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# Reducing bureaucratic corruption: Interdisciplinary perspectives on what works



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#### ABSTRACT

This article offers the first comprehensive review of the interdisciplinary state of knowledge regarding anti-corruption policies, with a particular focus on reducing corruption among civil servants. Drawing on the work of economists, political scientists, sociologists, and anthropologists, we examine seven policy categories: (1) rewards and penalties; (2) monitoring; (3) restructuring bureaucracies; (4) screening and recruiting; (5) anti-corruption agencies; (6) educational campaigns; and (7) international agreements. Notably, rigorous empirical evaluation is lacking for the majority of commonly prescribed anti-corruption policies. Nevertheless, we find growing evidence of the effectiveness of policies based on monitoring, including anti-corruption audits and e-governance. In addition, adequate civil service wages seem to be a necessary but insufficient condition for control of corruption. An emerging skepticism regarding the effectiveness of anti-corruption agencies also is apparent in the literature. We conclude with broader lessons drawn from our review, such as the recognition that when corruption is a systemic problem, it cannot be treated in the long term with individual-level solutions.

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#### 1. Introduction

The pernicious economic, social, and political effects of corruption have been well documented (for reviews, see Olken and Pande, 2012; Svensson, 2005), leading influential organizations to emphasize the importance of reducing corruption. For example, fighting corruption is not only an explicit target of the United Nations' Sustainable Development Goals¹ but also widely considered to be a prerequisite for the successful implementation of other SDGs aimed at mitigating poverty, improving healthcare, and providing education (UNDP, 2014; World Bank, 2016). However, while scholars and policymakers are in near consensus about the importance of combatting corruption, development of effective strategies is infeasible without a clear sense of which anti-corruption policies are likely to succeed.

With the aim of supporting evidence-based policymaking, this article assesses the interdisciplinary state of knowledge regarding anti-corruption policies, with a particular focus on reducing corruption among civil servants. Our approach stands apart from earlier works in a number of ways. First, existing literature reviews have yet to break out of disciplinary silos, with economists writing primarily to economists (Olken & Pande, 2012; Svensson, 2005); political scientists to political scientists (Treisman, 2007); sociologists to sociologists (Heath, Dirk, & de Graaf, 2016); and anthropologists to anthropologists (Torsello & Vendard, 2016). By contrast, this study draws comprehensively on research from across the social sciences.<sup>2</sup> Meanwhile, whereas many existing reviews focus on specific methodological approaches, such as cross-national regression analyses (Treisman, 2007) or experiments (Abbink, 2006; Serra & Wantchekon, 2012), this study identifies areas of consensus and divergence in the findings of scholars working with a wide range of methodological tools and analytical frameworks. Finally, although earlier reviews often touched on the question of "what works" when combatting corruption, they also focused more broadly on other important topics such as the definition, measurement, prevalence, and consequences of corruption. This study therefore provides the first systematic review devoted exclusively to anti-corruption polices.<sup>3</sup>

The findings presented below are based on our analysis of 260 studies from across the social sciences, which in turn were culled from a broader preliminary survey of the literature on corruption.

They represent what we believe to be a nearly exhaustive collection of all existing analyses that focus primarily on bureaucratic corruption;<sup>4</sup> offer insights into policies for reducing corruption; and consist of empirical, as opposed to theoretical, analyses. In the case of some academic disciplines, such as economics, many of the studies included explicitly sought to evaluate the impact of specific anti-corruption policies. In other disciplines, particularly those relying on ethnographic approaches, policy impact evaluation was rarely an explicit goal. We therefore relied on the expertise of appropriately trained members of our research team to identify implicit lessons of policy relevance. Our focus is solely on academic scholarship and our review does not include policy reports or internal assessments conducted by aid donors.<sup>5</sup> The majority of our sources have been published in a peer-reviewed format, but given the recent burst in empirical work on corruption, we also include working papers that we believe will be published in high-quality journals in the near future. Additional information about our inclusion criteria and methodological approach is provided in Section 2 below.

A review on the "state of knowledge" in any area of inquiry requires a clear definition and conceptualization of the topic at hand. We define corruption as the misuse of public office, authority, or resources for private gain, while recognizing that the definitions of many of these terms themselves may be contested. With the exception of some works in anthropology, where scholars have been wary of applying universal definitions (see discussion in Torsello & Vendard, 2016), we found that the definitions of corruption employed by nearly all studies we examined were compatible with our conceptualization. Within the broader concept of corruption, our focus was on corruption involving appointed civil servants rather than elected officials – or on what we refer to as bureaucratic corruption (sometimes also called administrative corruption). Finally, we recognize that bureaucratic corruption itself comes in many forms and that each of these may require different anti-corruption policies.<sup>6</sup> But given the relative lack of empirical evidence on policies for combatting corruption, we did not find it feasible at this time to offer a systematic assessment of policies for addressing specific sub-types of bureaucratic corruption.

To offer an accounting of what we do and do not know, this article evaluates the interdisciplinary evidence on seven categories of anti-corruption policies: (1) rewards and penalties; (2) monitor-

<sup>&</sup>lt;sup>1</sup> See Target 16.5 of SDG 16 at https://sustainabledevelopment.un.org/sdg16.

<sup>&</sup>lt;sup>2</sup> This article is based on a collaborative effort by a team of economists, political scientists, sociologists, and anthropologists supported by a USAID Learning Agenda Questions Research Grant. See Prasad et al. (2017) for a companion paper that presents a new research agenda for addressing systemic corruption.

<sup>&</sup>lt;sup>3</sup> Other relevant reviews include Schmidt (2007) and Jancsics (2014). The former provides an overview of research on anti-corruption research but focuses narrowly on the post-communist region. The latter discusses theoretical approaches to corruption from an interdisciplinary perspective but does not offer a comprehensive review of empirical studies.

<sup>&</sup>lt;sup>4</sup> Though they are often intertwined with bureaucratic corruption, we do not include studies of patronage and clientelism in our review (see, e.g., Hicken, 2011; Kitschelt & Wilkinson, 2007). State capture – the illicit purchase of favorable laws or decrees – also falls outside our scope (see, e.g., Hellman, Jones, & Kaufmann, 2003).

<sup>&</sup>lt;sup>5</sup> For evaluation of foreign donors' anti-corruption policies, see the report by Johnsøn, Taxell, and Zaum (2012).

<sup>&</sup>lt;sup>6</sup> For example, Shleifer and Vishny (1993) distinguish between coordinated and uncoordinated corruption, and Ryvkin and Serra (2015) emphasize the difference between extortionary and collusive corruption.

ing; (3) restructuring bureaucracies; (4) screening and recruiting; (5) anti-corruption agencies; (6) educational campaigns; and (7) international agreements. For each group of policies, we provide an overview of evidence from ethnographic, qualitative, quantitative, and experimental studies, with the aim of assessing the extent to which evidence from across social science disciplines has converged in support of specific policies.

Overall, we draw four main conclusions. First, research from across the social science disciplines indicates that adequate civil servant salaries are a necessary but insufficient condition for addressing corruption. Second, the most robust evidence to date of successful anti-corruption policies pertains to policies based on monitoring, such as anti-corruption audits and e-governance. Third, despite the widespread promotion of anti-corruption agencies over the past two decades, scholars express skepticism about these agencies' effectiveness, with the notable exception of a handful of cases such as Hong Kong, Finally, while scholars and policymakers have prescribed numerous anti-corruption policies, for the vast majority of these policies the existing evidence is too thin to offer rigorous assessments of their effectiveness. To be clear, we believe that many commonly employed policies may hold promise, but our review points to an alarming gap between the level of evidence supporting prominent anti-corruption policies and the conviction with which many scholars and policymakers promote these policies.

In the conclusion, we discuss broader lessons about anticorruption efforts drawn from the literature and suggest avenues for future research, emphasizing that an overarching lesson from multiple disciplines is that corruption is a systemic problem that cannot be treated in the long term with individual-level solutions.

#### 2. Methodology

Before turning to our findings, we briefly discuss our approach for identifying materials to include in the review and for evaluating evidence regarding the effectiveness of anti-corruption policies. First, we began with a set of inclusion criteria, limiting our search to studies that (1) focus predominantly if not exclusively on bureaucratic corruption; (2) offer insights into combatting corruption; and (3) primarily consist of empirical analyses. Additionally, we sought to include only peer-reviewed studies or high-quality working papers deemed by team members likely to be published in a peer-reviewed format in the near future. Using Google Scholar and the Web of Science, we identified a preliminary set of approximately 600 articles, book chapters, books, and working papers that appeared likely to fit our inclusion criteria based on the content of their titles and abstracts.<sup>7</sup>

The second stage of the project consisted of refining our sample of relevant studies. The preliminary list was divided among team members, who then thoroughly evaluated each study to decide whether it fit our inclusion criteria. This process resulted in a condensed sample of approximately 220 studies. Careful review of these studies and their bibliographies led to identification of additional sources that fit our inclusion criteria, resulting

in a final sample of 260 studies on which the analysis below is based.<sup>8</sup>

We next annotated all studies in the sample. Based on the annotations, we developed a comprehensive list of anti-corruption policies, which we grouped into the seven categories presented in the introduction above. Studies were then sorted according to (1) their relevance to each of the seven categories of anti-corruption policies and (2) their methodology, i.e., whether they drew primarily upon ethnographic research, qualitative research, macroquantitative analyses, micro-quantitative analyses, laboratory experiments, or field experiments and natural experiments.9 For each category of anti-corruption policies, we coded overall findings of relevant studies as either: insufficient evidence to draw conclusions; mixed or contradictory evidence; evidence in favor of the policy's effectiveness; or evidence against the policy's effectiveness. Ultimately, evaluation of six types of methodological approaches across seven sets of anti-corruption policies produced 42 categories for coding. The table in the article's appendix provides an overview of these findings.<sup>10</sup>

To make these coding decisions, we considered both the quantity and quality of studies on each policy. Given the challenge of creating a unified coding system for evaluating quality across multiple academic disciplines, we instead relied on each team member's expertise and took criteria used by each discipline to determine the quality of research at face value. For example, for experimental and other quantitative research, we considered standard measures of statistical significance to assess whether evidence confirmed the effectiveness of a given anti-corruption policy, while drawing on the expertise of our economists and political scientists to assess the quality of a particular study's research design with respect to questions such as causal identification. For qualitative and ethnographic research, we drew on the expertise of our team's sociologists, political scientists, and anthropologist to assess the quality of research, considering factors such as the reliability and variety of primary sources employed; the appropriate use (or lack thereof) of process tracing, comparative case study techniques, and other qualitative research tools: and the duration and/or depth of immersion for ethnographic fieldwork.

While we do not attempt to adjudicate instances in which studies from distinct methodological traditions produced contrasting results, we do emphasize results supported by multiple methodological approaches in the belief that the convergence of evidence across disciplinary and methodological divides speaks to the robustness of these findings. Our analysis below offers transparency by providing detailed foundations for our coding determinations, beginning with the first of seven sets of anti-corruption policies: the use of rewards and penalties.

<sup>&</sup>lt;sup>7</sup> During this first stage of the research, each team member identified relevant studies primarily in his or her own social science discipline or in accordance with his or her methodological training (e.g., one political scientist on the team specializes in ethnographic research and accordingly worked in collaboration with the team's anthropologist). Key words and phrases used in these initial searches included combinations of the terms "administrative corruption," "anti-corruption," "anti-corruption agencies," "anti-corruption policy," "anti-corruption reform," "bribery," "bureaucracy," "bureaucratic corruption," "civil service," "civil service exam," "civil service reform," "civil service wages," "corruption," "corruption reform," "egovernance," "graft," "monitoring," "public administration," "public administration reform," "public service motivation," and "transparency,"

<sup>&</sup>lt;sup>8</sup> The bibliography includes these 260 studies as well as additional sources, such as literature reviews, cited in this article.

<sup>&</sup>lt;sup>9</sup> "Ethnographic" refers to participant observation, unstructured interviews, and other tools of in-depth immersion relying primarily on an inductive approach. "Qualitative" refers to case studies, comparative historical analysis, process tracing, and semi-structured interviews. "Macro-quantitative" refers to cross-national and cross-regional (i.e., across states or provinces within a single country) regression analyses. "Micro-quantitative" refers to regression analyses or related quantitative tools applied to micro-level data such as household surveys or surveys of firms. Experimental refers to studies with randomized or as-if randomized assignment to treatment and control groups, with "laboratory experiments" referring to studies in settings fully controlled by the researcher and "natural" or "field experiments" referring to studies conducted in real-world settings. Some studies utilized more than one methodological approach.

Because the findings of ethnographic and qualitative studies overlapped without exception, the table in the appendix collapses these studies into one column.

# 3. Rewards & penalties

Perhaps the most straightforward approach to fighting corruption is to reward integrity and penalize illicit behavior. This section addresses the effectiveness of policies that rely on (1) rewards targeting extrinsic motivations, such as increased wages; (2) rewards targeting intrinsic motivations, such as a desire to better society; and (3) penalties for corrupt acts.

#### 3.1. Extrinsic motivations

Evidence from ethnographies and qualitative case studies provides support for the contention that corruption emerges when salaries are below a basic living wage. Corruption has been particularly prone to flourish when austerity measures or other crises of state capacity force wage cuts for civil servants (Anders, 2010: Chew, 1990; Hanlon, 2004; Oka, 2013; Polese, 2008; Reeves, 2013), in part because bribes may be perceived as morally acceptable when civil servant wages are below the poverty threshold (Polese, 2008; Reeves, 2013). However, ethnographic and qualitative research also indicates that increasing wages - at least in isolation from a broader anti-corruption strategy – often has a modest effect on corruption levels. From Uganda to China, examples exist of wage increases failing to stem corruption (Fjeldstad, 2005; Gong & Wu, 2012), even as other studies attribute anticorruption success stories in countries such as Georgia in part to rising wages (Schueth, 2012). Shore (2005) further bolsters the case that adequate salaries are insufficient for combatting corruption by drawing attention to the repeated corruption scandals among well-compensated European Union bureaucrats.

Ethnographic and qualitative studies' finding that increased salaries may be an insufficient step toward reducing corruption corresponds with the findings of cross-national regression analyses, which have produced ambiguous results. Although Panizza, di Tella, and Van Rijckeghem (2001) and Van Rijckeghem and Weder (2001) identify a statistically significant but substantively modest relationship between higher relative government wages and lower levels of corruption, as measured by expert perception indices, the more comprehensive analysis conducted by Treisman (2007) indicates these relationships are not robust (see also Dahlström, Lapuente, & Teorell, 2012; Rauch & Evans, 2000 and Treisman, 2000). Treisman (2007) also finds no correlation between relative civil service wages and the frequency of citizens' reported encounters with corruption as measured by survey data. At a sub-national level, Alt and Lassen (2014) similarly find no correlation between relative wages for state and local government employees in the United States and the number of corruption convictions across states.

At a micro level, evidence in support of the role of extrinsic rewards in reducing corruption is more robust. Lindkvist (2014) finds in a survey of health workers in Tanzania that both merit-based promotions and higher wages are associated with a lower probability of accepting informal payments. Meanwhile, Kwon (2014), drawing on a survey of 800 South Korean bureaucrats, finds that civil servants who believe promotion is tied to performance are less likely to tolerate corruption in a hypothetical vignette. A number of laboratory experiments provide additional support for a wage-corruption nexus, showing that subjects are less likely to engage in acts of corruption when receiving higher pay (Armantier & Boly, 2011; Azfar & Nelson, 2007; Van Veldhuizen, 2013), although the link between wages and propensity to engage in corruption is weaker in some studies than others (e.g., Barr, Lindelow, & Serneels, 2009) and sometimes contingent on increased monitoring to supplement rising pay (Schulze & Frank, 2003).

While suggestive, research based on surveys or laboratory experiments does not directly evaluate the effectiveness of realworld policies aimed at extrinsic motivation. Evidence from more rigorous quasi-experimental and experimental approaches only recently has begun to emerge. Using a difference-in-differences approach comparing examination scores for public and private high schools in Romania before and after a large and unexpected cut in public sector wages, Borcan, Lindahl, and Mitrut (2014) find a significant *improvement* in public school exam scores relative to their private counterparts. They attribute this outcome to public school teachers' and administrators' efforts to solicit bribes in order to compensate for their loss of salary. However, while these findings provide additional support for the notion that impoverishment of public officials contributes to corruption, they cannot speak to the effectiveness of wage increases as an anti-corruption strategy. By contrast, Foltz and Opoku-Agyemang (2015) directly examine the impact of a doubling of Ghanaian police officers' salaries on their propensity to extort bribes at checkpoints along trucking routes. Also employing a difference-in-differences approach, they compare Ghanaian police behavior before and after the salary reforms with police behavior in neighboring Burkina Faso, where salaries remained low. Their findings offer a striking note of caution against wage increases as a corruption cure: While the number of bribes extorted fell following the salary reforms, the average bribe size rose and the total amount of bribe revenue collected by police increased. They posit that, among other explanations, the salary reforms increased Ghanaian officers' social status and shifted their reference point for what constitutes an appropriate income, leading to intensified efforts to extort bribe revenue.11

With respect to pay-for-performance schemes, Khan, Khwaja, and Olken (2016) conduct the first large-scale randomized field experiment, assigning different reward schemes across units of tax collectors in a province of Pakistan. They find that linking pay to inspectors' collection levels increases tax revenue. However, much of this revenue appears to come from a handful of properties being reassessed more accurately at a higher value, while many property owners report an increase in bribes paid to avoid reassessment of their tax bills. Though highly informative, the reforms studied in Khan et al. (2016) focused on improving tax revenues, not on linking pay to anti-corruption efforts. Ultimately, to the best of our knowledge, there remains a dearth of direct experimental evidence regarding the impact of wage increases and pay-for-performance systems on corruption. 12

Finally, ethnographic, qualitative, and quantitative analyses, as well as laboratory experiments, point to the importance of considering the ways in which wage increases interact with other anticorruption policies, and with the broader institutional and political context. In particular, Barr et al. (2009), Di Tella and Schargrodsky (2003), Fjeldstad (2003), and Kiser and Tong (1992) provide evidence of complementarities between higher wages and the effectiveness of audits and other forms of monitoring. Meanwhile, the cross-national analyses of Van Rijckeghem and Weder (2001) find that the effect of higher wages on corruption is largest in countries with higher quality bureaucracies and more rule of law, while ethnographic and qualitative research emphasizes the importance

Niehaus and Sukhtankar (2013) provide evidence that civil servants' expectations of rising future income streams can reduce embezzlement in the present, based on a natural experiment exploiting discontinuous changes to India's rural welfare program across state borders. However, the future income streams in their study pertain to long-term embezzlement opportunities, not to an increase in official wages.

A handful of well-designed experimental studies also show that increased wages attract more qualified applicants to work in the public sector (e.g., Dal Bó, Finan, & Rossi, 2013; Gagliarducci & Nannicini, 2013), but unfortunately these studies do not directly address the question of whether more qualified candidates are less likely to engage in corruption.

of embedding increased wages in a broader anti-corruption campaign (Fjeldstad, 2005; Schueth, 2012; Shore, 2005).

In summary, there is a near consensus across disciplines that poverty-level wages for civil servants contribute to corruption, and that sudden declines in salaries can be particularly detrimental. But while adequate wages may be necessary for reducing corruption, qualitative and macro-level quantitative studies indicate they are often insufficient, though it should be noted that micro-level quantitative research and laboratory experiments are somewhat more optimistic. Evidence from field experiments remains scarce, as is scholarship on the effects of pay-for-performance systems on anti-corruption efforts.

#### 3.2. Intrinsic motivations

Public administration scholars have long argued that civil servants are motivated to a significant extent by intrinsic – rather than extrinsic – factors, including a sense of obligation to society, a desire to help others, or professional norms (Perry, 1996; Perry & Wise, 1990). Unfortunately, the link between intrinsic motivations and corruption has been all but ignored.

The limited existing evidence suggests that anti-corruption policies targeting intrinsic motivation could prove promising. Based on interviews and focus groups with public officials from water and sanitation bureaucracies in Pakistan and India, Davis (2004) produces qualitative evidence that staff morale is crucial for successful anti-corruption efforts, as is instilling a sense of pride from participating in the fight against corruption. Kwon (2014), drawing on a survey of South Korean bureaucrats, finds lower tolerance for corruption in a hypothetical vignette among respondents who report being motivated to perform tasks because they find their job intrinsically interesting. And in laboratory experiments, Barr and Serra (2009) find that subjects' willingness to offer or accept bribes falls as the harm inflicted by corrupt transactions on other participants rises. They also find that subjects are less willing to offer bribes when the game is explicitly framed as a corruption scenario designed to elicit moral considerations, rather than in abstract terms.

In summary, there is a near absence of analysis on the effects of intrinsic rewards on reducing corruption, but the existing evidence indicates that this is a research agenda that deserves much greater attention.

#### 3.3. Penalties

As with higher wages, the logic for higher penalties creating a deterrent effect against illicit behavior is straightforward. In theory, civil servants weigh the payoffs and costs of engaging in corruption, and raising the cost side of the equation should reduce corrupt acts (Becker & Stigler, 1974). However, evidence in favor of this proposition is strikingly limited.

Laboratory experiments produce results in accordance with theoretical expectations, with subjects becoming less willing to offer bribes in corruption games as the penalties for corruption rise (Abbink, Irlenbusch, & Renner, 2002). And in a natural experiment in which Fisman and Miguel (2007) studied United Nations diplomats' willingness to abuse diplomatic privilege to avoid paying parking tickets, they found that after the city of New York started stripping the official diplomatic license plates from vehicles that accumulated unpaid parking tickets, violations decreased significantly. But it is unclear whether these results offer broader lessons for anti-corruption campaigns. Ethnographic and qualitative research in particular calls into question the feasibility of *implementing* stringent penalties. Hasty (2005), in an ethnography of anti-corruption efforts in Ghana, draws attention to the challenges prosecutors face in encouraging public officials to distinguish

between customary gifts and illicit bribes. She notes that at least in the Ghanaian case, encouraging civil servants to repay embezzled funds or return stolen goods has often proved more effective than jail time or fines. Fjeldstad's (2003) study of the Tanzanian tax bureaucracy offers insights into how dismissal of corrupt officials can backfire. Because corrupt tax officers often are embedded in networks of collaborators that cut across the public and private sectors, private companies frequently recruit former officials as "tax experts" who can then act as intermediaries in facilitating corruption. Finally, Kiser and Tong (1992) offer a historical analysis of imperial Chinese tax bureaucracies, emphasizing how even the strongest penalties had little effect in the absence of monitoring capabilities.<sup>13</sup>

In summary, there is a notable lack of empirical research assessing the effectiveness of increased penalties – or of different types of penalties – for engaging in corrupt acts. Although research in the ethnographic and case study traditions largely provides grounds for skepticism that harsh penalties are an effective route to combatting corruption, more research is needed before drawing definitive conclusions.

# 4. Monitoring

Rather than shaping incentives of civil servants through rewards and penalties, a second set of policies seeks to increase the chance that corrupt activity will be observed. This section addresses four sets of anti-corruption policies related to monitoring: (1) top-down audits; (2) bottom-up civil society monitoring; (3) transparency initiatives; and (4) e-governance.

#### 4.1. Top-down audits

Top-down monitoring has received relatively little attention in the ethnographic and case study literature. The studies that do exist sound a note of warning about potentially detrimental aspects of crackdowns against corruption. For example, Schueth's (2012) ethnographic analysis of anti-corruption reforms in Georgia emphasizes the important role of monitoring and prosecution in these reforms' success, but he also notes that the crackdown entailed concerning elements of coercion, including the use of the security forces' surveillance system to encourage civil servants' compliance with new procedural codes. Davis's (2004) study of water and sanitation bureaucracies in Pakistan and India provides evidence that while improved oversight of civil servants does have the potential to reduce corruption, it can also reduce staff morale and undermine efforts to induce intrinsic support for anti-corruption campaigns.

Laboratory experiments also offer mixed results. Serra (2012) finds in a study conducted with Oxford University students that the introduction of a low-probability audit – a 4 percent chance corruption will be detected and fined – reduces the willingness of subjects acting in the role of a bureaucrat to request a bribe by 5 percentage points, but this finding is not statistically significant. Banuri and Eckel (2015) conduct a game with US and Pakistani university students in which corruption goes unpunished in the first "pre-crackdown" phase, can be punished in the "crackdown" phase, and then again goes unpunished in the "post-crackdown" phase. They find that the risk of punishment has no significant effect on Pakistani students' willingness to engage in corruption, but that it does reduce corruption during the crack-

<sup>&</sup>lt;sup>13</sup> That the effectiveness of penalties is likely to be conditional on sufficient resources is underscored by Alt and Lassen's (2014) finding of a robust association between the resources available to prosecutors and the number of corruption convictions across US states. However, it is not clear whether their findings generalize beyond the United States and other wealthy countries.

down phase in the US setting. However, there are no longer-term effects of the crackdown: Corruption returns to previous levels in the third phase of the game even among the US students. Laboratory experiments have also raised the prospect that excessive monitoring can crowd out intrinsic motivation to act honestly. Schulze and Frank (2003), for example, found that the number of fully honest subjects in a corruption game without monitoring – that is, subjects who refused to accept even a small bribe – declined when the possibility that corruption could be detected and punished was introduced (see also Armantier and Boly, 2011).

Despite the concerns raised by ethnographies, case studies, and laboratory experiments, top-down monitoring is arguably the most thoroughly and rigorously studied anti-corruption policy to date from a quantitative policy impact evaluation perspective - and the findings indicate that audits frequently are capable of reducing corruption at least in the short term, although questions remain about their long-term effectiveness. Di Tella and Franceschelli (2011) study the effects of a crackdown involving extensive audits of public hospitals' procurement in Buenos Aires, Argentina. Drawing on panel data from 28 hospitals, they find that during the crackdown the cost of basic medical supplies fell by approximately 15 percent, an outcome they attribute to the elimination of corruption-related expenses incurred by hospitals prior to the crackdown. As the intensity of audits diminished, prices again rose but stayed well below their initial levels. Acconcia and Cantabene (2008) utilize panel data from 95 Italian provinces to examine the effect of a surge of anti-corruption investigations initiated by Italian judges in the mid-1990s. They find that before the crackdown, infrastructure spending appeared to be frequently diverted to corruption schemes, as evidenced by a robust positive relationship between provincial-level infrastructure spending and the number of corruption crimes prosecuted or the number of public officials convicted for embezzlement. After the crackdown, the association between infrastructure spending and corruption levels disappeared.

Experimental work provides further evidence regarding the impact of audits and crackdowns. Olken's (2007) field experiment involving approximately 600 village road projects in Indonesia randomly assigned projects to government audits. He finds that the certainty of facing an audit reduced missing expenditures by around 8 percentage points, as measured by a comparison of official village expenditure reports to estimates produced by independent engineers. Other studies exploit exogenous variation in the assignment of municipal audits. Bobonis, Cámara Fuertes, and Schwabe (2016) study the effectiveness of municipal audits in Puerto Rico, which are carried out in a predetermined order established by an independent agency, allowing local officials to anticipate upcoming audits. They find that when conducted prior to an election, audits reveal municipal corruption levels that are around 67 percent lower than the level of corruption revealed by audits after elections. However, they find no evidence of audits' longerterm effect on corruption. In contrast to Puerto Rico, municipal audits in Brazil are conducted at random. Avis, Ferraz, and Finan (2016) utilize this institutional feature to investigate the longterm effects of random audits by comparing the results of audits in municipalities facing their first inspection to the findings of audits in municipalities that had been previously inspected. Corruption levels in municipalities that had faced earlier audits were 8 percent lower. 14 They also find that the effects of audits spill over to neighboring municipalities, presumably as local politicians and citizens react to media reports of audit results in nearby cities.<sup>15</sup>

In summary, although ethnographic and qualitative research raises important questions about possible side effects of monitoring, a robust literature is emerging regarding the effectiveness of anti-corruption audits, at least in the short term. However, because these studies draw on data from diverse institutional settings, more research is needed to assess the effects of specific institutional arrangements, such as predetermined or random audits. Additional research on the long-term effectiveness of top-down audits also is warranted.

#### 4.2. Bottom-up civil society monitoring

Compared to top-down audits, there have been fewer efforts to empirically assess civil society monitoring. Ethnographic and case study research offers a relatively pessimistic picture regarding the effectiveness of bottom-up approaches. Conning and Kevane's (2002) assessment of community-based programs for the distribution of social welfare finds that such programs enmesh aid providers and recipients in shared local networks. These networks may reduce distributors' willingness to engage in corruption that could harm the local community, but can also be coopted by local elites for corrupt purposes. Véron, Williams, Corbridge, and Srivastava's (2006) case study of a welfare program in rural West Bengal also demonstrates how when vertical accountabilities (e.g., linkages between citizens and political parties) are weak, horizontal accountability structures such as participatory communitybased monitoring can mutate into corrupt networks that facilitate collusion between local civil society and officials. Moyo (2014) notes that in contexts such as Zimbabwe, civil society groups' effectiveness in combatting corruption is curbed by fear of legal prosecution for their "anti-state" motivations. And Muñoz (2014) shows how the effectiveness of civil society representatives who sit on boards designed to oversee the transparency of public contracts in Cameroon is marred by the fact that many of these representatives themselves are public contractors.

The one field experiment to address bottom-up monitoring also provides grounds for skepticism. Olken (2007), in his study of Indonesian village road projects discussed in the preceding section, compared the effectiveness of civil society monitoring to top-down audits, randomly assigning the use of anonymous comment forms designed to encourage grassroots reporting of corruption incidents as well as the conducting of "accountability meetings" at which public officials reported to villagers on the use of project funds. While these interventions increased community participation in the monitoring process, they had no statistically significant effect on corruption levels. By contrast, Serra's (2012) laboratory experiment, also discussed above, indicates that combining top-down and bottom-up monitoring may be effective. She finds that introducing a mechanism whereby subjects in the role of a citizen can report instances of bribery, which then triggers the possibility of a low-probability audit, reduces the willingness of those playing the role of public officials to request a bribe by a substantively and statistically significant 25 percentage points. She attributes this result at least in part to participants' concerns about social disapproval of other participants.

<sup>14</sup> The noticeable difference in the magnitude of Bobonis et al.'s (2016) and Avis et al.'s (2016) results presumably is due to the contrast between the former's focus on the short-term effects of prescheduled audits and the latter's focus on the long-term effects of randomly assigned audits. The former also explicitly considers the effects of public officials' electoral incentives.

<sup>&</sup>lt;sup>15</sup> It should be noted that recent work by Lichand, Lopes, and Medeiros (2016) has pointed to unintended consequences of anti-corruption audits in Brazil, such as declines in public spending by audited municipalities which have resulted in fewer per capita hospital beds, lower immunization coverage, and a smaller share of households with access to piped water. In contrast, drawing on user satisfaction surveys, Zamboni and Litschig (2016) find no evidence that Brazil's anti-corruption audits reduce the quality of health services.

In summary, too few studies have been conducted to draw conclusions about the effectiveness of bottom-up monitoring for reducing corruption, despite increasing efforts to evaluate such monitoring's effectiveness on bureaucratic performance more broadly (see Finan, Olken, & Pande 2017, for a review). More research on this topic would undoubtedly be fruitful.

# 4.3. Transparency initiatives

Effective rewards, punishments, and monitoring all rely on information. It is therefore not surprising that ample evidence links freedom of the press to lower levels of perceived corruption, as found in a number cross-national regression analyses (Brunetti, & Weder, 2003; Camaj, 2012; Treisman, 2007). At a more micro level, Di Tella and Franceschelli (2011) show how higher newspaper dependency on government advertisements in Argentina is associated with less willingness to provide coverage of government corruption scandals, while Campante and Do (2014) demonstrate that geographic isolation of state capitals across the United States is associated with less newspaper coverage of state politics and subsequently higher levels of corruption, as measured by corruptionrelated convictions per capita. Ethnographers such as Hasty (2005) and Chalfin (2008a) also point to the importance of robust investigative journalism for combatting corruption. And emerging evidence additionally indicates that information flows work in conjunction with other monitoring policies, as shown by the spillover effects noted above of municipal government audits in Brazil resulting from media coverage of audit findings (Avis et al., 2016).

Encouraging freedom of the press is, however, a laudable but challenging goal. Fortunately, evidence is emerging that more specific transparency initiatives can contribute to anti-corruption efforts. After documenting massive leakage in government grants allocated for local school funding in Uganda, Reinikka and Svensson (2005) find that the government's publication of data about grant transfers in local newspapers had a dramatic effect. Exploiting variation in teachers' access to information, they show that a one standard deviation increase in information exposure results in approximately 44 percentage points more funding reaching the school. More recently, Banerjee et al. (forthcoming) conducted a randomized control trial in Indonesia aimed at reducing leakage in food subsidy programs resulting from local government corruption. Households in villages assigned to the treatment condition were mailed cards with information about the quantity and monetary value of food subsidies to which they were entitled, resulting in a 26 percent increase in subsidies received.

Specific laws can also potentially contribute to transparency, such as freedom of information (FOI) and financial disclosure laws. Although such laws have rarely been the focus of ethnographic and case study researchers, Mathur's (2012) analysis of transparency initiatives in India provides a note of caution. She finds that these initiatives have led to more bureaucracy, which in turn has contributed to even more severe fraud. Early studies drawing on cross-national regression analyses also produced counterintuitive results: Adoption of FOI laws often is associated with higher perceived corruption (Costa, 2013; Escaleras, Lin, & Register, 2010). These findings appear to reflect researchers' reliance on corruption perception indices. If the FOI laws lead to increased exposure of corruption, then experts' and citizens' evaluation of corruption levels in a given country may rise, even if these laws contribute to a decline in the actual level of corruption. Accordingly, the use of a difference-in-differences approach by Cordis and Warren (2014) to study the implementation of stronger state-level FOI laws across the United States produces findings more in line with expectations: Corruption conviction rates increased significantly immediately after the laws' adoption due to increased rates of exposure, but then declined over time as actual levels of corruption fell.

Systematic evidence about the effectiveness of financial disclosure laws also is beginning to emerge. Based on cross-national regression analyses of rules governing legislators' disclosure of financial information and conflicts of interest across 175 countries, Djankov, La Porta, Lopez-de-Silanes, and Shleifer (2010) find that disclosure requirements are associated with lower levels of perceived corruption, but only if information disclosed is made readily available to the public at large. Similarly, Vargas and Schlutz (2016), using panel data for 91 countries between 1996 and 2012 and a more detailed measure of financial disclosure legislation based on the World Bank's Public Accountability Mechanisms initiative, provide suggestive evidence that the introduction of such legislation reduces perceived corruption, Fisman, Schulz, and Vig (2016), meanwhile, analyze state assembly elections in India before and after the introduction of financial disclosure laws. showing that these laws motivated corrupt politicians to leave political office.

In summary, while there is evidence that a free press and investigative journalism are beneficial for reducing corruption, only recently have scholars turned their attention to the effectiveness of specific transparency initiatives. While the evidence pertaining to FOI laws is mixed, other efforts to fight corruption by improving citizens' access to information appear promising.

# 4.4. E-governance

Over the past two decades, tools for transmitting information have been changing rapidly, with implications for fighting corruption. Andersen, Bentzen, Dalgaard, and Selaya (2011) provide evidence of a link between Internet diffusion and reduced corruption levels both within the United States and crossnationally, using a novel instrumental variable approach based on the correlation between Internet diffusion and damage to digital equipment following power outages resulting from lightning strikes (see also Lio, Liu, & Ou, 2011).

Beyond Internet diffusion in general, e-governance – the use of information technology to provide government services – is increasingly being hailed as a promising anti-corruption approach. To be sure, case studies such as Ganie-Rochman and Achwan (2016), which shows how networks of public officials and public contractors in Indonesia managed to circumvent anti-corruption measures built into an e-procurement system, make clear that digitization is no panacea. But drawing on a UN e-governance index measuring the scope and quality of online services, telecommunication infrastructure, and human capital, Elbahnasawy (2014) finds in a dynamic panel of over 160 countries across a 14-year period that the introduction of more e-governance on average is followed by lower levels of perceived corruption.

At a more micro level, there is a small but high-quality set of studies emerging on e-governance. In a large-scale randomized control trial involving nearly 19 million people, Muralidharan, Niehaus, and Sukhtankar (2016) show that introducing biometric smart cards in India substantially decreased embezzlement of government transfers. Similarly, Banerjee, Duflo, Imbert, Mathew, and Pande (2014) use random assignment to introduce an electronic system of public funds provision across local village bodies for a workfare program in the Indian state of Bihar. They find that egovernance leads to a substantial decrease in financial outlays. even while participants in the workfare program reported no decline in earnings - evidence of decreased leakage resulting from fraud or other forms of corruption. Further evidence of the program's effectiveness was the decline of reported assets among public officials in treated districts, an indication that officials in these districts curtailed the common practice of skimming from the workfare program. Finally, exploiting the gradual rollout of eprocurement systems in India and Indonesia, Lewis-Faupel, Neggers, Olken, and Pande (2016) find evidence that e-procurement improves product quality and increases the likelihood that firms from outside of a given region will receive government contracts. They do not find evidence of an effect on prices, nor do they offer a direct assessment of whether their outcomes are the result of lower corruption or increased competition among contractors.<sup>16</sup>

In summary, e-governance itself is relatively new, yet a highquality literature on its effectiveness is already emerging, including several studies based on natural experiments and randomized control trials. The existing evidence provides cause for optimism, although the few case studies to address the topic offer insights into the limitations of e-governance.

# 5. Restructuring bureaucracies

A third fundamental way to shift incentives faced by civil servants is to alter the structure of bureaucracies in which they work. This section investigates the evidence for six sets of anti-corruption policies related to bureaucratic structure: (1) decentralization; (2) bureaucratic discretion; (3) bureaucratic competition; (4) staff rotation; (5) whistleblowing; and (6) streamlining regulation.

#### 5.1. Decentralization

In theory, decentralization can reduce corruption by creating inter-jurisdictional competition: If citizens are dissatisfied with the services provided by corrupt bureaucrats in one location, they can move to another. It may also be more feasible to hold local rather than national-level public officials accountable for their actions. The framework developed by Shleifer and Vishny (1993), on the other hand, indicates that decentralization might lead to lack of coordination among bribe-seeking bureaucrats, raising the burden that corruption imposes on firms and citizens. Empirical evidence, largely in the form of cross-national regressions, has yet to resolve these countervailing predictions, in part because decentralization comes in many forms and because analyses rely on a number of distinct indicators of decentralization.

Treisman (2000) finds based on cross-national regressions that countries with federal systems have higher levels of perceived corruption, although his subsequent analysis with updated data determined that this correlation is not robust in a larger set of countries (Treisman, 2007). By contrast, indicators based purely on fiscal decentralization produce more optimistic results. Fisman and Gatti (2002a) show that when decentralization is measured by the subnational share of total government expenditures, crossnational regressions produce evidence of a robust association between more decentralization and lower levels of perceived corruption. Recent work by Fiorino, Galli, and Padovano (2015) employing a panel data analysis of 24 countries between 1995 and 2007 comes to similar conclusions (see also Lederman, Loayza, & Soares 2005). Additionally, drawing on sub-national regression analyses that exploit variation across US states, Fisman and Gatti (2002b) find that the smaller the proportion of a state's expenditures derived from federal transfers, the lower the state's levels of corruption.<sup>17</sup>

Fan, Lin, and Treisman (2009) move the debate beyond indices measuring levels of perceived corruption and consider the relationship between multiple indicators of national-level decentralization and firm-level survey data measuring reported encounters with corruption in approximately 80 countries. A similar divergence between political and fiscal measures of decentralization emerges. More tiers of government or administration are associated with higher rates of reported bribery, but a larger share of revenues as a percent of GDP for local governments is associated with lower rates. Notably, a larger share of revenue as a percent of GDP accruing to central governments also is associated with lower levels of reported corruption, indicating that coordination problems linked to revenue sharing itself – rather than the level of fiscal centralization – might be responsible for more extensive problems with bribery.

Other studies provide further support for the notion that uncoordinated bribe taking in decentralized political systems leads to higher levels of corruption. Based on firm-level survey data for 24 transition countries, Diaby and Sylwester (2014) find that bribe payments are higher under a more decentralized bureaucratic structure, as measured by firms' beliefs that even if they pay bribes they will be asked by other public officials to make additional payments. Olken and Barron's (2009) study of more than 6000 bribes paid at checkpoints by Indonesian truckers also provides evidence that decentralized corruption can result in higher total bribe payments, based on a novel natural experiment that exploits an exogenous shift in the number of checkpoints resulting from the Indonesian military's withdrawal from the Aceh province.

In summary, despite a longstanding debate, disagreement persists about whether decentralized or centralized bureaucracies are more conducive to anti-corruption efforts.

# 5.2. Bureaucratic discretion

Since the influential work of Klitgaard (1988, 26, 87–89), many have argued that limiting bureaucrats' discretion to interpret and apply regulations constitutes an effective policy for reducing corruption. Although this proposition has only been rarely subjected to empirical examination, the existing evidence seems to be favorable. Chan and Gao's (2008) case study of target-based anticorruption reforms in China illustrates that when targets were specified vaguely and allowed for discretion among local officials, superiors had little incentive to punish subordinates and tended to establish easy-to-achieve targets, thereby compromising anticorruption endeavors. Drawing on a survey of 800 South Korean Bureaucrats, Kwon (2014) finds that more bureaucratic discretion, measured by the extent of delegation by supervisors, is associated with higher corruptibility, as measured by bureaucrats' tolerance of corruption in a hypothetical vignette. And Duvanova's (2014) analysis of survey data covering 25 post-communist economies between 1999 and 2005 also suggests a link between greater bureaucratic discretion and the extent to which firms face bribe requests.

In summary, excessive bureaucratic discretion does seem to be associated with more corruption, but scholars have yet to directly evaluate whether reducing discretion is an effective anticorruption policy.

# 5.3. Bureaucratic competition

Another policy with a long pedigree in the anti-corruption literature concerns competition among government bureaucrats (Klitgaard, 1988, 87; Shleifer & Vishny, 1993). In some models, the possibility that citizens facing a corrupt bureaucrat can turn to other bureaucrats to provide the same service has the potential to drive down corruption to minimal levels. Unfortunately,

<sup>16</sup> Changes in information technology beyond e-governance – such as social media – also may contribute to reduced corruption. Enikolopov, Petrova, and Sonin (forthcoming) show that social media postings about corruption in state-owned companies in Russia led to an almost immediate fall in these companies' stock returns.

<sup>&</sup>lt;sup>17</sup> It is also worth noting that some preconditions may be necessary for decentralization to reduce corruption. For example, Lessmann and Markwardt's (2010) crossnational analysis of about 60 countries reveals that decentralization counteracts corruption in countries with high levels of media freedom, but has the opposite effect in countries without a free press.

evaluating such propositions is challenging. Our review of the literature uncovered only one work directly devoted to this issue, a laboratory experiment by Ryvkin and Serra (2015). In the experiment, subjects in the role of citizens apply for licenses from multiple officials, each of whom has the option to extort a bribe. They find that increased competition – that is, increasing the number of officials offering the same service – can potentially reduce bribe demands, but that these results are contingent on the costs to citizens of switching from one public official to another. With low fixed "search costs," increased competition can potentially have an adverse effect, leading to more demands for bribes from officials. In summary, laboratory experiments have offered important insights into the potential impact of increased competition among bureaucrats, but much more research is needed.

# 5.4. Staff rotation

Although the rotation of bureaucrats across locations or functions has long been proposed as an anti-corruption measure designed to prevent the formation of corrupt networks and collusive relationships, the effectiveness of such policies has faced minimal empirical scrutiny. To our knowledge, just one empirical study, a laboratory experiment by Abbink (2004), has directly addressed this question. In the experiment, pairs of potential bribers and public officials were randomly re-matched in every round and compared to other pairs who engaged in repeated interactions without rotation. Abbink (2004) finds that, at least in the laboratory, staff rotation reduces bribery transactions by almost one half. In summary, laboratory experiments suggest that rotation of cadres may be an effective anti-corruption policy, but whether these findings generalize to real-world settings remains to be studied.

# 5.5. Whistleblowing

Laws and policies designed to facilitate whistleblowing are frequently a prominent component of anti-corruption campaigns. Yet whistleblowing policies have not attracted the attention of empirical researchers, and the handful of existing studies focus largely on the developed world. Goel and Nelson (2014) provide evidence of a higher number of corruption convictions in US states with high levels of citizen awareness about whistleblowing laws, as measured by the number of search hits in Google and Yahoo related to the whistleblowing laws of a particular state. While an innovative approach for assessing a difficult-to-research topic, their research design does not allow for direct assessment of whistleblowing laws' effectiveness. Other analyses, such as Zipparo's (1998) study of public sector employees in New South Wales, Australia, use survey data to offer insights into the factors that discourage the reporting of corruption, such as lack of proof or lack of legal protection. And laboratory experiments such as Abbink, Dasgupta, Gangadharan, and Jain (2014) have explored policies that might contribute to whistleblowing, such as lenient punishment for bribers that report bribe-taking public officials. Yet despite the contributions of these studies, direct evidence regarding whistleblowing laws' effectiveness has yet to emerge.

#### 5.6. Streamlining regulation

A final policy often proposed for reducing corruption is to streamline government bureaucracies, thereby limiting opportunities for civil servants to extort bribes. In accordance with this line of thought, a number of ethnographic studies show that overly complex bureaucratic regulatory policies can be breeding grounds for corruption (e.g., Anand, 2015; Gupta, 2012; Hoag, 2010; Mathur, 2012). Meanwhile, ethnographers and case study

researchers such as Toye and Moore (1998) and Schueth (2012), in studies of tax reforms in Indonesia and Georgia, respectively, suggest that simplifying tax rules reduces tax corruption by providing fewer opportunities for bureaucrats to use their discretion.

Cross-national regression analyses also provide some preliminary support to the proposition that reducing regulatory burden can reduce corruption levels. Early work by Ades and Di Tella (1997, 1999) reveals that levels of perceived corruption are lower in countries with effective antitrust regulations and without industrial policies that favor domestic firms. Djankov, La Porta, Lopezde-Silanes, and Shleifer (2002) show that countries with more regulation of entry for startup companies have higher levels of perceived corruption, while Gerring and Thacker (2005) find a positive correlation between measures of regulatory burdens drawn from the Heritage Foundation's Index of Economic Freedom and corruption levels. Treisman (2007), however, emphasizes that regulatory burdens may be the result, rather than the cause, of corruption.<sup>18</sup>

Regulatory burden is, of course, distinct from the size of government, and there is ample case study evidence that merely rolling back the state rarely leads to reduced corruption (e.g., McMann, 2014; Moshonas, 2014; Schamis, 2002). Quantitative analyses addressing the impact of government size also produce ambiguous results. Although Goel and Nelson (1998) find that within the United States higher state spending is associated with more corruption, Gerring and Thacker (2005) find few robust cross-national correlations between levels of perceived corruption and indicators such as public consumption as percent of GDP, total central government expenditures as percent of GDP, state run enterprise as share of total economy, and government employees as share of population.

In summary, there is little evidence that reducing the size of government is an effective anti-corruption policy, but appropriately targeted deregulation deserves further attention. Overall, there is a noteworthy gap between the widespread promotion of reforms based on bureaucratic restructuring and the lack of empirical studies evaluating these reforms' effectiveness.

# 6. Screening & recruiting

Rather than shaping the incentives of civil servants already in office, an alternative approach is to focus on *who* becomes a civil servant. This section assesses the effectiveness of anti-corruption policies that rely on (1) meritocratic recruitment and (2) integrity screening.

# 6.1. Meritocratic recruitment

Both scholars and policymakers often tout meritocratic recruitment – often via the implementation of civil service exams – as an effective policy for reducing corruption. However, although recent scholarship, such as Oliveros's (2016) survey of Argentinean public servants, supports the contention that officials hired via patronage agreements are more likely to target public services to political supporters, direct empirical evidence linking meritocratic recruitment and decreased corruption levels is minimal.

Comparative case study research has emphasized the role of meritocratic recruitment in reducing corruption, particularly in

<sup>&</sup>lt;sup>18</sup> Another consideration is that de facto implementation of regulatory policies may have a more significant effect on corruption levels than de jure regulatory rules (see Duvanova, 2014).

<sup>&</sup>lt;sup>19</sup> Although meritocratic recruitment is often associated with civil service exams, scholars such as Sundell (2014a) have challenged this conception, suggesting that recruitment processes based on interviews and resume screening may be more meritocratic.

places with British colonial legacies such as Hong Kong and Singapore. Quah (2011) contrasts the beneficial legacies of British civil service traditions with the non-meritocratic, clientelistic recruitment practices that emerged in Indonesia following Dutch and Japanese colonialism. Yet he also notes that Bangladesh emerged from colonialism with similar civil service institutions to those of Hong Kong and Singapore, yet ultimately faced higher levels of corruption. Other case study researchers have pointed to the challenges of implementing civil service reforms. For instance, Burns and Xiaoqi (2010) show how in China informal norms of existing bureaucratic cultures undermined efforts to develop a competitive recruitment process for civil servants. And while historical studies of the United States, such as Freedman (1988) and Hamilton (2002), found that anti-patronage staffing systems implemented in the city of Chicago were able to reduce, though not eliminate, abuses of city resources for political gain, these reforms also had negative consequences, such as adding considerable time and paperwork burdens to the process of hiring officials.

Beyond case studies, only two quantitative studies have assessed meritocratic recruitment. Drawing on an expert survey on bureaucratic structures covering 35 developing countries, Rauch and Evans (2000) offer evidence of a positive correlation between reliance on meritocratic recruitment and lower levels of perceived corruption. Dahlström et al. (2012), also employing an expert survey to measure bureaucratic structures, find that similar results hold for a sample of 52 middle-income and developed countries. However, because these studies rely on expert perceptions for both the independent and dependent variables, their research design leaves open the possibility that experts' assessments of bureaucratic structures and corruption simultaneously are shaped by their broader perceptions of a country's level of governance. More research therefore is needed to determine the robustness of these findings in larger samples and with other indicators of meritocratic recruitment.

In summary, despite the topic's clear importance and recent attention to bureaucratic recruitment policies more broadly (see Finan et al., 2017 for a review), the effects of meritocratic recruitment on corruption have yet to be rigorously studied.

# 6.2. Integrity screening

Nearly three decades ago, Klitgaard (1988, 75) noted that private companies had begun using "honesty tests" developed by psychologists to pre-screen potential hires in an effort to reduce fraud and improve integrity levels of their workforces. He also noted the role that pre-screening plays in the US government's selection of contractors, including checks on criminal history, creditworthiness, and audit records. The idea has received little attention in the literature on bureaucratic corruption in the years since.

A series of recent studies drawing on experimental games, however, indicates that more attention to screening might be warranted, particularly in environments in which corruption is widespread. Hanna and Wang (2017) find that university students in India who express a preference for joining the civil service are more likely to cheat when playing an incentivized dice task game than their peers planning to pursue a private sector career (see also Banerjee, Baul, & Rosenblat, 2015). By contrast, Barfort, Harmon, Hjorth, and Olsen (2015) employ a similar research design to that of Hanna and Wang (2017) but study Danish students, finding that in this low-corruption environment, students who cheat more often are more likely to self-select out of the civil service and into the private sector. This line of inquiry indicates that additional research on the incentives for joining the civil service, as distinct from the incentives facing current civil servants, could prove fruitful.

Another line of research has focused on individual characteristics associated with the propensity to engage in corruption. Foremost among these has been gender. Dollar, Fisman, and Gatti (2001) attracted attention to the issue when they found using cross-national regressions that countries with more female legislators had lower national corruption ratings. Swamy, Knack, Lee, and Azfar (2001) expanded this analysis, showing that not only countries with more female legislators, but also countries with more female ministers and other high-level bureaucrats, as well as countries with more women in the labor force, have lower levels of perceived corruption on average. At an individual level, they find based on data from the World Values Survey for 18 countries that women are less likely to perceive bribery as justifiable, and based on enterprise surveys in the country of Georgia that firms with female owners are less likely to engage in bribery. Lee and Guven's (2013) overlapping approach using data for 26 countries from the European Social Values Survey similarly finds that women are less likely than men to have offered or accepted a bribe in the last five years. While they do not find robust evidence that women are less willing to tolerate corruption individually, they do find lower overall tolerance for corruption in countries with less traditional views about women's role in the workplace and at home.

Many of these studies explicitly, though cautiously, suggest that increasing the number of women civil servants might reduce corruption. However, as Swamy et al. (2001) emphasize, robust policy recommendations require additional research on the underlying reasons why women appear less willing to engage in corruption. If this is due to innate biological or psychological differences across genders, then increasing the number of women in government might be an effective policy. If instead apparent gender differences result from distinct social networks and socialization experiences, then women's attitudes and behaviors related to corruption might change over time as they play a greater role in the civil service.<sup>20</sup>

In summary, sufficient evidence about gender differences exists to warrant additional research. In particular, studies are needed that examine the effects on corruption levels of policies explicitly designed to increase female participation in the civil service or government more broadly. Meanwhile, policies related to integrity screening are all but unstudied. This, too, constitutes a potentially fruitful research agenda.

# 7. Anti-corruption agencies

Anti-corruption agencies (ACAs) first gained prominence due to the success of such organizations in Hong Kong and Singapore in the latter half of the 20th century (see, e.g., Klitgaard, 1988; Quah, 2011). ACAs, specialized law enforcement agencies with centralized control over the coordination of a country's anti-corruption efforts, have since the 1990s become a prominent component of anti-corruption strategies promoted by international financial institutions and development agencies. Mungiu-Pippidi (2015, 103) calculates that whereas 12 countries had an ACA in 1990, this figure had reached nearly 100 by 2008.

Despite the prominence of ACAs, relatively few efforts have been made to systematically assess their effectiveness. In part, this is because such evaluation presents significant challenges (see

<sup>&</sup>lt;sup>20</sup> Experimental evidence provides further grounds for caution. Alatas, Cameron, Chaudhuri, Erkal, and Gangadharan (2009) find in laboratory bribery games in Australia, India, Indonesia, and Singapore that gender differences in tolerance for and willingness to engage in corruption emerge only in Australia. Frank, Lambsdorff, and Boehm (2011) find that corrupt transactions are less likely to take place in laboratory experiments when one or both parties to an exchange are women, but they emphasize that these results most likely are due to higher levels of risk aversion, not to higher levels of intrinsic honesty or aversion to corruption, among women.

Meagher, 2005). For instance, Asibuo (2001) finds that in Ghana, a country with a relatively low level of government resources, an anti-corruption agency succeeded in closing some loopholes that enabled corruption and in recovering large sums of stolen money. The agency did not, however, have a transformative effect on national corruption levels. Whether such outcomes should be considered successes or failures remains unclear. Moreover, across countries, ACAs have vastly different resources, powers, and mandates, making head-to-head comparisons difficult (Doig, Watt, & Williams, 2006; Kuris, 2015). Perhaps most importantly, establishing a causal link between the creation of an ACA and reduced corruption is extremely challenging given the numerous factors that contribute to national corruption levels.

The more promising attempts to evaluate the effectiveness of ACAs consist of comparative case studies. Quah (2003) investigates the anti-corruption strategies of six Asian countries and suggests that the relative success of Singapore, Hong Kong, and South Korea compared to India, the Philippines, and Mongolia can be attributed to reliance on a centralized ACA, rather than on multiple agencies with overlapping authority to combat corruption. In later work Quah (2007) seeks to establish why ACAs in Singapore and Hong Kong proved more effective than their counterparts in South Korea and Thailand, emphasizing six conditions necessary for ACAs' success, including: (1) the incorruptibility of the ACA itself; (2) independence from politics and other law enforcement bodies; (3) embeddedness in comprehensive anti-corruption legislation; (4) adequate staffing and funding; (5) the capability to impartially enforce laws; and (6) support - or "political will" - from the country's top leaders (see also Choi, 2009; Quah, 2011, 2013). However, these studies rarely offer clear criteria for what constitutes "success" in fighting corruption, and often it appears as though the existence of the aforementioned preconditions is itself considered evidence of success.

Even advocates of ACAs such as Quah often urge caution about the feasibility of transplanting the Hong Kong or Singapore model, noting what they refer to as the propitious "policy context" of these cases: a small population, relatively high levels of economic development, and institutions largely imported from Great Britain. While the limited number of systematic studies and challenges entailed in evaluating ACAs' success hinder definitive conclusions, the existing literature indicates that the dramatic success stories of Singapore and Hong Kong have yet to be replicated, with the possible exception of a sub-national ACA in the Australian province of New South Wales. Indeed, Doig et al. (2006) find that international consultants' explicit emphasis on the Hong Kong model often has detrimental effects, leading to unrealistically outsized expectations or encouraging ACAs to take on mandates well beyond the capacity of their limited resources. Some analysts suggest that once expectations are set realistically for lower income countries, some ACAs - such as the Indonesian Corruption Eradication Commission perform "good enough" (Schütte, 2012). But the one crossnational quantitative study to evaluate ACAs shows that on average, countries with ACAs have higher levels of corruption than those without, even taking into account a country's level of corruption at the time of its ACA's founding (Mungiu-Pippidi, 2015, Chapter 4). It is also worth noting that recent success stories outside of Asia identified by scholars such as Mungiu-Pippidi (2015, Chapter 5), such as Estonia and Georgia, do not have a centralized ACA but rather have employed a decentralized anti-corruption strategy.

In summary, the limited amount of rigorous scholarship on ACAs stands in marked contrast to the widespread adoption of such agencies. Nevertheless, the literature is sufficient to establish that clear-cut success stories other than the first-generation of ACAs are lacking.

#### 8. Educational campaigns

Informational anti-corruption interventions have a long pedigree, gaining prominence after Hong Kong's Independent Commission Against Corruption (ICAC) employed educational campaigns with great success in the 1970s (Klitgaard, 1988, Chapter 4). Following in the ICAC's mold, anti-corruption agencies throughout the world, as well as organizations such as Transparency International, have developed anti-corruption modules. However, few efforts have been made to rigorously assess such interventions' effectiveness.

Some ethnographers and qualitative researchers have detailed the anti-corruption educational campaigns employed in specific cases, or emphasized the importance of shifting attitudes about corruption. Muñoz (2014), in an ethnography on anti-corruption policies in Cameroon, notes that not only does the National Commission Against Anti-Corruption underscore the importance of workshops and trainings for public officials "in order to strengthen civic-mindedness and a change of mentalities" (p. 186), but also that anti-corruption bodies take a pedagogical rather than punitive approach, allowing violators a period of amnesty and helping them to avoid breaking laws in the future. Werner (2000), drawing on ethnographic research in Kazakhstan, suggests the fruitfulness of linking anti-corruption education campaigns to values such as patriotism, nationalism, and social justice. Hira and Shiao (2016) conduct a comparative historical case study comparing the successful anti-corruption drives of Chile, Hong Kong, and Singapore to the unsuccessful policies of Nigeria and Paraguay. They conclude that a critical similarity among the three success cases was the use of education and media to reach a "cultural inflection point" after which a critical mass of public officials developed a low tolerance for corruption.

In line with these findings, Gong and Wang (2012) provide evidence of a low-tolerance equilibrium using surveys of university students in Hong Kong. The surveys demonstrate overwhelming antipathy for corruption among Hong Kong's youth. Interestingly, they find that participation in ICAC programs or other formal anti-corruption activities is not associated with lower levels of tolerance for corruption. Rather, the current generation of students – who are far too young to remember the period of corruption prior to the ICAC's success – appears to have absorbed anti-corruption values more broadly from society and from parental influences, as indicated by the lower levels of tolerance for corruption among students who had lived longer in Hong Kong, as opposed to immigrating more recently from mainland China.

These studies have offered important insights into the potential for information campaigns to reduce corruption. However, experimental approaches to the question have been almost nonexistent, despite their suitability for the question. The lone exception of which we are aware is Denisova-Schmidt, Huber, and Prytula's (2015) study conducted with Ukrainian students, which randomly assigned participants in the study to either a "treatment" folder with information about the extent and consequences of corruption or a control group folder with information about local demographic trends. They then assessed participants' willingness to participate in anti-corruption efforts (based on whether or not participants agreed to hand out flyers) and attitudes toward corruption via a survey. Strikingly, they found that such interventions might increase some students' tolerance of corruption, perhaps because they come to realize the extent to which other members of society engage in corruption.

In summary, case study evidence indicates that anti-corruption educational campaigns deserve more attention, but the limited existing experimental evidence points to the importance of carefully crafting and formulating such campaigns.

**Table 1**Evaluating Anti-Corruption Policies: What Works?

#### **Favorable Evidence**

Wage increase\* Anti-corruption audits Investigative journalism E-governance Financial disclosure laws

#### **Favorable Preliminary Evidence**

Engaging civil servants' intrinsic motivations Reducing bureaucratic discretion Streamlining regulations Meritocratic recruitment

#### **Unfavorable Preliminary Evidence**

Bottom-up monitoring Decentralization<sup>+</sup> Anti-corruption agencies<sup>+</sup>

#### **Insufficient Evidence for Evaluation**

Pay-for-performance
Penalties
Freedom of information laws
Increasing bureaucratic competition
Staff rotation
Whistleblowing
Educational campaigns
International anti-corruption conventions

- Necessary but insufficient for reducing corruption.
- \* Evidence suffers from methodological challenges.

# 9. International agreements

Despite the fanfare related to implementation of the OECD Anti-Bribery Convention at the turn of the twentieth century, the creation of numerous transnational anti-corruption agreements at the regional level, and a growing number of convictions under the US Foreign Corrupt Practices Act (FCPA) (see Rose-Ackerman & Palifka, 2016, Chapter 14), analysis of whether these laws and conventions have an impact on corruption has been rare.

With respect to cross-national quantitative approaches, scholars have focused primarily on whether the OECD Anti-Bribery Convention and/or the FCPA have made signatory countries' investors less willing to invest in corrupt countries. Although earlier studies were skeptical of the FCPA's effects on investment trends (Wei, 2000), more recent studies suggest that both the OECD Convention and the FCPA have redirected investment flows (Cuervo-Cazurra, 2008; D'Souza, 2012).

None of these studies, however, directly assess the effect of international anti-corruption conventions and laws on corruption levels in developing countries. Moreover, Gilbert and Sharman (2016), using a qualitative "most-likely" case approach, detail how two signatories of the OECD Convention which usually are perceived to have low levels of corruption - Great Britain and Australia – failed to fully prosecute offenders in three high-profile foreign bribery scandals, due to concerns about their government's image or about the economic impact of prosecuting prominent domestic companies. They suggest that the enforcement failures of even those countries most capable of compliance with the Convention bode poorly for enforcement in countries with less propitious conditions. Batzilis (2015), using data from Transparency International's Bribe Payers Index, a measure based on local business interests' assessment of foreign firms' conduct in their countries, does show that companies from OECD Convention signatory countries bribe less when conducting business abroad. However, he provides evidence that these results most likely reflect the fact that firms with a lower propensity to bribe are located in countries more likely to sign the Convention, rather than the Convention's efficacy itself. Moreover, beyond the OECD Convention, he finds no evidence that firms from countries with domestic laws prohibiting bribery when operating abroad are less likely to engage in corruption.

In summary, there is a notable discrepancy between the prominent role of international anti-corruption conventions in the global effort to reduce corruption and the lack of empirical knowledge about these conventions' effectiveness.<sup>21</sup>

# 10. Discussion: So what works?

Overall, this review finds that the effectiveness of the majority of commonly prescribed anti-corruption policies has yet to be rigorously evaluated.<sup>22</sup> Nevertheless, our analysis points to key lessons about "what works" in the fight against corruption, as well as to fruitful avenues for future research. It also highlights areas of research that might prove particularly challenging. Table 1 presents an overview of these findings. A more nuanced overview of the findings disaggregated by policy category and methodological approach is provided in the appendix.

With respect to rewards and punishments, the existing state of knowledge indicates that adequate civil servant salaries are necessary but insufficient for reducing corruption. Meanwhile, although the evidence is thin, a promising line of research pertains to the possibility of appealing to civil servants' intrinsic motivations – such as concerns about harming others or sense of duty to serve society – as a tool for fighting corruption. With respect to important gaps in the existing research, our review points to a lack of studies on the impact of pay-for-performance schemes and of novel forms of penalizing corruption.

Our review shows that many of the most rigorously studied and potentially promising - policies relate to monitoring. Promoting active and independent investigative journalism appears to be an effective anti-corruption policy, albeit with the caveat that developing freedom of the press is a challenging endeavor that may be politically or financially infeasible in many contexts. Topdown anti-corruption audits appear to hold promise, even though additional research is needed to more fully evaluate their longterm effectiveness and possible side effects. Rapidly emerging studies also point to the potential effectiveness of e-governance and, to a lesser extent, financial disclosure laws. By contrast, preliminary evidence raises questions about the effectiveness of bottom-up civil society monitoring, but more research is certainly warranted before strong claims are made. And with respect to gaps in the existing literature, methodological challenges have left unresolved the question of whether freedom of information laws are an effective anti-corruption tool.

Unlike policies related to monitoring, far fewer concrete findings emerge with respect to policies involving restructuring of bureaucracies. Decentralization has been extensively studied but results are inconclusive, in part due to scholars' reliance on contending conceptualizations and indicators. Preliminary evidence indicates that constraining bureaucrats' discretion might reduce corruption, suggesting a productive line of inquiry for researchers

<sup>&</sup>lt;sup>21</sup> Jensen and Malesky (forthcoming), using a sophisticated approach, identify a decline in the willingness of foreign investors in Vietnam who are subject to the OECD Convention to engage in corruption relative to their peers from non-signatory countries. The caveat to this finding is that reduced corruption among investors from signatory countries may provide new opportunities for competitors from countries without international anti-corruption regulations. This forthcoming study came to our attention as our article was going to press and therefore was not incorporated into our assessment of international conventions' effectiveness.

<sup>&</sup>lt;sup>22</sup> The current state of knowledge might, in fact, be even less conclusive than our review would indicate, due to factors such as publication bias. If scholars as less likely to publish null results, then peer-reviewed scholarship might overstate the true impact of anti-corruption policies on levels of corruption. We thank an anonymous reviewer for pointing this out.

to pursue. On the other hand, several policies buttressed by prominent theoretical work or frequently advocated by policymakers – including increased competition among bureaucrats and staff rotation – have yet to receive critical scrutiny in the empirical literature.

Finally, empirical support for a number of high-profile approaches to combatting corruption is lacking. The evidence suggests that anti-corruption agencies, which have proliferated across the globe over the past two decades, only rarely produce dramatic reductions in corruption. Meanwhile, empirical research is scant regarding the impact of common-sense approaches such as meritocratic recruitment, anti-corruption educational campaigns, and international anti-corruption conventions. To be clear, we believe that many of these policies may in fact be effective. Our claim is simply that more empirical research is urgently needed, particularly research attuned to methodological challenges such as how to rigorously assess the effectiveness of anti-corruption agencies, or how to disentangle the impact of international conventions from the influence of underlying forces leading countries to sign on to conventions in the first place.

This overview of findings is subject to two important caveats. The first concerns our understanding of what it means to say that an anti-corruption policy "works." We have assessed each policy with respect to what it is designed to do – but different policies have different goals, some more ambitious than others. Anti-corruption audits are often designed to reduce specific types of corruption – such as embezzlement – in specific projects or local government administrations, and may be an effective policy for achieving these laudable goals. Anti-corruption agencies, by contrast, are often created with a mandate to reduce national levels of corruption *overall*, a highly challenging standard to achieve.

The second caveat concerns a distinction between policies and strategies. This review has primarily focused on policies as defined by concrete courses of action with narrowly specified goals. We define strategies, on the other hand, as plans that combine multiple policies in an effort to fight corruption more broadly. A final and critical lesson emerging from our review is the importance of developing comprehensive, integrated anti-corruption strategies or campaigns. Across disciplines there is growing recognition that, particularly in societies where corruption is systemic, reforms will fail in the long term when they focus only on cases of individual transgressions (see Prasad, Borges, & Nickow, 2017). In countries in which corruption is widespread, corruption represents not deviance from a social order, but an alternative social order (e.g., Blundo, Olivier de Sardan, Arifari, & Alou, 2006; De Sardan, 1999; Heilman and Ndumbaro, 2002; Mungiu-Pippidi, 2015; Rothstein 2011b; Smith, 2010). Programs to reward good behavior or punish bad behavior frequently fail because the monitors doing the rewarding and punishing are themselves corruptible. Additionally, systemic corruption produces a collective action problem in which refraining from corruption is sub-optimal for individuals given the extent to which fellow citizens are corrupt (Collier, 2000; Corbacho, Gingerich, Oliveros, & Ruiz-Vega, 2016; Persson, Rothstein, & Teorell, 2013; Rothstein, 2011a). Systemically corrupt states end up trapped in an undesirable equilibrium in which the risk of punishment for corruption is low, moral legitimation of corruption is prominent, and self-fulfilling expectations reinforce one another.

Together, these views of corruption as an alternative social order and collective action problem suggest that successful anticorruption efforts will require not just evaluation of specific anticorruption policies, but also systematic analyses of the political and social strategies for implementing comprehensive anticorruption campaigns. While such analysis is in its infancy, some scholars emphasize the need for dramatic reform efforts – sometimes referred to as a "big bang" strategy – that seek to simultane-

ously replace corrupt institutions on a system-wide level (e.g., Rothstein, 2011a). But even advocates recognize that such strategies typically are feasible only in rare historical circumstances, such as in the wake of major military defeats (Teorell & Rothstein, 2015), while other observers have raised questions about the human rights consequences of anti-corruption efforts implemented with revolutionary zeal (Light, 2014). Scholars find more consensus in the notion that successful reforms require the backing a powerful stakeholder, some political actor or social group that stands to gain from control of corruption (e.g., Chalfin, 2008b; Collier, 2000; Kernell, & McDonald, 1999; Langseth, 1995; Mungiu-Pippidi, 2015; North, Wallis, & Weingast, 2009; Popa, 2015; Schuster, 2014; Skowronek, 1982; Wallis, Fishback, & Kantor, 2007). However, the critical stakeholder appears to vary from case to case, ranging from independent business groups to factions within the state, and systematic analysis of similarities and differences across cases has yet to emerge. Clearly, a vital topic for future research concerns the political economy of anticorruption campaigns.

#### 11. Conclusion

This article has offered a comprehensive review of the interdisciplinary state of knowledge regarding anti-corruption policies, with a focus on seven policy categories: (1) rewards and penalties; (2) monitoring; (3) restructuring bureaucracies; (4) screening and recruiting; (5) anti-corruption agencies; (6) educational campaigns; and (7) international agreements. We find broad agreement from across the social sciences that adequate civil servant salaries are a necessary but insufficient condition for addressing corruption. Our review also reveals growing evidence of the effectiveness of policies based on monitoring, such as anti-corruption audits and e-governance. By contrast, our review points to an emerging skepticism regarding the effectiveness of anti-corruption agencies. Notably, we find that for a clear majority of commonly prescribed anti-corruption policies, the existing evidence is too thin to offer rigorous assessments.

This gap between evidence and policymaking advice is cause for concern, but nevertheless we see grounds for optimism. The last five years have witnessed a remarkable burst of empirical research on anti-corruption policies, most notably by scholars employing randomized control trials and other experimental or quasi-experimental approaches, but also by researchers working in ethnographic and qualitative traditions. Readers struck by the amount of unresolved questions highlighted in this review might be inclined to see the proverbial glass as half full, but we believe our analysis is better interpreted as evidence that the glass is rapidly filling.

# **Conflict of interest**

None declared.

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#### Appendix: Findings organized by methodological approach

Italicized = assessment based on limited evidence NA = insufficient evidence to make assessment

	Ethnographic/ Qualitative	Macro Quantitative	Micro Quantitative	Lab Experiments	Field/Natural Experiments	Evaluation: What Works?
Rewards & Penalties						
Extrinsic: Wage increase	Necessary but insufficient	Mixed evidence	Effective	Effective	Mixed evidence	Favorable evidence*
Extrinsic: Pay-for-perform.	NA	NA	Effective	NA	NA	Insufficient evidence
Intrinsic motivations	NA	NA	Effective	Effective	NA	Favorable preliminary evidence
Penalties	Ineffective	NA	NA	Effective	NA	Insufficient evidence
Monitoring	-					
Top-down audits	Mixed evidence	NA	Effective	Mixed evidence	Effective	Favorable evidence
Bottom-up monitoring	Ineffective	NA	NA	Effective	Ineffective	Unfavorable preliminary evidence
Transparency: Investigative Journalism	Effective	Effective	Effective	NA	NA	Favorable evidence
Transparency: FOI Laws	NA	Mixed evidence	NA	NA	NA	Insufficient evidence
Transparency: Disclosure	NA	Effective	NA	NA	Effective	Favorable evidence
E-governance	Mixed evidence	Effective	NA	NA	Effective	Favorable evidence
Restructuring Bureaucracies						
Decentralization	NA	Mixed evidence	Ineffective	NA	NA	Unfavorable preliminary evidence
Bureaucratic Discretion	NA	NA	Effective	NA	NA	Favorable preliminary evidence
Bureaucratic Competition	NA	NA	NA	Effective	NA	Insufficient evidence
Staff Rotation	NA	NA	NA	Effective	NA	Insufficient evidence
Whistleblowing	NA	NA	NA	NA	NA	Insufficient evidence
Streamline Regulation	Effective	Mixed evidence	NA	NA	NA	Favorable preliminary evidence
Screening & Recruiting						
Meritocratic recruitment	Mixed evidence	Effective	NA	NA	NA	Favorable preliminary evidence
Integrity screening	NA	NA	NA	NA	NA	Insufficient evidence
Anti-Corruption Agencies	Ineffective	NA	NA	NA	NA	Unfavorable preliminary evidence
Educational Campaigns	Effective	NA	NA	NA	Ineffective	Insufficient evidence
International Agreements	NA	Mixed evidence	Mixed evidence	NA	NA	Insufficient evidence

<sup>\*</sup>Necessary but insufficient for reducing corruption

Note: "Ethnographic" refers to participant observation, unstructured interviews, and other tools of in-depth immersion rely primarily on an inductive approach. "Qualitative" refers to case studies, comparative historical analysis, process tracing, and semi-structured interviews. "Macro-quantitative" refers to cross-national and cross-regional (i.e., across states or provinces within a single country) regression analyses. "Micro-quantitative" refers to regression analyses or related quantitative tools applied to micro-level data such as household surveys or surveys of firms. Experimental refers to studies with randomized or as-if randomized assignment to treatment and control groups, with "laboratory experiments" referring to studies in settings fully controlled by the researcher and "natural or field experiments" referring to studies conducting in real-world setting. Ethnographic and qualitative research are grouped together in the table above because their findings nearly always converged.

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