or decrease social efficiency, and we do not yet know of an empirical example demonstrating how competition between bureaucrats could lead to greater social efficiency.

Open Research Questions:

- *Can changing the structure of the bureaucracy to encourage competition between government officials lower bribes?*
- *How should the trade-off between the need for regulation and lower corruption be measured?*

4.2. External Factors that may Impact Corruption

The levels of corruption may be influenced by factors beyond the agent's control. This section reviews the evidence on three important factors: technology, transparency, and the judiciary.

4.2.1. Technology

Technology is a very broad term, and there are many ways technology could affect the level of leakages. Broadly speaking, we consider two ways in which technology could matter: by providing tools that are hard for humans to tamper with and by enhancing communication. It is important to point out, however, that there are other mechanisms through which technology could matter, many of which likely have yet to be discovered.

(i) Providing tools that are hard to tamper with

For many (though not all) corrupt activities, the corrupt agent needs to somehow evade the rules or procedures that the official government bureaucracy has set up. Technology can help address this problem by ensuring mechanically that certain procedures are followed.

One nice example of this is the cameras study conducted by Duflo et al (2010) in India. In this study, teachers needed to verify their attendance at school by having a student take a picture of them with the entire class at the start and close of each school day. Technology—the camera—meant that teachers could not simply fudge their attendance records. The use of this monitoring device coupled with monetary incentives that linked salaries with attendance reduced absenteeism from 42 percent to 21 percent and raised children's test scores by 0.17 standard deviations.

Of course, technology is only as affective as the system it feeds into. Banerjee et al (2008) evaluate the impact of an incentive program on nurse attendance in India showing that when the incentives were effectively in place, as they were during the first 6 months, they produced a substantial improvement in attendance, according to some measures a 100 percent increase. However, over time, the local health administration deliberately undermined the incentive system by allowing more and more excused absences, so that by the end of the sixteenth month the program produced no effect on absence rates.

A variety of other studies with similar conceptions are currently underway, and in India these ideas have in fact begun to be implemented in policy. For example, in Karnataka, India, a new program that integrates technology with incentives to monitor absences and leakages in the health sector and ultimately improve health outcomes is currently being implemented and evaluated. The program makes use of GPS systems, cameras, biometric captures and wireless transmission of data to record doctor and staff attendance, service delivery and payments. The monitoring system is combined with an incentive system of penalties and awards.

Similarly, in Andhra Pradesh, India, a system based on smartcards that disburse payments for two programs—an employment guarantee scheme and social security pension program—is also being implemented by the government. The idea of providing smartcards to beneficiaries and smartcard readers at the village level is to help reduce corruption and fraud by increasing security and precision in the payment process. Similarly, The Unique Identification Authority of India (UIDAI) is also implementing a large project at the national level in India called Multipurpose National Identity Card (MNIC) to provide a unique identification number to all citizens based on biometric information from the individual. MNIC's main goal is to facilitate individual identification helping public programs to better reach intended beneficiaries. An important area for future research is to understand whether these types of technologies are effective when implemented at scale, or whether their impact is undone by the sorts of forces identified by Banerejee et al (2010).

(ii) Increasing communication

Technology can also have a substantial impact on corruption by facilitating communication, which can enable better monitoring. Yang (2008) explores how hiring foreign inspectors to verify the tariff classification and the value of shipments before they leave their origin country impacts import duty collections. The key mechanism to reduce customs fraud is the transmission of information from the foreign firm at the origin port to the client government. The flow of information could not only improve the monitoring ability but also reduce the bargaining power of corrupt customs officials, which can reduce bribes payments and custom clearance time. The results from the study provide evidence in favor of this hypothesis showing pre-shipment imports inspection programs increased import duty collection by 15 to 30 percentage points in the first five years after implementation.

Related to this, in many countries technology has played an important role in the design and administration of the tax system. One key idea of tax enforcement is double-reporting, where the tax department compares two independent reports about tax performance and investigates discrepancies. Here, the best evidence is from the developed world: Kleven et al (2010) analyzes a randomized tax enforcement experiment in Denmark and find that that the tax evasion rate is very small (0.3 percent) for income subject to double-reporting and much higher (37 percent) for self-reported income. Technology plays a key role here: in a manual system actually doing the matching from all the double-reported information would be very challenging, but once the system is automated it is much easier. Given the large number of countries in the process of modernizing and computerizing their tax infrastructure, it should be possible to study the impacts of this type of technology in the context of a developing country where tax evasion is usually higher.

Open Research Questions:

- *Can using technology to reduce the discretion of government agents reduce corruption?*
- *Can using technology as a monitoring tool reduce corruption?*
- *Can using technology as an information sharing tool reduce corruption?*

4.2.2. Transparency

One of the key themes of the international anti-corruption movement is the role of transparency—so much so that the largest worldwide anti-corruption NGO is called “Transparency International.” But does transparency matter? And if so, what are the mechanisms through which transparency could matter?

The basic idea about transparency is that by enabling information about government actions, citizens and civil society can do a better job monitoring what the government is doing and demanding better performance. However, the effect of making information about politicians publicly available is a priori unclear. While disclosure of information can increase political accountability it can also undermine politicians’ privacy and, thus may disincentive more qualified candidates from participating in politics.

Several pieces of evidence suggest that, indeed, there is a relationship between providing access to information about politicians’ performance and both the political accountability and the quality of government. In a cross-sectional, cross-country study, Djankov et al (2010) study the relationship between disclosure rules for information about parliament members and a numbers of measures of quality of government and corruption. Their main conclusion is that public disclosure, but not internal disclosure to parliament, is associated with lower perceived corruption and better government. They further find that information about politicians’ assets, liabilities, income sources, and potential conflicts, as opposed to simply income and wealth levels, are more consistently associated with better government. Since the study is cross-sectional in nature, they cannot rule out reverse causality (i.e., higher quality governments adopt better transparency laws).

In a more micro example, Banerjee et al (2010) study how public disclosures about politicians’ performance and qualifications can influence electoral accountability in settings characterized by weak institutions and a less educated population by conducting a randomized experiment in Delhi, India. Using the Indian Right to Information Act and candidates’ affidavits, they created report cards for ten assembly jurisdictions during the run-up to the 2008 election in Delhi. They then randomly provided slum dwellers with pamphlets and free newspapers containing information on candidate qualifications and legislator performance. The information increased voter turnout by 3.5 percentages points and reduced the incidence of vote buying by 19 percentage points. The information campaign seems to increase the quality of government: the vote share of the best performing incumbent increased by 7 percentage points in the treatment group relative to the controls. An interesting next step would be to see if, over the long term, increased transparency in certain assembly districts encourages better quality candidates to run and/or encourages politicians to improve their behavior while in office.

A related example is Ferraz and Finan’s (2008) study in Brazil on how information about incumbent performance increases accountability and how the presence of the media can influence this result. The authors take advantage of the implementation of a federal government anticorruption program that randomly selected the municipalities where the use of federal funds was audited and the results publicly disseminated. The study showed public dissemination of corruption scandals in local governments had a negative effect on incumbents' electoral performance, especially in those areas where local radio stations were present to broadcast the results of the audit reports. The probability of reelection for an incumbent who committed two corruption violations in municipalities with pre-election audit was 7 percentage points lower than one who had zero violations and 11 percentage points lower if radio stations were present in the municipality. One interpretation for the larger effect in municipalities where local radios were present to divulge the information is that radios are more efficient in transmitting information about local politics to smaller municipalities.

A second way that transparency may matter—and the way that many suggest it does—is by providing citizens with information on what they are entitled to. One example along these lines is Reinikka and Svensson (2005), who study how an information campaign to monitor local officials can reduce corruption and also increase educational outputs. They exploit a newspaper campaign in Uganda aimed at reducing capture of public funds by providing students' parents with information to monitor local officials' use of an educational grant. Their empirical strategy used distance to the nearest newspaper outlet as an instrument of school exposure to information, and find that an increase in information resulted in an increase in spending reaching the schools and ultimately an increase in school enrollment and student learning. An important caveat is that distance to newspaper outlets may be non-randomly assigned, and may also have other, direct impacts on educational performance. Randomized studies and other methodologies that can better identify the causal mechanisms by which information impacts policy outcomes are an important priority for future research in this area.

A third way in which transparency could matter is by allowing citizens to signal interest in a particular outcome. Peisakhin and Pinto (2010) examine this by conducting a randomized experiment to test whether freedom-of-information laws can be used to obtain greater access to basic public goods that are otherwise attainable only through bribery. The experiment randomly assigned individual applicants in India to one of three mechanisms used when requesting public benefits and then tested the effect of these mechanisms on the time that elapsed before the applicant received the benefit. In the first treatment group, applicants submitted an information request under the Right to Information Act shortly after their applications. The second group of applicants presented a letter of support from a local NGO with their application. Finally, the third group of applicants paid a bribe to a local to obtain the benefits. According to the results 94 percent of those who pay bribes or sent an information request received benefits over the course of one year, as opposed to 21 percent in the NGO and control groups. Individuals in the group that paid bribes received benefits in a median of 82 days, 38 days less than those in the groups that filed an information request. The groups that neither paid a bribe nor requested information only obtained benefits after 343 days. The results suggest that requesting information under the freedom of information law is a reasonable, though imperfect, substitute for bribing an official.

In a follow-up study, Peisakhin (2010) estimates the effect of the freedom-of-information law in the process of voter registration. The results suggest that the information law is an effective, free and legal substitute to bribery for middle class applicants. Once the time it takes to process the request for information is considered, paying bribes does not reduce the number of days needed to register for voting. The experiment is then replicated for poor applicants with similar results, suggesting the information act can also empower under-privileged groups.

Despite this these recent studies, the academic literature still does not necessarily have the answer on the impact of some of the more macro-transparency questions that are the focus of much international advocacy. For example, there is a movement in the corruption and leakage field to increase overall budget transparency, through such organizations as the International Budget Partnership. There has also been a movement to increase transparency of natural resource revenues, through the Extractive Industries Transparency Initiative and groups such as Revenue Watch. To the degree that these macro initiatives operate at the country level, identifying their impact is harder, and an important area for future research.

Open Research Questions:

- *Does transparency encourage government officials to be less corrupt?*
- *Does transparency enable citizens to monitor more effectively?*
- *What types of information releases are more effective in reducing leakages?*

4.2.3.Judiciary

Judicial corruption may pose a particular challenge because the judicial system is a key component in the efforts necessary to fight other sorts of corruption. After all, if judges or prosecutors are corrupt, then it will be difficult to impose punishments against corrupt officials, since they can bribe the prosecutors or judges and avoid punishment. (Of course, they would still have to pay the cost of bribing the prosecutor or judge, which would pose a disincentive for corruption, but as discussed above these types of disincentives in practice seem flatter than the actual punishments imposed.)

Judicial corruption can also have important efficiency implications for civil contract enforcement. If judges are bribable, then in the event of dispute contracts will be awarded to the party who is able to bid more. This will be ex-post efficient (i.e., the outcome will be favor of the party with the most to gain ex-post), but not necessarily ex-ante efficient, and may therefore discourage certain types of contracts. For example, in the developed world companies often sign long-term sourcing contracts for the fuel of power plans before the plant is built, to ensure a steady stream of inputs to the plant. If the price of fuel rises, ex-post the fuel provider might wish to renege on the contract and sell fuel at a higher price to an outside party, which an outside (bribable) judge might let them do. But knowing that this might happen, the power plant might not get built, or if it did, it might have a different ownership structure where it also owned the fuel provider, to prevent this type of dispute.

Despite the importance of judicial corruption, there is very little rigorous literature on the topic, both in terms of the consequences of judicial corruption and how to control it. Indeed, there is relatively little empirical literature on courts in developing countries at all, with most literature focusing on delays. In one study, Visaria (2009) use the introduction of debt recovery tribunals to study the effect of judicial quality on the repayment behavior of borrowers and the lending decisions of banks in India. In a cross-country study, Djankov et al (2003) explore the effectiveness of courts as mechanisms of resolving simple disputes and examine how the characteristics of the legal procedure affect courts' efficiency and the ability to deliver justice. We regard these areas as important directions for future research.

Open Research Questions:

- *What are the impacts of judicial corruption on economic efficiency?*
- *How can the extent and effects of judicial corruption be measured?*
- *What approaches work best in reducing the levels and efficiency costs of judicial corruption?*
- *Is it possible to insulate the judiciary from corruption that is endemic in the rest of the government?*

4.3. Anti-Corruption Policy in the Long Run

Much of the evidence discussed above shows the short-run effects of anti-corruption policies. But there is ample evidence to believe that the long-run impacts could be quite different. For example, it could take corrupt officials time to learn how to manipulate a new system, so the long-run effects of an anti-corruption policy could be smaller than the short-run effects. Alternatively, it could take time for a new group of civil servants to select into the system, so an anti-corruption policy could be more effective over time if it encourages more low-corruption types to select into the civil service.

There are several examples that suggest that the long-run effect of anti-corruption policies may be smaller than the short-run effect as officials adapt. One of the examples already described is Banerjee et al (2008). In this study, an incentive program on nurse attendance in India was found effective only during the first 6 months of the intervention, when the program was correctly in place. Later, however, the system was undermined by the local health administration and the program was no longer able to improve nurse attendance.

Bobonis et al (2009) also provide an example where the disclosure of information about corruption practices only induced a reduction in corruption levels in the short run. They compared the level of reported corruption for municipalities audited before and after an election in Puerto Rico. The results seemed to confirm the positive effect of the program showing corruption was lower in municipalities audited before the election. However, in subsequent terms corruption levels increased, especially among those who refrained from rent-seeking activities in the first audit.

In the case of Brazil, Ramalho (2007) uses the 1992 impeachment of President Fernando Collor to evaluate the impact and persistence of corruption on the market value of politically connected companies. The results suggest that the market perceived the decrease in the president's probability of staying in power as affecting the value of politically connected companies, but only temporarily. According to the results, family-connected companies had on average daily abnormal returns 2 to 9 percentage points lower during bad event days, with the effect reversing completely within one year. One interpretation is that over the course of the year, these previously politically connected firms were able to form new connections.

In Colombia, Camacho and Conover (2008) study the manipulation of the poverty index score as an eligibility requirement to gain access to social programs. They show strategic behavior in the timing of household interviews around local elections, and direct manipulation of scores given by a sharp discontinuity on the scores exactly at the eligibility threshold. The results suggest that in total three million people had their score changed, which accounts for about 40 percent of the beneficiaries. Also, they provide some evidence that manipulation increased in cases where the elections were more competitive and decreased with more community organizations and higher newspaper circulation.

A final examine is Burgess et al (2010). They examine the determinants of illegal logging in Indonesia using satellite data to track logging and find that when a district's oil and gas revenue increases, providing an alternate source of rent extraction for local district officials, illegal logging falls. However, within 3 years, the effect reverses and illegal logging is back to its previous level. Burgess et al provide suggestive evidence that the mechanism is a change in the political equilibrium—the higher oil and gas rents change the nature of the governing coalition towards a type of coalition associated with higher rent extraction. This new political coalition presumably extracts rents not just from oil and gas but also from the forest sector.

In sum, the evidence in this section provides a word of caution: in many cases, reductions in corruption in the short run do not always persist in the medium run, with effects often being undone within a period of 1-3 years. This suggests that, to the extent possible, anti-corruption actions should be tracked over a period of several years to determine whether the impacts are persistent.

Open Research Questions:

- *How can corruption be effectively combatted in the long run?*
- *How can the impacts of anti-corruption programs be made to persist?*
- *How can clean governance and anti-corruption values be made intrinsic among civil servants?*

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Table 1: Magnitudes of Corruption

Paper	**Country**	**Context**	**Strategy for Assessing Corruption**	**Corruption estimate**	**Corruption Estimate (in percent)**
Estimates of bribery					
Svensson (2003)	Uganda	Bribes firms pay	*Survey evidence:*	Firms pay bribes of US$88 per worker	8% of costs
Olken and Barron (2009)	Indonesia	Bribes truck drivers pay to police on their routes	*Direct observation:* Enumerators accompanied truck drivers on their regular routes, dressed as truck drivers' assistants and observed illegal payments	Truck drivers pay bribes averaging US$0.50 to US$1 per payment	13% of cost of a trip
McMillan and Zoido (2004)	Peru	Bribes the secret police paid to judges, politicians, and media to support the Fujimori regime	*Direct observation:* after fall of Fujimori regime, videotapes and bribe receipts became public	Politicians received bribes of $3,000 - $50,000 per month. Media received bribes as much as $1.5 million per month for one television station's support.	N/A
Sequeira, Djankov (2010)	South Africa Mozambique	Bribe payments to port and border post officials	*Direct observation*: enumerators shadowed clearing agents in ports to collect information on bribe payments	Bribes amounted to 14% and 4% respectively of the total shipping costs for container passing through Mozambique and South Africa.	14% of shipping costs (Moz.) 4% of shipping costs (S. Africa)
Estimates of graft					
Reinikka and Svensson (2004)	Uganda	Graft in public spending of educational funds intended to cover school's nonwage payments	*Estimate by subtraction:* PETS compared the amount of grant sent down from the central government to the amount received by schools.	Schools received on average only 13 percent of the grants	87% of funds

Paper	**Country**	**Context**	**Strategy for Assessing Corruption**	**Corruption estimate**	**Corruption Estimate (in percent)**
Olken (2007)	Indonesia	Graft in the building of rural roads funded through a national government program	*Estimate by subtraction:* compare the official amount spent on the road to an independent engineering estimate of what the road actually cost to build.	Missing expenditures" – the difference between what the village claimed the road cost and what the engineers estimated it actually cost – averaged about 24% of the total cost of the road.	24% of cost of the road
Olken (2006)	Indonesia	Theft of rice from a program that distributed subsidized rice	*Estimate by subtraction:* compare administrative data to a generally administered household survey.	At least 18% of the program's rice disappeared before reaching households.	18% of program expenditures
Hsieh and Moretti(2006)	Iraq	Bribes achieved through the under-pricing of oil in Iraq's Oil For Food Program	*Estimates by subtraction:* gap between the selling price of Iraqi oil to the Oil for Food Program and the author's estimates of the "market" price of Iraqi oil	Iraq collected $1.3 billion in bribes from under-pricing oil, or 2 percent of oil revenues.	2% of oil revenues
Bandeira, Prat, and Valetti (2009)	Italy	Waste generated through corruption ("active waste") and incompetence ("passive waste") in the procurement of supplies by public bodies (PB)	*Estimates by subtraction:* compare above-average procurement prices of corrupt PBs with those of incompetent PBs	Passive waste accounts for 83% of total estimated waste. Corruption account for 17% of waste.	N/A
Chaudhury et. al (2006)	Bangladesh Ecuador India Indonesia Peru	Teacher and health-worker absence in developing countries?	*Survey* data based on unannounced visits to primary schools and health clinics	Absence rates: Primary Schools: Bangladesh-16%, Ecuador-14%, India-25%,	14%-27% absence for schools

Paper	**Country**	**Context**	**Strategy for Assessing Corruption**	**Corruption estimate**	**Corruption Estimate (in percent)**
	Uganda			Indonesia-19%, Peru 11%, Uganda-27%; Primary health centers: Bangladesh-35%, India-40%, Indonesia-40%, Peru-25%, Uganda-37%.	25% - 40% absence for health centers
Banarjee, Deaton and Duflo (2003)	India	Absence rates of health personnel in rural Rajashtan	*Survey* of health facilities based on weekly visits where authors checked whether the facility was open,	45% of medical personnel found absent in sub-centers and aid posts, and 36% are absent in the (larger) Primary Health Centers and Community Health Centers	45% absence in health sub-centers 36% absence in major health centers
Kremer et. al (2005)	India	Absence rates of teachers across Indian states	*Survey* data on absence collected through unannounced visits at schools	25% of teachers were absent from school, and only about half were teaching. Higher absence rates concentrated in poorer states.	25% of teachers absent
Fisman (2001)	Indonesia	Value of political connections to President Suharto to Indonesian public firms	*Estimate from market inference*: firm stock price movement when Soeharto fell ill given the strength of its political connections to Suharto	23% of the value of the most connected firms was due to political connections	23% of value of firm
Fisman et al (2006)	US	Value of personal ties to Vice-president Cheney of U.S public firms	*Estimate from market inference*: firms' stock price movement in response to shock to Chaney's health when he was a candidate and while he was in office given the strength of connection to Chaney	In all events studied there is a zero effect on the stock prices of connected firms.	0% of value of firm

Paper	**Country**	**Context**	**Strategy for Assessing Corruption**	**Corruption estimate**	**Corruption Estimate (in percent)**
Faccio (2006)	Cross-country	Value of political connections for firms across sample of 47 countries	*Estimate from market inference:* stock price movements of firms around the time of announcements that officers or large shareholders are entering politics or that politicians are joining their boards.	2.29% increase in company value when a businessman enters politics. 4.32% increase in stock market value when a board member or large shareholder becomes a politician in countries where corruption is above median.	2.3% - 4.3% of company value
Gorodnichenko and Peter (2007)	Ukraine	Bribes received by public sector employees	*Estimate from market inference:* residual wage differentials between the public and private sectors (consumption levels are the same in the two groups and labor market equilibrium implies employees are indifferent between working in the public and private sectors.	Aggregate amount of bribery estimated to be is between US$460 million – US$580 million, or about 1% of GDP of Ukraine.	1% of GDP