

CHAPTER 8

Understanding Corruption through Government Analytics

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SUMMARY

Corruption is a multidimensional phenomenon that affects governments and citizens across the world. Recent advances in data collection and analytics have generated new possibilities for both detecting and measuring corruption. This chapter illustrates how the public sector production function introduced in *The Government Analytics Handbook* helps holistically conceptualize where corruption can occur in public administration. It then outlines how corruption can be detected in its multiple dimensions using the microdata approaches outlined in the remaining chapters of this book. Along the production function, corruption can be detected with input data (for example, personnel or budget data), data about processes (for example, survey data on management practices), and output and outcome data (for example, public service delivery data). Using corruption as a thematic focus, the chapter thus showcases how the approaches presented in the *Handbook* can be combined and leveraged to holistically diagnose a key issue in public administration. The chapter complements this methodical discussion with a broader consideration of how political-economic constraints affect policy reforms to reduce corruption.

ANALYTICS IN PRACTICE

- Corruption is a multidimensional phenomenon, affecting public administration across its parts. Corruption can affect public administration in personnel and payroll, through patronage appointments of public servants, and through the payment of ghost workers. Corruption can disrupt service delivery if public servants demand bribes in exchange for access to public services, such as health care and education. Since corruption affects public administration in various ways, a holistic assessment of corruption requires multiple data sources and methodologies.

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- Recent advances in data collection and analytics have generated new possibilities to detect and measure corruption. The use of data and indicators on corruption is a long-standing tradition in international development. Previous efforts primarily relied on expert assessments and national-level indicators, which are susceptible to subjective bias and lack a foundation in microdata. More recently, there has been growth in administrative microdata, such as procurement, payroll, and other data sources, like surveys of public servants. These rich data environments create novel possibilities to engage in more granular analytics for measuring corruption.
- The public sector production function structures holistic conceptualization and measurement of corruption in public administration. This chapter showcases how conceptualizing public administration as a production function with distinct parts enables corruption to be unpacked into its different dimensions, such as procurement and service delivery. In procurement, for instance, corruption can take the form of the capture of bidding processes by companies or the bribery of public officials. To measure this type of corruption, procurement data can be analyzed to create red flags on bids with a single bidder.
- Since corruption cuts across the public administration production function, the integration of the different data sources and methodologies presented in other chapters in *The Government Analytics Handbook* enables a comprehensive assessment of how corruption operates. For instance, corruption by public servants can stem from different causes. Public servants who engage in corruption might be dissatisfied with their wages or pressured by their managers. Measuring this complex environment of agents and organizational dynamics requires multiple data sources. For instance, managerial pressure can be measured through public servant surveys, while payroll data can provide a sense of pay equity.
- Measurement of corruption can guide and complement public sector reforms, but it is not a substitute for the implementation of challenging policies to reduce corruption. Measuring where corruption occurs can guide public sector reform by detecting areas of vulnerability—for example, ghost workers—and informing reforms—for example, improving quality control and payroll enforcement. Measurement cannot substitute for the important step of implementing challenging policy reforms that will likely be resisted by agents who benefit from the status quo. Reformers should be cognizant of the political-economic environment, which may deter reforms from taking place.
- The multidimensional analytical approach presented in this chapter can be leveraged for other key topics in public administration. While the thematic focus of this chapter is corruption, we emphasize that other important topics in public administration can also benefit from the application of analytical approaches based on multiple data sources. For example, performance management could leverage survey data on public sector motivation and management practices, as well as administrative data on performance indicators such as delays in processing business licenses. Using multiple data sources and analytical approaches enables a more holistic understanding of how public administration maps onto these key issues.

INTRODUCTION

Corruption in public administration has many faces (Campos and Pradhan 2007).¹ To name just two, corruption affects how public services work through nepotism and patronage—the use of political and personal connections for professional gain (Colonnelli, Prem, and Teso 2020; World Bank 2021). It can also shape how state resources are allocated, diverting funds from public education or health for private gain (for example, Ferraz, Finan, and Moreira 2012). This puts a premium on better understanding, measuring, and fighting against corruption. Throughout this chapter, we follow a common definition of corruption as “the use of public office for private gain” (Jain 2001; Rose-Ackerman 1978).

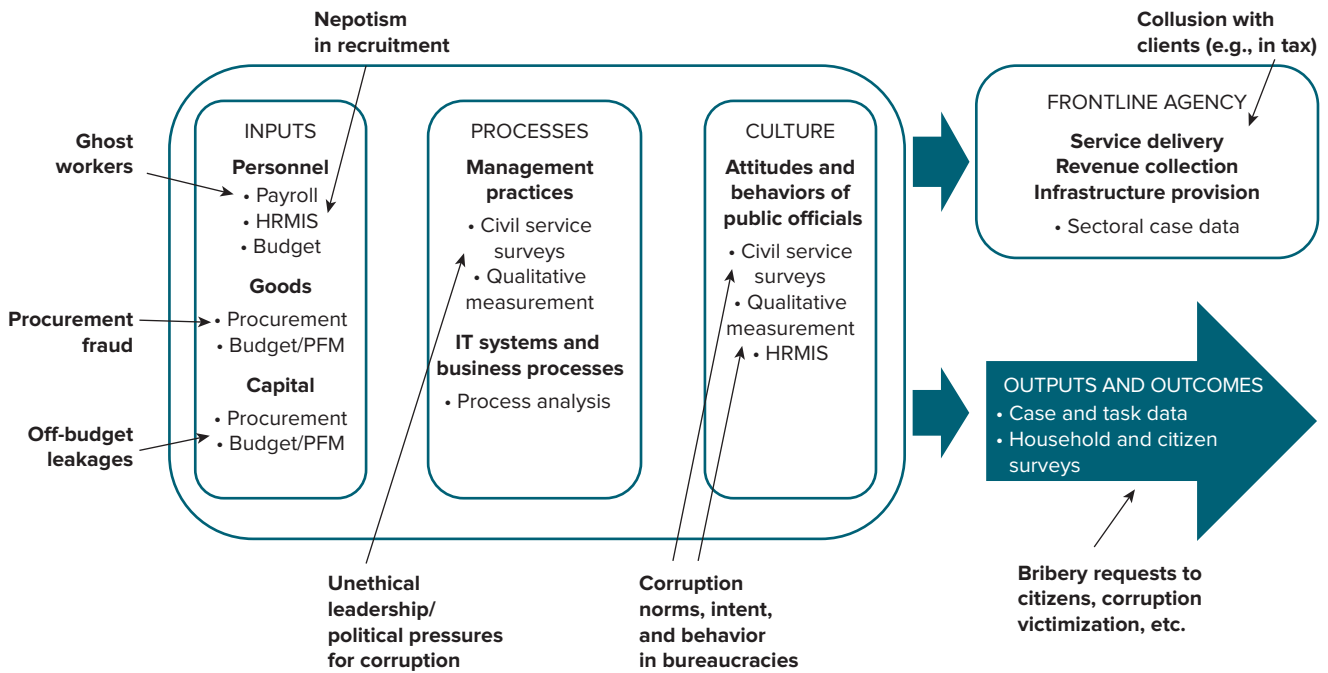
The use of government analytics—and data more broadly—to fight corruption is a long-standing tradition in the international development community (see, for example, Kaufmann, Pradhan, and Ryterman 1998).

Initiatives such as the World Bank’s World Governance Indicators (WGI) and Transparency International’s Corruption Perception Index (CPI) have sought to aggregate a set of indicators into a single measure to help draw attention to issues of governance and the control of corruption. These indicators often rely on expert surveys or qualitative indicators that provide national-level indicators on corruption. More recently, there has been growth in microdata analyzing corruption. For example, surveys of public servants provide staff-level perspectives on how corruption operates within countries and across sectors and government agencies (Recanatini 2011). The growing availability of microdata—administrative and survey-based—provides novel opportunities to increase and refine analytical approaches to understanding and reducing corruption.²

In this chapter, we demonstrate how to leverage the microdata sources and methodologies described in *The Government Analytics Handbook* to measure corruption. We do so through the public administration production function (figure 8.1). Corruption can be measured along the production function with input data on personnel—for example, human resources management information systems (HRMIS)—data about processes in the management of public servants—for example, surveys of public servants—and output and outcome data on the quality of service delivery—for example, service delivery measures. The following list provides a few examples of corruption along the production function:

1. **Inputs:** nepotism in hiring, procurement fraud, and off-budget leakages
2. **Processes:** unethical leadership by line managers and political pressures on public servants to act corruptly
3. **Culture and behavior in public administration:** whether public servants believe bribes are acceptable and corrupt behavior of public servants
4. **Outputs and outcomes in frontline agencies:** tax evasion in collusion with customs and tax officers
5. **Direct outputs and outcomes of public administration:** corruption in regulatory or policy decisions, bribery requests to citizens, and distorted allocation of licenses and permits.

FIGURE 8.1 Examples of Corruption along the Public Administration Production Function



Source: Original figure for this publication.

Note: The public administration production function conceptualizes the public sector as different dimensions (personnel, management practices, and attitudes and behaviors) that connect to each other to produce outputs and outcomes. HRMIS = human resources management information systems; IT = information technology; PFM = public financial management.

While our analysis focuses on each sector of the production function individually, integrating analytics across multiple dimensions of the production function provides even greater analytical insights. For example, procurement data may be linked to personnel data to identify public servants who might benefit from discretion over contracting decisions. Management practices, such as unethical leadership, may have downstream effects on the norms and behaviors of public servants. For this reason, integrating data allows practitioners and researchers to assess risk factors associated with corruption holistically, connecting the different parts of the production function. We include in each section a brief discussion of how to integrate different data sources and methodological approaches.

Each section of this chapter focuses on a particular dimension of the production function and how to measure and identify where corruption occurs. As such, the chapter should be read as an overview of analytical approaches to measuring corruption rather than as a corruption topic chapter. To frame our discussion, in each section we provide a brief overview of relevant academic and policy literature. We then highlight how methodological tools in other chapters of the *Handbook* can be used to understand and, potentially, reduce corruption. For example, if practitioners are interested in corruption in personnel, tools outlined in chapter 9, such as compliance and control mechanisms for human resources (HR) data, may prove helpful. We provide suggestions to practitioners about how to implement the methods discussed.

Accumulated experience suggests that relying solely on data is not enough to identify and measure corruption. Public officials and private agents who stand to benefit from corruption have incentives not to disclose their corrupt behavior in both survey and administrative data. As emphasized in chapter 4, measurement efforts are subject to existing power dynamics: politicians who benefit from collusion in procurement can manipulate procurement indicators to their advantage—for instance, by misreporting the number of bidders. Beyond concerns about the integrity of measures, improving the measurement of corruption should be embedded in a wider strategy of public sector reform to reduce corruption. A reform strategy can, for example, reduce corruption through monitoring technologies (for example, audits or reporting mechanisms) and positive reinforcement (for example, ethics training).³

Finally, we highlight the importance of combining data analytics with recognition of the sensitive political-economic issues surrounding reforms to reduce corruption (Evans 1995). Resistance to reform may come from multiple stakeholders who have economic incentives to preserve the status quo, not just from public officials. Politicians, political appointees, high-ranking public servants, and large corporations may resist data collection and analytics on corruption. Politicians may collude with or pressure public officials for personal gain, derailing reforms that threaten them.⁴ Survey data and interviews can help articulate the nature of these political dynamics and their intensity across the administration. Awareness of the institutional context within a country can guide reforms by securing buy-in from stakeholders and negotiating compromises that ensure the sustainability and effectiveness of reform efforts.

This chapter is structured as follows. Section 2 covers the input side of the production function, demonstrating how personnel, budget, and procurement data can be used to measure corruption. Section 3 dives into processes, such as management practices and business processes, that can be measured through a combination of survey and administrative data. Section 4 presents analytical approaches to measuring the norms and behaviors of public servants, particularly through surveys. Section 5 discusses corruption in frontline agencies, with a particular focus on service delivery, sectoral cases, and revenue collection. Section 6 covers the outputs and outcomes of public administration. Finally, we conclude.

INPUTS

Inputs to public administration include personnel, goods, capital, and budgets. In this section, we provide an overview of the extant literature on personnel (HRMIS and payroll), budget, and procurement, highlighting how different types of corruption, such as patronage, fraud, and embezzlement, may impair inputs into the public administration production function. Drawing on the approaches of other chapters in the *Handbook*,

we also present indicators to measure these dimensions of corruption and discuss how to develop and implement them.

Personnel and HRMIS Data

Personnel decisions, whether they regard selection or personnel management, have important consequences for public administration (Besley et al. 2022; Finan, Olken, and Pande 2017). Corruption may negatively affect personnel systems, particularly through patronage and nepotism, with long-term consequences (Evans and Rauch 1999; Rauch and Evans 2000). Patronage, the politically motivated selection and promotion of personnel, operates through the preferential hiring of copartisans (Brollo, Forquesato, and Gozzi 2017) or repayment for electoral contributions (Colonnelli, Prem, and Teso 2020). Patronage may adversely affect public servants' perceptions of the quality of governance and their general perceptions of corruption (Anderson, Reid, and Ryterman 2003). There can also be negative consequences for societal outcomes: the quality of government outputs such as health care and education can be compromised when people appointed based on political affiliation lack the skills or experience to perform critical functions.

It is important to consider not only how corruption occurs in personnel decisions (that is, through nepotism or patronage) but also how personnel systems affect corruption throughout public administration. A more meritocratic public service, for example, increases the opportunity cost for public servants who lose their jobs due to corruption (Cadot 1987). Conversely, if public servants believe that advancement is not based on good behavior, they may have an incentive to supplement their incomes through behavior that does not align with public policy goals (for example, bribes). Relatedly, if organizations are subject to high turnover due to political changes, officials will have a greater incentive to ensure their brief appointments pay off. Regarding the intensity of these political influences over bureaucratic careers, in Brazil's federal civil service, a quarter of civil servants believe that promotions are influenced by political connections (nepotism), and only 23.1 percent believe they are meritocratic (World Bank 2021). Such systematic prevalence of patronage may influence whether public servants engage in corruption.

Improvements in government analytics can assist in detecting and reducing corruption in personnel. Chapter 9 of the *Handbook* highlights a set of metrics that could be used to detect corruption in personnel. For example, talent management indicators that focus on recruitment—the number of applications per position or recruitment method (for example, competitive exam or political appointment)—can enable governments to better identify and measure cases of patronage. A lack of competitive exams or a low number of applicants may suggest a greater prevalence of patronage appointments. Performance indicators—the rate of performance reviews completed or employee ratings as completed by colleagues or supervisors—strengthen the measurement of meritocratic channels for promotion over political ones.

A publicly available analytics dashboard on public service can increase the transparency and accountability of personnel practices, as highlighted by the case study of Luxembourg in case study 1 of chapter 9. Moreover, HRMIS can enable governments to detect the risk of nepotism and patronage in recruitment by assessing similarity in the last names of public servants inside the same government organizations or, where such data are available, by linking name records to family records or political party membership records to understand where family or political party members are disproportionately hired into government (Bragança, Ferraz, and Rios 2015; Riaño 2021).

The implementation of analytical tools relies on robust data infrastructure, capacity, and attention to political-economic constraints. If HR data are to assist in the detection and reduction of corruption in personnel, governments need to establish processes for quality and compliance controls in HRMIS data to reduce gaps in the coverage and frequency of data. However, government agencies in which patronage is more common may resist sharing or even generating data on recruitment practices precisely to reduce this scrutiny. Additionally, there is the key issue of the sustainability of data collection. Governments often

launch new data collection efforts, but these efforts are not replicated over time. Collaborations with national statistical agencies and offices could ensure the sustainability of these efforts.⁵

Some countries do not have the necessary resources to implement an HRMIS. Thus, surveys and other tools are often used while an HRMIS is being designed and implemented. At the same time, it is important to complement efforts to generate HRMIS data on personnel with surveys of public servants and focus group discussions about experiences of corruption in personnel management. Political leadership from key stakeholders, such as the office of civil service, and broader institutional coordination may be necessary to reduce resistance by particular agencies.

Payroll

Corruption in payroll occurs through irregular payments to public servants, either through undue payments to ghost workers, who do not perform their service duties (Das and Hammer 2014; La Cascia et al. 2020), or through the collection of payments that exceed established guidelines (World Bank 2019). Payroll irregularities waste valuable public resources. In the context of fiscal constraint, irregular payments in excess of existing regulations may compromise the sustainability of the wage bill and lower citizens' trust.⁶ The irregular concentration of wages among a few public servants may lead to payroll inequalities that pose challenges to sustainability and may arise from public servants' wielding power to accumulate these resources (World Bank 2019). Reducing corruption in payroll is therefore an important policy objective for governments.

The principled use of payroll data, as well as the establishment of control and compliance mechanisms, can assist in curbing corruption in payroll. Chapter 9 outlines how indicators of payroll data can enable the accurate and timely monitoring of payroll in public administration. For example, a first exercise involves calculating the size of the wage bill and whether it complies with the actual budget allocation. A simple head count of public servants appearing in the payroll data identifies duplicated entries. A breakdown of wage-bill expenditures by sector, administrative unit, or territory enables a granular analysis of historical trends in payroll expenditure and a comparison between similar units to detect evidence of irregularity. Death and pension records can be cross-referenced with payroll data as well as attendance records to identify ghost workers. We note, however, that this exercise requires updated and reliable information systems. Compliance and control mechanisms, such as budget audits, should be set in place.

The use of digital technologies, such as machine learning, can assist in the detection of payroll irregularities, as outlined in chapter 16 and case study 2 of chapter 9. In particular, historical payroll data that are classified by payroll analysts as irregular can be used to train machine-learning algorithms to automatically classify irregularities in payroll entries. Given the large volume of payroll data being generated at any given point in public administration, these automated processes can complement and enhance the work of payroll analysts, enabling them to detect irregularities that would otherwise remain undetected. However, it is important to note that, in order to develop these advanced digital solutions, a robust payroll data infrastructure has to be set in place. Payroll data are often fragmented and decentralized. As chapter 9 outlines, a reform process may be necessary to integrate and standardize HRMIS data, which is demonstrated through its operational framework for HRMIS reforms.

The implementation of payroll reforms requires coordination with relevant stakeholders, such as the ministry of finance or the head of the civil service, and cognizance of the political-economic context. In particular, leadership support for reforms is necessary, as is navigating resistance from actors who benefit from the status quo, such as ghost workers. In contexts in which payroll data are highly decentralized, institutional coordination and data-sharing agreements are necessary to ensure that payroll data coverage improves. Additionally, an advisory rather than a punitive approach to payroll reform is recommended, in particular when justice systems are weak and unable to enforce regulations. While some duplications or excessive benefits may be intentional, they are often the result of a lack of knowledge or inadequate training, as well as legacy systems that are not regularly updated. As a result, onboarding to new control and compliance mechanisms, rather than punishing infractions outright, may reduce resistance to and ensure the uptake of policy reforms.

Budget

Budget data measure how public resources are spent throughout the entirety of the public administration. They include multiple sectors within the government, such as procurement and payroll. Due to its cross-cutting nature, the budget is exposed to different types of corrupt behavior. Corruption may manifest itself in budget leakages: resources that are unaccounted for in the flow of public resources across administrative levels of government (Gurkan, Kaiser, and Voorbraak 2009). In extreme cases, corruption occurs through embezzlement, the diversion of public funds for personal gain (Hashim, Farooq, and Piatti-Fünfkirchen 2020). Corruption in public expenditure may also have a distortionary effect, misallocating resources to less productive sectors of the economy and ultimately inhibiting economic growth (d’Agostino, Dunne, and Pieroni 2016). Because of its potential negative effects, corruption in the budget has been the subject of extensive policy debate, particularly in public financial management (World Bank 2020). Methodologies to detect corruption in budgets include the Public Expenditure and Financial Accountability (PEFA) assessment and Public Expenditure Tracking Surveys (PETS), which are discussed in greater detail in chapter 11.⁷

Chapter 11 also provides guidance on how to build more robust data infrastructures for public expenditures. It outlines five guiding principles that should be respected in designing and maintaining public expenditure data: data provenance and integrity, comprehensiveness, utility, consistency, and stability. These principles ensure that the sources of expenditure data are documented and accounted for and that data are comparable and stable across public administration. One simple measure is to map out all transactions in a given fiscal year to understand what goes through the government’s financial management information system (FMIS) and identify where high-value transactions are conducted. The share of the government budget transacted through the FMIS indicates the integrity of expenditure data.

Procurement

Governments are responsible for large volumes of procurement transactions. A recent estimate places these transactions at 12 percent of the global GDP (Bosio et al. 2020). There is a growing body of academic and policy literature on how to measure and prevent corruption in procurement. A widely used definition of corruption in procurement is the violation of impartial access to public contracts—that is, the deliberate restriction of open competition to the benefit of a politically connected firm or firms (Fazekas and Kocsis 2020). Corruption in procurement can occur in many forms. A single firm may bid for a procurement contract, securing exclusive access to lucrative government contracts. Or firms may overinvoice a procured good, often in collusion with procurement officials or politicians.

TABLE 8.1 Examples of Public Procurement Indicators

Economy and efficiency	Transparency and integrity	Competition	Inclusiveness and sustainability
<i>Tender and bidding process</i>			
<ul style="list-style-type: none"> • Total processing time • Evaluation time • Contracting time 	<ul style="list-style-type: none"> • Time for bid preparation • Single-bidder tender 	<ul style="list-style-type: none"> • Open procedure • Number of bidders • Share of new bidders 	<ul style="list-style-type: none"> • Share of SME bidders • Share of WOE bidders
<i>Assessment and contracting</i>			
<ul style="list-style-type: none"> • Awarded unit price • Final unit price after renegotiation 	<ul style="list-style-type: none"> • Share of excluded bids 	<ul style="list-style-type: none"> • Number of bidders • New bidders 	<ul style="list-style-type: none"> • Share of SME bidders • Share of WOE bidders
<i>Contract implementation</i>			
<ul style="list-style-type: none"> • Final unit price after renegotiation • Time overrun 	<ul style="list-style-type: none"> • Variation orders • Renegotiations 		

Source: Original table for this publication based on chapter 12.

Note: SME = small and medium enterprise; WOE = women-owned enterprise.

Chapter 12 provides an overview of a set of indicators and data sources on public procurement and how they can be used for data-driven decision-making (table 8.1). It also provides guidance on how to build data infrastructure and capacity for procurement data analytics and emphasizes the added value of combining public procurement data with other data sources. The chapter concludes by describing how a whole-of-government approach can increase the benefits of procurement analytics, as well as the advantages of combining administrative with survey data on procurement officials.

PROCESSES

Processes in public administration define organizational objectives and work procedures. They include management practices, which structure how managers and staff engage with each other in the performance of their duties. Processes also include business practices, which map onto the different regulations and procedures that structure how public servants should perform their duties. In this section, we provide a snapshot of the extant literature on these processes, highlighting, as illustrative examples, how unethical leadership and a lack of compliance with existing business processes may impact public administration. We also present indicators on these dimensions of corruption and discuss how to develop and implement them. Regarding data integration, management practices can affect multiple areas of public administration, including culture and behavior as well as turnover in personnel. It is therefore important to connect agency-level indicators of management practices with other administrative data sources.

Management Practices

Corruption in management practices involves the violation of business rules that govern how public servants are managed. We follow the definition proposed in Meyer-Sahling, Schuster, and Mikkelsen (2018), focusing particularly on human resource management practices. Management practices include decisions about recruitment into the public service, compensation, and the promotion of public servants. In practice, corruption can affect these different management functions. Politicians can appoint loyalists to the public service to extract rents, while low wages may encourage public servants to request bribes. Finally, political control or pressure may be applied to promote public servants who “steal for the team.”

Surveys of public servants can help measure their experience of (corrupt) management practices (see part 3 of the *Handbook* and also Meyer-Sahling, Schuster, and Mikkelsen 2018). In identifying these practices, practitioners must choose whether to capture public servants’ perceptions at the organizational level or their individual experiences with corruption. Chapter 23 assesses the trade-offs involved in each approach, highlighting how answers may differ depending on the kind of referent used. In particular, sensitive questions about topics such as corruption in management may be better measured at the organizational rather than the individual level because organizational comparisons reduce social-desirability bias. Another key question is how to assess the degree to which management practices differ across groups within public administration, such as across genders or organizations. Therefore, the choice of referent—organizational or individual—should be considered when designing the survey.⁸

Business Processes (Organizational Procedures in Government)

The *Handbook* provides tools to measure corruption in business processes, understood as the procedures that regulate how public administration is to conduct its business (for example, what kind of archives it needs to keep). Chapter 13 presents indicators that allow practitioners to measure the quality of the processes completed by public servants. Given that public administration is often regulated by a set of rules dictating which forms have to be filled out, the level of completion of these forms can be used by external evaluators to assess the quality of business processes in government and, thereby, the risk of corruption.

Indicators such as the availability of minutes, memos, and other relevant documents, as well as the proportion of incoming and outgoing correspondence with dates, stamps, and documented sources, may provide insights into the quality of business process implementation by public officials.

CULTURE AND BEHAVIOR OF PUBLIC SERVANTS

The culture of a public service organization includes the attitudes and norms of public servants, which, in turn, shape their behavior. Attitudes and norms include the values that guide officials as they do their jobs, the level of engagement officials have with their work, and the norms that govern their behavior, among other things. This section describes methods from the *Handbook* that can be used to assess how the culture, norms, attitudes, and behaviors of public servants might reveal a propensity for corruption. We have mentioned before that management practices can shape norms and behaviors in public administration. Integrating data on cultural norms with the quality of service delivery can help identify how norms shape practice in services such as health care and education.

Norms and Behaviors

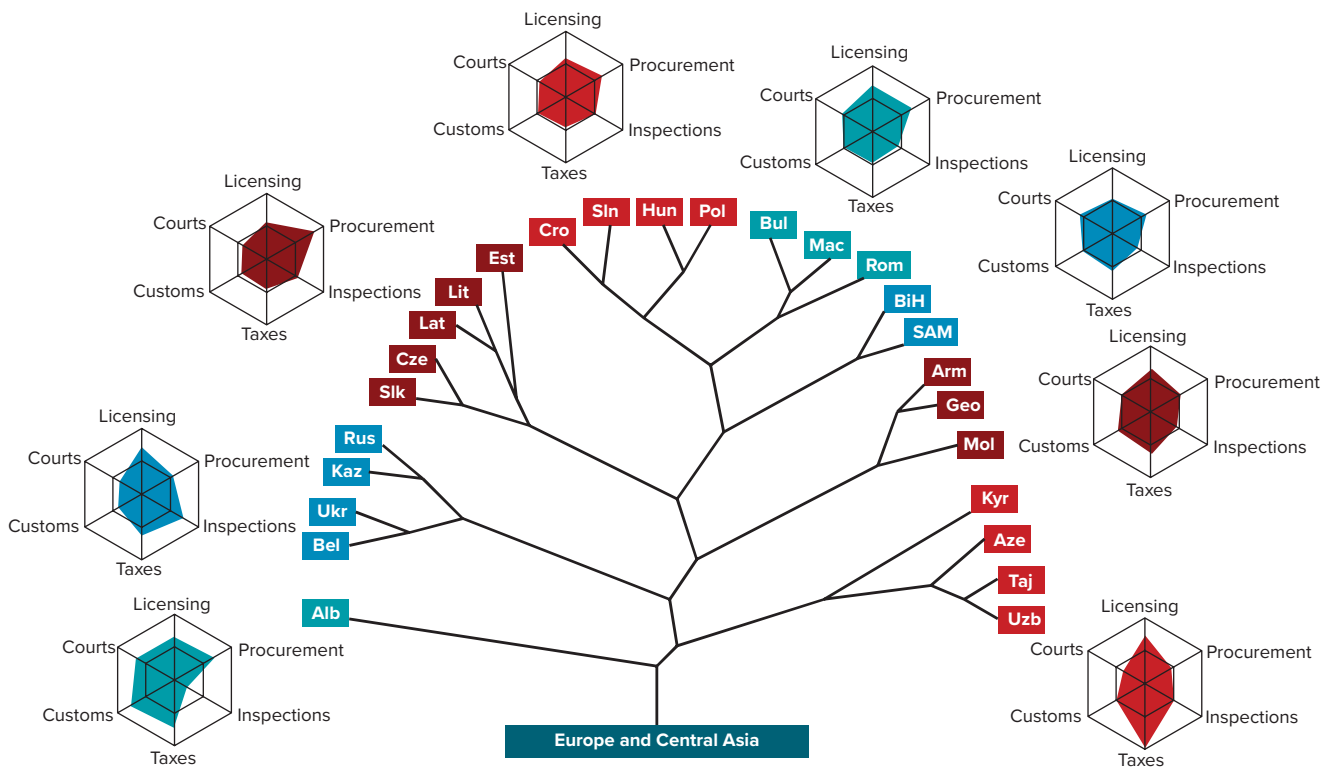
Corruption is most likely where the culture and norms within the public service enable it. The more prevalent corruption seems to public servants—the more it constitutes a norm—the more likely they may be to engage in corruption themselves (Köbis et al. 2015). Looking specifically at public servants, studies have found that certain motives, such as personal and social norms and opportunities not to comply with government rules, are significantly correlated with public servants' propensity to engage in corruption (Gorsira, Denkers, and Huisman 2018). These personal and social norms can also spur or hinder conflicts of interest, cases in which public servants' private interests unduly influence how they behave in public office, which have been a significant challenge in many countries. Initiatives led by various international organizations provide information on laws regulating conflicts of interest and their measurement.² However, business and ethical principles may vary across countries and within a single country. A report on Vietnam highlights different definitions of conflict of interest for public servants and how they can be culturally informed (World Bank 2016).

Identifying the attitudes and beliefs that motivate public servants to engage in corruption can help determine the root causes of corruption and inform strategies to curtail it at an international level as well. This task is crucial for practitioners examining corruption in the public service across countries, due to disparities in the understanding of corruption within different societies (Anderson and Gray 2006; World Bank 2016). Figure 8.2 shows clusters of countries based on the relative frequency of bribery in different sectors, enabling cross-country comparisons across different areas of corruption or bribes. These clusters map closely onto traditional groupings—for instance, northern and southern members of the Commonwealth of Independent States, Baltic states, and countries closest to accession to the European Union—suggesting that shared histories and similar paths of institutional development play a role in the types of corruption seen today.

The attitudes and motivations of individual public servants toward corrupt practices are primarily shaped by experiences and beliefs, making surveys a method well suited to analyzing them. However, self-reporting allows respondents to give inaccurate responses or not respond at all, distorting the resulting data. For example, if social or legal repercussions might arise from revealing a disposition toward corruption, public servants may try to mask their true attitudes or behavior. By applying methods in the *Handbook* to the design of surveys that aim to capture attitudes toward corruption, practitioners can mitigate distortions resulting from biases or nonresponse among public officials.

Chapter 22 presents findings about which questions can better solicit responses as well as a conceptual framework for understanding this phenomenon. One source of survey nonresponse is question sensitivity. A public servant asked about their views on violations of social norms or formally prohibited behavior may be hesitant to respond due to social-desirability bias or fear of legal sanctions. The chapter, however, suggests that

FIGURE 8.2 Country Clusters Based on Relative Frequency of Bribes in Specific Areas



Source: Adapted from Anderson and Gray 2006, figure 4.15.

Note: Alb = Albania; Arm = Armenia; Aze = Azerbaijan; Bel = Belarus; BiH = Bosnia and Herzegovina; Bul = Bulgaria; Cro = Croatia; Cze = Czechia; Est = Estonia; Geo = Georgia; Hun = Hungary; Kaz = Kazakhstan; Kyr = Kyrgyz Republic; Lat = Latvia; Lit = Lithuania; Mac = North Macedonia; Mol = Moldova; Pol = Poland; Rom = Romania; Rus = Russian Federation; SAM = Serbia and Montenegro; Slk = Slovak Republic; Sln = Slovenia; Taj = Tajikistan; Ukr = Ukraine; Uzb = Uzbekistan.

public servants *are* willing to answer sensitive questions on, say, their attitudes and behaviors toward corruption (though they may, of course, do so in a socially desirable way). Instead, the strongest predictor of nonresponse is complexity—specifically, a question’s “unfamiliarity” and “scope of information”—as when officials are asked general questions about the work environment rather than about their immediate experiences. To address this, survey questions should ask about public officials’ perceptions of corruption within their own organizations.

Merely eliciting a response, however, does not ensure that the data being collected through surveys are reflective of true norms surrounding corruption in public administration. For instance, to address whether face-to-face or online surveys better reduce response bias, chapter 19 examines the impact of survey mode on civil servant survey responses. Face-to-face surveys tend to offer several benefits, including significantly higher response rates and lower break-off rates. Online surveys, by contrast, limit the ability of an enumerator to probe public servants for responses, which risks distorting the true prevalence of attitudes and behaviors tolerant of corruption. Online formats tend to elicit more candid responses to potentially sensitive questions about topics such as ethics violations. Indeed, the chapter presents evidence that face-to-face surveys produce more “desirable” responses compared to online surveys—for instance, fewer public servants report that employees “observe unethical behavior among colleagues.” Survey designers must therefore consider the trade-offs of each survey mode, recognizing that the choice of survey mode can impact the accuracy of results. The pilot phase and focus group discussions can help validate survey results.

To draw comparisons regarding the norms that enable corruption, practitioners may compare survey results across different demographics, organizations, and countries. To do so, these different groups must understand survey measures in the same way. However, norms around corruption differ across countries and, at times, across organizations within a single country. Determining what public servants view as corruption or as an ethical violation is therefore necessary to understanding and contextualizing the results

of civil servant surveys.¹⁰ Chapter 24 provides an approach to this task by measuring the comparability of a latent statistical concept among different groups. While this chapter looks specifically at the concept of transformational leadership, its approach can be applied to latent concepts relating to attitudes toward corruption. By using this framework, practitioners can better ensure that when they measure corruption norms against certain benchmarks, those benchmarks enable valid comparisons.

Finally, due to the limitations of survey data and the potential rigidity of attitudes and norms regarding corruption, qualitative analyses can be valuable tools for interpreting the data obtained through surveys. Principles for using qualitative analyses to analyze norms and the behavior of public servants are presented in chapter 30. For example, through participant observation, observers can document how public servants interact in an office environment, which may be difficult to capture using a survey instrument. Meetings and other forms of interaction between public servants may reveal power dynamics—in particular, how gender, race, and seniority stratify hierarchies in public administration. Incorporating qualitative analyses such as these into investigations of corruption norms can give practitioners more robust insights into the roots of corruption and tools to remedy it.

DIRECT OUTPUTS OF PUBLIC ADMINISTRATION

Corruption may affect the outputs of governments in multiple ways. Politicians may exert pressure on public servants to relax procedures for electoral gain. Public servants may accelerate cases for firms in exchange for bribes. These forms of corruption can be measured through household and citizen surveys. This section draws on *Handbook* chapters to outline several illustrative indicators to measure corruption in case and task data, as well as citizens' perception of corruption. Since direct outputs are the products of public administration, these can be linked to multiple data sources, such as personnel, budget, and procurement. This enables practitioners to assess the efficiency of different personnel recruitment and management practices as well as norms and behaviors in producing important outcomes for citizens.

Case and Task Data

To implement policy, governments generate large amounts of administrative data on the deliberations and actions of public servants. These case data are rich records of how work is carried out within governments, and they enable practitioners and researchers to better understand public servants' performance within public administration. For example, exploring data on social security cases in Italy, Fenizia (2022) estimates the effect of management changes on office productivity, finding that improvements in manager talent increase productivity. Dasgupta and Kapur (2020) collect data on time-usage diaries in India to analyze bureaucratic task overload in block development offices. In other cases, public servants may face pressure from superiors to expedite bidding processes and cases or to disregard due process in the development of new regulations (World Bank 2021).

It is possible to detect fraudulent activity by public servants by analyzing case data. Chapter 15 provides a simple measurement, the error rate, to identify cases of potential fraud risk in public administration. Calculating the fraction of claims and cases processed incorrectly allows governments to measure the extent of administrative irregularities and provide remedial measures. For example, in the case of social security claims, there are two types of mistake: a government agency may incorrectly give beneficiaries a social transfer or erroneously deny a transfer to the correct party. Keeping track of appeals by denied beneficiaries would only capture the latter case. To provide a comprehensive measure of the error rate, and better identify fraudulent behavior, governments should regularly audit a random subset of claims by government offices.

Public servant surveys can also provide insight into the extent to which cases are affected by corruption. Chapter 13 provides indicators to assess the quality and completeness of claims in government through enumerator reviews of extant cases. To measure the comprehensiveness of reporting on a claim across a

series of tasks, the following survey question was asked: “Where applicable, are minutes, memos, and other necessary records present and complete?” Another indicator is the overall commitment to effective process: “In general, to what extent does the file organization adhere to government procedure?”

Household and Citizen Surveys

Household surveys are a valuable tool to measure corruption in public administration, generating evidence on citizens’ trust in government, the quality and accessibility of service delivery, and experiences with bribes (Anderson, Kaufmann, and Reanatini 2003; UNODC and UNDP 2018). A 1998 report on Latvia shows, using household surveys, that over 40 percent of households and firms agreed with the statement “A system whereby people could anonymously report instances of corruption would not be successful because corruption is a natural part of our lives and helps solve many problems” (Anderson 1998). Additionally, citizens reported that bribes often occurred in reaction to difficulties in processing cases with public servants, such as intentional delays to resolve firms’ requests or vague explanations of legal requirements. Numerous studies have found negative correlations between citizens’ perception of corruption in government and their level of trust and satisfaction with the government, two foundational components of effective political systems (Park and Blenkinsopp 2011; Seligson 2002).

Citizen surveys can assess the extent to which citizens trust their government, focusing on issues of corruption, such as bribery. To provide standardized metrics for measuring this relationship, chapter 28 develops a framework concerning drivers of trust in public institutions. This framework is based on four components of institutional trust, including a competence indicator that measures whether citizens believe public institutions “minimize uncertainty in the economic, social, and political environment” and a values indicator that measures whether public institutions “make decisions and use public resources ethically, promoting the public interest over private interests, while combatting corruption.” Disaggregating these components of trust allows practitioners to gauge both the level of corruption citizens expect from their government and the extent to which citizens believe corruption affects the reliability of public services. By applying this framework through the Organisation for Economic Co-operation and Development (OECD) Survey on Drivers of Trust in Public Institutions, as described in chapter 28, practitioners can examine the multidimensional effects of corruption on trust in public institutions and compare their results with other countries.

While corruption may impact trust in different ways across countries, a few practices can strengthen government transparency and accountability to mitigate the effects of corruption. Chapter 25 outlines several of these practices, which include disseminating public servant survey results across all levels of government as well as to the public. By disseminating survey results, which may include public servants’ perceptions of corruption within their agencies, governments can increase awareness of areas for improvement and incentivize stakeholders to act on results. One example comes from a recent corruption report in which a survey of federal civil servants in Brazil revealed that a majority had witnessed unethical practices while in the public service (World Bank 2021). By gathering and revealing this information, the comptroller general demonstrated his public commitment to addressing corruption.

FRONTLINE AGENCIES

Frontline agencies in government are responsible for the delivery of public services directly to citizens. These agencies include hospitals, schools, and police stations. Frontline agencies have been the subject of extensive research and policy work because their work has a direct impact on social welfare and their tasks, such as the delivery of health care or education, are often by nature amenable to measurement exercises. This section provides illustrative examples from the *Handbook* of how these agencies can be affected by corruption, such as bribery or budget leakages. Frontline agencies are amenable to different types of data integration:

personnel data help identify the extent to which service providers are qualified, management practice data provide information on how well services are being managed, and procurement data enable assessment of the extent to which important materials—for example, school textbooks or medical equipment—are sourced and distributed.

Service Delivery

Corruption may occur in different public services and sectors in the economy due to public servants' power to allocate benefits or impose additional costs on citizens, such as bribes (Rose-Ackerman and Palifka 2016; World Bank 2003). An example of this type of corrupt behavior is when a service provider—such as a government clerk issuing licenses or a health official providing services—extracts an informal payment from a citizen or business to grant or expedite access to the service (World Bank 2020). The World Bank Enterprise Surveys find evidence that, across the world, around 12.3 percent of firms are expected to give gifts to get an operating license.¹¹ Data from the World Bank Business Environment and Enterprise Performance Survey (BEEPS) suggest a higher prevalence of corruption in taxation and government contracts in contrast to utilities or environmental inspections (Anderson and Gray 2006). Collecting survey data on different respondents—for example, public servants, business owners, and citizens—paints a more holistic picture of corruption in service delivery. For example, the Governance and Anti-corruption (GAC) diagnostic surveys, developed by the World Bank, identify where a public servant asked for a bribe, or if a citizen first offered it.

In the *Handbook*, we provide different methodologies to measure corruption in both service delivery and sectoral data. For example, chapter 28 provides an indicator for measuring the integrity of public servants while they perform their duties, as observed by citizens. Specifically, the survey question is “If a government employee is offered a bribe in return for better or faster access to a public service, how likely or unlikely is it that they would accept it?” Asking citizens this question directly may reduce concerns over social-desirability bias that arise when surveying public servants, but both responses provide insight into how corruption in service delivery occurs.

Another indicator that may assist in measuring the prevalence of corruption is the time it takes to process social security cases, as outlined in chapter 15. While a delay in processing cases may not directly imply corruption, combining this information with citizens' perception of the prevalence of corruption may help identify particular sectors—such as social protection or business licenses—where delays in case processing are used as leverage to extract bribes from citizens.

Chapter 29 provides measures of service delivery (MSD) that can be used to identify cases of corruption in public service delivery. For health care in particular, patients may be asked questions regarding their confidence in the health care system, such as their level of satisfaction and recommendation, as well as regarding care uptake and retention. Low indicators for satisfaction may signal issues regarding public service delivery and can be followed by more direct questions about corruption. Additionally, indicators on the availability of medical equipment and supplies may help evaluate whether these resources are being allocated to relevant facilities or leaked along the way.

Finally, procurement indicators can be also used to evaluate contracts between a government's frontline agencies and contractors, as outlined in chapter 12. The prevalence of single-bidder contracts and short time periods for bid preparation point to problems in the bidding process, while a low number of renegotiations can shed light on collusion between government officials and contractors.

Regulation of Economic Sectors

Corruption is often linked to government officials' power to regulate what firms and individuals can do in particular sectors of the economy. Corruption in regulation affects environmental regulation, building inspections, labor and safety standards, and land-use management, among other areas. The rationale for government regulation emerged as a response to the rise of natural monopolies, such as in the telecommunications and energy industries, where the government should act in the public interest to reduce negative

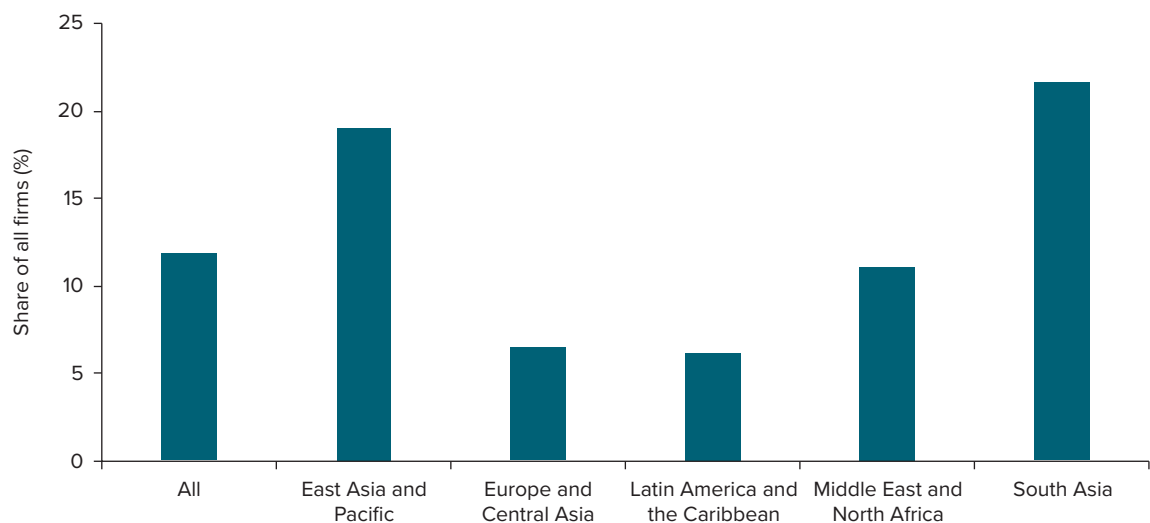
market externalities (Berg and Tschirhart 1988). However, regulation is subject to the pressure of interest groups and may be exposed to regulatory capture due to informational asymmetries and direct bribes (Laffont and Tirole 1991) or the promise of postgovernment employment in regulated industries (Dal Bó 2006). Because improving the informational environment can reduce the potential for regulatory capture, sectoral reforms have often focused on increasing transparency and access to data. A report on land management in Vietnam highlights how data can be used to track transparency and, in turn, how that transparency can reduce corruption in land-use regulation (World Bank 2014). The justice system plays an important role in enforcing regulation but can itself be exposed to corruption through bribery and other forms of capture.

The *Handbook* provides a few tools to understand corruption in sectoral cases, from both the supply and the demand side. On the demand side, chapter 28 highlights how measures of integrity and reliability can be applied to citizens’ experiences with regulatory agencies. For example, if a citizen is to apply for a business license, an indicator of the fairness of the process is the question “If you or a member of your family would apply for a business license, how likely or unlikely do you think it is that your application would be treated fairly?” Evaluating how business owners have been treated depending on age, education, and gender may yield additional insights about fairness. Questions regarding the integrity of public servants when adjudicating business license applications may yield insights into the extent to which regulatory agencies have been captured. Chapter 13 provides indicators on the supply side of government regulation. The degree to which internal government procedures are followed when adjudicating licensing and regulatory cases, as well as the degree to which cases are complete, provides evidence on whether governments are being impartial and thorough when adjudicating the enforcement of regulations on businesses and citizens.¹²

Revenue Collection

Corruption in revenue collection affects tax collection from citizens and revenue from customs, licensing fees, fines, and the sale of goods and services. Enterprise Surveys routinely point to tax as a source of corruption, often in the form of bribes to avoid paying the full tax amount, as illustrated in figure 8.3. This can weaken the tax base of the country and lead to government underfunding. Furthermore, corruption in tax administration can cause inefficiency by diverting resources from productive activity to bribery and

FIGURE 8.3 Percentage of Firms Expected to Give Gifts in Meetings with Tax Officials, by Region



Source: World Bank Enterprise Surveys, <http://www.enterprisesurveys.org>.

undermining equity, as honest taxpayers bear the brunt of these costs (Purohit 2007). In customs, corruption tends to take two forms: customs officials may pocket a portion of import revenue or may extract bribes from importers in exchange for some benefit (Yang 2006). Both forms of corruption can harm citizens by siphoning off revenue from the government, of which customs duties often constitute a significant share. Beyond financial costs, bribery in customs risks harming citizens by allowing illegal and potentially dangerous goods into the country. Through targeted incentives and heightened monitoring, corruption in customs can be curtailed (World Bank 2020).

Methods for mitigating corruption in revenue collection and administration are examined in chapter 15 using a case study from Punjab, Pakistan. The tools used to ensure the quality of tax administration include standardizing the process of reporting collected taxes and cross-checking the tax department's administrative records against the national bank's tax receipts for discrepancies. The chapter also assesses performance-pay mechanisms to improve revenue collection. Although these programs may increase revenue, they may also lead to greater bribes as performance rewards increase tax collectors' bargaining power over citizens. Governments should therefore consider the costs of potential incentive schemes for tax administrators.

Chapter 14 provides tools for identifying bottlenecks in customs processes, which lessen incentives to bribe officials to expedite the processes. These include the Automated System for Customs Data (ASYCUDA), time-release studies (TRS), trader perception surveys, and GPS trackers. Furthermore, the chapter describes revenue collection indicators that can be used to detect fraud. Where fraud is suspected, authorities can look at the value of identical goods or similar goods to determine the revenue that could have been collected had goods been correctly declared. Monitoring customs can be reinforced with mirror analyses that compare the quantity of goods declared by the exporting country to the quantity of similar goods declared by the importing country.

CONCLUSION

This chapter has provided a framework for both conceptualizing and measuring corruption in public administration. It recognizes corruption as a challenge with many faces and with particular characteristics and ways of operating in each sector of public administration. By assessing corruption along the public sector production function, we have highlighted the range of microdata approaches available in the *Handbook* to understand corruption in public administration. While our thematic focus has been on corruption, other topics in public administration are amenable to this approach as well. Of course, our review—drawing in particular on the chapters in this book—has only lightly engaged the vast literature on this topic. For example, hundreds of surveys on corruption in public administration have been conducted, with techniques ranging from list experiments to direct questions to randomized response techniques, to name a few.

Our goal in this chapter has been to highlight the different microdata sources and methodologies available to assess corruption and to show how measurement along the public administration production function can help analysts assess corruption holistically. This approach showcases the benefits of employing multiple sources of information in holistically assessing substantive topics in public administration, such as corruption. In so doing, we hope to have highlighted the benefits and challenges associated with the holistic use of government analytics in reducing corruption.

Beyond the comprehensiveness of analytics on corruption, a multipronged approach enables the integration of multiple data sources to reveal corruption in innovative ways. For example, integrating HRMIS with procurement data can reveal which procurement officials are more likely to manage corrupt bidding practices that benefit colluding companies. Additionally, information on wages, management practices, and other data sources can help diagnose what risk factors are associated with procurement officials' corrupt behavior. This integration of data provides exciting possibilities for understanding how corruption operates, generating novel insights that would not be possible if analytics were restricted to a single sector.

Finally, we have emphasized that measurement can provide direction for reducing corruption, but it does not reduce corruption itself. Challenging administrative reforms need to embed analytics of corruption into a broader public sector reform strategy, proactively using indicators to identify and enact policies against corruption. This requires not only technical knowledge but political negotiation based on compromise and consensus building. We hope that evidence-based reforms, informed by analytical insights, can guide practitioners in their efforts to understand and reduce corruption.

NOTES

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1. For a report on the multiple faces of corruption, see Campos and Pradhan (2007). For a comprehensive discussion of definitions of corruption, see Fisman and Golden (2017). Anderson et al. (2019) include a review of other definitions.
2. For a sample of innovative research and development on the use of data analytics to understand corruption, see video of the sessions from the Symposium on Data Analytics and Anticorruption (World Bank and Korea Development Institute School of Public Policy and Management 2021).
3. For a discussion, see chapter 4.
4. Focus groups and interviews enable involved actors to share their experiences with corruption and reveal these sources of pressure (Benjamin et al. 2014).
5. The experience of the National Institute of Statistics and Geography (INEGI), the national statistical agency of Mexico, sets an example for other countries about how to integrate data collection on corruption with regular data efforts. INEGI centralizes information on audits, experiences with corruption by citizens, and sanctions against civil servants. See the topic “Transparency and Anti-corruption” on the INEGI website: <https://en.www.inegi.org.mx/temas/transparencia/>.
6. This problem is highlighted in the Brazilian newspaper article “Problema não é número de servidores, mas salários altos, diz Temer a Bolsonaro,” *Folha de S.Paulo*, November 16, 2018, <https://www1.folha.uol.com.br/mercado/2018/11/problema-nao-e-numero-de-servidores-mas-salarios-altos-diz-temer-a-bolsonaro.shtml>.
7. More information about the PEFA assessment is available at the PEFA website, <https://pefa.org/>. For more information about PETS, see Koziol and Tolmie (2010).
8. A sampling tool for survey designers to assess the scale of sample required to investigate different topics in the public service is described in more detail in chapter 20 and can be found here: https://encuesta-col.shinyapps.io/sampling_tool/.
9. Examples of the measurement of conflict of interest include the Public Accountability Mechanisms (PAM) Initiative, EuroPAM, and the work done under the Stolen Asset Recovery (StAR) Initiative. Data on PAM are available at <https://datacatalog.worldbank.org/search/dataset/0040224>. Information about EuroPAM can be found on its website, <https://europam.eu/>. For more information about StAR, see World Bank (2012).
10. Anderson (2002) and World Bank (2002) also include direct survey questions—in the Kyrgyz Republic and Kazakhstan, respectively—about whether public servants define certain behaviors as “corruption.”
11. Data on corruption from the World Bank Enterprise Surveys are accessible at <https://www.enterprisesurveys.org/en/data/exploretopics/corruption>.
12. There are also de jure measures that look at gaps in the existing legal or regulatory structure that allow government officials to exercise discretion in favor of or against regulated entities. Mahmood and Slimane (2018) look at the existence of these structural weaknesses that allow firms to exercise privileges.

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