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Edited by Oriana Bandiera, Erica Bosio  
and Giancarlo Spagnolo



**Procurement in Focus**  
Rules, Discretion, and  
Emergencies

# Procurement in Focus

## Rules, Discretion, and Emergencies

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# Foreword

Public procurement of goods and services is a large and essential component of government functionality, involving vast sums of taxpayers' money. Yet, the process is vulnerable to issues of agency and moral hazard, which can result in concerns surrounding efficiency and abuse. Understanding how best to navigate these complex trends is a key part of policymakers improving bureaucratic efficiency.

This CEPR book brings together leading economists from across a wide range of developed and developing countries, to focus on agency problems in public procurement and analyse the effectiveness of policies implemented in response. The central theme throughout the book is the fundamental tension between rules and discretion: rules limit an agent's ability to pursue private interests at the expense of the taxpayers, but discretion allows them to use their knowledge of the context to react quickly to unforeseen changes.

Chapters within the book analyse the tradeoffs between rules and discretion in public procurement and examine how this relationship changes during crisis periods. While the relationship becomes distorted during unstable periods, with consequences for transparency, accountability, and corruption, the benefits of discretion can be crucial for facilitating rapid responses, which are essential during emergencies.

Authors also focus on the role of institutions in contributing towards an efficient and trustworthy public procurement process. It is clear from the research that the quality of surrounding institutions and the competence and professionalisation of bureaucrats is imperative in determining whether discretion ends up being beneficial. When complementary institutions are present and well-functioning, one can afford more discretion in the hands of public administrators.

Overall, policymakers must learn to strike the right balance between rules and discretion in public procurement. Chapters within this book contribute to a greater understanding of this relationship, as well as providing important lessons from past and present crises.

CEPR is grateful to Oriana Bandiera, Erica Bosio and Giancarlo Spagnolo for their expert editorship of this eBook. Our thanks also go to Anil Shamdasani for his skilled handling of its production. CEPR acknowledges the World Bank Group's financial contribution towards this publication.

CEPR, which takes no institutional positions on economic policy matters, is delighted to provide a platform for an exchange of views on this important topic.

Tessa Ogden  
Chief Executive Officer, CEPR  
November 2021





# Introduction

**Oriana Bandiera, Erica Bosio and Giancarlo Spagnolo**

London School of Economics and CEPR; World Bank Group; SITE - Stockholm School of Economics, University of Rome Tor Vergata, and CEPR

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The procurement of public goods and services is a textbook example of moral hazard: an agent buys goods that he does not use with money he does not own. The agent's goal is typically set to achieve 'value for money' for the taxpayer, but value for money is hard to measure and often not entirely under the control of the agent. The latter makes the contract between the state and its procurement agents incomplete and, for economists, very interesting.

This volume explores several aspects of the agency problems and the solutions that have been tried in a range of countries, with varying degrees of success. The core theme that runs through the book is the fundamental tension between rules and discretion. Rules limit the agent's ability to pursue his private interests at the expense of the taxpayers, but discretion allows them to use their knowledge of the context and react quickly to unforeseen changes, as in emergencies. At the time of writing, two years into the Covid-19 pandemic, this is very topical and a number of chapters analyse how the trade-off between rules and discretion changes during crises.

The trade-off between rules and discretion has been central to research on procurement. Kelman (1990) stressed the costs of overly rigid regulations in US government procurement and made the case for increased discretion. Recently, research on the potential benefits of discretion has progressed rapidly (Duflo et al. 2018, Coviello et al. 2018, Bandiera et al. 2021, Decarolis et al. 2020, Bosio et al. 2021). However, the risk of its abuse remains high, as several chapters remind us, particularly during emergencies and with weak institutions.

In the textbook set up of the principal-agent model, there are just two actors. Reality is somewhat more complex, as the person in charge of enforcing rules is not the principal (the taxpayer) but rather another agent on a higher rung of the hierarchy who faces moral hazard problems of her own.

To strike a balance between rules and discretion, we need to know more about the exact nature of the agency problem. A common assumption is that agents (and their monitors) are corrupt, that is, they actively exploit their position to extract rents. A less common assumption is that they have a strong preference for leisure and therefore put little effort in achieving their contractual objective of getting value for money. This distinction between corrupt and lazy agents is important because policies designed to curtail corruption such as strict rules that require extensive documentation can backfire if the agent is lazy – or even just cautious – as deviating from the rules is punishable even when doing so would

benefit the taxpayer. Bandiera et al. (2009), for example, estimate excess expenditures on the procurement of generic goods in Italy, and show that about 20% can be attributed to corruption. This does not mean that corruption is not an issue; it means that inefficiency is the bigger issue.

The agency problem in the procurement of non-generics (for instance, roads) has a third actor – suppliers – who maximise their own utility and can collude with the agent to do so. This is particularly relevant in large infrastructure projects that are supplied by a limited number of firms which, by virtue of their market power and repeated interactions with the procurement office, can pursue their own private interest. The relevant question becomes who should choose the set of suppliers that can bid, and through what procedure.

The papers in this volume are organised into three sections, although with substantial overlap between them. The first section mostly explores the trade-off between rules and discretion; the second examines relevant complementary institutions; and the third focuses on the current Covid-19 crisis. In the context of emergencies and crises, the research in this volume suggests that two steps can be taken to improve procurement outcomes and mitigate the risk of corruption, collusion, abuse and incompetence during crises.

The first step is better regulation of emergencies *ex ante*. Preparedness for emergency situations entails defining crisis-ready contracting procedures and outlining fundamental principles of crisis response. This should include developing public authorities' competence and expertise, increasing capacity of the procurement workforce, and establishing reliable institutional structures to favour public contract adaptability to unanticipated shocks. Certain institutional arrangements – such as specialised emergency catalogues or framework agreements – can help. While procurement rules should be the main focus of this effort, other aspects of regulation – for example, rules on financial asset disclosures – play an important role as well.

The second step is increased monitoring to ensure that the increase in discretion coming during emergencies is not abused. Monitoring, however, is best reoriented towards outputs and results rather than procedural correctness. Audits and citizen oversight should be strengthened, including through the use of open data. Special attention should be paid to the design of auditing mechanisms.

## **RULES VERSUS DISCRETION**

Several chapters in this volume address the trade-off between rules and discretion, a topic of relevance beyond the study of public procurement. **Decio Coviello**, **Giancarlo Spagnolo** and **Clarissa Lotti** use as an example the years following the 1997 earthquakes in Umbria and Marche in Italy to document that the public road authority actively sought discretion in its public procurement strategy by manipulating project values to stay below a regulatory threshold. This 'bunching' below the threshold allowed the

use of simpler, faster and more discretionary procedures. Awarding speed is valuable in emergencies, but the increased discretion may be abused. The authors find that in the sample of manipulated contracts, works are more expensive but are both awarded and completed faster.

**Jean Beuve** and **Stéphane Saussier** study discretion in the renegotiation of contracts, making the important point that while renegotiation could lead to opportunistic behaviour – with parties renegeing on their commitments – or serve as a way to get around competitive auctions and facilitate corruption, it can also be useful for adapting to contingencies to optimise contracts. The authors use data from contracts in the French car park sector to show that renegotiations lead to more renewals, which are regarded as a proxy for successful performance in the eyes of contracting parties. The positive impact is particularly visible when a renegotiation is about quality rather than price.

The authors further explain that the possibility of repeated interactions is important for renegotiations to show a positive impact, as this possibility safeguards against opportunistic behaviour. Accordingly, the study finds that while for complex concession-type contracts the positive effects are visible, they are not for more rigid, shorter-term service-type contracts. This finding may suggest that the benefits of discretion from renegotiation and selection of participants interact. This echoes the finding of Coviello et al. that discretion can foster relational benefits too.

Increased discretion may of course increase the risk of its abuse, as shown by **Mihaly Fazekas**, **Shrey Nishchal** and **Tina Søreide**. After discussing a survey of aid-based procurement case studies from Italy, the authors focus on how regulations permitting simplified contracting of emergency goods introduced in Romania in March 2020 affected corruption risks in public procurement. In their analysis, they track a host of risk indicators such as the use of direct contracting or short advertisement periods, and also whether suppliers had tax haven registration or if they entered the market without healthcare experience. Following the regulatory change, the risks of corruption increased dramatically across all sectors of Romanian public procurement, despite the fact that the emergency rules only applied to the procurement of healthcare supplies. This has the policy implication that ringfencing emergency laws may be important, particularly in countries with low government capacity.

The cost of discretion is analysed by **Bruno Baranek** and **Vítězslav Titl**, who show how changes in the governing party in the Czech Republic affect the value of procurement contracts won by firms providing campaign contributions. The authors find that a firm that increases its donations to a political party gaining power by 10% will, on average, see the value of its public procurement contracts increase by 0.5–0.6% in the following year. Campaign contributors receive more contracts where discretion can be exercised. The authors further show that authorities manipulate contract values to fall under the threshold of discretion. Contracts of connected firms are shown to be overpriced by 11%, without any quality gains.

The risks linked to discretion also increase sellers' and buyers' *perception* of corruption in procurement. **Polina Detkova, Pavel Pronin, Andrey Tkachenko** and **Andrei Yakovlev** study Russian procurement after a March 2020 regulatory change allowing direct procurement procedures without auction announcements for Covid-related purchases. They find that perceptions of buyers and suppliers about the presence of informal connections are comparable (56% versus 68%), but there is a significant difference in how market participants perceive their side in corrupt dealings. Twenty-five percent of buyers believe that there is corruption on the buyers' side, while 76% of suppliers believe that suppliers are corrupt. This gap is dynamic – it was negligible before the Covid-19 pandemic and increased as the pandemic progressed.

### COMPLEMENTARY INSTITUTIONS

Following the theoretical model in Bosio et al. (2021), several chapters in this volume argue that the quality of surrounding institutions is crucial in determining whether discretion ends up being beneficial. **Erica Bosio, Joseph Lemoine** and **Marko Grujicic** use data on public procurement and disclosures of income and asset declarations of politicians in 175 countries to show that these two sets of regulations are complementary in achieving better procurement outcomes and ensuring the proper behaviour of politicians and government officials.

**Francesco Decarolis, Leonardo Giuffrida, Elisabetta Iossa** and **Vincenzo Mollisi** focus on the importance of competence and professionalisation of bureaucrats by quantifying them through a survey of US federal workforce combined with US procurement and federal employees data. Using public buyers' deaths for identification, they find that an increase in the buying institution's competence of one standard deviation reduces the number of days of delay by 23%, cost overruns by 29%, and renegotiations by half. They further find that managerial competencies are especially important for complex procurement procedures (e.g. those that aim at innovation), that typically entail more discretion both at the awarding and contract management stage.

**Maria Paula Gerardino, Stephan Litschig** and **Dina Pomeranz** use Chilean data to show how audit design may distort incentives. They find that audits trigger a subsequent shift away from transparent auctions towards less-competitive direct contracting which, in turn, leads to a significant reduction in supplier competition. As a result, subsequent contracts are more likely to be awarded to incumbent, small and local firms, consistent with a process that favours insiders. The authors also find that relative to comparable direct contracts, auctions mechanically undergo more than twice as many checks and lead to twice as many detected infractions, thereby creating a distortionary incentive.

**Sami Atallah, Mounir Mahmalat** and **Wassim Maktabi** provide a study of Lebanon's independent public procurement institution, the Council for Development and Reconstruction (CDR), tasked with the implementation of vast majority of infrastructural projects. The authors demonstrate how poor institutional design can lead to bad

outcomes. CDR has extraordinary prerogatives, with little oversight, and an unchanging board of governors. Between 2000 and 2008, firms that were connected to members of CDR's board got contract values 40% larger than the average contract. Two additional results from this study are informative about institutional effects. First, larger contracts tend to be overspent, which hints at challenges on the side of CDR in supervising more complex projects. Second, projects that are overseen by international organisations tend to run to budget, likely because they have better oversight.

**Jorge Gallego**, **Mounu Prem** and **Juan Vargas** provide evidence on corruption in the procurement process by focusing on Latin America, one of the regions with the highest levels of corruption. They provide detailed evidence for Colombia, where they find that the use of direct contracts differentially increased in municipalities that presented a greater risk of corruption. These regions were also more likely to have been issued an alert for cost overruns and assigned contracts to campaign donors. The authors additionally show that in these places the contracts are more likely to exhibit implementation inefficiencies, in the form of budget or time extensions. Increased and rapid spending in crises generates a spike in corruption opportunities, which may draw in corrupt actors. A growing literature finds that rent-seeking tends to proliferate in extraordinary times such as wars, natural disasters or epidemics (e.g. Schultz and Søreide 2008, Leeson and Sobel 2008, Barone and Mocetti 2014, Gallego 2018, Maffioli 2021).

## DISCRETION DURING EMERGENCIES

In times of crisis and emergency, public procurement rules are often made more flexible to support governments' efforts to increase spending, save lives and reduce the damage. This flexibility takes the form of a relaxation of rules requiring transparency, competition and oversight. It may include an increased use of negotiated contracts and direct contracting, more flexible pricing strategies, more frequent renegotiations, and accelerated timelines. This was the case during the Covid-19 pandemic, as well as in earlier crises and natural disasters discussed in this volume.

While emergencies justify a departure from standard procurement rules, implementation failures and rent-seeking opportunities remain substantial. Emergency procurement has historically been linked to corruption, collusion and abuse. Examples of such corruption and abuse include the bunching of contracts below discretion-reducing thresholds; the allocation of contracts at inflated prices to the firms of family, friends and those who offer bribes; reduced quality; and increased allocation of contracts to politically connected firms.

**Antonio Estache** and **Renaud Foucart** provide insights into the relationship between emergency procurement and discretion, detailing how emergencies could lead to politicians wanting to exercise more discretion relative to the 'business-as-usual' scenario. The uncertainty during emergency situations makes policymakers' propensities for risk and their understanding of risks more important. In a crisis, low prices, competition and

the usual tools/metrics that are used to control procurement and improve auditing are given less weight than in normal circumstances. For this reason, the authors conclude that deviations from transparency and increased discretion are justified, but they note that it is crucial to maintain the possibility of ex-post auditing intact.

**Francesco Decarolis, Clarissa Lotti, Francesca Marazzi and Giancarlo Spagnolo** study the effect of changed legislation with a focus on emergency goods' procurement in Italy. In February 2020, the government allowed for greater use of simplified procedures – primarily negotiated procedures and direct awards. As a result, the use of these procedures sharply increased, dramatically reducing the share of competitive procedures and, perhaps surprisingly, in framework agreements. Discretion in such simplified procedures far exceeded that of other procedures used in normal times.

**Serena Cocciolo, Vincenzo Di Maro and Sushmita Samaddar** provide a global overview of emergency public procurement measures, using a survey based on 136 procurement experts from 103 countries between April and August 2020. Their analysis reveals that countries most affected by Covid-19 adopted a larger percentage of emergency procedures and that transparency and accountability standards consistently deteriorated in Covid-related procurement. Using indices on institutional capacity of the country, consistent with Bosio et al. (2021), the authors find that the quality of institutions is an important driver of the timeliness and quality of the procurement response to the pandemic, and the deterioration of transparency and accountability standards for emergency procurement is contained by stronger institutions.

**Riccardo Camboni, Elena Podkolzina and Paola Valbonesi** provide a study of corruption risks in Russia, looking at hospitals' purchases, in emergency situations. They investigate how a relaxation in the conditions for using single-supplier direct negotiations in April 2020 led to changes in such practices. Their main finding is a rise in the negotiations for contracts with a value greater than 300,000 rubles (i.e. those affected by the newly relaxed rules). This effect was driven by federal buyers, rather than municipal or regional buyers.

**Cyn-Young Park and Kijin Kim** study Asian countries and the broader institutional environment that is required for swift procurement response. The motivation is that as of May 2021, vaccination in most Asian countries has been slower than expected. While around 80 doses per 100 people had been administered in North America by this time, Asia and the Pacific recorded just 14 doses per 100 people. Many developing countries in Asia and the Pacific are not ready for the enormous logistical challenges of distributing Covid-19 vaccines rapidly and safely under stringent temperature requirements. Transportation equipment and infrastructure in general are not adequate, and reaching rural areas is especially difficult. Emergency response requires discretion, both at the national and local levels.

## AREAS FOR FURTHER WORK

In recent years, the field of public economics has focused on the comparison across countries with different government capacity. The theme of this research is that institutions exert a profound influence on economic and social development (see, for example, Djankov et al. 2003 and Shleifer 2005 for a summary). The chapters in this volume contribute to this burgeoning literature by arguing that, to understand institutions, one needs to understand the basic trade-off between the costs of discretion and those of rules. An extreme application in research is the study of this trade-off during emergency situations such as the Covid-19 pandemic.

The trade-off between rules and discretion also has normative implications, as suggested in several chapters in this volume. A key determinant of institutional efficiency is the marginal effectiveness of rules in reducing inefficiency and corruption. When complementary institutions are present and well-functioning, one can afford more discretion in the hands of public administrators (Bosio et al. 2021).

The logic that permeates the chapters in this volume can be applied to study the structure of efficient institutions and the politics of institutional choice. We do not delve into these two broader areas, as new data need to emerge from the latest healthcare and fiscal crisis to be able to properly measure the effect of different institutional arrangements.

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**PART I**

**RULES VERSUS DISCRETION**



# CHAPTER 1

## Rules, bunching and discretion in emergency procurement: Evidence from an earthquake

**Decio Coviello, Giancarlo Spagnolo and Clarissa Lotti<sup>1</sup>**

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Strict procedural rules constraining public buyers' discretion – for example, mandating open competitive procedures – are pervasive as they are widely considered an effective tool to limit corruption and favouritism, in particular in weak institutional environments (Rose-Ackerman 1999, Bosio et al. 2021).

On the other hand, Banfield (1975), and in particular Kelman (1990) for public procurement, stressed early that rules limiting bureaucrats' discretion comes at the cost of not allowing them to perform effectively. Discretion allows contracting authorities to select, reward and punish contractors based on non-verifiable performance information, which is essential for obtaining non-contractible quality through relational and reputational forces (Spagnolo 2012, Decarolis et al. 2016). These beneficial and detrimental uses of discretion typically coexist, and entail a trade-off whose strictness heavily depends on the institutional framework (Bosio et al. 2021, Decarolis et al. 2020).

At times of emergency this trade-off becomes even more important, as several contributions to this eBook testify. The devastating experience of the Covid-19 pandemic required an emergency procurement response, which most national public procurement systems provided for by drastically suspending standard accountability-enhancing rules requiring transparency and competition. These measures have helped on many occasions, but procurement failures remained widespread and have often been connected precisely to abuses of the emergency-induced increase in discretion (Nyreröd and Spagnolo 2020). Indeed, emergency procurement and disaster relief have historically been linked to widespread corruption (Leeson and Sobel 2008, Schultz and Søreide 2008), in particular where institutions are weaker (Barone and Mocetti 2014) but also in advanced economies.

<sup>1</sup> Decio Coviello gratefully acknowledges funding from the Canada Research Chairs programme. Giancarlo Spagnolo and Clarissa Lotti gratefully acknowledge research funding from the Italian Ministry of Education (PRIN 2017 - 2017Y5PJ43 001).

In this chapter, we build on material from our previous work (Coviello et al. 2018, 2021) to document the increase in discretion linked to the Italian emergency response to an earthquake and its effects.

## DISCRETION, BUNCHING AND PROCUREMENT PERFORMANCE: BACKGROUND

In Coviello et al. (2018), we studied Italian construction works data using a regression discontinuity design (RDD) around a regulatory threshold in the value of projects to identify the causal effects of an increase in procurement discretion on procurement outcomes. Below this threshold, regulation increased contracting authorities' ability to use restricted auctions with a minimum number of invited bidders, where they could use discretion in selecting who (not) to invite to bid. We found that greater discretion did not worsen procurement outcomes, sometimes improved them, and increased repeated awards to the same suppliers (i.e. incumbency) after good performance.

Bobilev et al. (2015) documented that bunching was also common in Swedish procurement, and that the bunching observed in Italian road works was particularly pronounced for a large buyer – the road authority. This observation prompted a second paper (Coviello et al. 2021), in which we expand the sample of Italian works in various dimensions to focus on the question of *who* bunches and *why*.

Bunching of procurement contract values below discretion-restricting thresholds has been studied before by Palguta and Pertold (2017) and Szucs (2020) with data from the Czech Republic and Hungary, respectively. These studies emphasise the aggregate costs of discretion-enhancing procurement manipulations in these countries, both in terms of higher prices and the selection of suspicious (anonymous) or inefficient and politically connected suppliers (their data unfortunately do not include ex-post performance measures). More recently, Carril (2021) studies bunching of US federal contracts for goods and services below a simplified acquisition threshold. His measurement of bunching is complicated by these contracts being negotiated and not having a reserve price. Still, he manages to document substantial bunching at the threshold, both due to contract manipulation and straight deterrence of purchases. He finds that contracts awarded with less discretion performed worse in terms of ex-post outcomes, and that a substantial increase in the level of the threshold would be optimal.

In Coviello et al. (2021), we find that discretion-enhancing bunching around two discretion-reducing thresholds is done by appointed but not elected bodies, consistent with the political economy argument that electoral discipline is weaker for the former, making it less costly to circumvent rules through contract value manipulation. We also find that bunching (i) causes increased use of restricted auctions and a reduction in the number of bidders; (ii) has mixed or no effects on discounts/prices, leads to selecting

financially more stable suppliers; and (iii) improves ex-post outcomes such as delivery time, contractual delays and cost overrun. Appointed bodies also buy more often from the same sellers when these performed better in the past.<sup>2</sup>

A finding on which we build here is that at one of the thresholds there was particularly strong bunching for works linked to an earthquake that took place in the Italian regions of Umbria and Marche. The rest of this chapter expands on that finding to document how the increase in discretion linked to the emergency affected the rules-versus-discretion trade-off, bunching below thresholds and procurement outcomes.

## DISCRETION, BUNCHING AND PROCUREMENT PERFORMANCE IN AN EMERGENCY

The source of identification for bunching and discretion in this chapter is the earthquake that hit Umbria and Marche in 1997. We use the same approach, data and designs as in Coviello et al. (2018 and 2021), in which we consider the use of discretion for works with value around the €300,000 threshold, awarded in Italy between 2000 and 2005, with a project value greater than or equal to €150,000.<sup>3</sup> This threshold allows procurers to use discretion in who to invite to auctions. Specifically, the discretion in this context is *Trattativa privata*, which is the use of restricted auctions with a minimum number of invited bidders – a tool that allows discretion in (not) selecting bidders.

For comparability, we restrict our sample to road works performed by the national road authority (ANAS) with a value below €500,000. Our sample includes road works for which we have information on the value of the contract, the procedure (discretionary or not), the number of bidders, the rebate with respect to the reserve price, the effective work length and the days of delay in delivering the works. These outcomes are key indicators of the functioning of procurement.

We use the earthquake to define treated (hit) and control (not hit) regions.<sup>4</sup> Our evidence will therefore compare and contrast the outcomes for Umbria with those of control regions: Toscana and Lazio (neighbouring regions) and Abruzzo (close and geographically similar).

We compare the value of the contracts and the main procurement outcomes in treated and control regions below and above the €300,000 threshold and infer whether and how public administrations use manipulation-induced discretion.

2 The fact that Palguta and Pertold (2017) and Szucs (2020) found that 'bad' effects of increased discretion dominate, while Carril (2021) and Coviello et al. (2018, 2021) found the opposite is consistent with Bosio et al. (2021)'s point that the effects of rules and discretion largely depend on the institutional framework. Italy has high levels of perceived corruption, but also, perhaps for that reason, rather extensive monitoring/data collection and anti-corruption controls and enforcement compared to other European countries.

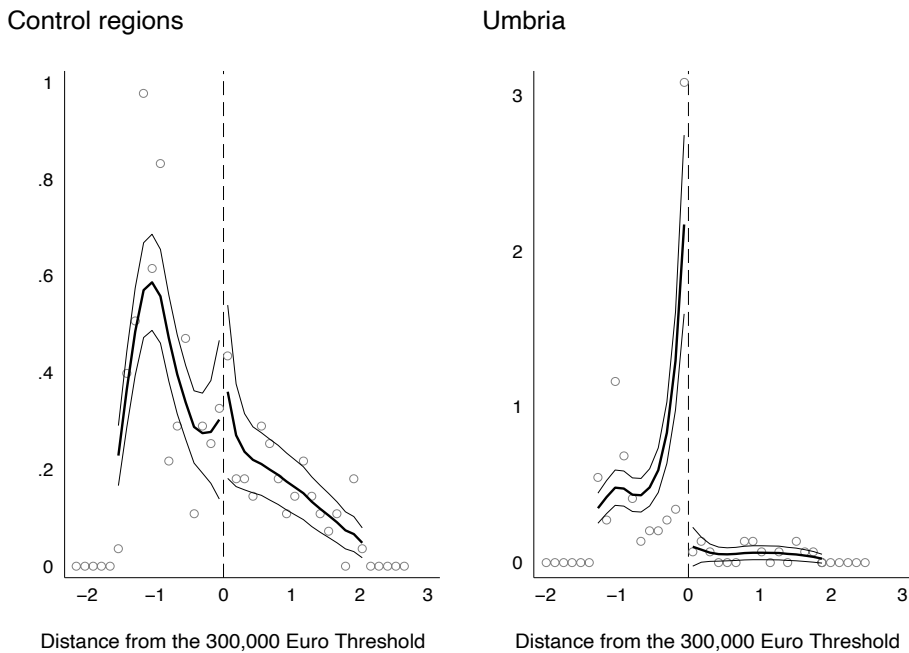
3 The state of emergency in these regions lasted until 2007, so emergency procurement is identifiable in our data.

4 Due to limited sample size (six auctions), we drop Marche from the treated group.



Figure 1 shows that the treated region (right panel) manipulates contracts values to keep them below the regulatory threshold while controls do not (left panel).<sup>5</sup> The figure is obtained using McCrary' (2008) procedure and produces point estimates and confidence intervals of the density of project values relative to the threshold. In the right panel, point estimates (black line) and confidence intervals (grey lines) are not overlapping, which indicates that there is a discontinuity in the density distribution of the values of contracts that is non-trivial and statistically significant.

**FIGURE 1 WORKS IN THE TREATED REGION ARE SYSTEMATICALLY MANIPULATED BELOW THE THRESHOLD**

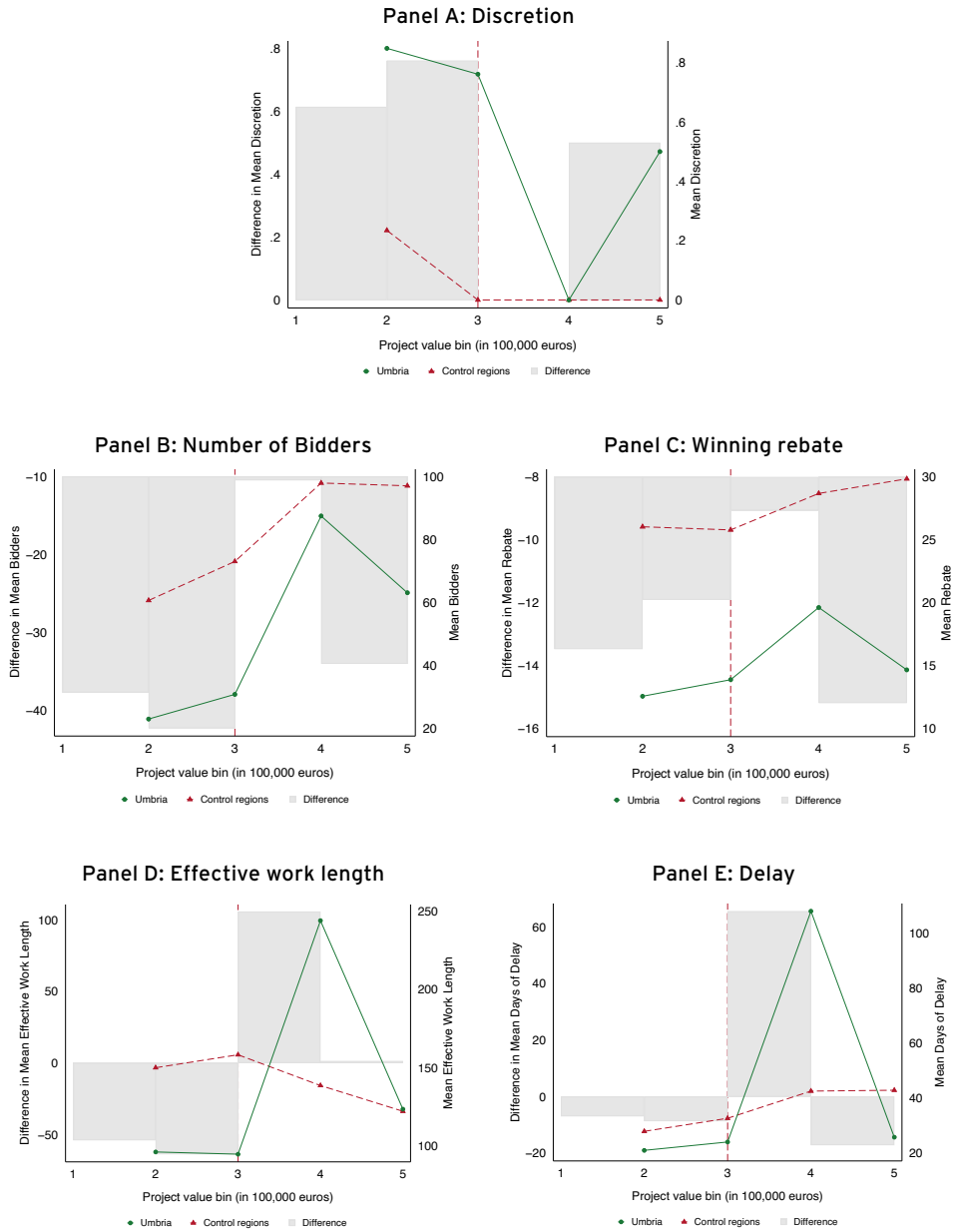


Notes: The figure shows discontinuity tests of the value of the project around the €300,000 threshold for the treated region (right panel) and the control regions (left panel). The sample consists of road works tendered by ANAS between 2000 and 2005, with project value  $y \in [1.5, 5)$ , in €100,000 (2005 equivalents). In each panel, the running variable is the difference between the project value and the threshold (vertical line); circles are average observed values; the bold, solid line is a kernel estimate (McCrary 2008); and the two thin lines are 95% confidence intervals. The evidence suggests that the null hypothesis of no sorting is rejected at standard statistical confidence levels only for the treated region.

We next move to the analysis of our main procurement outcomes and compare them to the left and the right of the €300,000 threshold. Figure 2 reports sample means around the threshold, and Figure 3 a more formal analysis of the amplitude of these effects.

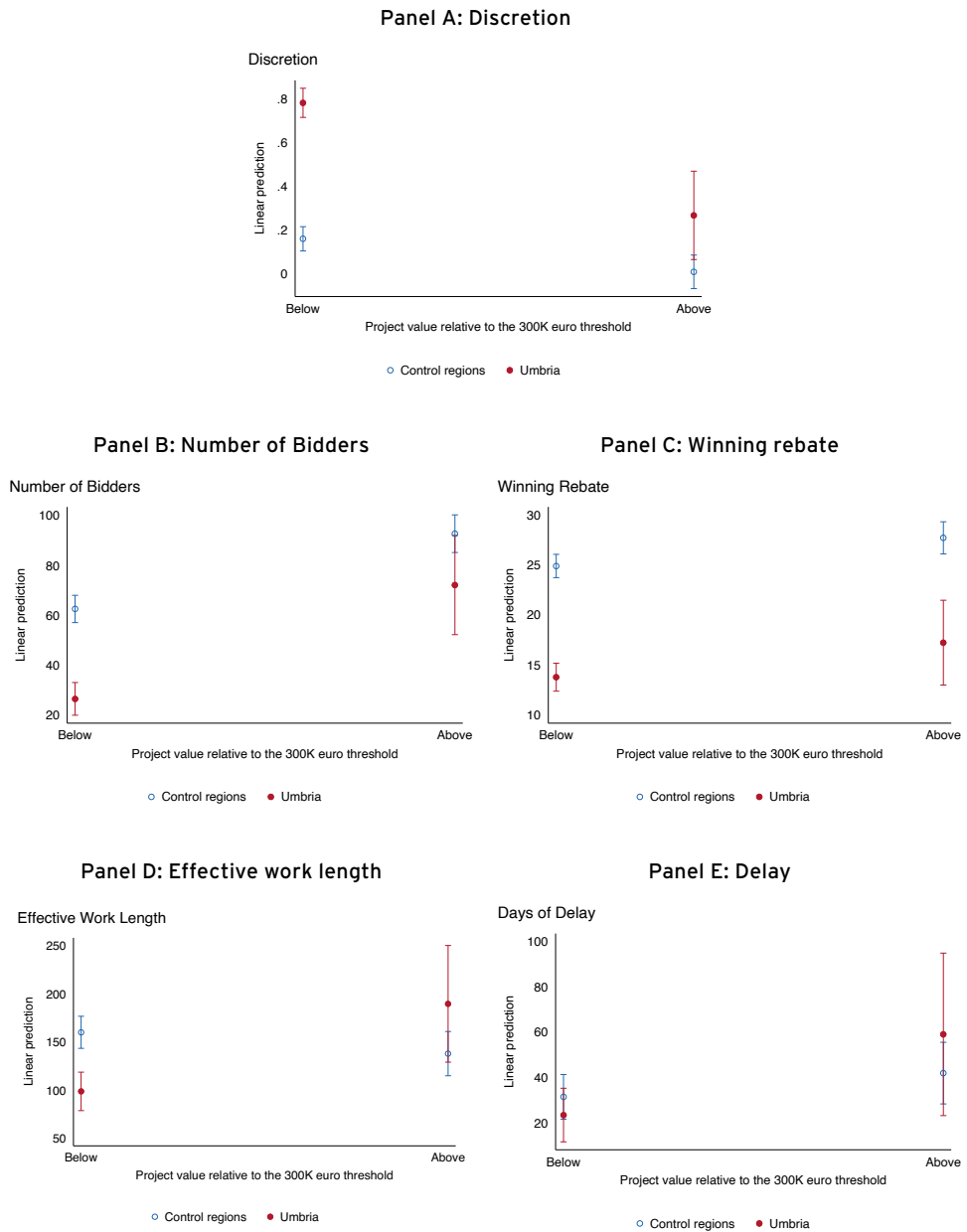
<sup>5</sup> This figure/test is based on the more general estimates presented in Coviello et al. (2018, 2021).

**FIGURE 2 OUTCOMES (DISCRETION, NUMBER OF BIDDERS, WINNING REBATE, EFFECTIVE WORK LENGTH, DELAY) FOR TREATED/UMBRIA VERSUS CONTROL REGIONS AROUND THE DISCRETION THRESHOLD**



Notes: The figure plots mean outcomes by project value bin for Umbria (circles) and Control regions (triangles) on the right axis, and the difference in outcomes between the two groups (grey bars) on the left axis. The vertically dashed line marks the €300,000 threshold. Means are calculated over the entire period 2000-2005 for project value bins of €100,000: [€150k, €200k], [€200k, €300k], [€300k, €400k], [€400k, €500k].

**FIGURE 3 ADJUSTED PREDICTIONS OF OUTCOMES (DISCRETION, NUMBER OF BIDDERS, WINNING REBATE, EFFECTIVE WORK LENGTH, DELAY) FOR TREATED/UMBRIA VERSUS CONTROL REGIONS AROUND THE DISCRETION THRESHOLD**



Notes: The figure plots interaction effects of project value relative to the discretion threshold (below/above) and Umbria versus control regions on procurement outcomes.

In Panel A of Figure 2, we show that in the treated region there is a notable use of (manipulation-induced) discretion. Panel B and Panel C indicate that the use of manipulation-induced discretion is associated with fewer bidders and lower winning rebates, respectively. Lower winning rebates in this context imply higher procurement prices (see Coviello et al. 2018, 2021 for institutional details). The former effect is somewhat mechanical as discretion requires inviting fewer bidders to compete for the adjudication of the contracts. The latter effect indicates that discretion might be associated with less competition, and this could have potential effects on how fast suppliers deliver the works. This is what we study in Panel D and Panel E, where we look at effective work length and days of delay and find that the use of manipulation-induced discretion is associated with shorter work length and fewer days of delays in the delivery of the works relative to the controls.

This descriptive evidence is confirmed when we estimate a parallel empirical model in the following form:

$$Y = \alpha + \beta \cdot \text{Umbria} + \gamma \cdot \text{Below300k} + \delta \cdot \text{Umbria} \times \text{Below300k},$$

where  $Y$  is one of the main five outcomes, and we also control for year fixed effects. Figure 3 shows the resulting interaction plots.

## CONCLUSIONS

In this chapter, we have documented that public officers procuring roads in the aftermath of a natural disaster in the form of an earthquake in central Italy strategically manipulated the value of the procurement contracts to keep them below a threshold where simpler and more discretionary procedures can be used. This practice, generating bunching below the regulatory threshold, is shown to generate effects that are in line with our findings in previous papers. In particular, works in our sample are more expensive, but are delivered faster and with somewhat less delay (the latter result, however, is not statistically significant). This evidence confirms that there are strong incentives to manipulate contracts and increase discretion during emergencies, and suggests that increased post-emergency monitoring is necessary to ensure that the increase in discretion coming during emergencies is not abused.

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# CHAPTER 2

## Renegotiations of public contracts: A blessing in disguise?

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Because they address services of general interest and they involve vast amounts of public money (on average 12% of global GDP; see Bosio et al. 2021), renegotiations of public contracts are a very important topic for researchers and practitioners. The new European Directives on public procurement and concession contracts (Directives 2014/24/UE and 2014/23/UE) regulate, for the first time, contract changes in the face of unforeseen contingencies during contract execution.

The Covid-19 crisis was clearly unanticipated and a disturbing factor in many public contracts. One of its consequences is an increase in contract renegotiations. Indeed, the number of registered renegotiations increased by more than 70% in 2020 compared to 2019. During the first five months of 2021, the frequency of renegotiations again increased, by more than 10% compared to the same period in 2020.<sup>1</sup>

Should we be concerned about this development? Does it reflect good cooperation between contracting parties? Alternatively, do renegotiations destroy incentives and reflect opportunistic behaviours? Whether contract renegotiation represents a mutually beneficial move towards greater efficiency or the demonstration of opportunistic behaviour is an important research issue. On the one hand, renegotiation might be used by one of the contracting partners to opportunistically renege on his or her initial commitments (Williamson 1985), reducing incentives (Guasch et al. 2008) and destroying trust between parties (Fehr et al. 2011, Frydlinger et al. 2019). On the other hand, renegotiation is a way to adapt to unforeseen events (Williamson 1985, Grossman and Hart 1986) and keep the contractual agreement efficient. Ultimately, public contract renegotiations should therefore not be criticised in a systematic way, but the phenomenon should rather be considered complex and deserves to be studied carefully.

<sup>1</sup> Data on public procurement contracts in the European Union are accessible at <https://ted.europa.eu/>



## AN OPTIMAL LEVEL OF RENEGOTIATIONS

Several empirical studies, conducted in various countries and industries, illustrate that public contracts are frequently renegotiated (see Table 1). Many studies contend that such high rates of renegotiation potentially reduce the advantages of competitive auctions and lead many scholars to consider renegotiations to be the major flaw of public contracts (e.g. Guasch et al. 2008).

Indeed, renegotiations are typically interpreted as a sign of failure of the contractual relationship, i.e. a consequence of aggressive bids in the context of an ex-ante lack of commitment from the government, which translates into deadline extensions and cost increases.<sup>2</sup>

Additional reasons, also documented in the literature, are corrupt governments (e.g. Guasch 2004) and the fact that firms that are winning bids are also politically connected, helping them renegotiate ex post contracts (Ryan 2020, Brogaard et al. 2021). Other researchers explore government-led renegotiations and renegotiations that enable incumbent governments to circumvent budgetary rules before elections (e.g. Engel et al. 2019).

**TABLE 1 CONTRACTUAL RENEGOTIATIONS: SOME STUDIES**

Geographical area	Sector	Percentage of negotiated contracts	References
France	Highways	50 %	Athias and Saussier (2007)
France	Car Parks	73 %	Beuve and Saussier (2021)
Latin America and Caribbean	All Sectors	68 %	Guasch (2004)
	Electricity	41 %	
	Transport	78 %	
	Water	92 %	
Portugal	Water	100 %	Cruz and Marques (2013)
	Road	100 %	
Spain	Highways	100 %	Baeza and Vassallo (2010)
United Kingdom	All Sectors	55 %	NAO (2003)

<sup>2</sup> For instance, empirical studies of UK data indicate that only 30% of public service infrastructure was delivered within the time initially allotted and that 73% of projects presented cost overruns during the construction phase (HM Treasury 2003), which suggests that these contracts have been repeatedly renegotiated. The same observations have been made in the US and elsewhere in Europe (France, Italy, etc.).

Ultimately, regardless of who is at the origin of the renegotiation process, the scant empirical literature on renegotiations mostly regards them as a negative event and almost never good news for both contractual parties.

Interestingly, public contracts are often complex transactions with changing objectives, and it is not easy to anticipate future events that may disturb the relationship (Williamson 1985, Hart 1995). Hence, renegotiations might also be viewed as necessary adaptations to fill in the contractual blanks of the initial agreement to meet contingencies that arise ex post (e.g. Grossman and Hart 1986). Such unforeseen events may be exogenous (economic crises, technological innovations, legislative changes, pandemics, etc.) or may result from internal needs of the contractual relationship (evolution of needs for more efficient service management or inadequate design of the initial contract). Thus, renegotiations are necessary, and the frequency of renegotiation may provide public contracts with a relational dimension (Spiller 2009) associated with greater surplus.

Ultimately, renegotiations can improve contractual efficiency but remain a risky adaptation process that may lead to opportunistic behaviors. As a consequence, contracting parties need a formal agreement to secure their specific investments, but this security should not come without any contractual flexibility to adapt to unanticipated events. This trade-off leads to an optimal level of contractual completeness (e.g. Crocker and Reynolds 1993, Saussier 2000), which translates to an optimal level of contract renegotiations.

## THE IMPACT OF RENEGOTIATIONS ON CONTRACT RENEWALS

To address the question of whether renegotiations have a positive or negative impact, it is necessary to explicitly connect renegotiations to (actual or perceived) performance effects and to derive disaggregated details about which types of provisions are renegotiated in the presence of which triggering factor (Oxley and Silverman 2008).

In a recent paper, we shed light on this issue by investigating the link between renegotiations and contract renewals (Beuve and Saussier 2021). The contribution of our study is twofold. In accordance with previously mentioned literature, we posit that the design of contracts is affected by the challenge of including the appropriate level of flexibility for renegotiation to occur when needed. Too much flexibility, and undesirable opportunistic renegotiations are likely to occur; too little flexibility, and opportunities for welfare-enhancing renegotiations will be lost.

We also implement a new strategy to assess how renegotiations influence contractual surplus by examining contract renewals. Indeed, we posit that if renegotiations result in a significantly negative outcome, the parties are not likely to contract again.<sup>3</sup> One consequence is that contract renewal can be used as a proxy to indirectly assess parties' perceptions of their contractual relationships, and ultimately their feelings about cooperative adaptation and contractual surplus creation during renegotiations.

This assumption is consistent with the previous literature on contract renewals that posits the threat of non-renewal as a disciplinary device to achieve better performance. For instance, Iossa and Rey (2014) build a model where contract renewal creates an implicit incentive to provide good performance even when performance and investment are non-verifiable. In the same vein, Decarolis et al. [2016] show that reputational incentives may be a powerful mechanism for improving supplier performance and limiting the perverse effect of price competition on contract execution.<sup>4</sup> The assumption is also in line with relational contract theory, which states that repeated interactions represent one means of circumventing opportunistic behaviours. Indeed, reputation concerns enhance cooperative behaviour throughout the duration of the relationship – the fact that contracting parties interact repeatedly can enforce informal agreements, thereby reducing opportunistic behaviour because of the potential loss of future business in the event of punishment in the form of non-renewal (Coviello et al. 2018, Desrieux et al. 2013).

However, it is less possible (or impossible) to rely on informal agreements in the case of public contracts where every modification is supposed to be translated through formal amendments (Beuve et al. 2019). This is why we can assume that public contract renegotiations may provide a kind of relational dimension to the contractual relationship (Spiller 2009).

We put this proposition to the test by using an original database of 252 public contracts in the French car park sector, in which more than 750 renegotiations occurred (Beuve and Saussier 2021). Our dataset is characterised by the existence of two different types of contracts that mainly differ in the duration and the discretion given to the public authority during the tendering process: *concession* contracts and *services* contracts.

In the case of *concession* contracts (i.e. greater discretion), we find a negative correlation between the absence of renegotiation and the likelihood of contract renewal. In other words, contracts that are never renegotiated have a lower chance of being renewed. Then, by introducing variables that capture the frequency of renegotiations, our results suggest

3 Unless they are in a corrupt relationship. Then renegotiations and renewals would always move together. We control for corruption in our estimates, and it is never significant. We feel confident it clearly indicates that corruption is of minor concern to our setting. In addition, because we analyse contracts between different public authorities and one of the biggest car park company in France, unless the whole sector is largely captured by this operator, the reputation spillovers of corruption charges can easily be assumed to outweigh the plausible gains from unlawful practices. Lastly, the ability of corporations to buy favours through donations to political candidates or parties is forbidden in France rendering more difficult bribes to public authorities.

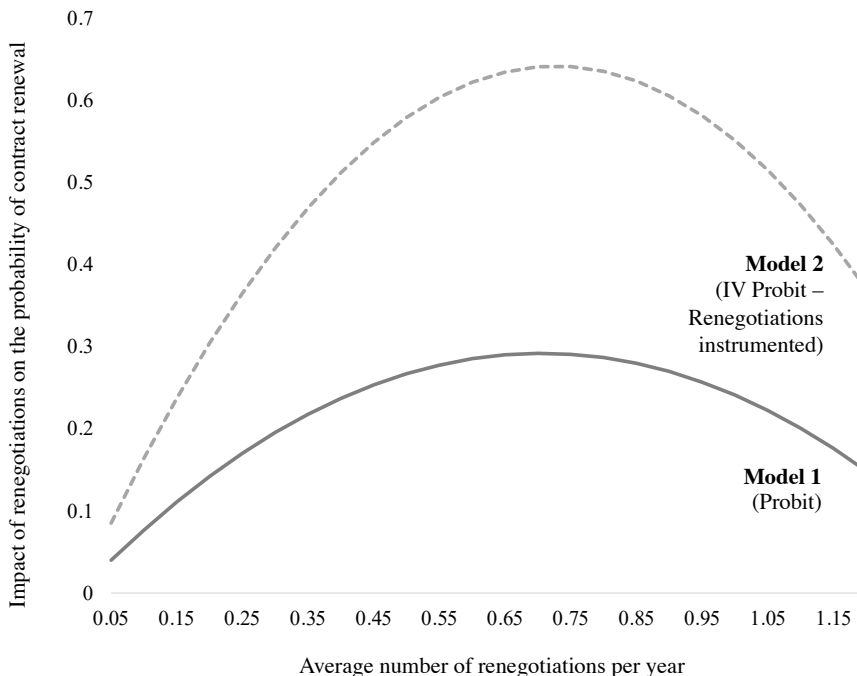
4 They analyse a unique experiment run by a large utility company in Italy which introduced a new vendor rating system scoring its past performance and linking it to the award of future contracts. See also Chong et al. (2015) for an empirical study on the water sector in France.

that there exists an optimal level of renegotiations. More precisely, we find an optimum of 0.7 renegotiations per year (or one renegotiation every one year and a half (see Figure 1) before and after controlling for possible endogeneity issues (see Model 1 and Model 2). This level is twice the mean of the renegotiation ratio observed in our data, meaning that many contracts in our sample are not renegotiated enough to allow a higher likelihood of renewal.

As expected, the type of renegotiation also plays a role. Indeed, our results show that renegotiations that improve the quality of service offered to users are positively and significantly associated with renewals. In contrast, renegotiations related to financial equilibrium, which typically arise from an error of anticipation, an ex-post shock or the requirement for an additional investment that cannot be funded by a tariff increase, negatively impact the likelihood of renewal. Similarly, miscalculated spending by the operator requiring tariff renegotiations negatively impact the likelihood to be renewed.

Taken together, our results confirm our initial proposition stating that to maximise surplus (i.e. a higher probability of contract renewal) in repeated long-term contracts like concessions, which entail a lot of future uncertainty, there exists an optimal frequency of contractual renegotiations. One consequence is that renegotiating per se should not be interpreted as a sign of failure of the relationship.

**FIGURE 1** OPTIMAL LEVEL OF RENEGOTIATIONS



## DISCRETION AND COMPETENCIES OF PUBLIC AGENTS

An important condition for being able to observe a relationship between renegotiations and renewals is the possibility for the public authorities to make contract renewal dependent on what happened during contract execution. As a consequence, our proposition regarding the existence of an optimal level of renegotiations maximising contract renewal stands as long as public authorities have discretion over their choice of partner.

This statement is consistent with recent literature that highlights the potential benefits of discretion. For instance, Coviello et al. 2018 analyse the causal effect of increasing buyers' discretion on procurement outcomes in a large database on public works in Italy. They find that discretion increases the probability that the same firm wins repeatedly, but it does not deteriorate (and may improve) the procurement outcomes they observe. Their qualitative result that buyer discretion leads to repeated contracts with the same firms without always deteriorating contractual surplus is consistent with the idea that repeated interactions permit renegotiating contracts without overly opportunistic behaviours.

In our paper, we exploit the fact that we observe two types of contracts (*concession* contracts and *services* contracts) that are associated with different levels of discretionary power at the awarding stage. While there is room for negotiation and the consideration of previous experience in *concession* procedures, *services* procedures are much more rigid. This is because *services* contracts are simpler and much shorter in duration, with no need for long-term investment and much less future uncertainty. As a consequence, our results should not stand in the case of *services* contracts, where the level of discretionary power is much lower.

This is precisely what we observe, as the results on the frequency and types of renegotiation found for *concession* contracts largely disappear for *services* contracts.

## CONCLUSION

Our paper provides new insights into the issue of renegotiation, which has generally previously been analysed through the lens of opportunism. Instead of considering renegotiation to be bad news, our results suggest that there exists, for each specific contract and relationship, an optimal level of renegotiation. In addition, types of renegotiation (price/financial versus quality) impact differently the likelihood of contract renewal, suggesting that the public party feels the other party is to blame or has not acted reasonably to mitigate the losses associated with price and/or financial equilibrium renegotiations (Frydinger et al. 2019).

One consequence is that it is necessary to construct a mechanism that minimises the ex post cost of making changes and the potential for corruption and opportunistic behaviours. The crucial challenge at stake is to implement contractual mechanisms, to develop public authorities' expertise and to establish reliable institutional structures to

favour public contract adaptability to the economic, financial and statutory environment as well as to unanticipated shocks such as the one that struck the world economy in 2020 with the Covid-19 pandemic.

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# CHAPTER 3

## Public procurement under and after emergencies

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In the aftermath of an earthquake, a tsunami, a severe hurricane or a serious infectious disease, governments are (and ought to be) eager to spend whatever it takes to save lives and reduce the damage. Governments purchase a range of extraordinary goods and services, medical supplies, power from new sources, transportation, water, food for families, and much more. Financial support from the central government, foreign governments or international development partners intensifies this spending. While concerns about integrity in this situation might appear untimely, the rent-seeking opportunities presented by extraordinary circumstances are substantial (Cremer 2000).

Corruption and fraud in these settings may happen in several ways (Ewins et al. 2006, TEC 2006, Schultz and Søreide 2008), including the allocation of contracts at inflated prices to the firms of family, friends and those who offer bribes (ADB, OECD and Transparency International 2005). It may involve incentive payments in the form of a percentage add-on to winning bids, reduced quality requirements, or the use of expired medicines, badly maintained vehicles or diluted cement, as well as outright theft. Funds may be allocated towards the sorts of procurement where corruption can most easily occur, leaving other areas underfunded. The firms that succeed in securing many contracts obtain (local) market power, and some of those firms become ‘crony contractors’ (Cray 1998) – the more contracts they get, the easier it becomes to share parts of the profit with incumbent officials. Those involved in disaster profiteering may have little interest in recovering from the emergency if that would put an end to their benefits.<sup>1</sup>

While the potential risks justify concerns about corruption in emergency situations, the existence or extent of actual wrongdoing is uncertain and may well depend on idiosyncratic factors such as the type and magnitude of the disaster. The critical situation implies a particularly high marginal value of money spent in terms of saving lives and reducing harmful consequences for society in other ways, and such concerns may demotivate officials from accepting bribes in exchange for distorted decisions. If so, the disaster may in fact increase the integrity with which state revenues are spent.

<sup>1</sup> In New Orleans after hurricane Katrina, Atkinson and Sapat (2012: 370) suggest that procurement officials tried to remain under the emergency procurement authority longer than necessary.

Several authors, including Coviello et al. (2018) and Bosio et al. (2021), point at how the consequences depend on institutional context. Higher discretionary authority for officials, or circumstances of lax regulation, will not necessarily lead to inefficient procurement and more corruption. In these contexts, material support from external players means there are more auditors who might be interested in the details of the spending, especially *ex post*, when many of the agents involved in procurement intend to continue their careers. Eventually, in most democracies, misuse of public funds during an emergency will lead to a loss of voters, which may drive the incumbent political party to take special care to avoid any such scandal. Therefore, disaster situations may also entail greater oversight by society and policymakers, and such oversight might act as an antidote to any rent-seeking.

In this chapter, we present selected results from two studies of corruption in public procurement during and after an emergency, representing different types and sizes of crisis. These are described in more detail as we go: (1) a quantitative analysis of procurement practices following five natural disasters in Italy; and (2) an empirical study of Covid-related procurement in Romania, comparing the heightened risk of corruption in healthcare market and non-healthcare market. We end the chapter by summarising insights and discussing policy implications.

## **QUANTITATIVE INVESTIGATION OF CORRUPTION IN EMERGENCY-RELATED PROCUREMENT**

Several aspects complicate the quantitative analysis of how an emergency affects the risk of corruption in public procurement. Corruption is normally unobservable, and there are no reliable data on the extent of the problem. We may imagine clear-cut bribery and embezzlement, while in reality the problem presents itself as a conflict-of-interest situation, minor deviations from procurement principles, exchanges of information that should be announced to all potential suppliers at the same time, ‘grey area’ ways of steering a contract in a specific direction without any clear benefit offered in return, and loss of revenues in ways that cannot be explained. The exchange of benefits may be diffuse because the *quid pro quo* is provided at some later stage, and therefore auditors and investigators may have difficulties associating biased contracting with bribery even when they are particularly aware of the problem. The legitimate reasons to make use of emergency clauses in procurement rules, which governments allow by law, make these difficulties harder than they would be under normal circumstances. In addition, a certain extent of waste must be expected in emergencies simply because acquisitions happen quickly, often before those in charge have the full overview of needs (Bandiera et al. 2009). Therefore, increased spending, unused materials and higher prices of goods and services are poor proxies for changes in the level of corruption following an emergency.

These different reasons make it difficult to estimate the extent of corruption upon emergencies, and this means it is hard to know if the problem increases or not.<sup>2</sup> It is also difficult to define the period of emergency-related procurement. What determines the stage at which society returns to some level of normality? If corruption is a problem, one cannot rely on the local government's conclusions regarding this matter because incumbent leaders may benefit personally from a prolonged state of emergency.

When it comes to the impact of an emergency on the risk of corruption, a methodological benefit in this area of research is the possibility to determine the causality between the emergency and a higher extent of rent-seeking activity. A disaster presents an external shock to society that cannot be attributed to governance, and therefore the direction of the estimated effect is quite clear. In cases of man-made disasters such as civil war, this causality is less obvious (for example, if corruption in government is one of the reasons why there is a war). Similarly, the management of an infectious disease may depend on the quality of governance, and therefore a global pandemic cannot be considered an external shock in the same manner as an earthquake.

## THE IMPACT OF DISASTERS ON PUBLIC PROCUREMENT IN ITALY

In a study of five disasters – two earthquakes, two floods and one avalanche – in Italy between 2009 and 2020 (Fazekas et al. 2021), we analyse contract-level data available from Tenders Electronic Daily (TED) as processed by the Government Transparency Institute.<sup>3</sup> For several reasons, Italy presents a relevant case for an investigation of how disasters affect procurement. The country is exposed to several sorts of natural disasters, such as the ones mentioned. It has relatively strong and stable institutions, and still, corruption has been recognised as a major problem plaguing public procurement, despite several steps having been taken to mitigate the problem. For example, in 2014, the Authority for Supervising Public Contracts (AVCP), the government agency for public procurement, was merged into the Italian Anti-Corruption body (Autorità Nazionale Anticorruzione, or ANAC), which is now responsible for Italian public procurement as well as ensuring transparency through detailed data disclosures. In several ways, harmonisation with EU regulations have improved Italian procurement procedures.

Considering this environment, we estimated the impact of disasters on the procurement process with a view to two countervailing mechanisms: (1) more opportunities for rent-seeking due to relaxed procedural rules, and (2) greater control of corruption due to stronger oversight in an extraordinary situation. Which mechanism would be the most important was difficult to tell because we expected disasters to affect both spending composition and behavioural changes.

2 In addition, if all the required data were readily available, it would be difficult to determine whether the extent of corruption should be defined by the number of corrupt transactions, the size of bribes, or the extent of distortions (Søreide 2016: Chapter 2).

3 For the full dataset, see <https://opentender.eu/it/download>.

We conducted two analyses to investigate the impact: first, simple regression analysis of the procurement procedures in disaster-hit areas before and after the disasters; and second, a matched comparison of the same two groups of contracts. In each of these analyses, we compared the same geographical areas to ensure that we considered the same provincial governance structures before and after the disasters. In other words, unobserved institutional quality differences were largely controlled for.

Using data from a time window of three years before and after the disasters, the regression analysis showed that disasters lead to a statistically significant increase in the risk of public procurement corruption in disaster-hit areas. That means there was an increase in the likelihood of contract awards through non-open procedure types, lack of tender advertisement, single bidding and overly short advertisement periods.

The regression analysis captures both the effect of changes in spending composition and changes in behaviour. The former implies that a disaster could lead to an increase in procurement of certain goods and services. These goods and services may inherently be more susceptible to corruption risks. To control for changes in spending composition and to isolate the effect of behavioural changes, we also conducted a matched analysis (coarsened exact matching) where we compare similar contracts lying in disaster-affected areas before and after a disaster. The matching analysis shows that disasters lead to statistically significant increases in the share of contracts awarded through non-open procedures, limited advertisements, and overly short advertisement periods. We also find a positive but insignificant increase in the share of contracts with a single bidder.

Our results point to a heightened risk of corruption. We have no evidence as to whether the presented opportunities for corruption were exploited for personal gain, and therefore we do not claim an increase in the actual extent of corruption. More discretionary authority for public officials may be beneficial because the disasters are very localised and local knowledge – including local firms – may be exactly what is needed for welfare-enhancing solutions (Coviello et al. 2018, Decarolis et al. 2020). At the same time, the heightened risk must be taken into account, and governments ought to have disaster-specific procurement strategies in place to make sure value for public money is as high as possible despite the challenging circumstances.

## HEIGHTENED RISK BEYOND EMERGENCY-SPECIFIC PROCUREMENT

In a study of the impact of the Covid-19 pandemic on Romanian public procurement, Abdou et al. (2021) use national procurement data as processed by the Government Transparency Institute,<sup>4</sup> including data from the Tenders Electronic Daily portal as well as national data publishers. This study exploits the specific date on which the Covid-19 state of emergency was introduced along with new rules applying to healthcare products, most specifically those which are relevant for fighting the pandemic (e.g. masks).

Romania is an ideal case for investigating the impact of pandemics on public procurement corruption risks because it has strengthened its national integrity system – for example, by creating a powerful and effective anticorruption agency (the National Anti-corruption Directorate) and also aligning its procurement legislation with EU standards). Recent reforms in Romania created a single National Public Procurement Agency (ANAP). As part of this reform, the agency was shielded from its superior authority, the Ministry of Finance, and leadership positions were no longer subject to political appointment. ANAP's enforcement powers were also strengthened by, for example, allowing it to halt procurement procedures in case of complaint.

Crucially for the analysis of emergency procurement, the Romanian president issued Decree no. 195/2020 on 16 March 2020, which declared a state of emergency in Romania because of the pandemic. This decree made it easier to procure emergency goods by using simplified procurement procedures. The relaxation of rules and greater autonomy of contracting authorities involved in fighting the health care crisis were designed to facilitate a speedy and effective response, although they imply exactly the sort of expanded authority that may increase the risks of corruption, as discussed above. Most importantly from a policy perspective, even if corruption risks are increased during the emergency period in selected healthcare markets, we can reasonably expect the rest of the procurement market to remain unaffected. Moreover, the affected product markets should also return to something close to their pre-pandemic normal with the passing of health care crisis and the associated spending pressures.

Here, we report the result of the more straightforward analytical methods, as their conclusions are the same as those of more complex methods. In this analysis, we tracked a host of risk indicators of corruption in public procurement considering both the tendering process itself and the winning supplier (Fazekas et al. 2018). Risks in the tendering process included, for example, the use of direct contracting or short advertisement periods, while supplier risks included tax haven registration of the supplier or market entry of suppliers without healthcare experience. Similar to the case of Italy discussed above, these indicators merely reflect risks rather than actual corrupt abuse of the opportunity.

4 For the full dataset, see <https://opentender.eu/ro/download>

We make two important observations as result of this analysis. First, following March 2020, the risks of corruption dramatically increased across all forms of Romanian public procurement. While the emergency rules only applied to the procurement of healthcare supplies, which were necessary to control the pandemic, risks in other healthcare products increased similarly. Moreover, as illustrated in Figure 1, the risk in entirely unaffected markets followed the same path.

Second, even a full year after the institution of the state of emergency, the increase in the incidence of risk factors had not stalled or reversed. Tracking contract award dates and the risk factors associated with contracts, we see no association between the intensity of the health care crisis and public procurement risk levels. This is surprising because the acute shortage of masks, personal protective equipment and other Covid-related supplies largely disappeared three to six months into the crisis. Fighting the pandemic became more similar to business-as-usual a year or so after the onset of emergency.

**FIGURE 1 TRENDS IN THE CORRUPTION RISK INDEX BY PRODUCT GROUP ACROSS THE COVID-19 EMERGENCY PERIOD**



Note: Dashed line represents the beginning of the emergency period.

Source: Abdou et al. (2021)

## KEY FINDINGS

The evidence offers some initial policy lessons. Short-term spending needs and the associated necessity to increase discretion while loosening procedural rules should be balanced with the increased corruption risks these changes imply.

This difficult balancing act can be achieved by simultaneously drawing on the following:

- Preparations for emergency situations should include defining crisis-ready contracting procedures, outlining fundamental principles of crisis response, putting in place effective ex post controls and setting out a risk-based sanctions framework. Controls should be targeted at high-risk procurement without disruptive, wide-ranging monitoring frameworks.
- Monitoring and controls are best reoriented towards outputs and results rather than procedural correctness because deviations from standard open tendering processes (e.g. short advertisements) are unavoidable in times of crisis (Fazekas and Sánchez 2021).
- Strengthening non-bureaucratic controls of public procurement outcomes may counter-balance loosened ex ante procedural checks. For example, greater attention from civil society and the media may contribute to stronger political accountability, which is likely to increase the cost of corruption in emergency spending.
- While many of the corruption risks in emergency procurement are hard to avoid and control, ringfencing emergency rules both in time and by market is crucial. Obviously, if emergency spending is needed in healthcare, there is little justification for relaxing the rules for building football stadiums, for instance.

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# CHAPTER 4

## Political connections in public procurement

**Bruno Baranek and Vítězslav Titl**

Princeton University; Utrecht University

Suspicious emergency purchases during the Covid-19 crisis have raised public concern about an unprecedented increase in corruption. Emergency legislation often allows the purchase of masks, ventilators, vaccines and other medical equipment under non-transparent and uncompetitive procedures. International organisations such as Transparency International have issued numerous warnings about the connection of emergency purchases and corruption. One of the biggest scandals has been the result of an audit in the United Kingdom – out of \$10.5 billion of purchases, most were not procured in a competitive procedure and one-third were allocated to companies with an explicit link to political parties (NAO 2020).

We have collected media articles and non-governmental organisation (NGO) reports showing that allocating contracts to politically connected firms is a widespread phenomenon in many countries. Even though politically connected firms have traditionally been successful in winning government tenders, the current pandemic has likely escalated this. In Table 1, we show that scandals connecting procurement purchases during the pandemic to politically connected firms have appeared across the globe, both in highly developed countries and in developing countries.

In the remainder of this chapter, we use data from the Czech Republic to document that (i) allocating contracts to politically connected companies is a systematic phenomenon and that companies use their connections to increase the share of procurement contracts allocated to them; (ii) these connections lead to adverse effects in the form of higher prices with no quality gains; and (iii) increased oversight seems to efficiently mitigate this issue.<sup>1</sup> The last point supports the calls of numerous NGOs for higher transparency and oversight during recent emergency purchases.

1 The chapter builds largely on Titl and Geys (2019) and Baranek and Titl (2021).

**TABLE 1 RECENT SCANDALS IN PUBLIC PROCUREMENT ALLOCATIONS DURING THE PANDEMIC**

<b>Country</b>	<b>Description</b>	<b>Year</b>	<b>Source</b>
Bosnia	Purchase of inadequate ventilators.	2020	APNews, Transparency International
Brazil	Overpriced surgical masks delivered by a company with ties to the president.	2020	Transparency International
Czech Republic	Public procurement for respirators and other medical equipment found to exhibit enormous unit difference (e.g. from €2 to more than €13 for the type of FFP 2 respirator, with both contracts procured within two days).	2021	Czech Supreme Audit Office
Kenya	Government officials accused of corruption, allocation of contracts to firms with connections is part of the charge.	2020	BBC
The Netherlands	Rapid testing and related services for €1.1 billion outsourced in a no-bid contract to a private company through a newly created public trust; standard procurement procedures were not used.	2021	The Economist
Poland	Purchase of masks that did not work from a 'family friend'.	2020	Transparency International
Russia	Delivery of malfunctioning drugs by a company with ties to the government.	2020	Russian Anti-Virus Emergency Network
Turkey	The head of caretaker government in investigation over conflicts of interest for public procurement contracts during the beginning of the pandemic.	2020	I WATCH Tunisia
UK	Official audit finds 500 companies with ties to government receiving high priority over their competitors.	2020	Audit by National Audit Office
United States	Delivery of medical material using political ties worth \$630 million.	2020	WSJ
Zimbabwe	Provision of medical and surgical goods for inflated prices; the delivering firm has likely ties to the government but is not willing to disclose full ownership structure.	2020	Transparency international

## POLITICAL DONATIONS

Private corporations that contribute to political campaigns are important suppliers of public procurement contracts. For instance, in the Czech Republic, such firms supply about 16.6% of the total value of public procurement contracts according to Palguta (2016). This is a large share given that fewer than 1.1% of all Czech firms give campaign contributions to the parliamentary political parties (Titl and Geys 2019).

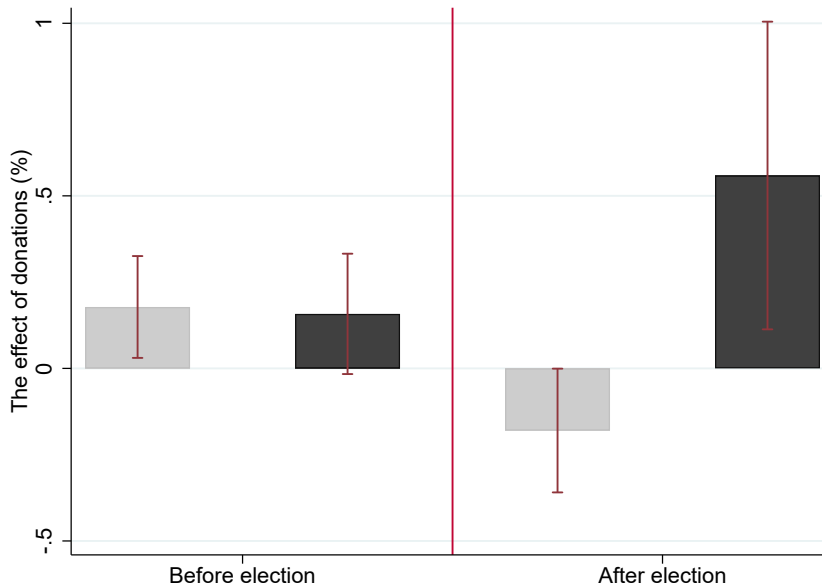
Corporate campaign contributors are an important source of revenue for Czech political parties, and the Czech political and legal system makes public officers susceptible to political influence. This has been the subject of repeated criticism by the European Commission and both international and national anti-corruption organisations. This situation is not unique to the Czech Republic, as demonstrated by Szucs (2020) for Hungary, Baltrunaite et al. (2021) for Italy, Baltrunaite (2020) for Lithuania, Schoenherr (2019) for South Korea and Witko (2011) for the United States. The Covid-related emergency procurement procedures have likely have amplified this issue, as emergency procedures provide procurement officers with more discretion and are less transparent.

To examine the relationship between campaign contributions and public procurement, we exploit shifts in power in the Czech regions. A firm that increases its donations to a political party that gains power by 10% will, on average, see the value of its public procurement contracts increase by 0.5–0.6% in the following year. Evaluated at the mean donation value and the average public procurement contract, donating one additional dollar to the party gaining power is associated with an increase in procurement contracts worth \$100 dollars. This initially sounds like a huge return on investment, but it should be noted that this is *not* profit, but additional revenue. Even so, given a profitability rate of approximately 9.5% for the average Czech firm in 2014, our results suggest that the return on investment is still very interesting.

To illustrate that this relationship between contributions and public procurement contracts is unlikely to be a spurious correlation, we plot the effects of political campaign contributions on the value of procurement contracts for the incumbent party and the opposition party before and after the election in which the party in power changed (Figure 1). Changes in the party in power in the Czech regions lead to observable changes in the firms receiving procurement contracts – from firms donating to the previous incumbent to those donating to the current incumbent.

The shift in the allocation of procurement contracts after the change in the party in power could be explained alternatively by a change in the policy preferences of the government. Yearly changes in the spending on different policy areas, however, cannot explain the effects of political campaign contributions on the allocation of public procurement contracts (Titl and Geys 2019).

**FIGURE 1 THE EFFECTS OF INCREASING THE VALUE OF CAMPAIGN CONTRIBUTIONS ON THE VALUE PUBLIC PROCUREMENT CONTRACTS IN THE FOLLOWING YEAR**



Notes: The figure presents the estimated effects of corporate contributions to the former incumbent party (ODS, in light grey) and to the former opposition (CSSD, in dark grey) before the election in 2008 (on the left side) and after the election when the party in power and the opposition switched (on the right side). On the right side, the new party in power is in dark grey and the new opposition in light grey. The effects can be interpreted as an increase/decrease in the value of public procurement contracts corresponding to a 10% increase in the value campaign contributions to the respective parties.

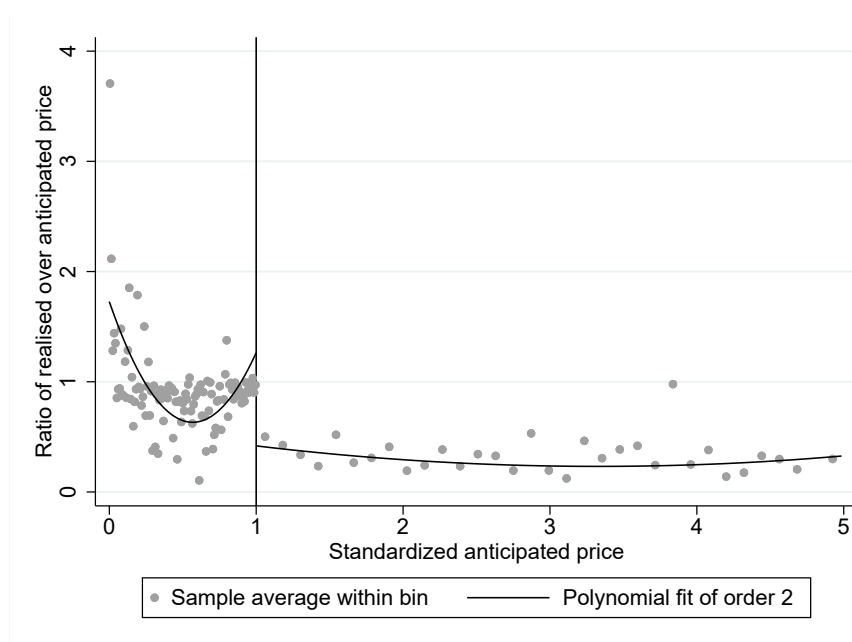
Source: Titl and Geys (2019).

Public procurement contracts above a specific value trigger more stringent regulations that do not apply under that threshold. In fact, for small contracts below this threshold (which varies slightly over time), Czech contracting authorities can invite a small set of selected firms to submit their bids and exclude other firms from participating. Kelman (1990, 2002) argues that such discretion is beneficial and that limiting the discretion is very costly for the public sector. However, recent empirical work suggests that discretion is likely to be costly in countries with low public sector capacity (Baranek 2020, Bosio et al. 2021). For example, the evidence from Hungary and Italy shows that greater discretion leads to higher prices and to less-productive firms with political connections winning procurement contracts (Baltruinate 2020, Szucs 2020). Based on this recent evidence, one can hypothesise that the effect of campaign contributions on the value of public procurement contracts would be concentrated among these ‘below-threshold’ contracts. And from the analysis in Titl and Geys (2019), it indeed follows that corporate campaign contributors receive significantly more smaller (‘below-threshold’) contracts. This suggests that contracting authorities award more smaller contracts with a higher combined value to donating firms. Assuming the total number of contracts and their combined value do not change dramatically over time, this means that either smaller contracts are reallocated across (non-)donating firms, or the contracting authorities

manipulate contract prices such that more contracts are considered to be below the threshold. Such manipulation could be rational as contracting authorities have more discretion in handling procurement contracts below these thresholds.

In Figure 2, we provide evidence of such manipulation by plotting the estimated costs of contracts against the ratio of realised prices to estimated costs (for a similar approach at a different threshold, see Palguta and Pertold 2017). The slope of a simple quadratic regression line through the data highlights a steep increase in the ratio of realised to anticipated prices just below the threshold. For a given realised price, this indicates a gradually decreasing anticipated price just below the threshold, which is consistent with increasing underestimation. A similar underestimation is not present above the threshold. So, it appears that procuring authorities use less-transparent procedures to favour connected firms and they also manipulate anticipated prices to fit below the threshold, which allows them to use these less-transparent procedures.

**FIGURE 2 DISCONTINUITY IN THE REALISED-TO-ANTICIPATED PRICE RATIO**



Notes: Each dot represents one procurement contract to regions. On the horizontal axis is the standardised price of the contract equal to 1 for contracts with the anticipated price equal to the threshold (distinguishing below and above the threshold); on the vertical axis is the ratio between the anticipated price and the actual realised price.

Source: Authors' calculations.



## POLITICAL CONNECTIONS

Next, we show how political connections affect prices and the quality of procurement contracts, and thus assess the efficiency of procurement contract allocation. We again use a dataset from the Czech Republic covering now not only regions, but also municipalities and the central government.

Anecdotal evidence alone might raise some suspicions about the efficacy of such allocations, but it is important to also present convincing empirical evidence. Connections between companies and politicians might facilitate contract allocation but might not necessarily be a sign of inefficient or corrupt behaviour. There may be politicians and public officers who prefer connected companies because they want to secure high-quality products and the connection can serve as a guarantee of this. On the other hand, the opposite could happen too – politicians and public officers might direct procurement contracts to connected firms to secure rents via bribes, and favour connected companies without any regard for efficiency or quality. The goal of this section is to present empirical evidence that political connections lead to worse outcomes: higher prices and no quality gains. Therefore, political connections should be seen as highly detrimental to public procurement.

We use a dataset of personal political connections – a more implicit way how to measure political connections. To create a measure of these connections, we collect a large-scale database of politicians currently or formerly active in private firms. We find a connection in the following way. A firm is connected to a politician whenever the firm has or had (i) an owner, or (ii) a board member affiliated with the same political party as the politician. The specificity of the Czech electoral system allows us to examine the political affiliations of business owners and managers in great detail. A person is affiliated with a political party if the person ever appeared on an electoral slate of the given party. Including business people on slates is a widespread practice, as they can boost the number of votes for the given party even if they are not in an electable position on the slate.

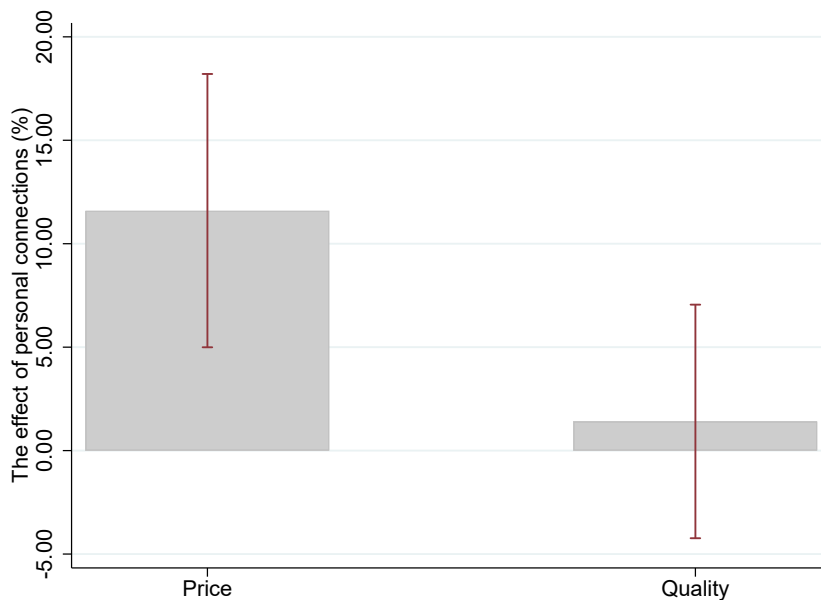
We identify 3,578 personal political connections. This implies that while only 1.3% of procurement vendors are connected, they supply 7% of the total volume of procurement contracts. Again, politically connected firms appear to be advantaged in the allocation process, as we discussed in the previous section based on a different dataset.

We then estimate the impact of these connections on the price and quality of procurement projects. Our data are very granular and allow us to compare contracts that are delivered by the same companies but under different regimes – first, when that a company has a connection to an agency; and second, when that company has no connection to the procuring agency. The fact that we see both of these scenarios in the data is due to politicians getting elected into office and then voted out of office, creating the necessary variation for our analysis.

When estimating the impact on price, we control for expert engineering estimates. This way we can compare heterogeneous goods, and thus essentially answer the question of whether the product was overpriced relative to the estimated price. We create a measure of quality for a subset of the data, namely, construction projects. Here, we measure quality as the inverse of all the subsequent repairs that are necessary for the project (Baranek 2020). Higher-quality projects of the same type generally need fewer repairs and less maintenance. This measure was created using a machine-learning algorithm that collected data on all procurement contracts, linked them, and calculated repairs for each construction contract. This overcomes the issue of the general lack of data on quality in public procurement.

We depict the results graphically in Figure 3. Public procurement contracts delivered by connected firms are overpriced by approximately 11%.<sup>2</sup> This could still be a positive result if there were sufficient quality gains associated with the price increase, but in the right-hand part of Figure 3 we see that the volume of repairs does not decrease. In fact, repairs increase, hinting at lower quality of contracts (although this result is not statistically significant). These results support claims by the media that political connections significantly worsen procurement outcomes.

**FIGURE 3 THE IMPACT OF PERSONAL POLITICAL CONNECTIONS ON PRICES AND QUALITY OF PUBLIC PROCUREMENT CONTRACTS**



Notes: The bars show the estimated effect of political connections on price (left) and quality (right). The vertical lines represent the confidence intervals.

Source: Authors' calculations.

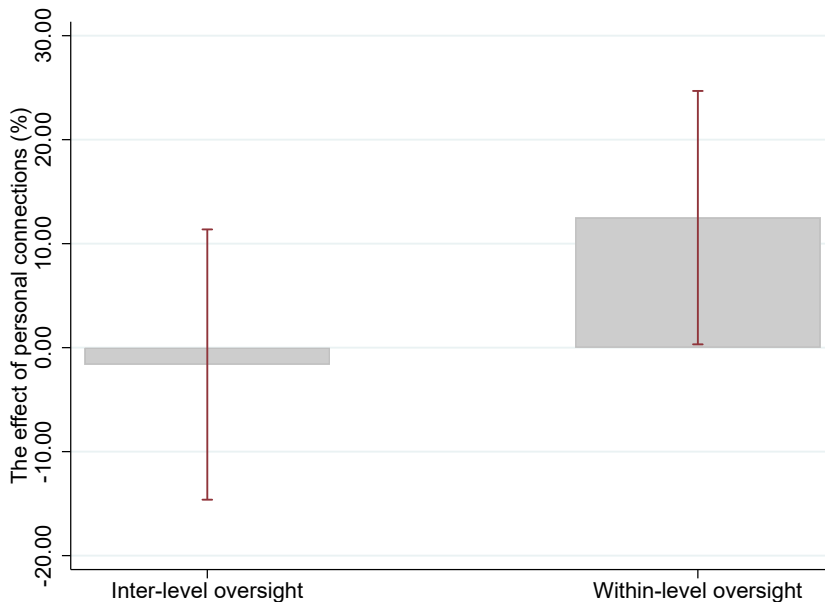
<sup>2</sup> This number differs slightly depending on the exact specification and lies in the range of 8% to 11% (Baranek and Titl 2020).

## OVERSIGHT

How could we mitigate the negative impact of political connections? Previous work suggests that increased supervision of procurement contracts could affect procurement outcomes in both a negative and positive manner (Giuffrida and Rovigatti 2018). We examine whether increased supervision and monitoring could help mitigate the effect of political connections. Over 40% of procurement contracts in the Czech Republic are subsidised by the European Union. A by-product of this is increased monitoring via two channels: audits by the European Union and supervision by specialised national agencies. We test whether the negative impact of political connections is present even when the contract is monitored.

In Figure 4, we can see that oversight cancels the negative impact of political connections when that oversight is from an institution at a higher governance level (e.g. when regions are overseen by a central government organisation rather than a regional organisation). This is an important finding as it suggests an effective policy to mitigate adverse effects of political connections.

**FIGURE 4 THE IMPACT OF PERSONAL POLITICAL CONNECTIONS ON PRICES IN THE PRESENCE OF INTER-LEVEL AND WITHIN-LEVEL OVERSIGHT**



Notes: Inter-level oversight refers to oversight of a high level of government (ministry) over a lower level of government (a region or a municipality). The bars show the estimated effect of political connections on price (left) and quality. The vertical lines represent the confidence intervals.

Source: Authors' calculations.

## CONCLUSION

There is significant anecdotal evidence on a widespread increase in the share of contracts allocated to politically connected firms during the Covid-19 crisis. Using detailed micro data covering public procurement, we show that using political connections to obtain a larger share of public procurement contracts constitutes a systematic phenomenon. We show that changes in the party in power lead to a significant change in which firms are favoured in public procurement, and that this is not due simply to different types of goods being purchased. We then demonstrate that these political connections have an adverse impact on the market, leading to higher prices but not higher quality. Finally, we examine the policy recommendation, suggested by numerous NGOs, to increase oversight, and show that increasing oversight mitigates the negative impact of political connections. This is an important finding that should be considered by governments during the crisis. Unfortunately, a common response for Covid-related emergency purchases has been to lower transparency and decrease oversight. This response has been heavily criticised by the public, and we show that it can have negative consequences for the procurement market and the efficiency of the public sector as a whole.

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# CHAPTER 5

## The changing perceptions of corruption during the Covid-19 pandemic in Russia<sup>1</sup>

**Polina Detkova, Pavel Pronin, Andrey Tkachenko and Andrei Yakovlev<sup>2</sup>**

HSE University; HSE University; HSE University and Bocconi University; HSE University

There is little evidence of how the Covid-19 pandemic and the regulatory amendments it induced changed the incentives for corruption in public procurement. Due to emergencies, many countries have softened their public procurement regulations and increased opportunities for buyers to choose discretionary non-competitive procedures. At the same time, lockdowns and strict sanitary measures imposed on firms reduced economic activity and private-sector demand. Firms became more dependent on public procurement, so their incentives to rely on their informal connections with public buyers were also affected. All these changes in incentives, in turn, affect the perceptions buyers and suppliers have about corruption in public procurement.

In this chapter, we study dynamic changes in perceptions of corruption by public buyers and suppliers in Russia during the pandemic. We conduct an online list experiment among 611 buyers and 792 suppliers. This was implemented in three waves of 2020: before the pandemic spread in March; during the strict lockdown in April–May; and, after some stabilisation, in September–October. As corruption is a sensitive issue, the list experiment technique mitigates the estimation bias in respondents' attitudes to this problem. Our approach distinguishes between corruption among buyers, corruption among suppliers, and informal connections between these two groups.

We find that perceptions of buyers and suppliers about the presence of informal connections are comparable – 56% of buyers versus 68% of suppliers believe they exist. This indicates a large scale of informal practices in Russian public procurement. However, there is a significant difference in how market participants perceive their side in corrupt dealings. Averaged over all waves, 25% of buyers believe that there is corruption on the buyers' side, and 76% of suppliers believe that suppliers are corrupt. This gap is dynamic – it was negligible before the pandemic and widened significantly as the pandemic progressed.

1 This study was implemented in the framework of the Basic Research Program at the National Research University Higher School of Economics (HSE University) in 2021.

2 Author contributions: Polina Detkova: Methodology; interpretation and discussion of the results; writing (draft manuscript, review, and editing). Pavel Pronin: Data curation; methodology; investigation, formal analysis; interpretation and discussion of the results; writing (draft manuscript, review, and editing). Andrey Tkachenko: Data curation; methodology; interpretation and discussion of the results; writing (draft manuscript, review, and editing). Andrei Yakovlev: Conceptualisation; project administration; interpretation and discussion of the results; writing (draft manuscript, review, and editing).

To ensure that it is the pandemic that has induced these dynamic changes, we introduce Covid-19 statistics – new cases, official Covid-19 deaths, and excess deaths – across Russian regions. The last statistic is more complicated to manipulate than the first two. We find that buyers' perception of corruption among buyers is lower when the officially published number of new Covid cases in the region is higher. However, buyers' perception of corruption is insensitive to regional excess deaths. On the other hand, suppliers' perceptions of corruption among suppliers are significantly higher when regional excess deaths are high, but insensitive to the official Covid statistics.

We cannot interpret our results as showing a change in corruption per se. Instead, we suggest that they indicate the changes in how market participants perceive what interactions are corrupt. Some informal practices of buyers that were forbidden before the pandemic are no longer perceived as abuse, especially under Covid-driven emergencies. However, suppliers, who observe these revealed informal practices and have become more dependent on public demand during the Covid pandemic, believe there has been a growth in corruption among suppliers.

Our study contributes to the literature on the consequences of the Covid pandemic. Most studies focus on assessing government policies (Elgin et al. 2020), forecasting economic losses and coronavirus dynamics (Acemoglu et al. 2020), or analysing social consequences (Alon et al. 2020, Simonov et al. 2020, Djankov et al. 2021). To the best of our knowledge, the chapter by Jorge Gallego, Mounu Prem and Juan F. Vargas in this book is the only study of corruption in public procurement during the Covid pandemic (Gallego et al. 2021). They show that the Colombian municipalities estimated to be more corrupt before the pandemic increased their use of non-competitive procedures during the pandemic. Although we agree that this phenomenon is likely to indicate increased corruption, our perspective enables us to also explore how the pandemic has changed the attitudes of market participants to informal practices.

## **PUBLIC PROCUREMENT AND THE COVID PANDEMIC IN RUSSIA**

The Russian public procurement system is highly prone to corruption. Since 2005, in response to high corruption, procurement regulation has become considerably stricter and has imposed significant sanctions for violation of the rules. However, excess rigidity in regulation focusing on price-based selection criteria led to inferior quality of supplies and failure to execute on time. Therefore, despite the fight against corruption, federal and regional authorities often have to disregard violations of formal rules by procurers to ensure the delivery of appropriate goods, works and services. This results in a combination of formal and informal practices in the activities of public buyers (Yakovlev et al. 2020) and selective imposition of fines for violating the regulation. This discrepancy between rigid regulation and wide-spread informal practices is not specific to Russia; it is a well-recognised problem in developing countries (Bosio et al. 2020).

Under these circumstances, an essential role from the buyers' perspective is played not only by the legislation itself but also by law enforcement practices. The statements of senior officials about applications of the law produce important signals for buyers (Di Tella and Schargrodsky 2003). In the early 2010s, presidents Dmitry Medvedev and, later, Vladimir Putin highlighted a high level of corruption in public procurement, which led to changes in law enforcement practices. Criminal cases against high-ranking officials for violations during the awarding of procurement contracts have become commonplace. Such law enforcement, broadly covered by the official media, changed market participants' perceptions about corrupt practices. They came to consider any deviation from the legislation as potentially corrupt activity.

On 19 March 2020, after official recognition of the Covid-19 pandemic in Russia, the Ministry of Finance permitted direct procurement procedures without auction announcements for purchases of any size if the product was deemed necessary to combat the pandemic. This relaxation of the requirements at the awarding stage likely gave a signal to public buyers and triggered changes in their perceptions of the extent of corruption in the existing procurement practices. Due to the spread of the virus, President Vladimir Putin announced non-working days from 30 March to 11 May 2020. Moreover, all movement within and between cities was limited and strictly regulated. Consequently, demand in the private sector contracted substantially, and the public sector became a last resort for financially constrained firms. The increase in firms' dependence on public procurement and revealed non-competitive practices affected suppliers' perceptions of corruption.

## METHODOLOGY

The survey consists of questions regarding different aspects of the public procurement process at all stages, and includes a list experiment question. For the list experiment, respondents are randomly divided between treatment and control groups. Each respondent is provided with a list of statements (items) and asked to name the number of items she supports. The lists for the treatment and the control groups consist of control items, suggested to both groups, and a sensitive item, suggested to the treatment group. Under assumptions that we discuss below, the difference in the average number of items chosen between the treatment and control groups is an unbiased estimator of the population's probability of choosing the sensitive item (Imai 2011). This technique allows for several treatment groups by comparing each treatment group with the control group.

The experimental question for all respondents was: "Based on your experience, how many factors characterise the public procurement system in Russia?". We used three different treatment groups in our experiment. The sensitive item for the first treatment group is "Informal connections between buyers and suppliers," for the second group it is "Corruption among buyers", while for the third it is "Corruption among suppliers." The control and all treatment groups had the same set of control items: (1) "High competition", (2) "Excessive



regulation”, (3) “High transparency of public procurement for small business”, and (4) “Low level of public buyers’ competence”. We conduct the list experiment among public buyers and suppliers separately.

Several assumptions should hold for list experiments to guarantee the estimator to be unbiased (Imai 2011): (1) the treatment is randomised; (2) the sensitive item does not affect the choice of control items; and (3) respondents tell the truth. To account for the first assumption, we rely on the initial randomisation of the treatment and check the balance statistics across the observed control and treatment groups. We control for the characteristics that may cause imbalances in the OLS analysis (Gerber and Green 2012: 108–109).

To account for the second assumption, we randomise the position of the sensitive item to mitigate its effect on the number of chosen items. However, the sensitive item is never the first in the list to avoid violating the third assumption (seeing the sensitive item first may cause suspicion by the respondent and provoke lying). Respondents were allowed to skip questions, which also maintains the third assumption.

## DATA

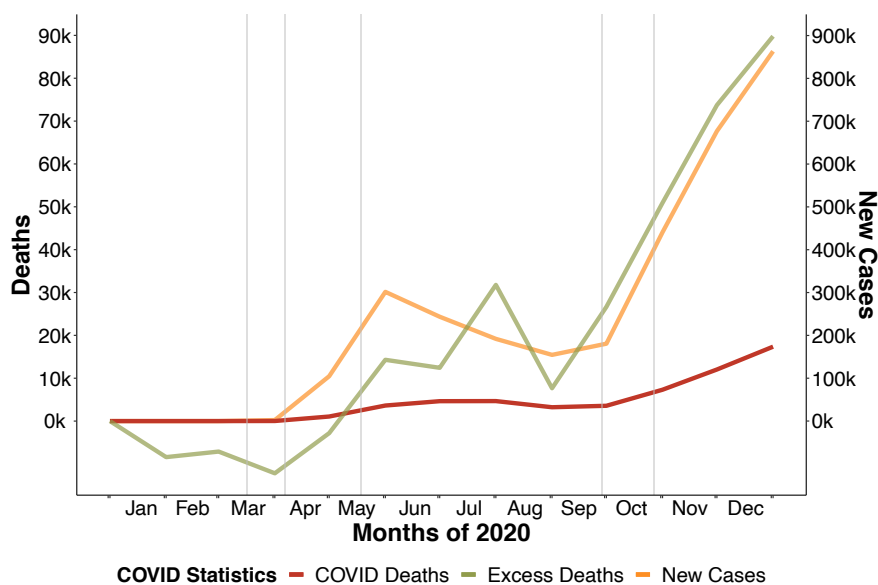
To conduct the survey with the list experiment as one of the questions, we collected a list of email addresses of public buyers and suppliers in Russia using data from the official website, [www.zakupki.gov.ru](http://www.zakupki.gov.ru), from January 2017 to September 2019. These email addresses are published so that bidders can contact buyers at the announcement stage and buyers can communicate with suppliers at the execution stage. The population of email addresses 94,500 buyers who had placed at least five announcements during 2017–2019, and 207,800 suppliers who had supplied at least three contracts during 2017–2019. For both public buyers and suppliers, we only keep emails which appear at least once in 2019. This guarantees that our respondents are active market participants. Therefore, the population comprises specialists from organisations and firms with sufficient experience in public procurement. Separately for buyers and suppliers, we randomly assigned each email to four groups: one control and three treatment groups.

We sent out cover letters to the population of email addresses with a link to the online survey in five periods of 2020: 17–18 March, 6–7 April, 18–19 May, 28–29 September, and 27–28 October. We conducted the survey on the online platform Anketolog, the Russian equivalent of SurveyMonkey. Overall, we received 611 replies from buyers and 802 from suppliers. Out of these, 599 buyers and 792 suppliers answered the experimental question. We group the five mailing periods into three waves: (1) the first period, before the government announcement of the relaxation of regulation on 19 March; (2) the second and third periods, during the first wave of pandemic and the strict lockdown in April–

May; and (3) the fourth and fifth periods (in the autumn), with some stabilisation of Covid cases in Russia but without cancellation of the relaxation in procurement regulation. Demographic characteristics are well-balanced over waves<sup>3</sup> and experimental groups.<sup>4</sup>

We extend the survey data with Covid statistics. For all 85 Russian regions monthly, we collected the official number of new cases and Covid-19 deaths during March–December 2020 and the number of deaths of any reason for 2015–2020. For each region-month of 2020, we construct a standard measure of excess deaths by subtracting the mean (maximal) number of people who died from any cause in a given region-month during 2015–2019 from the same measure for 2020. Figure 1 shows the official number of new Covid-19 cases and deaths and excess deaths for Russia in general.

**FIGURE 1 COVID-19 DYNAMICS IN RUSSIA**



Note: The figure demonstrates the dynamics of Covid-19 in Russia, relying on three monthly measures: official deaths from Covid-19 (red), excess deaths (green) with respect to mean, and new Covid-19 cases (orange). Grey vertical lines indicate the first days of five survey periods. Points on the horizontal axis indicate last days of the months.

There is substantial regional variation in the Covid-19 statistics.<sup>5</sup> Russian Covid statistics have been seriously criticised, with inaccuracy partially due to intentional manipulation by federal and regional authorities (Kofanov et al. 2020). Nevertheless, the official statistics are helpful for our analysis because, via administrative measures, bureaucrats

<sup>3</sup> Concerning the F-tests, the differences in means of demographic characteristics between the waves are insignificant at the 5% level. There is only a gender imbalance at the 10% level.

<sup>4</sup> There is only a gender imbalance at the 1% level in the first treatment group for buyers.

<sup>5</sup> Overall, during March–December, the official number of new Covid-19 cases was 3,159,149, the number of Covid-related deaths was 57,530 and excess deaths was 276,750 (with respect to mean).

respond to the high numbers of new Covid cases but not to actual deaths. For example, in April 2020, Vladimir Putin extended the duration of non-working days due to the rising number of new cases.

## RESULTS

Table 1 shows the treatment effects, including all waves of the survey. We interpret these results as market participants' perceptions of informal connections and corruption. Perceptions of buyers and suppliers of informal connections are comparable – 56% of buyers versus 68% of suppliers report them. Corruption among buyers is reported by 25% of buyers and 85% of suppliers. Compared to this distinction, buyers' and suppliers' perceptions of corruption among suppliers are 53% and 76%, respectively.

**TABLE 1 PERCEPTIONS OF CORRUPTION ACROSS ALL SURVEY WAVES**

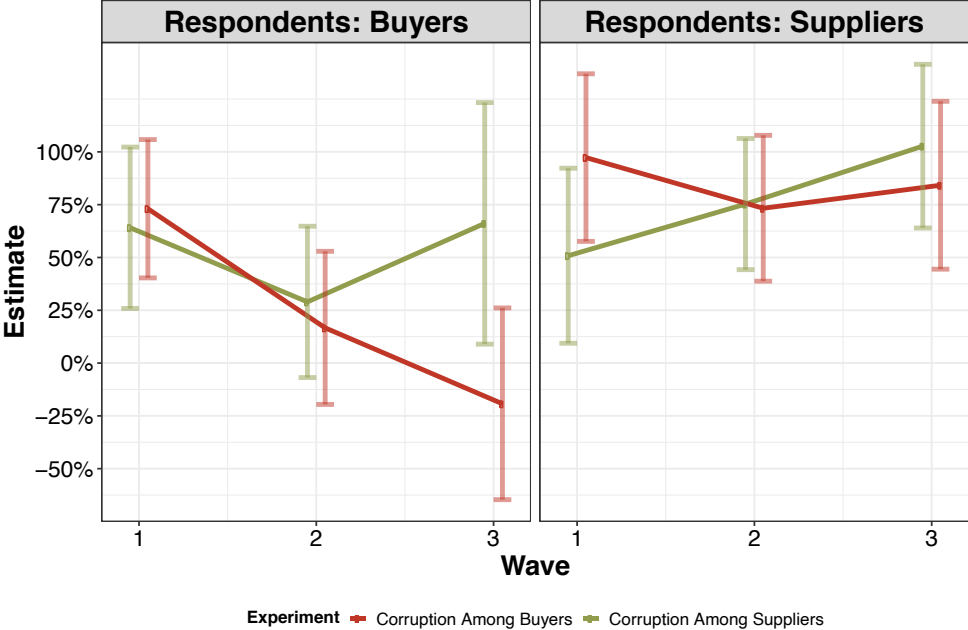
Experimental Group	N	Mean	Std. dev.	Difference	P-value
<b>Respondents: Buyers</b>					
Control	143	2.32	0.91		
1: Informal connections	142	2.88	1.08	0.56	< 0.01
2: Corruption among buyers	177	2.57	1.06	0.25	0.012
3: Corruption among suppliers	137	2.85	1.15	0.53	< 0.01
<b>Respondents: Suppliers</b>					
Control	214	2.14	0.98		
1: Informal connections	197	2.82	1.10	0.68	< 0.01
2: Corruption among buyers	186	2.99	1.19	0.85	< 0.01
3: Corruption among suppliers	195	2.90	1.14	0.76	< 0.01

Note: The table shows estimates of the list experiment for all waves. The "Difference" column shows the difference in the average number of chosen items between the corresponding treatment and control groups. P-value are calculated for one-sided t-tests with unequal variances, where the null hypothesis means no difference and the alternative hypothesis means positive difference.

Figure 2 illustrates the dynamic changes in buyers' and suppliers' perceptions of corruption across waves. Buyers perceive a reduction in corruption among buyers as the pandemic progresses. This result is supported by further regression analysis after controlling for demographic characteristics. The figure suggests an increase in suppliers' perceptions of corruption among suppliers, although the result is insignificant after controlling for demographic characteristics. Overall, the figure suggests a widening gap in whether

market participants blame their side for corruption as the pandemic progresses. However, there are no significant changes over time in how market participants perceive informal connections and whether they blame the other party for corruption.

**FIGURE 2** CORRUPTION PERCEPTIONS BY WAVE



Note: The figure shows the list experiment estimates by waves. Vertical bars show the 95% confidence intervals. The graph for informal connections is shown in the online appendix to our paper.

To ensure that it is the Covid-19 pandemic that has induced these dynamic changes, we introduce the above-mentioned Covid statistics across Russian regions. If the pandemic causes changes in perceptions of corruption, the changes should be more prominent in regions with higher Covid measures. We implement a regression analysis to test this. Table 2 shows the results. First, buyers’ perceptions of corruption among buyers are lower when the officially published number of new Covid cases in a region is higher. However, buyers’ perceptions of corruption are insensitive to regional excess deaths. Second, suppliers’ perceptions of corruption among suppliers are significantly higher when regional excess deaths are high, but are insensitive to the official Covid statistics.

TABLE 2 PERCEPTIONS OF CORRUPTION AND COVID-19 STATISTICS

	Official Covid-19 statistics		Excess deaths	
	New cases	Official deaths	Deviation from mean	Deviation from max
<b>Respondents: Buyers</b>				
1: Informal connections	-0.083 (0.06)	-0.758 (3.714)	0.61 (0.692)	0.43 (0.635)
2: Corruption among buyers	-0.14** (0.055)	-4.314 (3.363)	-0.756 (0.65)	-0.822 (0.608)
3: Corruption among suppliers	-0.104 (0.061)	-2.539 (3.759)	-0.305 (0.691)	-0.363 (0.639)
<b>Respondents: Suppliers</b>				
1: Informal connections	0.021 (0.049)	0.947 (0.89)	0.794 (0.563)	0.729 (0.514)
2: Corruption among buyers	-0.067 (0.05)	-0.343 (0.647)	-0.027 (0.635)	-0.02 (0.56)
3: Corruption among suppliers	-0.008 (0.046)	0.617 (0.796)	1.208** (0.566)	1.07** (0.514)

Note: The table shows estimates of corruption perceptions of buyers and suppliers interacted with Covid-19 statistics. Each line shows a coefficient of interaction between the treatment dummy and Covid-19 statistics (column name) from OLS regression, where the dependent variable is the answer to the experimental question (row name) in the treatment or control groups. Covid statistics are calculated in the region-month of the respondent answer. Other controls are treatment dummy, Covid-19 statistics, gender, age, work experience, location, size, and subordination level (for buyers only). Robust standard errors are in parentheses.

## CONCLUSION

The decrease in buyers' perceptions of corruption among buyers over the course of the pandemic is likely to reflect a change in buyers' attitudes towards their everyday practices rather than a change in the scale of corruption. The government amendment relaxing the procurement procedures allowed buyers to use non-competitive practices that were forbidden before. It affected buyers' attitudes to these practices and, as a consequence, their perceptions of corruption regarding these deals. It is noteworthy that the amendment is applicable when the purchase is necessary to combat the spread of Covid-19. Moreover, authorities seem to make their decisions based on new Covid cases but not on deaths. Therefore, a high level of new Covid cases in a region, but not a high level of deaths, is likely to be a sufficient argument for buyers to exploit this amendment and to be protected against fines from the supervisory authorities.

As for suppliers, a more severe actual Covid situation, as measured by excess deaths, reduces private demand and increases suppliers' dependence on procurement contracts. Given the opportunity for non-competitive procedures, suppliers become more prone to initiating corrupt interactions to keep their business running. The official Covid-19 statistics do not reveal these incentives as they are hardly informative about the actual Covid situation.

Changes in perceptions of corruption often precede changes in practices. For future studies, it is necessary to understand how the Covid-19 pandemic affected these practices. Another perspective is whether market participants will return to their pre-pandemic perceptions of corruption when the amendments are cancelled, or whether at least some of the changes will persist.

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## **PART II**

# **COMPLEMENTARY INSTITUTIONS**





# CHAPTER 6

## Complementary regulations to improve public procurement

**Erica Bosio, Joseph Lemoine, Marko Grujicic**

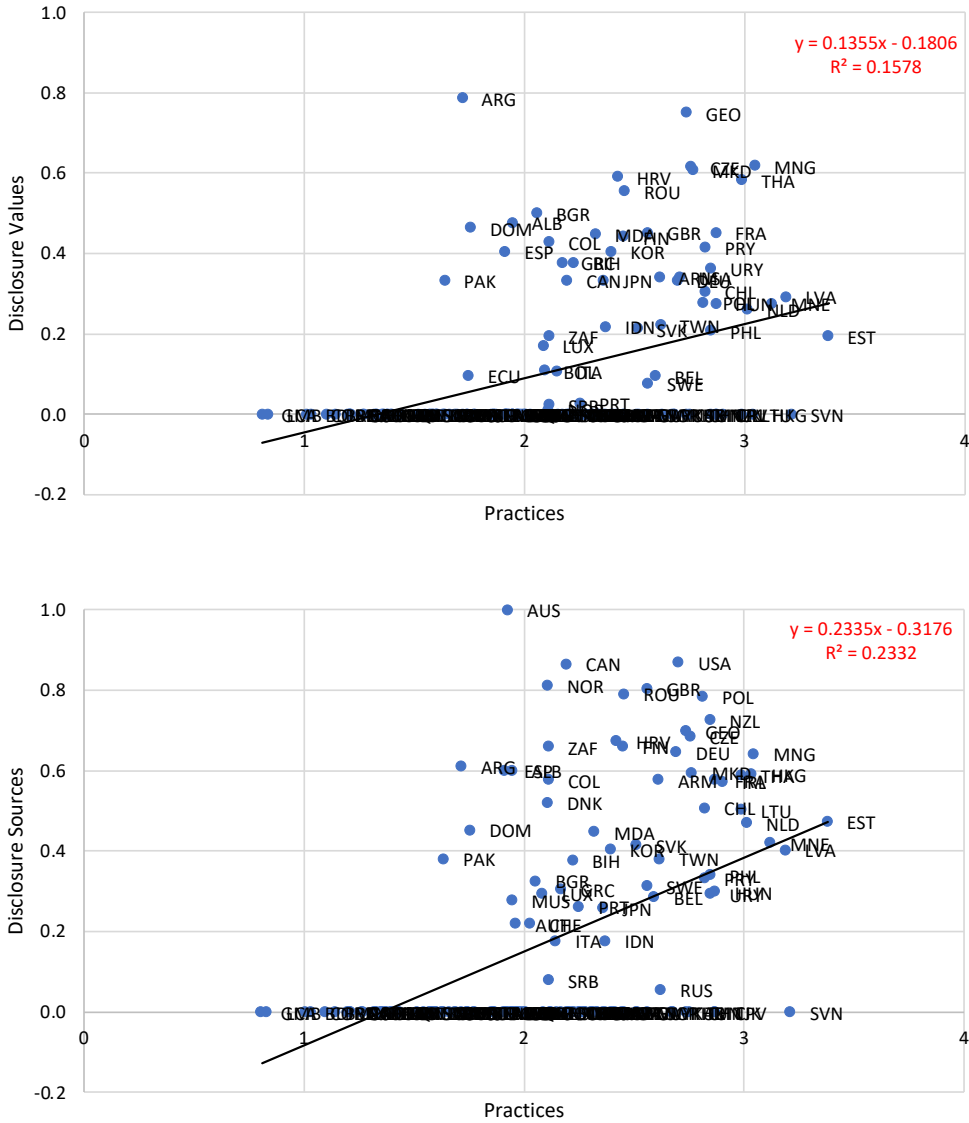
World Bank

Public procurement regulation has been the subject of intense scrutiny since the start of the Covid pandemic. Both its inefficiency in producing quick and cheap public goods, works and services, as well as its proneness to corruption, have been criticised in various country settings (see, for example, the chapters by Gallego et al., Coccio et al. and Detkova et al. in this volume). The healthcare response to the pandemic and the subsequent infrastructure investments during economic recovery have put further strain on procurement systems (see, for example, the chapter by Park and Kim in this volume). Emergency rules have been introduced to alleviate bottlenecks, and with the increased discretion of these rules further worries about corruption have arisen. While recent literature highlights the benefits of discretion in public procurement (Coviello et al. 2018, Rasul et al. 2019, Bandiera et al. 2020, Decarolis et al. 2020) – and expediency in difficult circumstances is warranted and necessary – the heightened corruption risk of corruption must be mitigated (Di Tella and Schargrodsky 2003, Olken 2007, Collier and Kirchberger 2016, Colonnelli and Prem 2020, Lichand and Fernandes 2019).

In this chapter we posit a simple proposition: that there is a degree of complementarity between ‘entry’ rules on transparency and competition in procurement practices, and ‘exit’ rules on the types of income and asset disclosures that politicians must make public. Having both sets of rules increases the likelihood that public money is not wasted. Figure 1 motivates this proposition, as the correlation between procurement practices and disclosure practices is positive and statistically significant in a global sample.

In the next two sections, we detail the data collection and provide further analyses of the linkages between procurement practices and disclosure practices. In the final section, we advance some policy recommendations.

**FIGURE 1 PUBLIC PROCUREMENT AND PUBLIC DISCLOSURE PRACTICES ARE HIGHLY CORRELATED**



Note: "Practice" is the sum of four sub-indices - each scored between 0 and 1 - measuring the practice of public procurement in four areas: transparency, competition, exclusion and contract integrity. "Disclosure values" is the simple average of value scores the following areas: (I) assets, (II) liabilities, (III) income, (IV) expenditure, (V) travel, and (VI) gifts. Similarly, "Disclosure sources" is the simple average of the six areas with source scores: (I) assets, (II) liabilities, (III) income, (V) travel, (VI) gifts, and (VII) other conflicts of interest. The sample includes the 172 countries for which data area available in both data sets.

Source: Authors' calculations based on data from Bosio et al. (2021) and the authors' update of the dataset in Shleifer et al. (2010).

## DATA

The analysis in this chapter relies on two sets of data: procurement practice data from Bosio et al. (2021) and disclosure practice variables based on an update of Shleifer et al. (2010). Here we detail both datasets in turn.

### Procurement practices

The data come from Bosio et al. (2021) and are current as of May 2019. The data collection is based on a fictitious case study of a government agency procuring road resurfacing works. The survey respondents are presented with detailed assumptions on the contract, the road, the procuring entity (PE), the bidder and the procurement process. The contract entails the resurfacing of 20 km of a two-lane flat road with an asphalt overlay of 40–59 mm (or its most common equivalent in the country). The road connects the economy's largest business city to another city in the same state, region or province and is neither a highway nor operated under concession. The value of the contract is \$2,500,000.

The PE choosing the contractor for this project is a government agency, typically the Ministry of Transportation, and is the sole financier of the work. To make the case study comparable across countries, the contract is assumed to be tendered through an open, unrestricted and competitive public call for tenders. The process ends with the contract awarded to 'BidCo', whose bid satisfies all technical and administrative criteria. BidCo is a privately and domestically owned medium-sized limited liability company (or its most common legal equivalent) that operates in the economy's largest business city, is in good standing with all relevant authorities, and has all the licenses and permits required to operate.

The hypothetical contract abstracts from a number of issues important in public procurement. It focuses exclusively on procurement of works and excludes the procurement of services and goods. To exclude roads operated under concession, the road cannot be a highway. The road cannot be a street within the boundaries of a city because many cities around the world do not conduct open tendering for such a contract but rather do it in-house or through direct award. Our data underestimate the complexity of public procurement by assuming that the work is procured through an open, competitive tendering procedure in which any qualified company can submit an economic offer. All other types of procurement (e.g. direct award, framework agreements, negotiated procedures, restricted tendering) are excluded by design. BidCo has already worked with the PE and participated in similar bidding processes in the past five years. This assumption eliminates the pre-registration process common in many countries.

The questionnaire is organised both chronologically, to facilitate the respondents' thinking about the public procurement process, and around the following four themes: *transparency* (the level of public availability of key documents), *competition* (what rules are in place to broaden participation in the tendering process), *limits to exclusion*

(whether there are rules in place making it more difficult for the PE to exclude bidders without justifying the exclusion or publishing the reasons) and the *integrity* of the contract (events that may take place during the life of the contract, such as payment, the ability to add subcontractors, renegotiation after the contract is signed, and changes in project specifications).

We ask questions about both the laws regulating procurement and actual practice. The questions about practice mirror those about laws to gauge their actual application. The coding of practice parallels that of laws – the less discretion the PE can exercise, the higher the practice score. As an example, the questionnaire asks whether, by law, the PE is required to publish tender notices and documents online. The corresponding questions about practice ask whether these notices and documents are indeed published. If such publication is meant to be online, the team checks whether this happens by visiting the relevant platforms or websites. Other practice questions measure the frequency of applying a particular provision in the law. For example, the questionnaire asks whether, by law, open tendering is the default method of procurement. The mirror practice question asks how often open tendering is used to procure road resurfacing work.

The practice index is the sum of the four themes or subindices and is scored between 0 and 4, with higher values representing more regulation or less discretion. Estonia scores highest with 3.38, followed by Slovenia (3.21) and Latvia (3.19). At the other end, South Sudan scores 0.68, followed by Venezuela at 0.70 and Gambia (0.81).

### **Disclosure regulation and practices**

We update the analysis in Shleifer et al. (2010) on financial and business disclosure of members of the lower house of parliament (MPs) across 175 countries. We use the World Bank Financial Disclosure Law Library, the Global Indicators of Regulatory Governance and the internet to update the database of laws governing disclosure by MPs as of May 2021. We assemble over 1,000 laws and regulations, including Constitutions, parliamentary standing orders, and anti-corruption and conflict of interest laws.

The analysis reveals that some disclosure is required of MPs in 137 of the 175 sample countries. There are large differences across countries in the ability of citizens to access the MPs' disclosure forms. In 77 of the 137 countries mandating disclosure by law, disclosure must be made to specific government agencies, such as the Speaker of Parliament or an internal Comptroller, but disclosure is inaccessible to the broad public.

Even mandating disclosure by law is no guarantee that the public can obtain this information. To take this possibility into account, we collected filled-out disclosure forms in countries with public disclosure. We were able to obtain the actual filled-out

disclosure forms in 61 countries.<sup>1</sup> We failed to obtain the filled-out forms in 27 countries where forms must be publicly available by law.

We also consider the content and comprehensiveness of disclosure. Even among the countries that mandate public disclosure, the actual disclosure available to the public is often far less complete than that available to government agencies. We use filled-out disclosure forms to construct indices of completeness of disclosure relative to the benchmark of a ‘universal’ disclosure form that contains all the disclosures used in any of the sample countries.

We reconstruct two disclosure measures that do not rely on content. The first records whether any disclosure is required from MPs. Seventy-eight percent of countries in our sample require disclosure from MPs, and these disclosures are always available to Congress or another specified body. High- and upper-middle-income countries are more likely to require disclosures, while more than 42% of low-income nations still do not have any disclosure requirements for MPs. The second disclosure variable records whether disclosure is available to the public, i.e. citizens have access to the completed forms in practice. In our sample, disclosure is publicly available by law in 87 countries, but publicly available in practice in 61 countries. In sum, only about a third of the global sample has genuine public disclosure.

The second group of variables deals with the content of disclosure. We ask what share of ‘conceivable’ disclosures are actually made public. For these content variables, we look at what is available to the public based on the filled-out forms we obtained. In many countries, MPs need to fill out more than one form, for instance at the beginning, during and at the end of their term. In our analysis, we consolidate these forms.

Blank disclosure forms previously collected in 106 countries by Shleifer et al. (2010) are used to construct an artificial universal disclosure form that incorporates information that any country might require its MPs to disclose with respect to financial matters and conflicts of interest (but not personal characteristics of the MPs). We keep track of disclosures in the following seven areas: (1) assets; (2) liabilities; (3) income; (4) expenditures; (5) travel; (6) gifts; and (7) other conflicts of interest. These categories closely follow the format of most blank forms.

To codify the content of the form, we assume that MPs disclose what they are asked to disclose on the blank form, but no more. Second, we assume that MPs interpret disclosure requirements in broad terms to avoid being accused of failing to comply with the law. This means that when there is an ambiguity as to what a particular disclosure request calls for (e.g. does a request to disclose share ownership cover mutual funds?), we assume that the form intends broader disclosure (i.e. yes, it does). Third, we give countries full

<sup>1</sup> In eight countries (Estonia, Ethiopia, Palau, Philippines, Sweden, Taiwan, Vietnam, and Zambia), we were not able to access the 2021 forms. For this analysis, we keep the same coding as in Shleifer et al. (2010).

credit if a majority of the items in a category of our universal form need to be disclosed (i.e. the form lists jewellery, art, and cattle, but not other movable assets), and no credit otherwise. Finally, some countries restrict the business activities of the MPs or their ability to receive gifts or own assets. Such restrictions can substitute for disclosure. The universal form allows us to account for these restrictions. When a restriction binds in a category, we code it as the highest disclosure standard for that category.

MPs may need to make two types of disclosure: the values of their assets, liabilities, expenses, income, gifts and travel; and the information needed to identify assets, liabilities, sources of income, gifts and travel, as well as parties with whom they have additional relationships or associations that could lead to other conflicts of interest. We refer to these two types of disclosure as values and sources, recognising that ‘sources’ is a loose reference encompassing all matters of identification of assets, liabilities and activities. In our coding, for each category, the score for values equals 0 if no disclosure is done, 0.5 if only aggregate values are disclosed (e.g. total wages, total real estate), and 1 if itemised values are disclosed. Similarly, for each category, the score for sources equals 1 if items are identified and 0 otherwise.

We compute disclosure measures made public for values and sources separately. To do so, we first compute a simple average score over the categories in that area. We then take the average of these area scores to create scores for public values and sources disclosure. More precisely, since the area of other conflicts of interest (VII) does not have values, our final measure of disclosure of values is the simple average of the following area value scores: (I) assets, (II) liabilities, (III) income, (IV) expenditure, (V) travel, and (VI) gifts. Similarly, since the area of expenditures (IV) does not have sources, the final measure of disclosure of sources is the simple average of the six areas with source scores: (I) assets, (II) liabilities, (III) income, (V) travel, (VI) gifts, and (VII) other conflicts of interest. We end up with two disclosure content variables, one for values disclosed to the public and one for sources disclosed to the public.

## EVIDENCE OF COMPLEMENTARITY IN REGULATION

With these datasets in hand, we look at the simple correlations between procurement practices and actual disclosure practice. We know from Bosio et al. (2021) that procurement practices are associated with higher integrity and quality of procurement contracts. This is true globally, but also separately for countries with high government capacity and low government capacity alike. We next would like to know how procurement practice and different aspects of it relates to the two disclosure content variables we have reconstructed following on from Shleifer et al. (2010).

Table 1 shows that the actual disclosure of both values and source of income and assets increases with income per capita. This association is highly statistically significant, at the 1 percent level, and economically meaningful, especially for the disclosure of sources of income and assets, with a coefficient of 0.522.

**TABLE 1 CORRELATIONS BETWEEN PROCUREMENT AND DISCLOSURE PRACTICES**

	Disclosure values	Disclosure sources	Log GDP	Procurement practice	Transparency	Competition	Limits to exclusion	Integrity of contract
Disclosure values	1							
Disclosure sources	0.763***	1						
Log GDP	0.282***	0.522***	1					
Procurement practice	0.386***	0.468***	0.332***	1				
Transparency	0.407***	0.354***	0.0712	0.557***	1			
Competition	0.122	0.178**	0.0699	0.603***	0.290***	1		
Limits to exclusion	0.130*	0.214***	0.303***	0.648***	-0.0816	0.226***	1	
Integrity of contract	0.227***	0.359***	0.360***	0.670***	0.0662	0.158**	0.445***	1
No.	172							



The two disclosure content variables are also positively correlated with both the aggregate procurement practice measure, as well as its four components (transparency, competition, limits to exclusion and integrity of contract). With one exception, the correlation between disclosure of values and competition practices, all coefficients are statistically significant. These correlations are especially strong in economic terms between the transparency component of procurement practices and the two disclosure variables, with coefficients of 0.407 and 0.354, respectively.

We next show the correlations between the two disclosure variables and several procurement outcomes related to integrity and quality (Table 2). For integrity, corruption and favouritism, we use data from the Global Transparency Institute's (GTI) collaboration with the World Bank (see Fazekas 2021 for details on the GTI database). These measures are based on a dataset of 1.2 million construction contracts awarded after the year 2000 in 171 countries. Only contracts worth \$100,000 or more are considered. Higher scores indicate better outcomes (e.g. less favouritism, less corruption). Quality is from Bosio et al. (2021) and reflects the time to completion, cost overruns and the quality of the works. We again code the inputs literally, so higher scores indicate better outcomes (e.g. fewer delays, smaller cost overruns, higher quality). Two external measures of road quality are also used: the World Economic Forum's (WEF) 2019 survey question on the quality of roads in a country; and the average night driving speeds between the north and south end of the three largest cities in each country calculated using Google Maps (ASPEED).

**TABLE 2 DISCLOSURE IS ASSOCIATED WITH BETTER PROCUREMENT OUTCOMES**

	Disclosure values	Disclosure sources
Disclosure values	1	
Disclosure sources	0.763***	1
Integrity (GTI)	0.281***	0.361***
Corruption (GTI)	0.135*	0.255***
Favouritism (GTI)	0.246***	0.234***
Quality	0.163**	0.372***
ASPEED	0.0706	0.132*
Road quality (WEF)	0.0671	0.307***
No.	172	

Consistent with Bosio et al. (2021), we find that higher actual disclosure of income and asset declarations by politicians is associated with better procurement outcomes.

These simple correlations are suggestive evidence in favour of our proposition that procurement regulation and disclosure regulation are complements. Further rigorous analysis can be performed to check the robustness of this result.

## CONCLUSIONS

Government expenditure outcomes are shown to improve with more transparency, competition, limits to exclusion and integrity of contract in the design of procurement regulation. This finding is well-documented in other chapters of this volume, as well as the recent empirical literature. We add a second set of regulations – those on disclosure by politicians – to the useful set of policy changes that can be made to increase efficiency and reduce corruption in public procurement.

We posit that these two sets of regulations are complementary: procurement-specific rules act as ‘entry’ regulations in preventing inefficiency and corruption, while disclosure rules further curb such behaviour at ‘exit’. Taken together, they create an environment more amenable to the provision of quality public goods.

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# CHAPTER 7

## The role of buyer competence

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Procurement meets an organisation's demand for goods and services. An organisation realises value for money if the acquisition process buys inputs of the right quality, in the right quantity, to the right place, at the right time and at the right price. Procurement can also serve as an indirect tool to pursue other goals. In public organisations, for example, it is increasingly instrumental in achieving sustainable and inclusive growth (OECD 2017).

To achieve these functions, procurers must appropriately handle a multiplicity of tasks, including choosing the tender format, tender specifications and award criteria, drafting the contract to append to the tender, handling purchasing risks, and monitoring the contract execution. This complex and multifaceted nature of procurement makes the role of the bureaucrats working as procurers pivotal for the organisation's functioning and objectives. Indeed, policymakers around the world increasingly recognise the importance of improving procurement efficiency by making use of specialised skills and competencies (European Commission 2017, OECD 2019). Consistent with this view, recent results in the economic literature, which we review below, highlight the importance of the buyer's role in explaining procurement outcomes.

### RECENT CONTRIBUTIONS ON THE ROLE OF BUYERS' COMPETENCE

The quantification of the role of buyers' competence as a determinant of procurement outcomes is an elusive research question due to the severe measurement problems that this task involves. In recent work with Giancarlo Spagnolo (Decarolis et al. 2020), we provide one of the first quantitative assessments of the influence of bureaucratic competence on complex procurements, including public works and services, in a developed country like the US.

The most common empirical design to measure the buyers' role has traditionally been the use of a fixed-effects strategy. Some of the studies following this approach include Bandiera et al. (2009), Best et al. (2017) and Buccioli et al. (2020). This approach, however,

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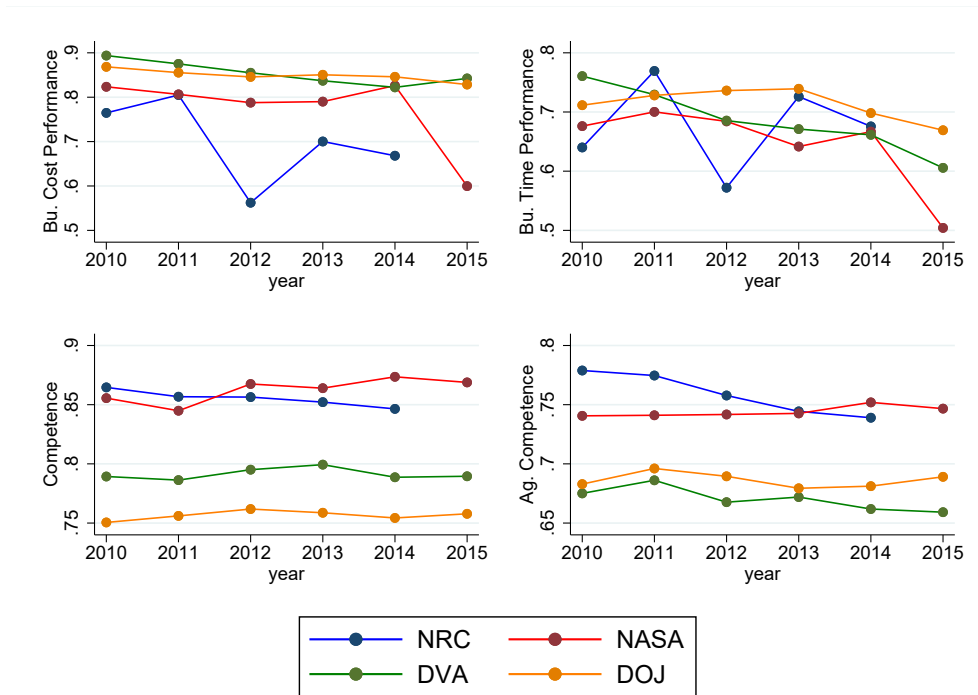
typically requires some selection in the set of offices analysed (as it requires sufficient variability in the data) and, even more crucially, it leaves open the question of what exactly the buyer fixed effect captures. Our contribution in Decarolis et al. (2020) is precisely that of filling this gap in the literature by showing how extensive survey data on US government employees can be combined with a large contract-level dataset to quantify a notion of bureau competence and then tie it to procurement performance.

We exploit a large data source on the characteristics of the US federal workforce: the Federal Employee Viewpoint Survey (FEVS). This survey has been administered to nearly all US government agencies for more than ten years with the same questions, eliciting responses from roughly one-fourth of all federal employees each year. The comprehensive nature of competencies is captured by the generality of the questions used in the survey.

In the context of public procurement, the complexity of these tasks and the relevance of the buyers' role in performing them is likely more pronounced in the purchase of non-standardised goods, works or services as their procurement necessitates more specific knowledge from different sectors and multiple players inside the organisation. This implies that, while price dispersion can be used to gauge efficiency in the procurement of standardised items, price comparisons are meaningless in the procurement of complex, heterogeneous goods. This poses the question of which performance metric is appropriate. Time and cost renegotiations (i.e. delays in contract execution and cost overruns), along with the overall number of renegotiation episodes, are the three metrics we used in Decarolis et al. (2020). They are observable in the US context thanks to an integrated data system like the Federal Procurement Data System (FPDS), which keeps track of every contract action. They also capture well the economic notion of Williamson's (1971) transaction or 'haggling' costs, and, in fact, have also been used in past studies on work contracts (see, among others, Bajari et al. 2014).

A second issue with measuring competence is the association between more complex contracts and more competent buyers: a buyer's performance may be persistently mediocre merely because it must cope with complex contracts. Because more complicated contracts are inherently more likely to result in renegotiations, an omitted variable problem is expected to skew downward the estimates of the effects of competence. This point is well explained by the following example, which is also graphically illustrated in Figure 1. In terms of both delays and cost overruns, the performance of the two least competent agencies (the Department of Veterans Affairs and the Department of Justice) is superior to that of the two most competent agencies (NASA and the Nuclear Regulatory Commission). This stunning reversal of relative ranking is a significant aspect of the current economic environment, and it indicates that any simple regression of performance on competence will grossly underestimate competence's impact.

**FIGURE 1 COST AND TIME COMPETENCE, OVERALL QUALITY, AND BUREAU AND AGENCY LEVEL**



An instrumental variable (IV) strategy is the approach we followed to solve both measurement errors and reverse causality issues. The strategy relies on exogenous changes in bureau competence based on the death of specific sorts of employees<sup>2</sup> (the ‘relevant employees’ are those who are likely to occupy managerial positions based on their relative age and salary). The data come from the Federal Human Resource database (FedScope), which covers detailed, employee-level data from the Office of Personnel Management’s Enterprise Human Resources Integration-Statistical Data Mart. The assumption underlying the IV strategy is that more competent offices adopt superior managerial practices, routines and processes that are less reliant on specific individuals and more resilient to hazards, such as the unexpected loss of a key employee. We find that an unexpected loss induces an average reduction in competence of 0.16 standard deviations. When key employees die unexpectedly, more competent offices experience less disturbance, including disruption in procurement performance, than less competent offices.

2 This approach is in the spirit of a related study on the effect of public officials’ workload by Warren (2014).

The IV estimation strategy shows a causal effect of bureau competence on procurement outcomes that is an order of magnitude larger than the corresponding ordinary least squares (OLS) estimate. In particular, an increase in competence of one standard deviation reduces the number of days of delay by 23%, cost overruns by 29%, and renegotiations by half. To explain these magnitudes, we report that if all federal bureaus achieved the high level of competence of NASA's John Glenn Research Center at Lewis Field (corresponding to the top 10% of the competence distribution), contract execution delays would be reduced by 4.8 million days and cost overruns would be reduced by \$14.7 billion across the entire sample studied (841,000 days and \$2.6 billion, respectively, on a yearly basis). Furthermore, a one standard deviation improvement in competence results in 0.5 (40%) and 0.8 (71%) fewer cost and time renegotiations, for a total of 1.3 (52%).

In related work with Gaétan de Rassenfosse, Emilio Raiteri and Giancarlo Spagnolo (Decarolis et al. 2021), we study the impact of the buyers' role on innovation procurement. When it comes to procuring innovation, public buyers are even more critical to the project's success: they need to conduct internal and market assessments to identify government needs and the state of potential supply, translate needs into functional requirements, design complex tenders and award mechanisms, and manage contract execution, which can take months, if not years, after the contract is awarded. Given the trend towards a more strategic role for innovation procurement as an instrument to increase competitiveness and growth (OECD 2017), measuring and enhancing the role of public buyers is of utmost importance.

However, when the goal of a contract is innovation, usual measures used in the procurement of standardised items, such as unit prices, or in the procurement of works and services, such as delays and cost overruns, have limited value. To address this problem, in Decarolis et al. (2021) we combine the procurement data with the 3PFL Database of Federally Funded Patents collected by de Rassenfosse et al. (2019). This database links information on patented inventions (namely, the number of patents, their associated citations and claims) to the US federal procurement contract of R&D that originated it. Although only a small share of contracts involve R&D produce patents (5.34%), a few of them (31.7%) produce more than one patent. Thus, the number of patents, as well as their citations and claims, are the main outcomes that we use to evaluate the role of public buyers, once again by exploiting the information on the public workforce produced by both the Office of Personnel Management, publicly available through the FedScope, and the Federal Employee FEVS, measuring government employees' perceptions of several characteristics of their agency and specific office.

The empirical strategy in this study is similar to that reviewed above in Decarolis et al. (2020). The main reason is that the variability across bureaus is more limited in the case of the analysis of innovation outcomes: the Department of Defense (DoD) accounts for most of R&D contracting, representing about 85% of the procurement cases in the

data.<sup>3</sup> Nevertheless, at the centre of the empirical strategy there is still the variation produced by unexpected death events of ‘relevant employees,’ as determined by age and salary figures for managerial positions. The analysis indicates that the main source of disruption is associated with death events that occur in the six months leading up to the contract award. These events have a significant, negative impact on the innovation outcome indicators: a 1% increase in relevant employee fatalities results in a 32.3% decrease in patents per contract, a 20.5% decrease in patent citations per contract, and a 34.3% decrease in patent claims per contract. Unexpected managers’ deaths occurring during the contract management phase following the contract’s award, on the other hand, have a smaller effect, although still statistically significant. When mortality events occur among individuals who are less likely to cover managerial jobs, no consequences are observed.

These findings show that the death of a manager causes a loss of specialised human capital that is difficult to replace. This interpretation is consistent with practitioners’ views that high technical skill is required for project management in the procurement of innovation. When comparing the Army and Air Force to the Navy, for example, the consequences of mortality on innovation results are more relevant. This is in line with the fact that the latter department relies less than the other two on project managers with technical knowledge (Rendon et al. 2012).

A final feature that is noteworthy in both Decarolis et al. (2020) and Decarolis et al. (2021) is that we look into what features qualify a bureau as ‘competent’. By exploiting a series of questions in the FEVS data, we classify three main components of bureau competency that are observable through these survey data: staff cooperation, incentives, and skills. Specifically, the data allow us to measure features such as the self-perceived level of the bureau’s talents, incentives, and intra-office cooperation at the bureau-year-state level. For all of the procurement outcomes considered, we find evidence of a relationship between cooperation and improved procurement outcomes, no effects of skills or incentives, either directly or indirectly through their interaction with death events.

The importance of cooperation is in line with the belief that successful procurement involves the ability to effectively manage and coordinate a variety of tasks involving many personnel and offices. These findings suggest that better working environments will not be enough to compensate for the loss of specialised human capital at the workplace. While some of these are likely to be unique to the federal agencies in the sample, the conclusion on the importance of the pre-award period is consistent with the core characteristics of complex procurement.

3 See Carril and Duggan (2019) for a recent study of the DoD’s procurement practices involving non-R&D outcomes.



## LESSONS FOR COVID PROCUREMENT

Four main lessons can be derived from the above results and are relevant for procurement in emergency times. First, a competent procurement workforce is a crucial element of a successful procurement. In 1976, the Federal Acquisition Institute (FAI) was established with the goal of supporting the development of the federal acquisition workforce and improving procurement capabilities in the US. Recent policy initiatives in Europe consider the introduction of qualification systems for public procurers as a required reaction to the increased discretion allowed to them by the Procurement Directives 24 and 25 of 2014. Some European professional organisations had already created optional qualification systems for individual procurers (see, for example, the UK Chartered Institute of Procurement and Supply). Existing certification programmes, on the other hand, have mostly aimed at single contracting officers. While certification of individual contracting officers' qualifications is good and necessary, the findings on the role of bureau competence and cooperation imply that it may not be enough. Certification programmes for procuring offices should be valuable and should incorporate features such as procurement process organisation and prevailing management practices, as is commonly done for private enterprises.

Second, managerial capabilities in public procurement offices are of major importance. The findings on the relevance of cooperation for both innovation and non-R&D procurement, as well as those on the lack of relevance of the measures of skills and incentives, clearly point to the relevance of managerial capabilities.

Third, building resilience to adverse shocks is important. An emergency situation like that of Covid-19, which hit at a different time different countries and different regions within countries, suggests that the ability to move tasks between different individuals and offices can be a crucial asset to ensure that adequate human resources are available for procurement activities.

Fourth, a more indirect but still important implication from the studies reviewed above relates to the crucial role of having an adequate degree of concentration of both procurement offices and contracts. At the level of procurement offices, some centralisation is necessary in order to concentrate resources and offer, in a cost-effective way, the specialised training discussed in the first of the four policy implications described above.<sup>4</sup> Similarly, at the level of contracts, larger procurement processes, especially if structured in the form of framework agreements (i.e. indefinite time/quantity contracts), allow broader ranges of public organisations to benefit from the competence of the specialised workforce that can design and tender off these contracts.

4 Both Bandiera et al. (2009) and Chiappinelli (2019) suggest some degree of centralization to improve procurement efficiency of municipalities and utilities in Italy.

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# CHAPTER 8

## Traditional audit design may distort incentives

**Maria Paula Gerardino, Stephan Litschig and Dina Pomeranz**

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No state can successfully execute its functions – ranging from infrastructure provision to regulation and redistribution – without a reliable way of monitoring rule compliance through audits. While the economics literature usually considers audits as neutral information collection tools (e.g. Becker 1968), we show that audits can not only be ineffective, but can actually backfire by creating (unintended) distortions even in a low-corruption, high-capacity setting. In particular, looking into the black box of the audit process reveals that commonly used mechanical ‘auditing by checklist’ approaches may inadvertently discourage the use of more regulated, complex and transparent procedures. This ultimately reduces the transparency and competitiveness of the process that audits were designed to improve. Such distortions can thus directly undermine underlying policy goals. In recent work (Gerardino et al. 2021), we empirically analyse this issue in the area of public procurement, a key focus of government auditing.

Our work has three main empirical findings. First, using regression discontinuity analysis, we find that audits trigger a subsequent shift away from transparent auctions towards less-competitive direct contracting. This distortion goes against the goals of the national public procurement regulation the audits are intended to enforce. Second, this leads to a significant reduction in supplier competition and, consistent with a process that favours insiders, subsequent contracts are more likely to be awarded to incumbent, small and local firms. We also find suggestive evidence of a price increase. Third, we collect additional data on the audit process itself and find that relative to comparable direct contracts, auctions mechanically undergo more than twice as many checks and lead to twice as many detected infractions, creating a distortionary incentive.

Such distortions in public procurement can have important impacts, given the government’s large share in many markets. Public procurement includes most public spending other than salaries and transfers and amounts to about one third of government expenditures (OECD 2016). The government is the largest buyer in most countries and public procurement contracts can have significant impacts on supplier firms (e.g. Ferraz et al. 2015, Carrillo et al. 2019, Barrot and Nanda 2020, Hjort et al. 2020). Free and fair

competition for government contracts is therefore of great importance not only for the quality and cost of government purchases, but also to create a level playing field for all firms.

In public procurement, the two most common procedures used to award contracts are direct contracting and public auctions. Under direct contracting, public entities select a supplier to purchase from directly. This type of procedure bears more risk of privileging incumbent suppliers and connected firms. In contrast, for public auctions, purchasing entities need to specify the selection criteria explicitly in advance and any qualified firm can participate. Public auctions have a built-in control mechanism, in that the losers have a vested interest in checking whether the process was executed fairly and correctly, and the winning supplier meets the specified criteria. If they suspect irregularities, they can launch a complaint. For all these reasons, public auctions are considered to be conducive to transparency and competitiveness and are often recommended over direct contracting (e.g. OECD 2015, World Bank 2016). Several recent empirical studies indeed find improved outcomes under auctions compared to direct contracts in terms of lower prices and higher quality in rail services (Lalive et al., 2015), lower prices and more productive suppliers (Szucs 2017), and more productive and less politically connected contractors (Baltrunaite et al. 2021).<sup>1</sup>

However, not all purchases lend themselves for auctions. In certain circumstances, conducting an auction can be inappropriate or inefficient (Bajari et al. 2009). This can be the case, for example, when there is only a single supplier in the market for a particular product; when there is an emergency, and the time it would take to organise an auction would lead to bigger problems; or when the amount involved is small compared to the cost of organising an auction. Procurement regulations therefore typically allow for exceptions, under which auctions are not required and direct contracting is allowed.

Government audits play an important role not only for enforcing compliance in public procurement, but for state capacity more broadly, enhancing public sector transparency, performance and accountability and ensuring correct execution of rules and regulations. Auditors often follow a checklist to investigate whether processes were executed in accordance with the regulation (e.g. Contact Committee of the Supreme Audit Institutions of the European Union 2018). In the case of public procurement, common checks include whether the corresponding steps in contract specification, supplier selection and contract execution were implemented correctly.

To investigate the impact of audits on subsequent procurement behaviour, we exploit how the Chilean auditing system works. For the years 2011–2012, the Chilean Comptroller Agency (Contraloría) formulated a secret scoring system using cutoffs to guide their

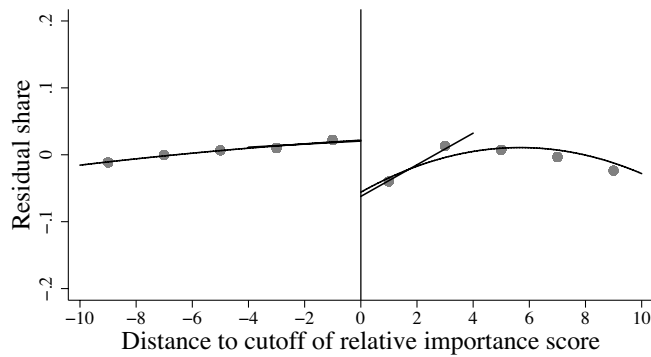
<sup>1</sup> Similarly, comparing procedures with varying degrees of openness to competition, Auriol et al. (2016) and Zamboni and Litschig (2018) document that more open procedures are less likely to involve corruption. Other studies find that increased accessibility of information can improve procurement outcomes such as increased entry, lower costs, better quality or reduced contracting times (e.g. Coviello and Mariniello 2014, Lewis-Faupel et al. 2016, Kovalchuk et al. 2019).

decision of which public entities to audit. Among those entities that the Comptroller considered to be of medium non-compliance risk, the decision to audit partially depended on an ‘importance score’. On a scale of zero to a hundred, this score measured a combination of different aspects of entity size such as budget and transfers to the private sector.

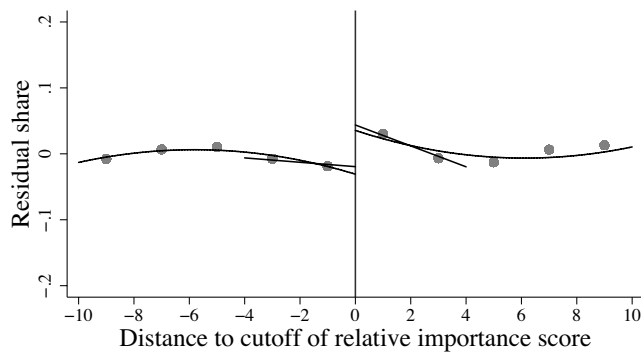
This allows us to employ a fuzzy regression discontinuity design (RDD) using administrative data on the universe of public purchases. We compare the procurement behaviour of public entities just above the cutoffs at which audits increase discontinuously with public entities just below those cutoffs. Audits led to a clear reduction in the use of auctions and a corresponding increase in direct contracting as the contract awarding procedure. To the right of the cutoff, there is an 8 percentage point lower share of purchases made through auctions and a 7 percentage point higher use of direct contracting, as shown in Figure 1.

**FIGURE 1** ABOVE THE CUT-OFF WHERE THE AUDIT PROBABILITY INCREASES, THE SHARE OF PROCUREMENT MADE THROUGH AUCTIONS IS LOWER, AND THE SHARE OF DIRECT CONTRACTING IS HIGHER

a) Auctions share



b) Direct contracting share



Notes: This figure shows the value of purchases made through auctions (Panel A) and direct contracting (Panel B) as a share of total procurement spending by a given entity with medium level of risk around the cutoff in the relative importance score. The dots are obtained from a regression of the outcome in a given year on stratum fixed effects and control variables: a dummy for having been audited in the preceding year, political affiliation, as well as first and second lags of log (+1) of total amount purchased, of auction and direct contract shares. Solid lines show linear and quadratic fits.

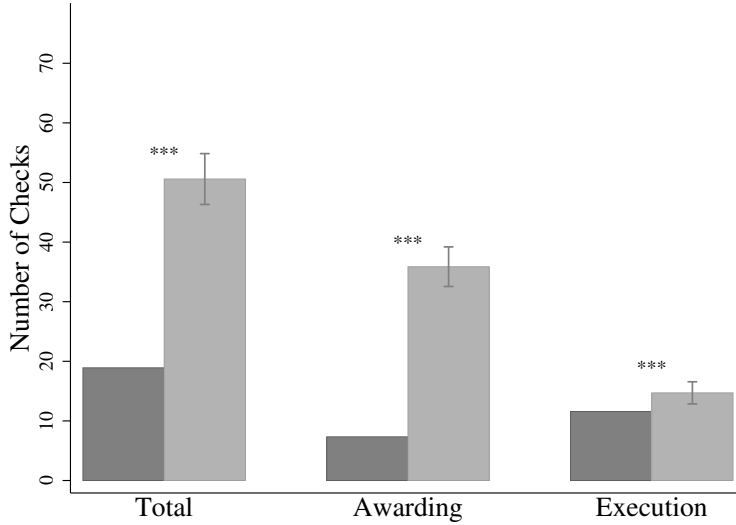
The increase is concentrated among direct contracts justified by emergency, which are particularly prone to overuse. At the same time, there is a large reduction in auctions with more than three bidders. Hence, the overall competitiveness of the procurement process falls. This has implications for the type of firms that win the contracts: more contracts are awarded to incumbents that have sold to the same entity before, as well as to small and local firms. This type of favouritism risks undermining entrepreneurship and innovation, as it creates barriers for new entrants. In addition to the effect on suppliers, we also find suggestive evidence of a price increase in the subset of products with clear units of measurement and for which there is a substantial shift from auctions to direct contracts.

To shed light on the underlying mechanisms, we worked with the Comptroller to collect more information through additional audits. Results from these audits show that holding the amount and type of purchase constant, auctions undergo about 2.7 times as many checks as purchases through direct contracts (see the left-hand set of bars in Panel A of Figure 2). About 90% of the difference in the number of applied checks between purchase procedures stems from the awarding stage. The number of checks in the contract awarding stage is 4.9 times larger for auctions than for direct contracts. This suggests that the difference is mainly driven by the awarding stage, where auctions and direct contracting differ mechanically through the longer list of steps and rules involved in organising an auction. We observe a similar pattern for the detected infractions. The left-hand set of bars in Panel B show that purchases via direct contracts have an average of 1.8 detected infractions. Purchases by auction have 2.7 more detected infractions. The effects are again concentrated in the awarding stage of the procurement process, where the purchase procedure makes a big difference, rather than in the contract execution stage, where the process is similar independent of the purchase procedure.

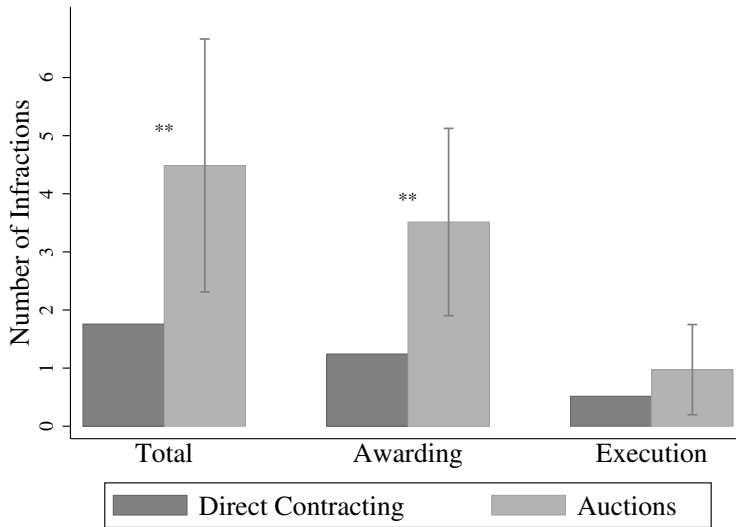
This stems from the standard design of the audit protocol, which includes more potential checks for auctions than for direct contracts. When procurement officers in public entities realise that they are more likely to be checked for infractions when using auctions, it can discourage them from using this purchase procedure even though the regulation aims to promote it. This pattern points to a more general issue: when audit protocols follow a simple checklist approach, which is standard in many settings, more heavily regulated processes with more steps, which leave a longer paper trail, mechanically lead to more checks during an audit. If agents risk making a mistake in any given step of the process, procedures involving more steps will lead to a higher probability of being found to be non-compliant. This can create unintended distortions and has important implications for monitoring agencies aiming to design audit processes that keep incentives neutral across procedures.

**FIGURE 2 THE NUMBER OF CHECKS AND OF DETECTED INFRACTIONS IS MUCH HIGHER FOR PURCHASES MADE THROUGH AUCTIONS THAN FOR SIMILAR PURCHASES MADE THROUGH DIRECT CONTRACTING**

a) Checks



b) Detected infractions



Notes: Panel A shows the number of checks per audited contract and Panel B the number of detected infractions. The left-hand set of bars display the total, the centre bars the awarding stage and the right-hand bars the execution stage. The dark bars indicate mean numbers for direct contracts. The light grey bars show expected outcomes for auctions based on OLS regressions of the outcome on an auction dummy and controls for purchase amount, product, month of purchase, month of audit, and internal unit. The vertical lines indicate 95% confidence intervals.



Avoiding such distortions is a big challenge for anyone designing audit systems – both in the public or private sector – when audit protocols differ by procedure and when agents have some discretion over the choice of procedure. All else equal, institutions may want to equalise the expected cost of being audited across the different procedures. To set correct incentives, they may, for example, consider adjusting audit probabilities or penalties to counterbalance the fact that some processes involve more auditing checks. In the case of procurement, this could mean equalising the number of checks across different purchase procedures or increasing the penalties for infractions committed in direct contracts compared to auctions. In addition, auditors could focus in more depth on the key step involved in using a direct contract, i.e. the validity of the justification given for the use of this procedure. Finally, they could increase the overall audit probability for purchases awarded through direct contracting or for entities with higher use of direct contracts. This was, in fact, one of the policy changes the Chilean Comptroller implemented in response to the findings of this study.

Overall, our study suggests that it is key not to think of audits merely as ‘neutral’ verification and information extraction mechanisms, but to carefully consider potential impacts and incentives created by the specifics of the audit design. This is in line with a growing number of findings showing that details of institutional design can have important impacts (Duflo 2017). Given the widespread use and important functions of auditing, the audit design can have fundamental consequences for the functioning of the state and the private sector. While there is a large literature related to audit probabilities and detection risk, little economics research has focused on the incentives created by the audit design itself. Audit procedures are often developed by lawyers and administrative specialists. Getting economists involved in audit design promises high returns.

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# CHAPTER 9

## Infrastructure procurement and elite-level collusion in Lebanon

**Sami Atallah, Mounir Mahmalat, Wassim Maktabi<sup>1</sup>**

The Policy Initiative

Governments worldwide consider infrastructure development as a central component of recovery from the economic fallout induced by the Covid-19 pandemic. The amounts of public money spent on such programmes are significant and often exceed previous programmes. The European Union's NextGenerationEU and the American Jobs Plan in the United States are only two of the most visible ones, involving trillions of dollars for infrastructure development.

Mobilising such unprecedented sums makes oversight and monitoring a top priority. A growing body of research shows how pervasive the challenge of elite capture of public funds is, both in developed and developing countries (Goldman et al. 2013, Hessami 2014, Hudon and Garzón 2017, Rijkers et al. 2017, Baltrunaite 2020, Dávid-Barrett and Fazekas 2020, Andersen et al. 2020). In a recent contribution, Baránek and Titl (2020) find that favouritism towards politically connected firms (PCFs) inflates the value of procurement contracts in the Czech Republic by an average of 8% with respect to the initially estimated costs. Countries with weak public sector capacities face particular challenges in avoiding elite capture. Bosio et al. (2021) formalise these dynamics and provide a model to discuss how regulation can be circumvented in the context of low public sector capacities.

Given the pervasive challenges emanating from elite capture and favouritism, large infrastructure programmes can have significant implications for a country's political economy. Such programmes can affect the distribution of economic rents and thereby potentially political power, particularly when funds come from external sources and international donors. New evidence from Lebanon documents the importance of infrastructure procurement and discusses how the institutions executing infrastructure procurement influence the way elites share economic rents (Atallah et al. 2020, Atallah et al. 2021). These contributions focus on the Council for Development and Reconstruction (CDR), an autonomous governmental institution tasked with the implementation of the vast majority of infrastructure projects in the country, more than half of which are funded by foreign donors.

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In this chapter, we discuss the findings of Atallah et al. (2021) and show how infrastructure procurement can underpin a country's elite-level power sharing arrangement. By discussing the case of CDR, our analyses highlight that the design of infrastructure programmes needs to take into account a country's political economy context in order to minimise elite capture and to avoid inadvertent effects on the distribution of economic rents and political power. We leverage the framework by Dávid-Barrett and Fazekas (2020) to distinguish three stages in which elites can influence the procurement process to their advantage. Stage 1 is the *formation* of procurement regulation, stage 2 concerns the *implementation* of procurement by the bureaucracy, while stage 3 concerns the *monitoring* of contract execution, including conducting audits.

In following these stages, this chapter proceeds as follows. Section 2 describes how the design of CDR has been set up to serve a mechanism of rent allocation. Section 3 discusses the role of political connections of firms and how elite capture affects the value of contracts during the implementation phase. Section 4 sheds light on the mechanisms of elite-level collusion. Section 5 briefly discusses project monitoring and how contracts are overspent. Section 6 concludes by offering policy recommendations for how to curtail elite-level collusion.

## THE DESIGN OF PROCUREMENT INSTITUTIONS

CDR was created during Lebanon's civil war (1975–1990) in 1977 in order to lead the post-conflict reconstruction (Leenders 2012). As the Ministry of Planning had ceased to exist by then and public institutions were divided and suffered from an acute shortage of human resources, CDR's mandate covered three main tasks: the formulation of a basic framework for reconstruction; attracting and managing loans from international donors to finance the projects identified; and supervising the execution and implementation of those projects. In practice, CDR has been managing all internationally funded infrastructure projects since the civil war (roughly 37% of capital expenditures were foreign financed and outside the state budget in 2011) and has been in charge of planning and implementing a large share of those that were domestically financed. In the absence of other major assets for rent generation, such as natural resources, CDR became so important for the allocation of rents within Lebanon's power-sharing arrangement that former politicians refer to it as a 'state within the state' that became "critical for the survival of [elites]".<sup>2</sup>

To pursue these tasks, CDR was endowed with extraordinary prerogatives. It was set up as an autonomous institution directly accountable to the Council of Ministers in order to circumvent "the administrative routine matters, [...] to accelerate the reconstruction process".<sup>3</sup> This notably includes accountability mechanisms and hiring decisions. For

<sup>2</sup> Author's interviews, documented in Atallah et al. (2021).

<sup>3</sup> See the section "About CDR" on CDR's official webpage at <https://www.cdr.gov.lb/en-US/About-CDR.aspx> (accessed 28 January 2021).

example, CDR was exempted from advance auditing by Lebanon's Court of Accounts and other oversight agencies, while hiring procedures were exempted from the same supervision by which other public administrations are governed. That way, CDR was largely exempted from public oversight, while the appointment of its board members as well as other leadership positions was left to the discretion of the prime minister. By imposing favourable candidates, elites allocated seats on the board of CDR to loyalists or even close relatives and thereby retained decision-making power over the acceptance of firms and tenders.

The board of CDR has moreover been kept closed and almost unchanged since 2004. While the board was supposed to be composed of seven to 12 members with a legal mandate of five years, it stood at only five members for the period under investigation in this study as the government issued a decree in 2009 by which it extended the mandate of the current board "until the appointment of a new board" (Al-Akhbar 2019). Yet, quorum and voting rules for decisions on awards still apply as if the board were fully staffed. In effect, for decisions to pass, all board members must agree. As will be discussed below, keeping the board closed and understaffed near its required quorum of five members was an important mechanism for political elites to synchronise the distribution of valuable contracts to connected firms.

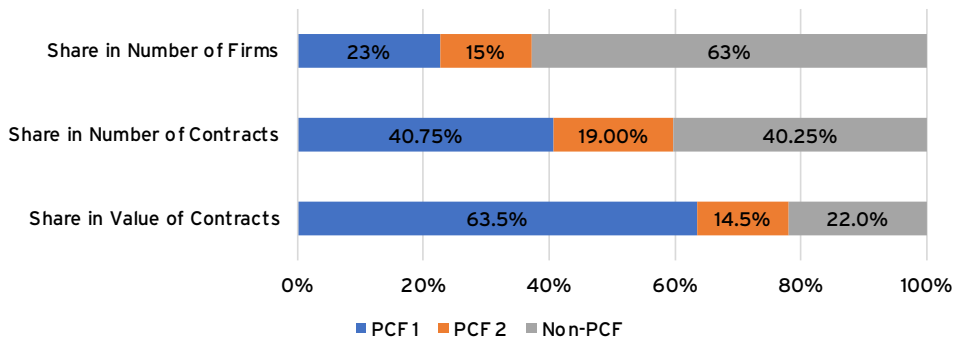
## **POLITICAL CONNECTIONS AND THE VALUE OF CONTRACTS**

With such an institutional and legal setup, elites were able to influence the implementation of procurement projects (stage 2 in the Dávid-Barrett and Fazekas framework). With a board staffed with aides to political elites and closed to members of other elites, as well as being endowed with a frail framework of supervision and auditing, CDR was all set to become subjugated to elite-level collusion. Even the most well-intentioned institutional setup geared towards efficiency and competence could not prevent elite-level collusion.

With a dataset on all infrastructure procurement contracts between 2008 and 2018, we investigate whether politically connected firms obtain larger contracts than non-connected firms. We follow Diwan and Haidar (2020), Faccio (2006), and others to identify a firm as politically connected when it has at least one board member or a CEO who is a politician, a close relative of one, or a publicly documented friend. Notably, we make a distinction between the 'quality' of a political connection and differentiate between two types of politically connected firms. 'PCF1' firms are those that are connected directly to the board members of CDR or the elites that act as their protégés. 'PCF2' firms are those that are connected to the wider set of politicians, including all ministers, parliamentarians and other elites that held political responsibility in the period under investigation. With this differentiation, we aim to gain insights into the mechanisms by which elites allocate rents.

We find that PCFs capture a significantly larger share of contract values (Figure 1). While political connections are widespread and 38% of contract-winning firms are PCFs, they capture 78% of the total value of contracts. However, not all political connections appear to matter. Only PCF1 firms are able to capture larger contracts, while PCF2 firms, connected to the wider set of political elites, receive contract values that approximate their share in the number of all firms.

**FIGURE 1 SHARE OF FIRMS, CONTRACTS, AND CONTRACT VALUES BY FIRM TYPE**



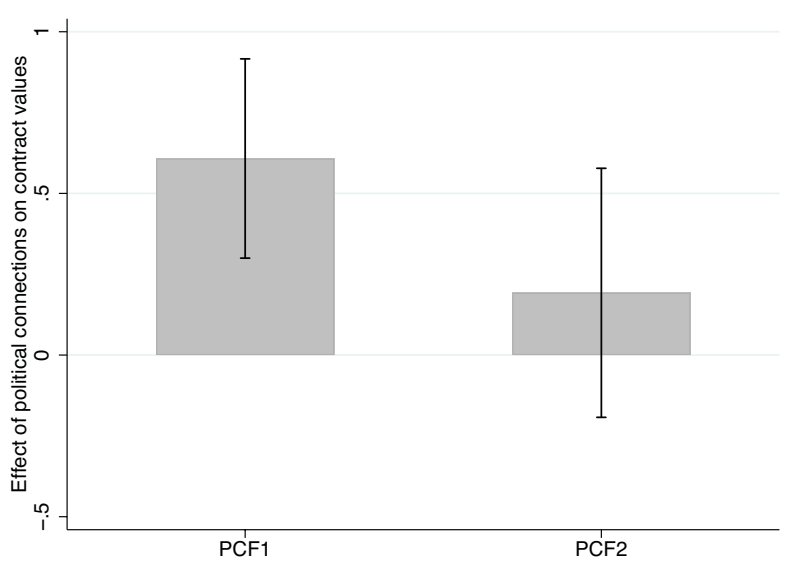
PCF1 firms, however, are also larger firms on average. It could be that PCF1 firms win larger contracts because they bring the necessary expertise to execute more complex projects. We therefore estimate the effect of political connections on the value of contracts by taking into account various potential confounding variables, including a firm's size, age and the sector it operates in, among others. After accounting for all of these effects, we find that PCF1 firms still obtain significantly larger contract values of almost 37% compared to the value of the average contract (Figure 2). This effect is by an order of magnitude larger than what other studies find (see, for example, Goldman et al. 2013).

However, this effect is only significant for PCF1 firms. PCF2 firms, despite being connected to a wider network of elites of which a part is very powerful in their regions of influence (Rizkallah 2017), do not obtain larger contract values. This result draws attention to the complexity of the phenomena that political connections evoke. Political connections appear to be a necessary but not a sufficient condition for elites to be able to reap rents from CDR.

The fact that not all elites impose discretion on procurement decisions is in line with recent evidence that emphasises the importance of norms of power-sharing behaviour (Bormann et al. 2018) and refines recent evidence that points to the exercise (or threat) of physical force as a dominant mechanism to guard agreements of resource sharing (Berman et al. 2017). In the Lebanese case, the allocation of contracts appears to be driven by such norms of power-sharing behaviour, as even powerful elites generally accept the deployment of firms in their region of influence that are connected to competing elites.

While elites would have the capacity to threaten physical force in case ‘their’ firms fail to win contracts in their regions and/or could obstruct the works of competing firms, they generally abstain from doing so. Instead, they accept the allocation of rents from an institution such as CDR after its staffing has been bargained among elites.

**FIGURE 2 IMPACT OF POLITICAL CONNECTIONS ON CONTRACT VALUES OF INFRASTRUCTURE PROJECTS**



### MECHANISMS OF COLLUSION

It could still be, however, that PCFs became connected only once they grew and became important on a national level. Firms would have become powerful not because of their superior connections, but because of the superior skills of their management that made them attractive for elites to buy in (Bandiera et al. 2020). We conducted a series of expert interviews with politicians, real estate developers, procurement specialists of donors and executives of CDR to qualify which mechanism prevails. We find two central reasons that prevent such reversed causation from being dominant.

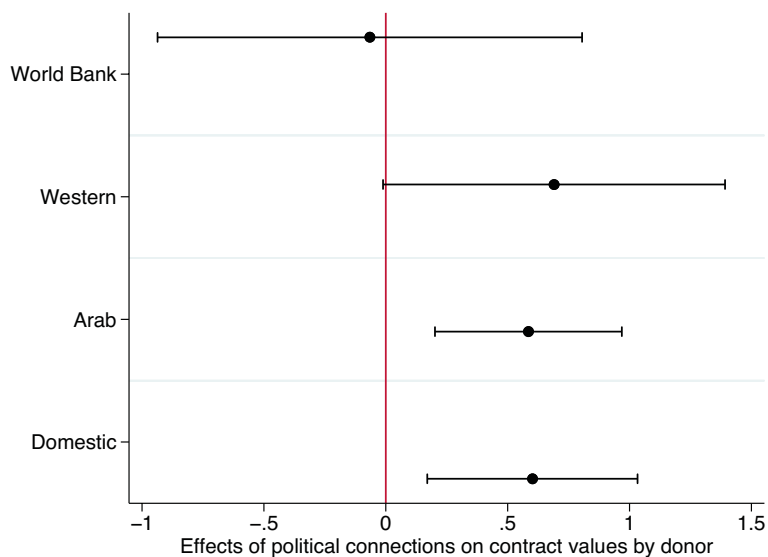
First, the board of CDR has remained unchanged since before the period of investigation in this study. Even competition among firms for better connections cannot explain our results. Second, CDR keeps the number of firms that are allowed to bid on tenders small. Before being able to place a bid, CDR requires firms to apply for being listed on lists of eligible bidders. The requirements to be listed, however, are so high that new firms generally need some ‘buy-in’ from established (often connected) firms to be able to work as a sub-contractor until they fulfil CDRs requirements.



By keeping the pool of board members and firms closed, the dominant mechanism of rent allocation appears to relate to the maintenance of complex networks among elites, their protégés and firms. Elites collude with eligible firms that bid for a given contract by ‘pre-allocating’ a contract to a given firm. Other firms learn how to overprice a given bid by knowing that the favour will be returned at a later stage (Hudon and Garzón 2017). As the pool of players involved is small and the game repeated, these networks are credible and stable over time.

As an additional indirect proof of this network hypothesis, we find that these networks break down once the pool of eligible firms is opened up. We leverage the fact the World Bank, a major implementing partner of CDR, explicitly requires CDR not to avail of these lists for any project it finances. By disaggregating the effects of political connections among donor-financed contracts, we find that World Bank-financed contracts are not significantly larger than others (Figure 3). Once the number of players increases, it appears to be difficult to maintain collusive networks and relay the information necessary to overprice bids (Huck et al. 2004).

**FIGURE 3 EFFECTS OF POLITICAL CONNECTIONS OF PCF1 FIRMS ON CONTRACT VALUE BY DONOR**

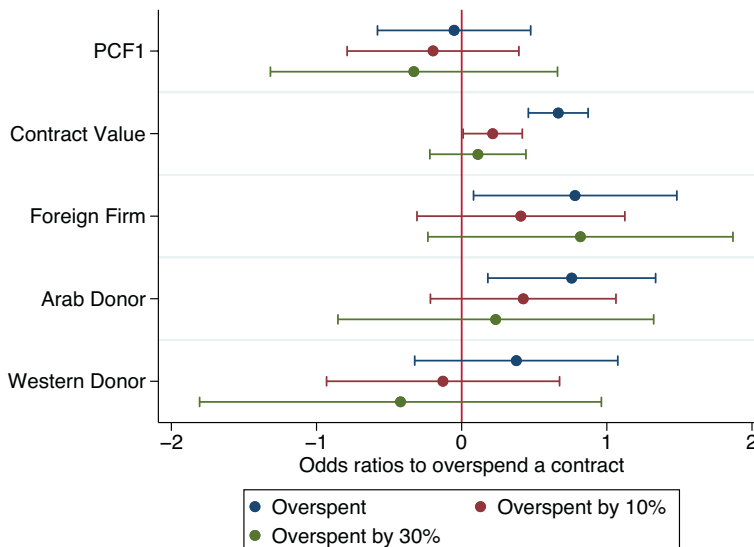


## CONTRACT MONITORING AND DONOR SUPERVISION

We are left with the question of whether collusion extends to contract monitoring as well (the third stage of the Dávid-Barrett and Fazekas framework). We leverage a specificity of our dataset in which we observe the initial contract values. On its webpage, however, CDR offers the actualised expenditures for each contract. We can hence observe the difference in initially contracted and actual expenditures and draw inferences on the factors responsible for overspending.

The same networks that allow contracts to be overpriced do not appear to systematically influence how contracts are overspent. By disaggregating contracts into three categories – those that are generally overspent, overspent by 10%, or by 30% of the initial contract value – PCF1 firms are not more likely to spend more on a given contract (Figure 4). Instead, larger contracts are more likely to be overspent, which hints at challenges on the side of CDR to supervise more complex projects. Moreover, foreign firms appear more likely to overspend, presumably due to the difficulty to monitor and punish weakly performing firms in repeated interactions within the framework of a future contract. Lastly, overspending appears to be dependent on the origin of donors. While contracts funded by Arab donors are more likely to be overspent, contracts funded by Western donors, including international organisations such as the World Bank, are not more likely to be overspent and appear to be supervised by a better set of oversight mechanisms.

**FIGURE 4 FACTORS DETERMINING THE LIKELIHOOD OF CONTRACTS BEING OVERSPENT**



## CONCLUSIONS

In countries with weak and politicised public sectors, typical of many post-conflict power-sharing arrangements, the design of valuable procurement institutions is not left to chance. They come to life to solve a problem of resource allocation. Infrastructure programmes can thus have inadvertent effects on the distribution of economic and, eventually, political power.

In light of the above results, two policy recommendations emerge by which elite-level collusion can be minimised or prevented. First, the openness of tenders must be guaranteed by carefully reviewing or abrogating measures that constrain the competitiveness of bids, such as lists of eligible bidders. In an otherwise functioning institution such as CDR, collusive networks can be undermined when the contestability of sectors is ensured (Gatti and Lederman 2021) and the network of individuals involved in collusion made too large to be sustained.

Second, for infrastructure programmes that are subject to conditions of international donors, such as Lebanon's Capital Investment Plan (Atallah et al. 2019), conditionalities for financing can target the design of implementing institutions. Auditing requirements, for example, or periodic changes in the composition of a board, can be effective means to avoid that collusive networks become entrenched.

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# CHAPTER 10

## Pandemic corruption: Insights from Latin America

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**Jorge Gallego, Mounu Prem and Juan F. Vargas<sup>1</sup>**

Universidad del Rosario

On 30 April 2021, Wilson Witzel, the then governor of the State of Rio de Janeiro, was convicted for collecting bribes to assign a US\$150 million emergency contract to build and manage seven field hospitals specialised in treating Covid-19 patients. This case is not an isolated anecdote (Milata 2020); cases of corruption associated with the management of resources earmarked to deal with the Covid-19 emergency seem to have proliferated since the outbreak of the pandemic (Rose-Ackerman 2021).

In this chapter, we argue that the global economic and public health emergency caused by Covid-19 has promoted instances of corruption, favouritism and waste of public resources. The reason behind the pandemic-driven corruption surge is simple: the health and economic crisis has pushed governments to spend large amounts of resources in a short period of time (Gentilini et al. 2020). In turn, this has led to the simplification of public procurement procedures, as well as to a weakening of oversight schemes (De Michele and Cruz 2020).

In the next section of this chapter, we delve into the economic, political and institutional mechanisms that explain why, in times of crisis such as the one generated by the Covid-19 pandemic, corruption and inefficiency problems tend to be exacerbated. In the third section, we present some cases of this phenomenon in Latin America. The fourth section discusses the Colombian case in detail. In the fifth section, we offer an overview some tools that can be used to control this phenomenon. The last section offers some concluding remarks.

### **CORRUPTION AND PANDEMICS**

Why do corruption, favouritism and inefficiency increase in times of crisis? A growing literature has shown how instances of malfeasance and rent-seeking tend to proliferate in extraordinary times such as wars, natural disasters or epidemics (Leeson and Sobel 2008, Gallego 2018, Khemani 2020, Maffioli, 2021). Following Querubin and Snyder

<sup>1</sup> We would like thank Simeon Djankov for helpful comments and suggestions. We thank Misión de Observación Electoral, Contraloría General de la República, and Luis Martínez for sharing with us data used in this project. Erika Corzo provided excellent research assistance.

(2013), we argue that after the occurrence of a shock of this nature, two complementary forces limit both the probity and efficiency of public spending. Crises usually generate an increase in corruption *opportunities* as well as a deterioration of *control* mechanisms.

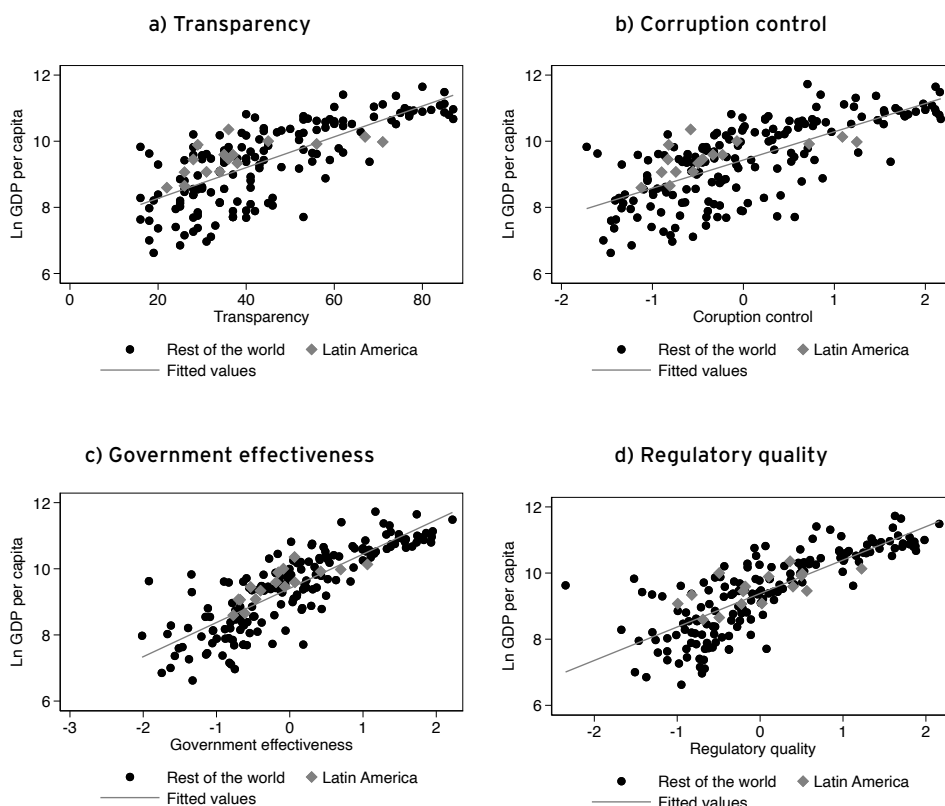
In terms of the opportunities for rent extraction, the Covid-19 pandemic pushed governments to promptly spend large amounts of resources both to address the public health challenge and to offset the negative socioeconomic impact of the pandemic. While these measures are necessary and often well intentioned, the spending surge has expanded the rents extraction opportunities of officials and bureaucrats (Bellows 2020). In other words, the spending caused by the emergency created a sort of *rapacity effect*, whereby a windfall in extractive resources attracts certain groups to seek to appropriate the available rents through various types of illicit strategies, including corruption (Dube and Vargas 2013). In relation to this mechanism, Querubin and Snyder (2013) show how the wealth of congressmen in the United States increased in the 1860s, precisely when public spending increased considerably due to the Civil War. Moreover, wealth accumulation was much larger for congressmen involved in military contracting or affiliated to committees in charge of military spending.

Second, public procurement usually takes place in an institutional environment shaped by a variety of rules and restrictions, the main objective of which is to promote competition among bidders and to limit discretion in the allocation of contracts (Bosio et al. 2021). In many countries, for example, direct contracting (which often lacks any instance of competition) is restricted to exceptional circumstances. When large catastrophes like the Covid-19 pandemic occur, however, governments tend to temporarily relax public procurement rules (Rose-Ackerman 2021). While well-intended, such institutional changes can have the side-effect of widening the opportunities for corruption and fraud. Based on the evidence collected by Gallego et al. (2021), in a later section we show how this was recently the case in Colombia.

## LATIN AMERICA DURING THE PANDEMIC

Latin America has been one of the regions most affected by Covid-19. It is also one of the regions with the highest levels of corruption. It is therefore not surprising that some of the mechanisms described in this chapter have become salient in Latin America. Figure 1 shows that there is a positive correlation globally between per-capita GDP and proxies of transparency (panel A), control of corruption (panel B), government effectiveness (panel C) and regulatory quality (panel D). It is worth noting that, relative to the world average and given their GDP level, most Latin American countries have low values on all these measures.

**FIGURE 1 LOG GDP PER CAPITA AND TRANSPARENCY**



Notes: This figure presents a scatter plot between the log of GDP per capita in real terms and a transparency index (Panel A), a corruption control index (Panel B), a government effectiveness index (Panel C), and a regulatory quality index (Panel D). The data for Panel A comes from Transparency International and for Panels B, C, and D comes from the World Bank.

Most Latin American governments had a similar response to the outbreak of the pandemic in terms of public procurement. First, the executive declared a ‘state of emergency’ or ‘public calamity’, thus securing special attributions to deal with the crisis. As a consequence, public procurement regulations were made more flexible, enabling modalities such as direct contracting as well as other mechanisms for purchasing without tenders. For instance, a presidential decree promulgated on 27 March 2020 in Mexico enabled the Ministry of Health to acquire goods and services to fight the pandemic without carrying out public bidding processes. Similar measures were issued in practically all countries in the region.<sup>2</sup> In some contexts, moreover, transparency rules that require publishing key information about contracts were relaxed, and officials were even shielded from possible investigation or sanctions associated with pandemic-related

<sup>2</sup> On 11 March Peru declared a “State of Health Emergency”; on 16 March, the “National Emergency” was decreed in Costa Rica, the same day that a “Decree of Exception for Public Calamity” was promulgated in Ecuador and one day before Colombia’s president declared a “State of Sanitary Emergency”; on 19 March, Chile declared an “Exceptional Constitutional State of National Catastrophe”, and the day after Brazil issued a “State of Public Disaster”.



spending. In Brazil, for example, President Jair Bolsonaro suspended the deadlines for public entities to respond to requests for information and protected public officials from actions or omissions in their efforts to address the emergency.<sup>3</sup>

Soon after these measures and decrees were implemented, corruption scandals related to the purchase of medical supplies and services and to the acquisition of products to alleviate the economic hardship caused by the pandemic began to proliferate in Latin America. One example in Ecuador is that of Hospital Docente de la Policía de Guayaquil, which acquired 400 mortuary bags at a value of \$130 each, almost seven times their commercial value of \$20.<sup>4</sup> In Mexico, the Instituto Mexicano de Seguridad Social bought mechanical ventilators at a unit price of \$63,000 from a company called Cyber Robotic Solutions. Other providers charged \$35,000 for the same item, and it was revealed that the selected seller belonged to the son of the Federal Electricity Commission. In Brazil, Transparency International revealed how the government acquired surgical masks for a value 12 times higher than the market value, and from a company that had ties to the president.<sup>5</sup> Something similar happened with a contract for the provision of hospital gowns, which was awarded to a company that donated to the electoral campaigns of members of the government. In Chile, over 100 companies were created during the pandemic and benefited from numerous public contracts to deal with the emergency.<sup>6</sup> Investigations of these contracts revealed substantial cost overruns and allocation to relatives of public officials and to companies whose corporate purpose had nothing to do with the services for which they were hired. In Honduras, the purchase of seven mobile hospitals for \$47 million was investigated for incurring a cost overrun of over \$12 million.<sup>7</sup> Bolivia's health minister was removed and imprisoned in May 2020 for authorising the purchase of 179 ventilators at a unit price of \$27,000 from a Spanish company that publicly advertised the same product at \$11,000.<sup>8</sup>

## THE COLOMBIAN CASE

In Gallego et al. (2021), we analyse the Colombian case in detail, and find support for one of the mechanisms described above. Just a few days after President Duque declared a state of emergency in the country, the director of the national public procurement agency, Colombia Compra Eficiente (CCE), issued a statement clarifying the implications of the decree for public procurement. According to Colombian law, direct contracting

3 For a detailed analysis of the public procurement measures implemented by the governments of the region to face the pandemic, see Lawyers Council for Civil and Economic Rights (2020). See also <https://ojopublico.com/1802/compras-de-la-pandemia-opacidad-y-sin-competencia>.

4 [www.france24.com/es/20200508-corrupcion-insumos-medicos-covid19-pandemia](http://www.france24.com/es/20200508-corrupcion-insumos-medicos-covid19-pandemia). Hospital General Guasmo Sur and Instituto Ecuatoriano de Seguridad Social paid higher prices for the same item (\$145 and \$148, respectively).

5 <http://ipsnoticias.net/2020/04/peligro-corrupcion-lucha-anticoronavirus-america-latina/>

6 [www.connectas.org/las-companias-chilenas-recien-creadas-que-ganaron-con-la-pandemia/](http://www.connectas.org/las-companias-chilenas-recien-creadas-que-ganaron-con-la-pandemia/)

7 <https://es.insightcrime.org/noticias/analisis/corrupcion-pandemia-honduras/>

8 [www.dw.com/es/arrestan-a-ministro-de-salud-de-bolivia-y-ordenan-auditor%C3%ADa-poresc%C3%A1ndalo-respiradores/a-53520623](http://www.dw.com/es/arrestan-a-ministro-de-salud-de-bolivia-y-ordenan-auditor%C3%ADa-poresc%C3%A1ndalo-respiradores/a-53520623)

is restricted to exceptional situations, such as the ‘manifest urgency’ caused by a catastrophic event. CCE encouraged mayors and governors throughout the country to declare manifest urgency and use direct contracting in relation to emergency care.

To study the effect of this relaxation of procurement protocols, we use public information from Colombia’s Sistema Electrónico para la Contratación Pública (SECOPE), which records purchases made by all public entities in Colombia. From this source, we studied over 360,000 contracts signed between 1 January and the end of April 2020, including the contract budget and duration, its purpose, and how the contract was awarded. In particular, we tracked the change in the use of discretionary contracting around the time of the outbreak of Covid-19 in the country. A large body of empirical evidence suggests that there is a close relationship between direct contracting and corruption (CAF 2019, Gallego et al. 2020, Decarolis et al. 2020).

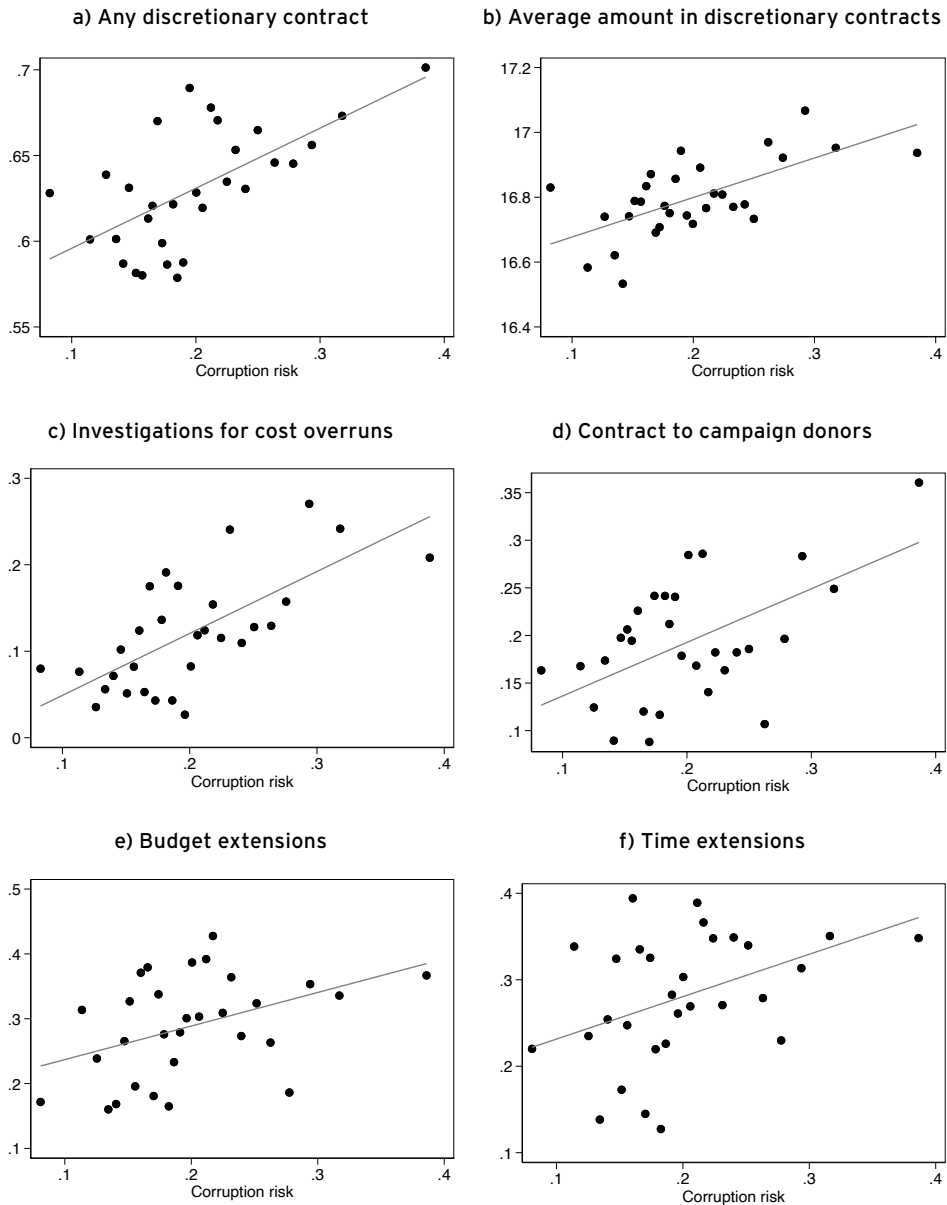
One of our main findings is that, after the pandemic arrived in Colombia, the use of direct contracts differentially increased in municipalities that, before the emergency, presented a greater risk of corruption. Since there is no official index of corruption at the municipal level in Colombia, we used machine learning models to predict this baseline corruption risk. In the models, the outcome variable is a dummy that indicates whether the mayor of a municipality was prosecuted by the Office of the Inspector General between 2008 and 2015.<sup>9</sup>

Here, we present a descriptive analysis that illustrates how public procurement processes differed at the outset of the pandemic between historically more and less corrupt municipalities in Colombia.<sup>10</sup> Figure 2 presents the correlation between our municipal corruption index and some indicators of public procurement, measured after the outbreak of the pandemic. Panels A and B show that in the municipalities with the highest risk of corruption, both the probability of using at least one discretionary contract (on a given week) and the value contracted using this modality are higher. In other words, although the possibility of using direct contracts increased throughout the country due to the declaration of emergency, the increase was greater in places that had historically been more corrupt.

9 For more details on the index, see Gallego et al. (2021).

10 In Gallego et al. (2021), we present a rigorous causal analysis based on a difference-in-differences model.

**FIGURE 2 RISK OF CORRUPTION AND PUBLIC PROCUREMENT DURING THE COVID-19 PANDEMIC**



Notes: This figure presents a scatter plot between different public procurement variables and a municipality level risk of corruption index measured before the pandemic at the municipality in Colombia. Variables are collapsed from the first case of COVID-19 in Colombia (March 6th) until the end of April. Any discretionary contract is a dummy for whether the municipality signed a discretionary contract in a given week. Average amount in discretionary contracts is the logarithm of the average discretionary contract value signed in a municipality in a given week. Investigations for cost overruns is a dummy for whether the mayor was investigated for over prices in public procurement contracts. Contract to campaign donors is a dummy for whether a campaign donor received a contract. Budget (Time) extensions is a dummy for whether the municipality had signed contracts that asked for budget (time) extensions. All panels control for the outcome variable in the pre-pandemic weeks of 2020, as well as for total population, population density, a poverty index, and department fixed effects.

While it could be argued that discretion does not necessarily imply corruption, Panel C of Figure 2 shows that the municipalities with the highest risk of corruption are more likely to have been issued an alert for cost overruns by the Office of the Comptroller General. Moreover, Panel D shows that it is more likely that in these places the contracts were assigned to campaign donors in 2019, the year when the mayors in charge of dealing with the crisis were elected. Panels E and F, additionally, show that in these places the contracts are more likely to exhibit implementation inefficiencies, in the form of budget or time extensions.

## CONTROL MECHANISMS

The arguments and evidence presented in this chapter may seem daunting. Are we cursed to suffer surges in corruption in the aftermath of a catastrophe? Naturally, a policy recommendation cannot be that governments curb spending in the face of a large negative shock. Nor it can tighten public procurement rules and thus delay relief packages that help the most vulnerable. Therefore, little can be done in terms of offsetting crisis-driven corruption *opportunities*. We are thus left with how to enforce *control* and monitoring.

A number of researchers have studied the potential of top-down and bottom-up accountability strategies to contain corruption. In particular, the role of audits and monitoring mechanisms has been highlighted (e.g. Olken 2007, Avis et al. 2018). This suggests that strengthening institutional efforts to monitor spending and procurement, as well as encouraging community-level monitoring, are strategies that could contain corruption in contexts in which catastrophic events create rent-seeking opportunities.

On the first strategy, Colombia's experience is important. After the outbreak of pandemic-related corruption scandals, watchdogs and control agencies such as the offices of the Attorney General, the Comptroller General, and the Inspector General created an institutional alliance called Transparency in the Emergency to monitor crisis-related procurement. On the second strategy, it is essential to strengthen transparency mechanisms and make contracts public and readily available. For instance, web-based public procurement platforms such as SECOP in Colombia or ChileCompra have been key to oversee public contracting during the emergency. Civil organisations have also played a fundamental monitoring role in several countries. In Argentina, for instance, Poder Ciudadano – the local chapter of Transparency International – created the Covid-19 Procurement Observatory to provide citizens with information on public procurement.

Statistics and data science can strengthen the control capacities of authorities and citizens (e.g. Colonnelli et al. 2020). In turn, this can help to allocate more efficiently the resources of watchdog agencies, which tend to be scarce. In Colombia, for example, the Office of the Comptroller General created a special unit of data scientists to use such tools to detect irregularities in public procurement during the pandemic.

In addition to being able to react to changes in the opportunities faced by bureaucrats, control strategies must also be preventive. This could be achieved, for instance, by enabling specialised catalogues on emergency-related items and price framework agreements with previously registered suppliers. Framework agreements serve as a mechanism to aggregate demand, which in turn allows contracting agencies to access more favourable conditions. It also increases transparency in procurement transactions. The case of Colombia is again illustrative. After the outbreak of corruption scandals associated with public procurement during the pandemic, CCE created a “Covid” catalogue within its Virtual Store.<sup>11</sup>

## CONCLUSION

In most countries in the Latin America region, the Covid-19 outbreak pushed governments to increase spending and lift controls. This was quickly followed by scores of corruption scandals. The Colombian case is particularly illustrative. Discretionary contracting increased substantially in the face of the pandemic, especially in places that exhibited a higher baseline risk of corruption. There, public contracts received more judicial alerts for cost overruns, were awarded to campaign donors, and experienced large inefficiencies in their execution.

Importantly, the evidence discussed in this chapter does not imply that corruption surges amid large crises are unavoidable. Audits and citizen oversight should be strengthened in these circumstances. To this end, open data and transparency are essential. Moreover, data science offers powerful tools that can enhance monitoring and control activities. Finally, certain institutional arrangements – such as specialised emergency catalogues or framework agreements – can help prevent malfeasance by making acquisitions more transparent and cost-efficient.

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<sup>11</sup> [www.colombiacompra.gov.co/tienda-virtual-del-estado-colombiano/salud/instrumento-deagregacion-de-demanda-emergencia-covid-19](http://www.colombiacompra.gov.co/tienda-virtual-del-estado-colombiano/salud/instrumento-deagregacion-de-demanda-emergencia-covid-19).

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## **PART III**

# **DISCRETION DURING EMERGENCIES**





# CHAPTER 11

## Procurement during health crises when not just incompetence and corruption matter

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In November 2020, the UK's National Audit Office issued a report (NAO 2020) identifying a lack of transparency and inadequate documentation in some key procurement decisions to acquire basic health equipment during the first wave of the Covid-19 pandemic. The report shows that many contracts were awarded directly without a competitive tender process and through amendments and extensions to existing contracts and framework agreements. It also shows that the adoption of a high-priority lane assessment procedure made new suppliers, including some with political connections, eligible for public procurement without the usual due diligence. Finally, the report notes that many contracts were awarded at higher prices than average. In reaction to the report, the government explained these ad-hoc adjustments by the health risks associated with the slow 'business-as-usual' (BAU) process.

Under normal circumstances, corruption and the lack of skills of politicians would offer the main possible explanations for the adoption of exceptional procurement measures overruling reasonable governance standards. The crisis allowed politicians to offer an additional explanation: their relationship to a high degree of uncertainty and the need to adapt fast in this context.

From a longer-term policy perspective, the UK example helps illustrate the need for governments to develop a framework defining ex ante whether, when, why and how it should be possible to rely on ad-hoc adaptation of the slow BAU approach to procurement processes. Many governments have adapted their rules during the Covid-19 crisis, although with very different levels of detail and varying degrees of debate in parliament (OECD 2020). The European Commission (2020) recommended accelerating open or restricted procedures, allowing negotiated procedure without publication, and considering direct awarding under certain circumstances.

Such upgraded guidelines are needed to smooth the management of crises without giving up on local specificities, including political preferences and cultural biases. However, they should be precise enough to allow an auditor to assess decisions such as instructing the award of a £30 million public contract for the provision of test kits to a local pub landlord with no obvious expertise – who contacted a Member of Parliament directly on

WhatsApp. They should also allow the evaluation of the extent to which the price paid in a crisis context should differ from the market average. Transparency International (2020) argues that, in some extreme cases, governments purchased masks at 25 times the original price.

This is not exceptional – it is a recurring issue characterising procurement processes in many countries during the pandemic. The resources allocated to monitoring and enforcing rules tend to be lower than what is needed to make the system work without corruption. This is probably why, according to Garcia (2019), corruption explains at least 10–25% of the \$7 trillion the world spends on health service in a BAU context.

Digging a bit deeper into the recent evidence suggests that the slow progress in putting the monitoring systems in place is somewhat understandable in the unique context in which we are all learning key information as we go along. In this chapter, we focus on how the diversity of sources of uncertainty arising in times of crises changes the optimal design of procurement processes and their audits, as well as the relative importance of various institutional actors involved in the process. We also discuss how uncertainty and ad-hoc adaptations to BAU rules can influence the selection and incentives of the politicians. In the next section, we explain the options available to minimise corruption and incompetence in procurement processes in the context of known risks (Estache and Foucart 2018). We then discuss how the design could be adjusted to account for uncertainty. We conclude with some suggestions on how to improve procurement guidelines.

### **PROCUREMENT COSTS, RISK AND INSTITUTIONS IN A BUSINESS-AS-USUAL SCENARIO**

The design of an ‘ideal’ procurement system in which politicians know their risk of delivering a project at high cost is relatively well understood, and so is the central role auditing plays in the efficiency of procurement processes. Such a system is also expected to minimise the incompetence and corruption of the individuals who choose to become politicians (and by extension, the bureaucrats in charge of implementing the decisions). It relies on the complementarity between independent public sector auditors, such as the National Audit Office in our earlier example, and judicial courts. Auditors can help increase the transparency of cost overruns due to corruption, but they will only matter if the country can also rely on a judicial system capable of penalising corruption. Demonstrating the importance of these interactions for the efficiency of procurement processes and their audit is essentially what we set out to do in Estache and Foucart (2018).

Our model confirms, unsurprisingly, that improving the quality of both institutions directly decreases the probability of corruption. There are, however, also indirect effects, and the various tools available involve trade-offs. Investing in better judges and in more thorough detection of cases of dishonesty is useful when the main problem is corruption, but can be counterproductive if the problem is that too many incompetent individuals

want to become politicians. Investing in better auditing and cost assessment of public projects also deters corruption, but may worsen the selection problem if only the least able citizens enter politics.

These ambiguous impacts make the case for higher quality democratic screening even stronger. Increasing transparency over the costs of public procurement is a necessity (Hutchinson et al. 2019). Yet, it continues to be a challenge for many countries, both at the national and subnational level. In the context of the pandemic, Kaufman (2020) shows that poor governance, which includes poor accountability and transparency as some of its dimensions, can easily be correlated with failed policy implementation and compliance, including procurement policies.

These insights are clearly relevant for any effort to reform procurement processes and their audits to be useful both in normal and exceptional times, but they are insufficient to address the uncertainties associated with the management of a health crisis.

## HOW DOES A PANDEMIC CHANGE THE OPTIMAL DESIGN OF PROCUREMENT PROCESSES?

In the model in Estache and Foucart (2018), a citizen chooses to become a politician only based on his or her privately known probability of being able to deliver a project at a low cost. However, when the sources of uncertainty go well beyond risk assessments or risk perceptions and nobody knows the true probabilities of future events, the citizen's choice is likely to be more complicated. More importantly in the short run, unknown risks influence the choices politicians make.

This is where experts enter the picture as a source of information. Nobody knows the probabilities, but many experts have a view on them. A problem arises when experts can present radically different projections of key sources of uncertainty. For instance, there is disagreement on the probability of a pandemic hitting the country, on the cost of the pandemic, on the importance of the supply difficulties in the short and medium run, and on the cost-to-benefit ratio of all possible medical and non-medical interventions.

This diversity of sources of information is bound to force politicians to take a position that not only involves their preference towards risk, but also their perception of risk and its relationship to uncertainty.<sup>1</sup> The rest of this section summarises how this changes the modelling of the options politicians need to consider and how they affect the optimal design and auditing of procurement processes. We focus on five dimensions: (i) the lower margin for trade-offs, (ii) the effects of hindsight biases, (iii) the optimal choice of contract awarding techniques, (iv) the optimal pricing strategy, and (v) the temptation to focus only on low-risk projects and partners.

1 For a broader discussion of the role of ambiguity and decision making in a pandemic, see Berger et al. (2021).

## THE APPARENT REDUCED MARGIN FOR TRADE-OFFS

When faced with high levels of uncertainty, politicians may decide to question many of the usual procurement tools. In the UK, for instance, as in many other countries, policy decisions on healthcare in a BAU context are made using an index of quality-adjusted life-years (QALYs).<sup>2</sup> They help make key procurement decisions and inform their ex-post audits, including the assessment of the cost-efficiency of one medicine against another, or the relative benefit of investing in different parts of the healthcare system.<sup>3</sup>

In the face of a disease that has the potential to kill millions of elderly people, a QALY approach based on uncertain estimates may look like the kind of dangerous gamble no politician wants to take publicly. For this reason, there is little public acknowledgment of the very real trade-offs the situation creates; the only element of language used by politicians is that “we are doing everything possible to save every single life.”

The impact of this reaction on procurement effectiveness and its auditing is not trivial. Assessing whether a contract was too expensive becomes much more difficult for an auditor since it depends on (i) the specific preferences of the politician in place in using the information produced by the experts, and (ii) his or her degree of aversion to known and unknown risk. A politician who is more averse to an unknown risk will be happy to pay more for a scarce resource than a less uncertainty-averse politician will. Yet both will be convinced that they made the right choice at the best possible price. The auditor will focus on the costs data as a reliable accounting measure, but he or she will ignore that it also reflects the differences in the preferences of the politician. Yet these differences may explain, for instance, why Israel, the UK or the US were willing to pay more for their vaccines than most of continental Europe. To our knowledge, current evaluations models or procurement guidelines do not address these sources of uncertainty explicitly.

## THE NEED TO LIVE WITH THE INCREASED RELIANCE ON HINDSIGHT BIASES

If the information available to the politician and how he or she values uncertainty are unknown, it gives them a margin to rely on hindsight biases to turn everything that went well into the result of an informed decision (Roese and Vohs 2012), while explaining away high costs by the lack of information available.

This trend is visible since the beginning of the pandemic, even for the most scrutinised decisions. When the death rate of the UK had soared to one of the highest in Europe, the government hammered the message that it had to take decisions under uncertainty – the role of asymptotic transmission was unknown at the time, and it was thus reasonable

<sup>2</sup> See MacKillop and Sheard (2018) for a history of the use of this term.

<sup>3</sup> While sometimes controversial, the tool remains relatively easy to rationalise as a way to allocate scarce resources in the most efficient way.

to limit non-medical intervention to isolating people with symptoms. In contrast, the government presented the early success of the vaccination drive as the result of a careful planning, without any mention of luck or uncertainty.

When auditors have to assess much more technical decisions on the award of public contracts, the temptation becomes even larger to rewrite the history of what decision makers knew at the time. Besides tracking the evolution of the political narrative and increasing its transparency to shift the burden of proof back onto politicians, there is not much an auditor or judge can do.

## THE IMPACT ON CONTRACT AWARDING PROCESSES

Auctions are a key component of procurement processes. Among the important properties of a successful auction is the ability to attract a large pool of applicants (Klemperer 2004). Yet, the BAU approaches to awarding contracts have been voluntarily short-circuited in many instances since the beginning of the pandemic (OECD 2020).

The emergency context led many governments to focus on speed rather than on the number of applicants. This adjustment to standard practice has been justified in two main ways, and well-illustrated by the debates that surrounded the distribution of vaccines across countries. The first justification was that production capacity may be limited in the short run and that there was a risk of having to deal with competition between countries rather than between firms. The second was that even when contracts had been signed, the slower the process, the higher the likelihood that suppliers would renegotiate. Both justifications are reasonable but likely to be difficult to assess ex post.

Considering the desirability of a switch from bidding to what in effect was often a formally or informally negotiated procedure in the context of crisis is necessary to ensure a fair ex-post audit. This is particularly important in view of the differences in the rate of time preference that characterise a crisis as compared to a BAU context. Any modelling of the optimal procurement under uncertainty would have to assess the relevance of the choice of the discount rate. It is likely that relying on a much higher, more realistic discount rate as compared to the BAU value will increase the social rate of return in a crisis context.

## THE IMPACT ON THE OPTIMAL PRICING STRATEGY

The pricing strategy is another reason why it could make sense to observe above-average prices in a context of uncertainty. The choice between a fixed and flexible price becomes more complex in an uncertain world. This is a particularly difficult decision if there are adjustment costs to accelerating production capacity in order to meet massively pressing demand that is unlikely to be sustained in the longer run. These adjustment costs would have to account for the fact that the firm would have to live with long spells of unused capacity until the next health crisis comes along.

Gros and Gros (2021) argue that a fixed-price contract, which is common in practice, fails to provide any incentive to producers to take on the adjustment costs needed to speed up delivery. They argue that the optimal contract may include a decreasing price schedule over time matching the evolution of the social cost of delays. It would also allow firms to fully recover the adjustment costs due to the demand to accelerate the production process. From an auditing perspective, cost benchmarking would have to be adjusted to account for these exceptional excess costs, while separating fair cost adjustments from unjustified cost overruns.

### **THE BIAS IN FAVOUR OF LOW-RISK PROJECTS AND PARTNERS**

A final dimension of the optimal design of procurement that is likely to be influenced by uncertainty and that will make auditing more challenging is the bias that can be introduced by the existence of low-hanging fruit. In Estache and Foucart (2018), we highlighted that auditing gives an incentive to politicians to focus on low-risk projects. The idea is to avoid being associated with anything that auditors could end up flagging as a cost overrun, even if the risky project was *ex ante* a good idea. This implies that, as uncertainty increases, the procurement of necessary projects may not be launched.

Let us assume that the pub landlord contacting a government minister on WhatsApp is actually the most able person to deliver the test kits the government needs. Would the minister take the risk of awarding him the contract if he expects that any failure to deliver what he promised may lead the judiciary to believe it was a case of corruption? As in the original model, the size of false positives/false negatives is the key – the optimal policy deters bad politicians but not good politicians.

### **CONCLUSIONS**

The analysis summarised in this chapter can be translated into a few initial ‘low-risk’ suggestions to help guide the design of procurement and its auditing under exceptional circumstances in an environment in which corruption and incompetence are reasonable concerns. These suggestions should also help any public inquiry on pandemic procurement.

First, politicians should be required to disclose to the auditors what their specific objective function was at the time of making the decision. How do they value avoiding the loss of a life when the probability of this loss happening is unknown? What about the cost of waiting to acquire more certainty on the risk? What about the balance between an uncertain loss of life and the certain economic cost of closing the economy? This

would increase transparency and implicitly inform on their perception and aversion to uncertainty as well as on the rate of time preference, even if it is clear that information on these dimensions is likely to be approximate.<sup>4</sup>

Second, it is not enough to look at the contracts that were awarded; auditors also need to have the information about the contracts that were not awarded. Only a comparison of the profile and offers of the firms that did not provide the equipment and services will allow us to understand if the decisions made were consistent.

Third, despite the common preference among procurement advisors for a certain rigidity in contract design, exceptional circumstances seem to justify the need to consider contracts that are more flexible. With the proper safeguards specified in the first two suggestions, the need to act fast may justify the emergency use of negotiated contracts and more flexible pricing strategies (such as a menu of contracts approach à la Laffont and Tirole 1986). This suggestion also relates to recent work showing that discretion might be under-utilised in public procurement (Bandiera et al. 2020, Decarolis et al., 2020, Coviello et al. 2018), in particular in countries with high public sector capacity (Bosio et al., 2021).

Fourth, the guidelines should mandate the budgeting of a professional communication strategy to improve information sharing on the multiple sources of uncertainty, on the recurring update requirements and on the validity of the multiple, often incoherent, expert opinions. Lack of clarity, contradictions and unexplained updates have fuelled confusion and frustration in many countries during the pandemic. Improving communication with the media, civil society, professional associations and all other interested actors is also a way to improve the accountability of decision makers.

Ultimately, one of the underestimated keys to improve procurement in uncertain times is to force politicians to document in real time their relationship to trade-offs and uncertainty, at least in confidential communications with the regulator as is common in other regulated activities demanding auditing. This will also make it easier to justify the necessary increased contractual flexibility recommended by theoretical research and inform guidelines to better manage the next health crisis.

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# CHAPTER 12

## Emergency procurement and the Covid-19 crisis: Insights from Italian administrative data

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The Covid-19 pandemic was accompanied by extensive failures in government procurement of critical healthcare materials. Elements of this ‘procurement crisis’ occurred in almost all countries, with problems ranging from a complete inability to source, to substandard quality of the procured goods, high prices, late or failed delivery and full-fledged scams (OECD 2020a).

This unprecedented crisis raised many new questions. Which were the most widespread and costly procurement failures during this emergency, and what caused them? Which procurement laws and procedures worked better and why? Recent research has highlighted the positive effects of discretion in public procurement (Coviello et al. 2018, Bandiera et al. 2020, Decarolis et al. 2020), in particular for countries with strong institutions (Bosio et al. 2021). But how much more discretion should be granted to public authorities to facilitate urgent purchases in emergencies? And how can we limit the risk of its abuse while maintaining the needed speed and flexibility of acquisition?

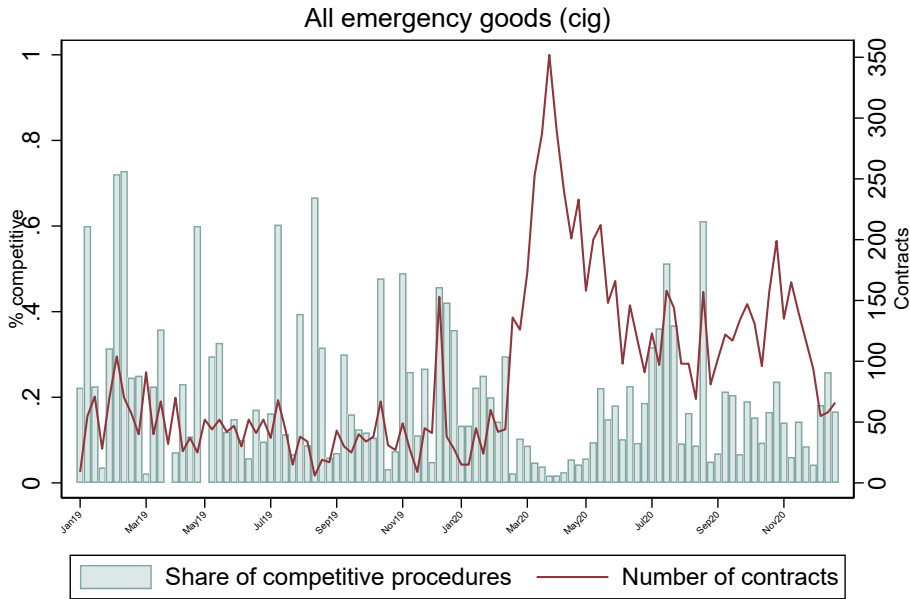
This chapter presents some novel descriptive evidence from Italy.<sup>2</sup> The Italian Anticorruption Authority (ANAC) provides detailed data on all public procurement contracts with a project value greater than €40,000. By focusing on contracts related to the Covid-19 emergency, we are able to document the exact patterns regarding the timing with which the procurement of Covid-19-related goods occurred, which products were most affected, and how the types of acquisition procedures shifted in response to the emergency.

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2 Despite an extensive economic literature documenting the effects of disasters and emergencies on economic and political outcomes, no economic study - whether theoretical, empirical or experimental - addresses the question of optimal design for emergency procurement, at least to our knowledge.

Several of these features are clearly visible in Figure 1. The spike in the red line around March 2020 denotes the marked increase in the number of procurement procedures involving emergency goods, while the simultaneous drop in the vertical bars denotes that the share of these acquisitions occurring under competitive acquisition procedures collapsed.

**FIGURE 1 NUMBER AND TYPES OF PROCUREMENT EVENTS**



## LEGAL FRAMEWORK

From the legal perspective, the main focus of our analysis regards acquisition procedures. The Italian Public Procurement Law (Codice Appalti Pubblici) allows for several different kinds of acquisition procedures that are shaped by European-wide public procurement rules as laid down in the EU Procurement Directives. To make our discussion more streamlined, we combine together what are formally defined by the law as acquisition procedures and some additional elements of the call for tenders and the contract. This allows us to define four procurement procedures:<sup>3</sup>

<sup>3</sup> See Decarolis and Giorgantonio (2015) for a detailed description of this taxonomy and of the selection mechanisms of private contractors in the public tenders for work contracts in Italy.

Competitive procedures (i.e. open auctions), in which any eligible firm is allowed to bid for the public contract. These are the ‘ordinary’ procedures, whereby the public administration has little discretion in the choice of the contractor and is required to define the object of the contract and the related technical specifications from the outset.

Negotiated procedures, characterised by significant discretion at the disposal of the public administration, which has the ability to select/limit bidders and negotiate the terms of the contract with one or more of them. Italian (and European) procurement law includes thresholds below which negotiated procedures can be used more easily; otherwise, they are permitted only when there is a particular technical contingency or emergency reason, or previous procedures were run with no adjudication of the work.

Direct awards, i.e. more streamlined discretionary procedures usually admitted for contracts of limited value, which allow the public administration to select contractors even without prior consultation of two or more economic operators.

Acquisitions from ‘framework agreements’. In this procurement mode, public administrations can directly buy ‘off the shelf’, with no further time-consuming procedures, from pre-selected suppliers that already have passed a competitive screening stage – typically arranged by a central purchasing body or a coalition of buyers – and have committed to sell the relevant goods or services at pre-established conditions for a given period of time (Yukins 2007, Albano and Nicholas 2016).

Some relevant changes to the legal framework were introduced during the emergency. On 21 January 2020, the World Health Organization (WHO) published the first report on the novel coronavirus. On 30 January 2020, the WHO Director General declared that the outbreak constituted a Public Health Emergency of International Concern (PHEIC). The next day, 31 January, Italy declared a state of emergency for a period of six months after two cases of Covid-19 were found in Rome.

In order to adapt the procurement procedures to the Covid-19 emergency situation, the Italian legislation intervened promptly. The Head of the Civil Protection Department Ordinance no. 630/20 of 3 February 2020, published on (and hence legally valid from) 8 February 2020, allowed the use of extremely simplified procedures suitable for emergency procurement, primarily negotiated procedures and direct awards.

This approach was later confirmed by the European Commission, whose Communication on using the public procurement framework in the Covid-19 emergency situation (2020/C 108 I/01) on 1 April 2020 provided that contracting authorities could reduce the deadlines to accelerate open or restricted tender procedures, or, if necessary, use negotiated procedures without publication or even direct awards.

Other important derogations included in the above-mentioned ordinance regarded:

1. the awarding criterion, with a more widespread application of the lowest price criterion;
2. subcontracting and variants during works, which became subject to less stringent limitations;
3. an extension of the deadlines for fulfilling reporting and other obligations towards ANAC, the main oversight body for public procurement in Italy.

## DATA DESCRIPTION

This section provides a descriptive analysis of public contracts for emergency purchases. First, we identify a set of emergency-related goods (hereafter, ‘emergency goods’), i.e. healthcare equipment and supplies for which we expect a consistent raise in purchases during the pandemic. We then compare the number of contracts and the corresponding awarding procedures made for such goods in 2020 and 2019. The data used come from ANAC.<sup>4</sup>

Via textual analysis of contract descriptions, we identify the subset of contracts for emergency goods and separate them in four categories:

- **Personal protective equipment (PPE):** face masks and visors, gloves, aprons, overshoes, hair caps. This category also includes all contracts reporting “PPE” in the description, without any further specification.
- **Screening:** nasal swabs, serology tests, oximeters, thermometers.
- **Ventilators:** equipment for mechanical ventilation therapy.
- **Oxygen therapy:** equipment for oxygen therapy.

Table 1 reports the number of contracts for each of the emergency good categories described above. It clearly shows how the need to buy has substantially increased for all the examined goods apart from oxygen therapy. It is worth noting how PPE shows the highest increment, rising by more than 270% and representing the most consistent part of the overall increase in emergency-good purchases (+200%).

4 <https://dati.anticorruzione.it/opendata>

**TABLE 1 NUMBER OF CONTRACTS BY GOOD CATEGORY, 2019 AND 2020**

Category	2019	2020	Total
PPE	1,452	5,506 +279.2%	6,958
Screening	434	876 +101.8%	1,310
Ventilators	148	392 +164.9%	540
Oxygen therapy	273	159 -41.8%	432
Total	2,307	6,933 +200.5%	9,240

Note: Percentages indicate the variation in the number of contracts in 2020 for each good category compared to 2019.

## TIMING OF THE EMERGENCY

Figures 2 and 3 show the trend of the weekly number of public procurement contracts, overall and separately for each good category of interest.<sup>5</sup> The vertical lines highlight the week in which structural breaks occur (if any). To identify structural breaks, we use the Bai and Perron (1998) test.<sup>6</sup>

The massive increase in the demand for PPE happens at the very beginning of the first Covid-19 wave, with the structural break occurring in the week beginning on 10 February. The break also occurs for ventilators in the same week. It is interesting to note how this sharp increase happens well before the actual spread of the virus in Italy.

Most types of public contracting seem to react to the Civil Protection Department Ordinance no. 630/20 published on 8 February, coordinating early interventions to prevent the spread of the virus. However, contracts regarding screening procedures (tests) exhibit a structural break later, in the week beginning on 1 March. We thus find evidence of a prompt reaction of public procurement to the emergency situation, but not for screening. Still, the delay in this category appears limited compared to that in other European countries, which had more time to prepare because the pandemic reached them later.<sup>7</sup>

<sup>5</sup> For the purposes of our analysis, the weeks start on Mondays and end on Sundays, following the Italian standard.

<sup>6</sup> We test the hypothesis of no breaks against the alternative of one break at unknown break date, implemented in Stata using `xtbreak` (Ditzen et al. 2021)

<sup>7</sup> For the example of Sweden, see Latour et al. (2021).



FIGURE 2 WEEKLY NUMBER OF CONTRACTS FOR ALL EMERGENCY GOODS

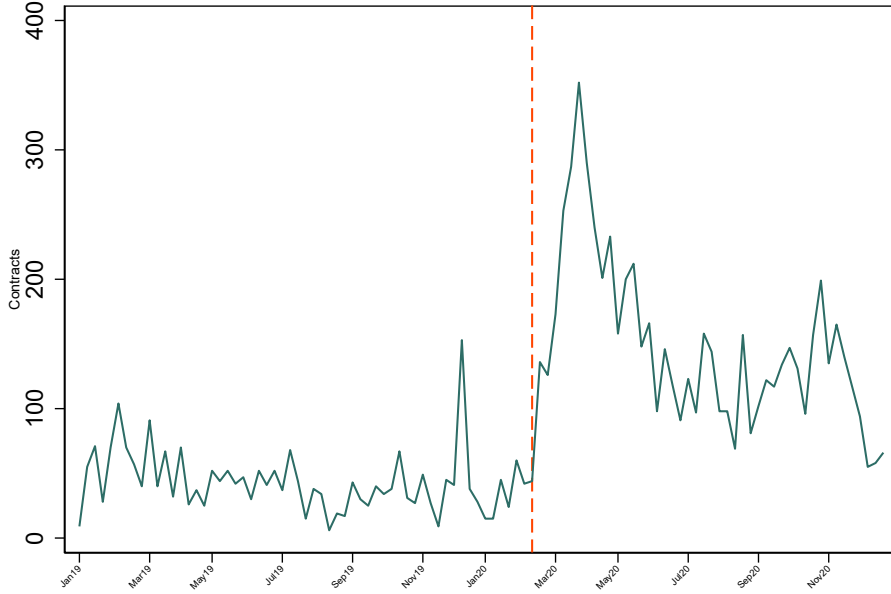
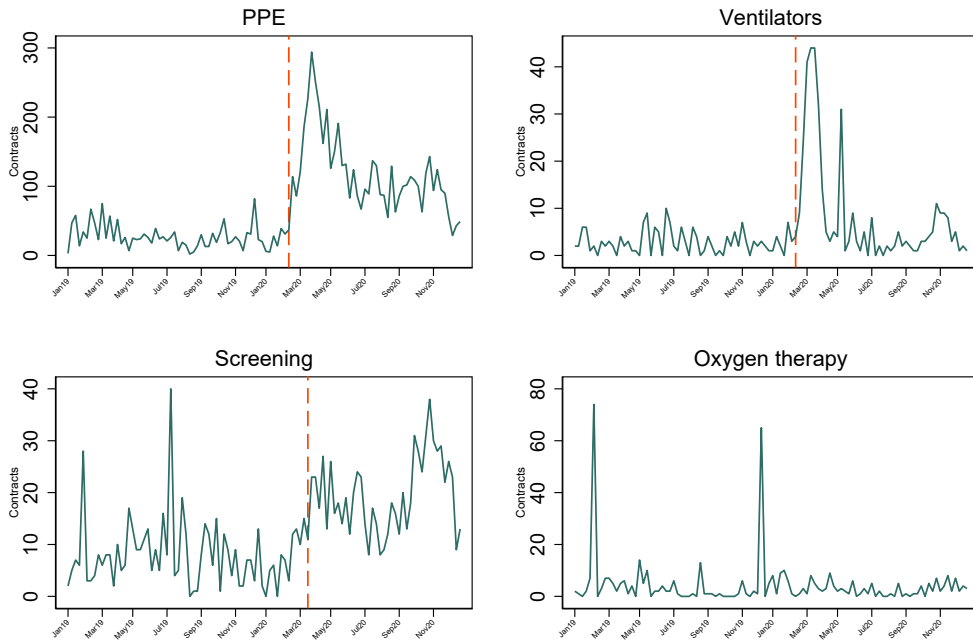


FIGURE 3 WEEKLY NUMBER OF CONTRACTS BY GOOD CATEGORY



## AWARDING PROCEDURES

Lastly, we analyse the awarding methodology of the public purchases mentioned in the previous section, with a focus on if and how their use has changed during the pandemic. Table 2 shows the overall number of contracts awarded for each good and procedure category; Figure 3 highlights the corresponding dynamics at the week level.

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**TABLE 2 NUMBER OF CONTRACTS BY GOOD AND AWARDING PROCEDURE CATEGORIES, 2019 AND 2020**

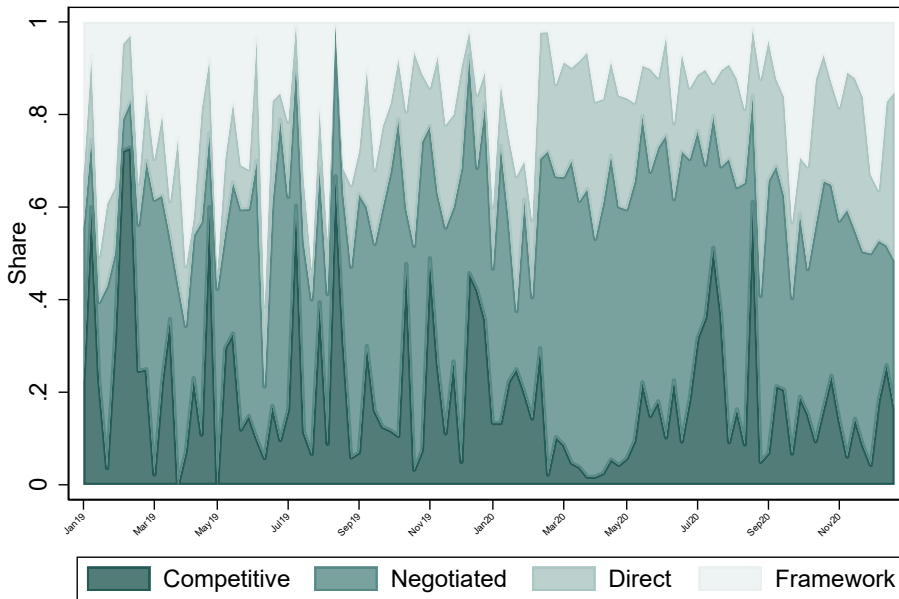
Good category	Competitive	Negotiated	Direct	Framework agreement	Total
<b>2019</b>					
PPE	280 19.3%	568 39.1%	284 19.6%	320 22%	1,452 100%
Screening	159 36.6%	142 32.7%	28 6.5%	105 24.2%	434 100%
Ventilators	31 20.9%	69 46.6%	5 3.4%	43 29.1%	148 100%
Oxygen therapy	167 61.2%	42 15.4%	7 2.5%	57 20.9%	273 100%
Total	637 27.6%	821 35.6%	324 14%	525 22.8%	2,307 100%
<b>2020</b>					
PPE	795 14.4%	2,666 48.5%	1,280 23.2%	765 13.9%	5,506 100%
Screening	123 14%	461 52.6%	166 19%	126 14.4%	876 100%
Ventilators	17 4.3%	257 65.6%	84 21.4%	34 8.7%	392 100%
Oxygen therapy	40 25.2%	53 33.3%	19 11.9%	47 29.6%	159 100%
Total	975 14.1%	3,437 49.6%	1,549 22.3%	972 14%	6,933 100%

Note: (row) percentages refer to the utilisation of each awarding procedure within each emergency good category.

Already at the aggregate level it is notable how, within the overall massive increase in the demand of emergency goods, competitive procedures and purchases from framework agreements show a less-than-proportional increase. For competitive procedures, which take a long time to be prepared and announced, this was expected. Due to the urgent nature of the purchases, procedures characterised by greater speed (and discretion) were preferred, with a consequent reduction in the level of transparency as well as competition. Perhaps more surprising is the fall in purchases from framework agreements, which we discuss further below.

Figure 4 shows the share of contracts for emergency goods, plotting with different shades the share of utilisation of each awarding procedure at the week level. The trend clearly illustrates how public contractors increased the use of negotiated and direct procedures since the early stages of the emergency, dramatically reducing the use of competitive procedures and of framework agreements.

**FIGURE 4 SHARE OF AWARDING PROCEDURE UTILISATION FOR EMERGENCY GOODS**

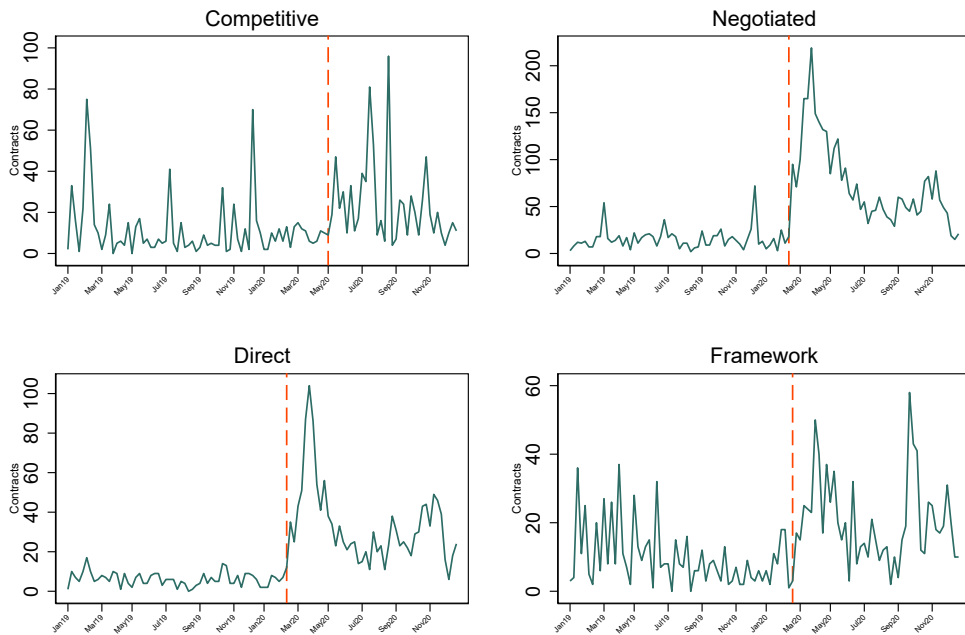


Similarly to Figures 2 and 3, Figure 5 shows the weekly number of public procurement contracts for emergency goods by the awarding procedure used, with vertical lines indicating the structural breaks (Bai and Perron tests for structural breaks at unknown break dates). It is interesting to note that the structural breaks in the weekly numbers of contracts awarded via both direct and negotiated procedures happen in the same week as the number of contracts. This is in line with the hypothesised response to Civil Protection Department Ordinance no. 630/20, which prompted not only a spike in purchases but also a change in the use of awarding procedures.

On the other hand, the numbers of contracts awarded via a competitive procedure or within a framework agreement show later structural breaks – in the weeks beginning 26 April and 17 February, respectively.

As expected, a return to competitive procedures only occurs after the acute phase of the emergency. With regards to framework agreements, the structural break seems to only be induced by the general increase in the number of contracts for emergency goods, since we do not observe a parallel increase in their relative use but rather a drastic reduction (see Figure 4).

**FIGURE 5 WEEKLY NUMBER OF CONTRACTS AWARDED BY PROCEDURE CATEGORY**

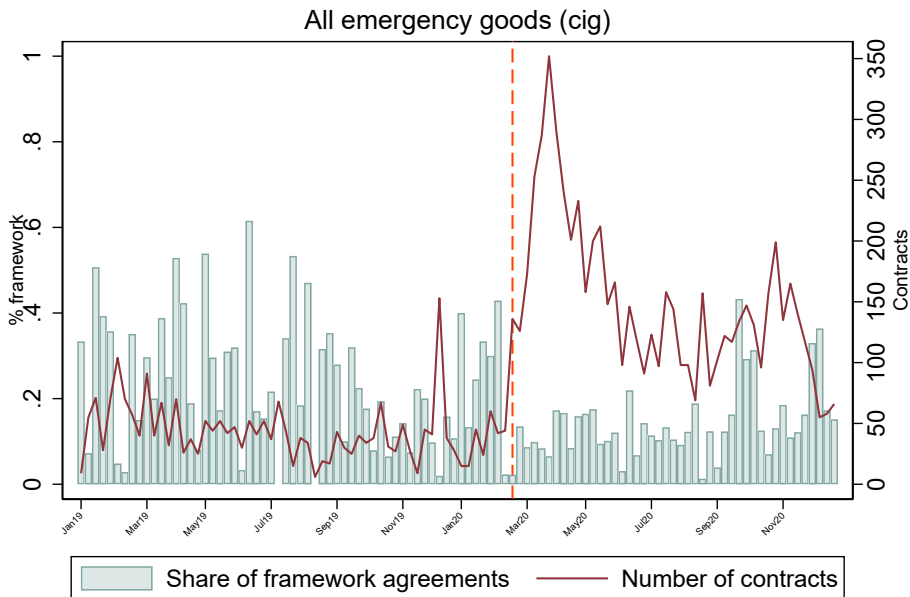


## FRAMEWORK AGREEMENTS

Figures 4 and 5 show that the share of purchases through framework agreements fell dramatically during the acute phase of the emergency. Figure 6 makes this drop in the utilisation of framework agreements even more evident. It plots a histogram of the share of utilisation of framework agreements for emergency goods (left-hand side vertical axis) together with a line graph of the weekly number of contracts (right-hand side vertical axis). The structural break represented by the red vertical dashed line represents the fall in the number of procedures awarded within a framework agreement (bottom-right panel of Figure 5). Overall, the figure confirms that, notwithstanding the massive increase in demand for emergency goods in the first months of 2020, the use of framework agreements has dramatically decreased.

This is surprising, because framework agreements are widely regarded as an effective tool for emergency procurement (Albano and Nicholas 2016). For example, after Hurricane Katrina devastated New Orleans in 2005, a congressional study concluded that the government should have put more framework agreements in place to prepare for disasters (US House of Representatives 2006). Indeed, this procurement system allows for speedy ‘off-the-shelf’ acquisitions with little loss of time and bureaucratic effort. Moreover, the pricing conditions might be advantageous for the public buyer, either because of the pre-established prices – not yet reflecting the spike in demand linked to the emergency – or because of the increased buyer power (Bandiera et al. 2009, Lotti and Spagnolo 2020). They also maintain a high level of transparency, helping reduce the risk of abuses of the additional discretion coming with the extensive use of direct and negotiated procedures discussed in several chapters of this book.

**FIGURE 6 WEEKLY NUMBER OF CONTRACTS FOR EMERGENCY GOODS AND FRAMEWORK AGREEMENT UTILISATION**



The fall in the use of framework agreements in Italy may be due to contracting authorities’ preference for the discretionary procedures that became easily available with the emergency legislation; but it may also be due to the existing agreements running out of capacity as soon as the emergency started, and to the time necessary to award new

ones.<sup>8</sup> Most likely, it was a combination of these two causes. We are not able to quantify the role of these competing explanations with the data currently available to us, but we plan to do so in future research when more data become available.

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<sup>8</sup> Indeed, the first procedure for establishing a new framework agreement for emergency-related goods at the national level was opened on March 6 by Consip, the Italian central purchasing agency, i.e. around a month after the first observed reaction in (decentralised) public procurement.

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# CHAPTER 13

## Public procurement at the onset of the Covid-19 pandemic

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**Serena Cocciolo, Vincenzo Di Maro, Sushmita Samaddar**

World Bank

The coronavirus outbreak has led to an enormous burden on public procurement services. Governments have responded in myriad ways – by rapidly adapting their procurement systems to cope with the emergency, by imposing export restrictions to deal with limitations in the supply of medical equipment, and by prioritising the procurement and transport of medical goods in regions that need it the most. The typical trade-offs in public procurement between rules, discretion and accountability are intensified during emergencies, including the Covid-19 emergency, since it is even more critical to procure essential goods and services in a timely manner.

In the early months of the pandemic, the World Bank conducted a survey of procurement experts to document the legal and administrative regulation for national emergency public procurement. The survey was implemented between April and August 2020, and it received 136 responses covering 103 countries. The survey was circulated among procurement specialists and experts inside and outside the World Bank. It focused on four areas: (1) the emergency procedures and guidelines for procurement processes and contracting that already existed in the legal framework before the Covid-19 crisis or that were introduced or changed in response to Covid-19; (2) the timeliness of the main relevant changes in the legal framework in response to the Covid-19 emergency; (3) the transparency and accountability (T&A) principles applied to Covid-19-related emergency procurement; and (4) the legal or administrative bottlenecks constraining the efficiency and effectiveness of Covid-19 emergency procurement.<sup>1</sup> In this chapter, we report the descriptive results of this survey.

### **DEFINITION OF CRITICAL AND HIGH-RISK EMERGENCY PROCEDURES**

The survey collected a rich amount of data, considering 19 dimensions related to the procurement process and 15 dimensions related to the contracting process, which also allow us to characterise the trade-offs between rules, discretion and accountability. We identified two categories that represent the focus of the analysis: (1) emergency procedures

<sup>1</sup> The objective of the survey was mainly to capture practices for Covid-19 public procurement *de jure* (that is, as defined by laws, official guidelines, and so on). The survey data do not allow an assessment of how these practices are implemented *de facto* nor how different practices *de jure* affect public procurement outcomes.



that are most critical for Covid-19-related procurement, and (2) emergency procedures that entail the highest risks for Covid-19-related procurement. Our categorisation into *critical* and *high-risk* emergency procedures aims to represent the balance achieved by each country with respect to procuring quickly versus procuring safely. *Critical procedures* are defined as those that contribute to shortening the time of procurement, while *high-risk procedures* are those that, by granting more flexibility for suppliers, substantially reduce buyers' security and increase the risks of fraud and corruption.

Table 1 reports the categorisation of critical and high-risk emergency procedures, as well as the share of countries that adopted each emergency procedure.

## READINESS, TIMELINESS AND QUALITY OF EMERGENCY PROCUREMENT

This section describes the readiness of emergency public procurement systems, the legal and administrative bottlenecks in the first months of the Covid-19 emergency, the type of early emergency procurement and contracting procedures most commonly adopted across countries, and the timeliness of when most changes in procurement and contracting processes were introduced in response to the Covid-19 crisis.<sup>2</sup>

Countries most affected by Covid-19 adopted a larger percentage of critical and high-risk procedures for emergency public procurement. The share of critical or high-risk procedures activated or newly introduced/changed was approximately 40% in countries that had more than 100 confirmed cases by mid-March, but it was 35% and 25%, respectively, in countries with no confirmed cases by mid-March. Similarly, there was a positive and significant relationship between a country's demand for hospital beds and ventilators at the peak of the Covid crisis and the percentage of critical or high-risk procedures activated or newly introduced/changed. Countries that adopted or newly introduced/changed a large share of the critical emergency procedures were also more willing and ready to do the same with high-risk procedures (Figure 1). However, countries chose different balances between rules and discretion, and even though high-risk procedures may introduce the potential for fraud, corruption, ineffectiveness and collusive behaviour in the procurement process, there was a group of countries with a tendency to prefer high-risk procedures to critical procedures.

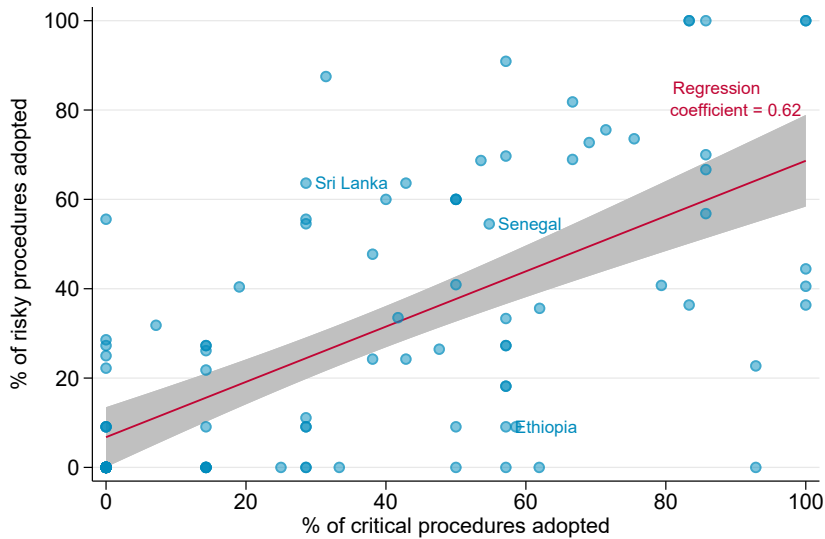
<sup>2</sup> The timing of the response to public health emergencies may be crucial for the outcome of the crisis in the country. Past emergencies such as the Ebola crisis in West Africa provided some insight into the importance of government response time (Siedner et al. 2015).

**TABLE 1 CRITICAL AND HIGH-RISK EMERGENCY PROCEDURES**

<b>Critical emergency procedures</b>	<b>Adoption (%)</b>	<b>High-risk emergency procedures</b>	<b>Adoption (%)</b>
Direct contracting allowed for emergency Procurement	47	Advance payments without bank guarantee	25
Increase in threshold for application of direct Contracting	25	Procurement is happening outside the formal system or regulations	27
No/unlimited threshold for application of direct contracting	36	Using unwritten contracts, verbal agreements, email quotes, and so on	14
Accelerated bid times	42	No requirement for performance security	25
Shorter bid validity period	35	No application of lowest-price bidding	25
Emergency framework agreement in place	28	Eased qualification requirements needed for Firms	32
No requirement for bid security	29	Fewer checks on firms' technical qualifications or past experience	31
		Flexible terms for the volume or date of Delivery	38
		Flexibility of inspections of the goods	31
		Flexibility of payment terms	40
		Flexibility of insurance terms	25

Source: Authors' calculations based on the survey data of procurement experts.

**FIGURE 1 BALANCE BETWEEN CRITICAL AND HIGH-RISK EMERGENCY PROCEDURES**

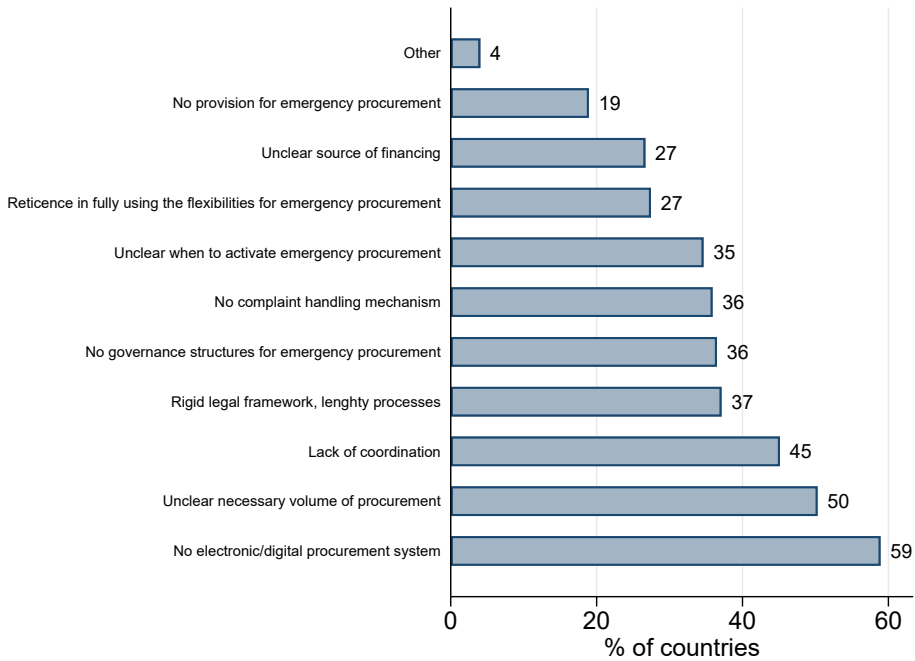


Note: Correlation significant at 1% confidence level. Regression line is reported in red and the shaded area is the 95% confidence interval.

Source: Authors' calculation based on the survey data of procurement experts.

Lack of clarity on procurement needs and lack of coordination were significant bottlenecks experienced by a large share of surveyed countries, creating unnecessary competition and uncertainties for procuring entities trying to secure the necessary medical supplies and for the geographical distribution of those supplies (Figure 2). For only 4% of surveyed countries is there no reported bottleneck for Covid-19-related procurement in the first months of the pandemic, and on average countries experienced 30% of the various legal and administrative bottlenecks considered in the survey. Lack of an electronic/digital procurement system was a constraint for 59% of the surveyed countries. In 31% of the countries, entities at the national, regional and local levels were entitled to administer Covid-19-related procurement, and indeed, lack of coordination was a constraint for more than half of the countries in the sample. There is room for strengthening the legal framework in countries where the procurement framework is rigid and the processes lengthy (37%), where it is unclear when to activate emergency procurement (35%), or where there is no provision for emergency procurement (19%).

**FIGURE 2** PERCENTAGE OF COUNTRIES THAT REPORTED EACH CONSTRAINT



Source: Authors' calculation based on the survey data of procurement experts.

**Transparency and accountability standards deteriorated for Covid-19-related procurement** relative to standard procurement, especially whether public procurement information is easily accessible, readable, and downloadable and the timeliness of making public procurement information publicly available. Following the T&A principles for public procurement outlined by Transparency International and Open Contracting Data Standard, the survey investigated whether these principles apply to standard public procurement and for Covid-19-related procurement during the first months of the pandemic. The data show an overwhelming deterioration of T&A standards for emergency procurement, with the majority of the considered T&A principles required for standard procurement but not for Covid-19-related procurement (Table 2). Public scrutiny from civil society and the media is critical when emergency procurement is conducted with expedited and simplified modalities and less ex-ante oversight, as is often the case in Covid-19-related procurement, but the deterioration of transparency and accountability standards risks impeding this.

TABLE 2 TRANSPARENCY AND ACCOUNTABILITY STANDARDS FOR COVID-19 PROCUREMENT (PERCENTAGES)

	Required for standard procurement but not for Covid-19 procurement	Required for standard and Covid-19 procurement	Not required for standard procurement but required for Covid-19 procurement	Not required for standard nor Covid-19 procurement
Information on public procurement can be easily accessible, readable, and downloadable.	72	15	1	12
Independent and effective appeals processes should be available and accessible for aggrieved bidders.	65	24	1	11
Information about awarded contracts, including contractor name, cost of contract, and services are provided.	69	21	3	7
Information on the execution, performance, and completion of the contract should be published.	31	11	2	56
There is one or more agencies specifically responsible for ex-post oversight and review of each stage of the procurement process.	62	24	3	11
There is one or more agencies specifically responsible for ex-ante oversight and review of each stage of the procurement process.	60	17	3	21
Selection criteria and details of the method of award should be published before the procurement process commences.	67	17	2	15
Information on public procurement should be made publicly available within a specific time frame.	70	17	0	13
Any contract alterations or sanctions, including debarment from future tenders, must be disclosed.	63	15	0	22

Source: Authors' calculation based on the survey data of procurement experts.

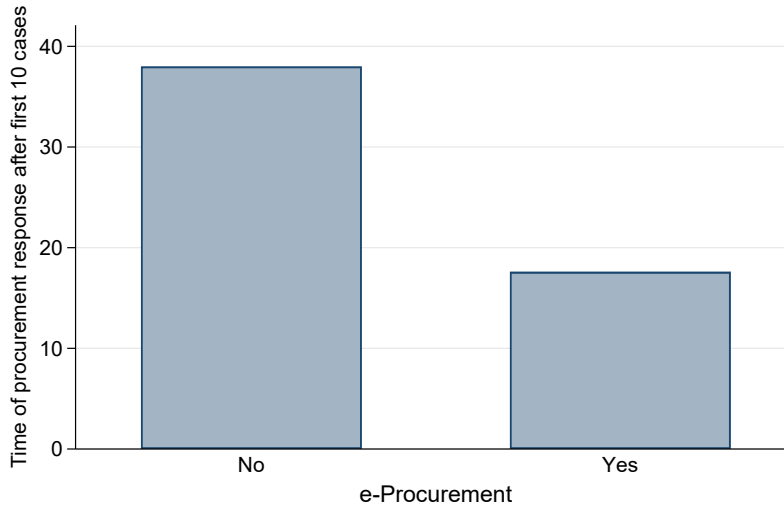
## **FACTORS ENABLING NATIONAL PROCUREMENT SYSTEMS TO RESPOND TIMELY AND EFFECTIVELY TO EMERGENCIES SUCH AS THE COVID-19 CRISIS**

There is growing evidence on the role of institutions in explaining government responsiveness to the Covid-19 pandemic and associated mortality. Bosancianu et al. (2020) show that social and political factors have driven the readiness and effectiveness of government response to the pandemic and, ultimately, Covid-19 mortality. Frey et al. (2020) find that autocracies were able to take more radical steps to impose social distancing measures, but they were less effective in implementing them in the longer run. We contribute to this literature by exploring some systemic factors that can shape the readiness of public procurement systems and their ability to respond to emergencies in a timely and effective manner: e-procurement adoption; exposure from previous emergencies; and the quality of institutions.

Countries with an existing e-procurement system had to introduce less drastic changes to adapt to the new circumstances resulting from the COVID-19 pandemic, and indeed they were able to adjust their public procurement functions more promptly. Lack of an e-procurement system was reported as a critical constraint for 59% of surveyed countries.

Several benefits are associated with e-procurement in general, and especially during emergencies. First, e-procurement is often associated with shorter processing and contracting times, which are critical dimensions during emergencies. In the case of a pandemic like Covid-19, delays in procuring necessary medical supplies can have severe implications in terms of casualties. Second, given the lockdowns and movement restrictions, an e-procurement system facilitated the ability of countries to continue their operations. Third, e-procurement systems can be more adaptable and resilient to rapidly changing circumstances. Fourth, e-procurement systems generate detailed public procurement data in machine-readable formats, enabling better planning and monitoring and facilitating auditing and ex-post reviews. We find that countries that had already adopted an e-procurement system were able to more promptly adjust their public procurement functions to respond to the Covid-19 emergency (Figure 3).

**FIGURE 3 TIMELINESS OF CHANGES IN THE PROCUREMENT LEGISLATIVE OR ADMINISTRATIVE FRAMEWORK WITH AND WITHOUT AN E-PROCUREMENT SYSTEM**



Note: Time before the procurement response is calculated in days, considering when each country reaches the first ten cases. The relationship between timeliness of the responses and e-procurement robust to controlling for GDP per capita, life expectancy and government effectiveness.

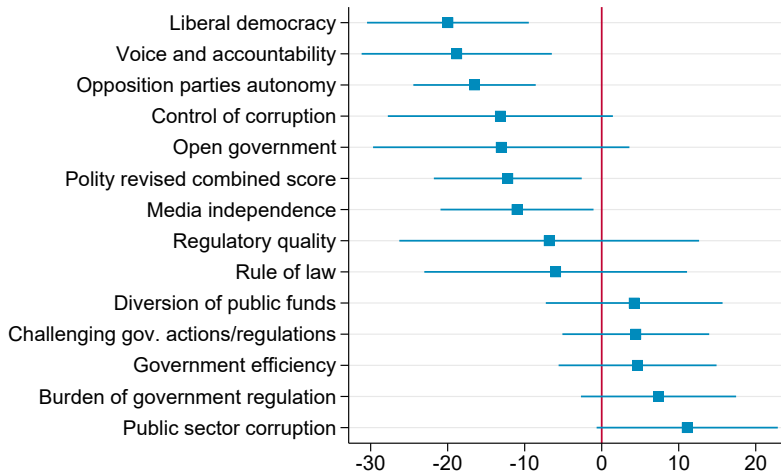
Source: Authors' calculation based on the survey data of procurement experts and the Global Public Procurement Database.

The quality of institutions is an important driver of the timeliness and quality of the procurement response to the Covid-19 pandemic, and the deterioration of transparency and accountability standards for emergency procurement is contained by stronger institutions. Motivated by the early evidence from Bosancianu et al. (2020) and Frey et al. (2020) on socioeconomic and political factors that may drive the effectiveness of the government response and, ultimately, Covid-19 mortality, we combined the survey data with a rich cross-country data set on the quality of institutions and explored whether there is a link between the quality of institutions and the quality of the public procurement response to the Covid-19 emergency. We find some evidence that the quality of institutions is an important factor for emergency public procurement.

First, institutions matter for the timeliness of the first procurement response (Figure 4). The time between the tenth confirmed case in a country and the time of most changes in the legal and administrative framework for Covid-19-related procurement was shorter for countries with more democratic, transparent and accountable systems – as measured, for example, by media independence, opposition party autonomy, voice and accountability – but it was longer for countries with higher risks of diversion of public funds, public sector corruption and burden of government regulation. Our results can be interpreted through the framework of Bosio et al. (2021), which predicts that countries

with stronger institutions have greater flexibility in their public procurement framework and that this flexibility improves public procurement outcomes, for example by allowing a timely and appropriate response during a pandemic.

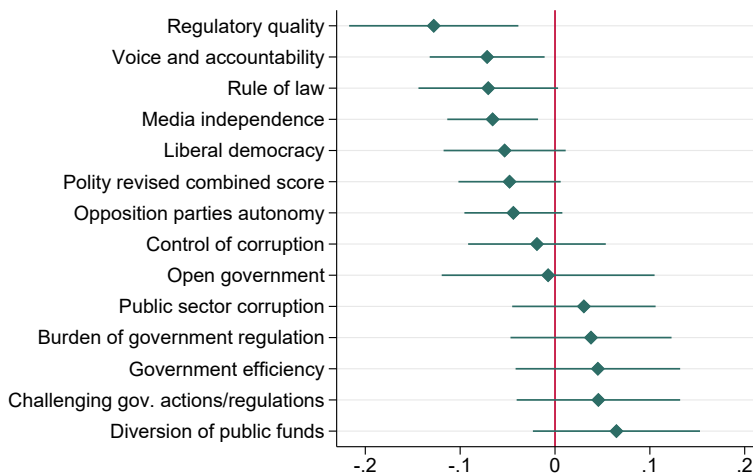
**FIGURE 4 TIMELINESS OF CHANGES IN THE EMERGENCY PROCUREMENT SYSTEM AND INSTITUTIONS, REGRESSION COEFFICIENTS**



Note: One regression per institutional variable, controlling for GDP per capita and life expectancy. Time before the procurement response is calculated considering when each country reaches the first ten cases.

Source: Authors' calculation based on the survey data of procurement experts and various international databases measuring the quality of institutions.

**FIGURE 5 DETERIORATION OF TRANSPARENCY AND ACCOUNTABILITY STANDARDS AND INSTITUTIONS, REGRESSION COEFFICIENTS**



Note: Coefficients from a regression model for each institutional index, after controlling for GDP per capita. Deterioration of transparency and accountability standards.

Source: See Figure 4.



Second, the deterioration of transparency and accountability standards was more contained in countries with stronger institutions (Figure 5). For example, the percentage of T&A standards that were waived for Covid-19 procurement relative to the required ones for standard procurement is lower in countries with stronger regulatory quality, rule of law, media independence and opposition party autonomy. We do not find any evidence that the deterioration in T&A is driven by the spread of Covid-19 in the country or by the share of critical or high-risk procedures activated or recently introduced for Covid-19 emergency procurement. This finding raises concerns that the Covid-19 emergency might have been opportunistically exploited to reduce transparency and accountability of public procurement, especially in settings with weak and fragile institutions.

## KEY FINDINGS

This chapter has a specific focus on the legal and administrative framework for emergency public procurement. Below we list the policy findings emerging from the empirical analysis:

- Countries most affected by Covid-19 adopted a larger percentage of both critical and high-risk procedures for emergency public procurement, but there is also a group of countries with a tendency to prefer *high-risk* procedures over *critical* procedures.
- Countries with a well-developed legislative framework for emergency procurement were better prepared to face the Covid-19 pandemic, with less need to introduce changes, amendments or new legislation.
- Countries with an existing e-procurement system had to introduce less drastic changes to adapt to the new circumstances caused by the pandemic, and were able to adjust their public procurement functions more promptly. E-procurement is typically associated with shorter processing and contracting times, a critical feature during emergencies when delays in procuring and receiving critical supplies can have severe implications.
- Lack of clarity on procurement needs and lack of coordination were important bottlenecks experienced during the first months of the pandemic by the majority of surveyed countries. These deficiencies created unnecessary competition and uncertainties for procuring entities trying to secure the necessary medical supplies and ensure the geographical distribution of these supplies.
- There are various systemic barriers impeding proper oversight. First, transparency and accountability standards deteriorated for Covid-19-related procurement with respect to pre-pandemic levels. Second, for most countries, Covid-19 transactions can be identified only using key words in the tender description – a more explicit categorisation of Covid-19 procurement would improve the transparency and usefulness of the available information. Third, publicly available procurement information is often incomplete, missing critical details on the contracting stage

such as unitary prices or date of contract signature, and is even scarcer for the procurement modalities most common for emergency procurement, such as direct contracting. Given the public scrutiny of Covid-19 public procurement, a window of opportunity for further advancements in transparency and accountability of public procurement can be opened.

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# CHAPTER 14

## Buyer's discretion in Russian public procurement during the Covid-19 emergency

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How much to regulate and how much discretion to leave to buyers is one of the most controversial questions in public procurement. Kelman (1990, 2005) highlighted that procurement regulation “*is more often the source of the problem than the solution to it*”. Indeed, the setting of rules to reduce abuses by the few often determines costs and sub-optimal choices for the many. In emergency times, the trade-off between rules and discretion becomes even more relevant, given the unconventional conditions and the required short delivery time for the purchasing.

In this chapter, we empirically explore the effects of new rules implemented during the Russian Covid-19 state of emergency and aimed at extending public buyers' discretion in using direct negotiations with suppliers.

We build a novel dataset on purchases of federal, regional and municipal hospitals in Russia during two periods: from 1 April to 31 July 2020 (the first wave of Covid-19 state of emergency), and from 1 April to 31 July 2019 (a period of no state of emergency). We compare these two periods to explore the effects of greater buyers' discretion in emergency times. Our results show that public buyers in the health sector increased their use of direct negotiations during the first phase of the Covid-19 emergency. This increase is larger for contracts with a value greater than 300,000 rubles – i.e. those subject to the new rules – and for those awarded by federal entities.

Our study contributes new empirical evidence to the growing literature on discretion versus rules in public procurement. This literature has mixed empirical findings on the effect of discretion on the awarding outcome. A first group of papers provides empirical results supporting the benefits of bureaucratic discretion in procurement (Coviello et al. 2017, Kang and Miller 2021, Coviello et al. 2021, Bandiera et al. 2020, Carril 2021). On the

<sup>1</sup> We would like to thank Enrico Rettore for useful discussions on Covid-19 datasets; Leonid Polishchuk and Igor Shagalov for providing us with Covid dataset on the Russian regions and related helpful comments; Julia Malakhova, Stephan Polikanov, Anna Sergeeva, for their valuable work of data collection. This work has received the financial support of the Department of Economics and Management of the University of Padova, and it was prepared within the framework of the HSE University Basic Research Program.

other hand, the findings in a second strand of this literature support the use of strict regulations against buyers' discretion (Palguta and Pertold 2017, Baltrunaite et al. 2018, Szucs 2017). Bosio et al. (2021) reconcile this opposing empirical evidence, highlighting that the effects of rules and discretion largely depend on the institutional framework.

Rules versus discretion in public procurement procedures has been also investigated in terms of the related risk of corruption. When granted greater discretion, buyers can exploit it for their private gain (Decarolis et al. 2021, Schultz and Søreide 2008). Additionally, a recent literature studies the intertwined effects of discretion and procurers' competence on procurement outcomes (Buccioli et al. 2020, Best et al. 2019, Decarolis et al. 2020).

In what remains of this chapter, we first describe the institutional setting and our dataset. We then illustrate our empirical strategy and summarise the results. Finally, we present conclusions and further steps for research.

## INSTITUTIONAL BACKGROUND AND DATA

Since January 2014, public procurement in Russia has been regulated by the 44th Federal Law (FL44). This regulation allows for ten different types of competitive procedure and one non-competitive procedure consisting of a direct negotiation between the public buyer and one selected supplier ('single supplier awarding').<sup>2</sup> The latter procedure is the least time-consuming as the contract is awarded directly, without the selection and tendering phases.

In conventional times, and according to FL44, buyers can adopt direct negotiations for low-value contracts (below 300,000 rubles, or around \$4,100) provided that their total annual value does not exceed 5% of the buyer's total annual value of purchases. Direct negotiations can also be adopted in the presence of proper contingencies.<sup>3</sup> In April 2020, the beginning of the first Covid-19 state of emergency phase in Russia, the government relaxed these binding constraints for the adoption of direct negotiations.<sup>4</sup> Specifically, public buyers can use discretionary procedures to award contracts of up to 600,000 rubles (about \$8,200) and representing up to 10% of the buyer's total annual value of purchases. Moreover, direct negotiations can be adopted if the purchase is motivated by the prevention of Covid-19 and a regional government declared an emergency.

In the first year of the pandemic, Russia faced two waves: the first wave began at the end of March 2020 in majority of the regions and continued until the end of July; the second wave began in the autumn of the same year. Our dataset collects information on procurement by public hospitals in the 15 Russian regions that recorded the highest number of cumulative Covid-19 cases. This information refers to the first wave of Covid-19

2 Throughout this chapter, we will use the terms 'single supplier awarding' and 'direct negotiation' interchangeably.

3 These contingencies are listed in Article 93 of the Law 44-FZ. They include, for example, procurement of goods and services of natural monopolies, emergency procurement in force majeure situations (fires, floods, etc.), military purchases, and so on.

4 See Federal Laws No. 98-FZ of 01.04.2020 and No. 124-FZ of 24.04.2020.

in Russia. We then compare it with information on the procurement in same months but one year before (i.e. during “conventional times”). Information on hospitals in the 15 regions – and their subdivisions at the federal, regional or municipal level – is from the federal register of healthcare organisations.<sup>5</sup>

We downloaded all of the public contracts under FL 44 for each hospital,<sup>6</sup> giving us information on the buyer’s ID and its administrative level (federal, regional or municipal institution),<sup>7</sup> each seller’s ID, the procurement procedure, the contract price, and the year and month when the contract was signed. In the present analysis, our main variable is the procurement procedure, which indicates whether a procedure was competitive (for example, e-auction or an open contest) or not (i.e. single supplier procedure).<sup>8</sup>

Our dataset also includes two variables referring to the contents of the contract: one-product contract, and dominant-good-type contract. The former is a binary variable indicating whether only one product is being purchased. The latter is a categorical variable dividing all possible products into medical needs (drugs, drugs manufacturing, medical equipment, medical services, and other medical tools and devices) or non-medical needs (cleaning, roof repairs, etc.), and taking the value of the class of the dominant product (i.e. the one whose price has the most weight in the contract).

All in all, our dataset includes information from 600 public buyers – four municipal hospitals, 576 regional hospitals, and 20 federal hospitals – which signed a total of 90,456 procurement contracts in the two considered periods. Note that due to nature of the Russian healthcare system, the hospitals are concentrated at the regional level.

The top panel of Table 1 shows descriptive statistics on all procurement contracts and their values (intervals) by federal, regional and municipal hospitals in 2019 and 2020.<sup>9</sup> In the bottom panel, the same information is presented for single supplier contracts only.

We record 4,823 single supplier contracts in 2019 (10.1% of the total observations for that year) and 12,751 single supplier contracts in 2020 (31.4% of the total observations for that year). From 2019 to 2020, federal buyers show the largest relative increase in the use of direct negotiations (from 15.6% to 59.4% of all contracts awarded); for regional buyers the share increased from 10.0% to 30.4%; for municipal buyers it increased from 8.4% to 39.6%.

5 Source: Ministry of Health; processing: Research Data Infrastructure, ANO CPUR, 2021. Dataset available at <http://www.data-in.ru/data-catalog/datasets/161>

6 We downloaded contracts from the website of the Account Chamber of the Russian Federation (<https://spending.gov.ru/devs/opendata>). These data were collected from <https://zakupki.gov.ru/epz/main/public/home.html> and transformed to JSON format, which simplifies the processing of data for research purposes.

7 This variable was coded from the OKOPF classification of legal forms: codes 7 51, 7 52 and 7 54, respectively, for federal, regional and municipal (Russian Federal State Statistics Service 2019).

8 This is a binary variable constructed by exploiting two different sources of information: first, the procedure adopted; second, in accordance with FL 44, the motivation the public buyer provided to adopt the single supplier procedure.

9 We restrict the sample to contracts from 2,000 rubles up to 15 million rubles and get 88,201 contracts.

TABLE 1 DESCRIPTIVE STATISTICS BY ADMINISTRATIVE LEVEL AND SIZE OF CONTRACT

	Contract size									
	2K-300K		300K-600K		600K-15000K		2K-15000K		2020	
	2019	2020	2019	2020	2019	2020	2019	2020	2019	2020
<b>Total procurement contracts</b>										
<b>Federal</b>										
Number of contracts	527	549	181	203	589	619	1,297	1,371		
Total amount	62,726,675	61,340,828	78,071,175	87,965,109	1,802,773,559	1,677,987,018	1,943,571,408	1,827,292,955		
Mean (median) price	119,025.9	111,731.9	431,332.5	433,325.7	3,060,736	2,710,803	1,498,513	1,332,818		
	(99,862.84)	(90,000)	(442,080.8)	(426,317.1)	(1,746,500)	(1,765,120)	(490,000)	(484,033.7)		
<b>Regional</b>										
Number of contracts	28,431	22,291	6,545	5,240	11,062	11,220	46,038	38,751		
Total amount	2,683,783,110	2,101,393,049	2,799,525,977	2,259,561,770	24,628,224,793	29,151,322,254	30,111,533,880	33,512,277,074		
Mean (median) price	94,396.37	94,270.92	427,735.1	431,214.1	2,226,381	2,598,157	654,058.3	864,810.6		
	(71,500)	(71,316)	(420,514)	(424,978.8)	(1,341,040)	(1,597,025)	(173,015.7)	(205,000)		
<b>Municipal</b>										
Number of contracts	163	199	68	61	101	152	332	412		
Total amount	20,345,024	23,876,116	29,981,415	26,702,987	232,692,472	278,420,493	283,018,911	328,999,596		
Mean (median) price	124,816.1	119,980.5	440,903.2	437,753.9	2,303,886	1,831,714	852,466.6	798,542.7		
	(102,632.3)	(102,042.3)	(438,365)	(435,140)	(1,478,785)	(1,089,435)	(306,124.5)	(326,932.3)		
<b>Contracts with single supplier</b>										
<b>Federal</b>										
Number of contracts	28	308	16	96	158	411	202	815		
Total amount	4,280,196	35,503,247	6,949,138	41,412,742	632,672,597	1,213,280,452	643,901,932	1,290,196,441		
Mean (median) price	152,864.2	115,270.3	434,321.1	431,382.7	4,004,257	2,952,021	3,187,633	1,583,063		
	(154,339.2)	(100,000)	(442,802.4)	(420,558.6)	(3,391,978)	(2,170,958)	(2,129,465)	(631,592.5)		
<b>Regional</b>										
Number of contracts	3,655	7,105	520	1,629	418	3,039	4,593	11,773		
Total amount	257,989,527	670,479,738	216,754,728	700,413,390	961,025,785	7,844,669,188	1,435,770,040	9,215,562,316		
Mean (median) price	70,585.37	94,367.31	416,836	429,965.2	2,299,105	2,581,332	312,599.6	782,770.9		
	(36,150)	(69,014)	(415,245.6)	(423,376)	(1,332,937)	(1,500,000)	(71,024)	(186,200)		
<b>Municipal</b>										
Number of contracts	21	81	1	24	6	58	28	163		
Total amount	2,346,370	9,430,774	386,667	11,344,944	41,362,390	131,668,466	44,095,427	152,444,185		
Mean (median) price	111,731.9	116,429.3	386,667.4	472,706	6,893,732	2,270,146	1,574,837	935,240.4		
	(109,316.5)	(102,750)	(386,667.4)	(491,787.8)	(6,825,591)	(1,131,500)	(152,860)	(300,600)		

Note: all prices are in rubles.

In terms of contract value, we record the following relative increases in the use of direct negotiations: the share of one supplier contracts among all contracts with a value under 300,000 rubles increases from 12.7% in 2019 to 31.8% in 2020; for contracts between 300,000 and 600,000 rubles, the share of direct negotiations went up from 7.9% to 31.8%; for larger contracts, it rose from 5% to 29.2%. Considering all observations, we also note that the mean and the median contracts for federal buyers are higher – both in 2019 and in 2020 – than those recorded for regional and municipal buyers.

Finally, we briefly describe the rationales provided by the public buyer, as recorded in our dataset, for adopting a direct negotiation (descriptive statistics available upon request). In 2019, the most common reason for using a single supplier contract – which was recorded for 41.4% of the cases in that year – was the purchase of medicines that are intended to be prescribed to a specific patient for medical reasons (such as individual intolerance). In 2020, the most common reason for using a single supplier contract – recorded for 74.1% of the cases in that year – was *force majeure*, i.e. a reason adopted as a response to an accident or other natural or man-made emergencies including, as explicitly stated in the law since April 2020, the Covid-19 pandemic. Note that, in 2019, *force majeure* was recorded as the explanation for only 6.4% of single supplier contracts.

## EMPIRICAL STRATEGY

The spread of Covid-19 in Russia led to ad hoc changes in the procurement regulation, with a relaxation of the rules limiting the use of direct negotiations. In this study, we investigate if and how such increased discretion in choosing direct negotiations was used by Russian municipal, regional and federal public hospitals to face the Covid-19 emergency.

Our empirical strategy is structured as a regression analysis with a three-way interaction on contract value (300,000 and 600,000 ruble thresholds), year (2019, 2020) and public buyers' type (municipal, regional and federal procurers), and a vector of controls. Specifically, we estimate the following regression model:

$$D_{ijt} = \alpha + \beta_0 Y_t + \sum_{k=1}^2 \left( \beta_k V_{ijt}^k + \beta_{k0} V_{ijt}^k Y_t \right) + \sum_{j=1}^2 \left( \phi_j T_j + \phi_{j0} T_j Y_t + \sum_{k=1}^2 \left( \phi_{jk} T_j V_{ijt}^k + \phi_{jk0} T_j V_{ijt}^k Y_t \right) \right) + X_{ijt} + \varepsilon_{ijt} \quad (1)$$

where  $D_{ijt}$  is a binary variable equal to 1 if the public buyer of type  $j$  in year  $t$  uses a direct negotiation mechanism to award contract  $i$ .  $Y_t$  is a binary variable equal to 1 for all contracts awarded from 1 April 2020;  $V_{ijt}^1$  and  $V_{ijt}^2$  are two binary variables equal to 1 if the contract value is, respectively, between 300,000 and 600,000 rubles and above 600,000 rubles.  $T_j$  is a set of two binary variables to capture the buyer's type  $j$ : we disentangle federal ( $j = 1$ ) and municipal hospitals ( $j = 2$ ), using the regional hospital



as our baseline.  $X_{ijt}$  is a vector of observable contract and buyer characteristics, which includes the contract size (measured by the logged price in rubles), a binary variable indicating whether the contract refers only to a single good or service, the type of products or services to be delivered (a set of dummies to control for six different categories) and a set of interactions between months and regional fixed effects. Finally,  $\varepsilon_{ijt}$  is the error component.

We investigate the increase in procurement value prompted by the Covid emergency and favoured by buyers' greater discretion in adopting direct negotiations. This increase is jointly captured by the parameters  $\beta_0$ ,  $\beta_{10}$  and  $\beta_{20}$  (for contracts below 300,000 rubles, contracts between 300,000 and 600,000 rubles, and contracts above 600,000 rubles, respectively). Moreover, given changes in the procurement regulation driven by the Covid-19 state of emergency, we investigate which buyers exploit most the discretion in adopting direct negotiations. With this aim, we use our model to estimate the average marginal effect of running the procurement process in 2020, instead of in 2019, on the choice of using a discretionary mechanism. We do this, separately, for contracts above and below the 300,000 and the 600,000 ruble thresholds, and for the three types of public buyers.

## RESULTS

Table 2 shows the probit model estimates. We cluster robust standard errors by public buyer's ID because we want to account for a possible correlation in the use of negotiations across auctions managed by the same buyer. The variables of interest are the binary ones referring to (i) to the year; (ii) whether the contract value is below 300,000 rubles, between the 300,000 and the 600,000 thresholds, or above 600,000 rubles; and (iii) the buyer's type. Column (1) includes no interactions between these variables. Column (2) adds all the interactions, and is our main estimate of equation (1). Finally, column (3) shows the results using public buyer fixed effects and absorbing region and buyer type fixed effects.

The coefficients for the year 2020 are positive and significant in all estimates, meaning that public buyers were more likely to use discretionary awarding mechanisms during the pandemic. The coefficients for contract value and buyer's type are significant only in column (1).<sup>10</sup> Adding all the interactions in column (2) reveals that, while on average direct negotiations were used more in 2020, this effect differs for specific combinations of buyer's type and contract value.

10 The only exception is the binary variable denoting contracts above 600,000 rubles, which changes its sign from the model in column (1) to the models in columns (2) and (3).

**TABLE 2 EMPIRICAL ESTIMATES**

Method	(1)	(2)	(3)
Dependent variable	Probit	Probit	Probit
	Negotiation	Negotiation	Negotiation
Year			
2019: baseline			
2020	0.857*** (0.051)	0.683*** (0.052)	0.766*** (0.056)
Value class			
0-300K₺: baseline			
300-600K₺	0.127*** (0.040)	-0.026 (0.060)	-0.060 (0.062)
600-15,000K₺	0.213*** (0.071)	-0.284*** (0.107)	-0.336*** (0.089)
Buyer type			
Regional: baseline			
Federal	1.095*** (0.259)	-0.145 (0.268)	
Municipal	0.102 (0.205)	-0.018 (0.241)	
Year X Value class			
2020 X 300-600K₺		0.270*** (0.068)	0.259*** (0.069)
2020 X 600-15,000K₺		0.642*** (0.096)	0.616*** (0.086)
Year X Buyer type			
2020 X Federal		1.217*** (0.416)	
2020 X Municipal		0.264 (0.521)	
Value class X Buyer type			
300-600K₺ X Federal		0.613*** (0.224)	
300-600K₺ X Municipal		-0.797* (0.456)	
600-15,000K₺ X Federal		2.039*** (0.274)	
600-15,000K₺ X Municipal		0.289 (0.241)	
Year X Value class X Buyer type			
2020 X 300-600K₺ X Federal		-0.857*** (0.258)	
2020 X 300-600K₺ X Municipal		0.692 (0.555)	
2020 X 600-15,000K₺ X Federal		-1.537*** (0.368)	
2020 X 600-15,000K₺ X Municipal		-0.494*** (0.163)	
Log contract value	-0.093*** (0.024)	-0.089*** (0.023)	-0.087*** (0.021)
Single product contract	0.633*** (0.030)	0.650*** (0.030)	0.661*** (0.028)
Product type FE	YES	YES	YES
Region FE X Month FE	YES	YES	NO
Month FE	NO	NO	YES
Public Buyer FE	NO	NO	YES
Constant	-1.326*** (0.327)	-1.326*** (0.323)	-0.769*** (0.261)
Log-Likelihood	-33637.615	-33199.009	-28340.411
Observations	88,084	88,084	82,925

Note: Std. errors, in parentheses, are clustered per PB's ID. \*\*\*p < 0:01, \*\*p < 0:05, \*p < 0:1.

When assessing the effect of an explanatory over the dependent variable, the coefficients of the probit model show the direction (the sign) and the significance of this effect. However, they do not directly reflect the magnitude (i.e. how the predicted probability of using a negotiation changes as we move from 2019 to 2020). We measure this effect, using the model in column (2) of Table 2, for the entire sample and for specific combinations of contract value – above or below the 300,000 and the 600,000 ruble thresholds – and buyer's types. Results are reported in Table 3.

**TABLE 3 AVERAGE EFFECT ON THE PROBABILITY OF USING A NEGOTIATION OF A DISCRETE CHANGE FROM 2019 TO 2020**

	dy/dx	std. err.	[95% Confidence Interval]
Entire sample:	0.190***	(0.011)	[0.169 – 0.211]
For Value Class:			
0-300K₽	0.152***	(0.012)	[0.129 – 0.175]
300K-600K₽	0.220***	(0.015)	[0.191 – 0.250]
600K-15,000K₽	0.285***	(0.018)	[0.249 – 0.321]
For Buyer Type:			
Federal:	0.451***	(0.097)	[0.261 – 0.642]
Regional:	0.181***	(0.011)	[0.160 – 0.202]
Municipal:	0.239**	(0.111)	[0.020 – 0.457]
For Value Class [0-300K₽] and Buyer Type:			
Federal:	0.493***	(0.120)	[0.258 – 0.728]
Regional:	0.142***	(0.011)	[0.120 – 0.164]
Municipal:	0.213	(0.132)	[-0.046 – 0.472]
For Value Class [300-600K₽] and Buyer Type:			
Federal:	0.389***	(0.099)	[0.196 – 0.582]
Regional:	0.214***	(0.015)	[0.184 – 0.243]
Municipal:	0.335***	(0.075)	[0.188 – 0.481]
For Value Class [600-15,000K₽] and Buyer Type:			
Federal:	0.283***	(0.095)	[0.097 – 0.470]
Regional:	0.281***	(0.019)	[0.245 – 0.318]
Municipal:	0.258***	(0.078)	[0.105 – 0.411]

Note: dy/dx measures the average marginal effect of a discrete change in the variable “year” - from 2019 to 2020 - on the probability of using a negotiation; the effect is measured on the entire sample and for specific combinations of value class and buyer's type; estimates are obtained from the model in column (2), Table (2); \*\*\*p < 0:01, \*\*< 0:05, \*p < 0:1.

The average marginal effect of a discrete change in the year – moving from 2019 to 2020 – on the probability of using a direct negotiation is 19.0%. The need to speed up the procurement process as a response to the pandemic emergency increased the use of direct negotiations in 2020; moreover, for an average contract over 300,000 rubles, the described policy changes further extended the scope of discretion. As a result, moving from 2019 to 2020 increases the predicted probability of using a direct negotiation by 15.2% for a contract below 300,000 rubles, by 22.3% for a contract between 300,000 and 600,000 rubles, and by 28.5% for a contract above 600,000 rubles. All the pairwise

differences between these three values are statistically significant using a 95% confidence interval. These results suggest that public buyers exploited the additional discretion given for large contracts by the two policy changes.

We then investigate which buyers recorded the highest increase in the predicted probability of using a direct negotiation in 2020 compared to 2019. We find that this probability increased by 45.1% for federal buyers, and by 18.1% and 23.9% for, respectively, regional and municipal buyers. The increase for federal buyers is higher than both the unconditional average increase and the increase for regional buyers. These differences are statistically significant using a 95% confidence interval.

Then, we simultaneously control for contract value and for buyer type (i.e., we consider, for example, the effect of year 2020 on an average contract below 300,000 rubles awarded by a federal buyer). Note that we find a statistically significant average increase in the probability of using a negotiation in 2020 with respect to 2019 for almost any combination of contract value and buyer type.<sup>11</sup>

Considering contracts awarded in 2019, the probability of using a negotiation for contract below 300,000 rubles was broadly the same across the three types of public buyer: 9%, 11.1% and 10.8% for, respectively, federal, regional and municipal buyers. In 2020, these probabilities increased to 58.3%, 25.3% and 32.1%, respectively. For these low-value contracts, when facing the pandemic emergency, federal buyers increased their use of negotiation the most (by 49.3%), compared to 14.3% for regional buyers and 21.3% for municipal buyers (as reported in Table 3). The difference between the increases for federal and regional buyers is statistically significant.

For contracts above 300,000 rubles, the probability of using a negotiation in 2019 was greater for federal buyers (19.5% for contracts between 300,000 and 600,000 rubles, and 56.3% for contracts above 600,000 rubles) than for regional buyers (10.7% and 7.3%, respectively,) and municipal buyers (2.8% and 10.9%, respectively). When moving from 2019 to 2020, federal buyers still record the highest increase in the probability of using a negotiation, but the difference with regional and municipal buyers becomes smaller and non-significant.<sup>12</sup>

We run one robustness check on our findings. The use of thresholds to limit public buyers' discretion on large contracts could have induced the manipulation of procurement values around these thresholds (Palguta and Pertold 2017, Coviello et al. 2021). To deal with this problem we repeat our estimation excluding contracts around the 300,000 and the 600,000 thresholds (specifically, all contracts with values 10% lower or higher than both thresholds). We find no qualitative differences with respect to the results discussed above (results available upon request).

11 The only exception is for contracts below 300,000 rubles awarded by municipal buyers.

12 For example, for contracts between 300,000 and 600,000 rubles, predicted probabilities increase by 38.9%, 21.4% and 33.5% for federal, regional and municipal buyers, respectively (see Table 3).

## CONCLUSIONS

In the period characterised by the spread of Covid-19, procurers in public hospital were pressured to buy, in the shortest possible time, the needed drugs and medical devices. To this end, the Russian government increased the level of discretion given to public buyers by setting new thresholds and rules for the adoption of direct negotiations ('single supplier contracts'). The latter require shorter time to procure – as compared to standard competitive awarding – because the selection and tendering phases are not required.

By exploiting a novel database on public procurement by Russian hospitals, we show that public buyers increased the use of negotiations in response to the pandemic emergency. This increase was greater for contracts with a value above the 300,000 ruble threshold – i.e. for those contracts subject to the policy change that extended the scope of discretion – and for contracts awarded by federal procurers.

We note that the number of single supplier contracts managed in 2019 is broadly similar across the different types of public buyer: the median federal and the median regional buyer both managed four contracts (we do not consider municipal buyers here because of their low numbers). However, the total value of single supplier contracts awarded by federal buyers in 2019 is much higher: for the median federal buyer, the total value is 8.24 million rubles, while for the median regional buyer it is around 830,000 rubles. This suggests heterogeneity in public buyers' experience in managing single supplier contracts in 2019. Further research is required to assess whether buyers' different gained competence had an impact on the public procurement efficiency of single supplier contracts in 2020.

Our study stops short of examining the effect of buyer's discretion (i.e. the larger adoption of direct negotiations) on emergency procurement prices; we leave this to future research. On the one hand, negotiations are faster procurement procedures. On the other hand, they eliminate competition, resulting in a mechanism where the public buyer has discretion over choosing the supplier. Does direct negotiation, increasingly used during the Covid-19 state of emergency, provide the best value for money? This is a crucial question to answer, as using the wrong awarding mechanism can lead to the purchase of low-quality items and/or reduce the available resources for life-saving operations. Further research investigating the trade-off of rules versus discretion in state of emergency procurement is expected to be developed.

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# CHAPTER 15

## Managing critical supply shortages of vaccines and PPE in Asia and the Pacific<sup>1</sup>

**Cyn-Young Park and Kijin Kim**

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The Covid-19 pandemic has revealed considerable weaknesses in the procurement and distribution of critical medical supplies globally, including vaccines and personal protective equipment (PPE). Countries have encountered critical shortages of PPE and other essential medical devices, particularly ventilators to support patients with severe respiratory conditions. Panic buying, hoarding and misuse made the early situation worse, aggravated by export bans on medical supplies and PPE to curb local shortages.

In times of crisis, governments need to react quickly to emergencies. At such times, there are calls to suspend standard procedures in the procurement process and use direct purchases by ministries and other government agencies. While recent literature highlights the benefits of discretion in public procurement (Coviello et al. 2018, Rasul et al. 2019, Bandiera et al. 2020, Bosio et al. 2021, Decarolis et al. 2020) – and expediency in difficult circumstances is warranted and necessary – the size and complexity of the Covid-19 vaccine rollout make it particularly challenging. This challenge of public procurement is not fully understood, especially as countries have not made their decision-making process fully transparent by consistently keeping vaccine purchase documents and prices confidential.

As of May 2021, vaccination in most Asian countries has been slower than expected. While around 80 doses were administered per 100 people North America (the leading region), Asia and the Pacific is lagging, with 14 doses administered per 100 people. This average masks significant heterogeneity across Asian countries, with Singapore and the People's Republic of China (PRC) leading the way with 28% and 12% of their populations vaccinated, respectively, while India and Indonesia are still catching up with 7% and 4%, respectively.<sup>2</sup> Many factors, including limited vaccine supply, logistical challenges, lack of funding and staff resources for vaccination and vaccine hesitancy hamper efforts to immunise meaningful shares of the population in other parts of Asia.

1 This chapter partly draws from the updates from Park et al. (2020, 2021).

2 In the chapter, Asia and the Pacific refers to the 49 regional members of the Asian Development Bank (see [www.adb.org/about/members](http://www.adb.org/about/members)).



In this chapter we discuss challenges and propose some measures for Asia to catch up with the global leaders in vaccinations and recovery.

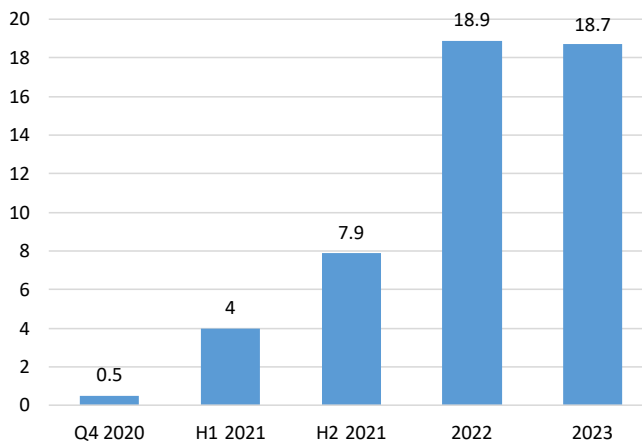
## ISSUES AND CHALLENGES TO PROVIDING VACCINES AND PPE

### Covid-19 vaccines

Covid-19 vaccines have been developed at an unprecedented pace. As of May 2021, 15 vaccines had been authorised for use by at least one country, with more than 100 candidates currently in clinical trials.<sup>3</sup> In Asia, the PRC and India have developed their own vaccines, while a few other countries have their own candidates in clinical trials. Vaccination campaigns have also started in about 40 countries in the region.

Vaccine availability and uneven access, however, remain a significant threat to recovery around the world. As of May 2021, the planned production for authorised vaccines covers about 80% of the world population under a two-dose regime in 2021 – or 11.9 billion doses. For 2022 and 2023, the situation might significantly improve, as about 19 billion doses are supposed to become available annually (Figure 1).

**FIGURE 1 COVID-19 VACCINE PRODUCTION CAPACITY**  
Billion doses, authorized vaccines only



Note: Q = quarter, H = half.

Source: United Nations Children's Fund, Covid-19 Vaccine Market Dashboard (accessed 13 May 2021).

As of March 2021, 80% of the global population was covered by advance vaccine purchases, though the coverage rates vary significantly by income group (Figure 2a). High-income economies have secured enough doses to cover nearly 200% of the population, and COVAX has helped vaccine acquisition in low- and low-middle-income

3 Source: Covid-19 Vaccine Tracker at <https://covid19.trackvaccines.org> (accessed 13 May 2021).

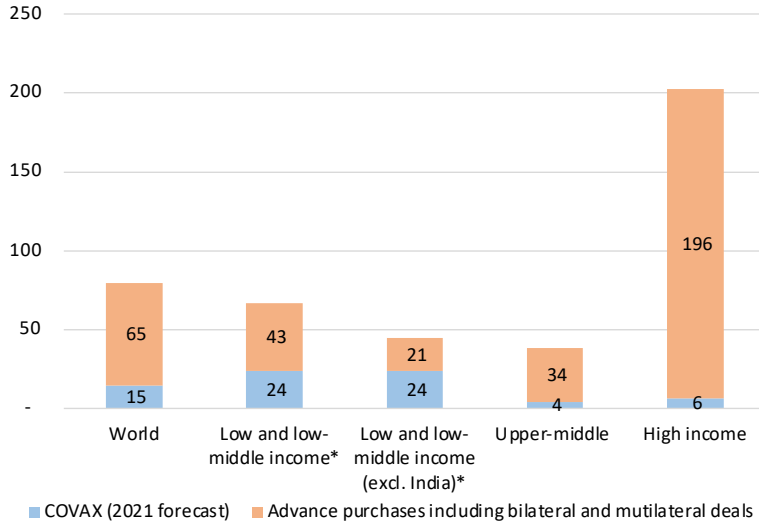
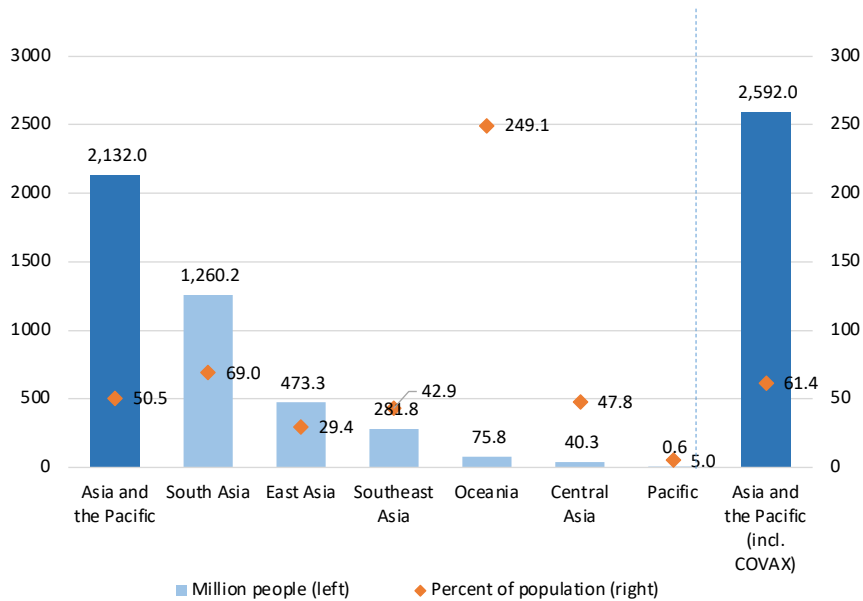
economies (Gavi 2021).<sup>4</sup> In Asia and the Pacific, however, most countries do not have enough doses to cover the entire population, with approximately 50% of people currently covered by Covid-19 vaccine contracts (Figure 2b). In the region, vaccine availability remains limited due to supply shortages, as vaccines have already been committed to developed economies outside the region. As of May 2021, the 27 wealthiest countries with just 10% of the world's population had 35% of globally available vaccines.<sup>5</sup>

Major vaccine-producing countries have given priority to domestic demand through various trade measures, which have hampered the global deployment of vaccines. This may have reduced exports of vaccines and raw materials to other countries. The mobilisation of the Defense Production Act in the United States, for example, enabled the government to reserve vaccine production lines and stockpile essential raw materials (The White House 2021). Similarly, the European Commission enforced an export authorisation mechanism for manufacturers with whom the EU made Advanced Purchase Agreements (European Commission 2021).

A large Covid-19 vaccination campaign is challenging for many developing countries in Asia and the Pacific. Apart from sufficient funding for vaccine procurement, a successful campaign requires transport, storage and logistics infrastructure; capacity in health facilities; sufficient medical personnel; safety monitoring; and strong public awareness and advocacy campaigns. Many countries' existing immunisation programmes may not be ready for the new vaccines and require new guidance, including the adaptation of the current programmes to allow large vaccination campaigns for adults and elderly people. A well-managed logistics system is particularly important for efficient vaccine rollout. The WHO estimates that more than 50% of vaccines may be wasted globally every year because of temperature control, logistics and shipment-related issues (WHO 2005). Complicating the Covid-19 vaccine situation is the requirement that some new vaccines need to be kept and transported in extremely cold temperatures.

4 COVAX is the vaccines pillar under the Access to Covid-19 Tools (ACT) Accelerator, the global collaboration platform launched by the World Health Organization (WHO) and partners to address the pandemic (the ACT pillars include diagnostics, treatment, vaccines, and health system strengthening). COVAX is co-led by WHO, Gavi, and the Coalition for Epidemic Preparedness Innovations (CEPI). It aims to accelerate the development and manufacture of Covid-19 vaccines and to guarantee fair and equitable access for every country in the world under the COVAX Facility. Gavi and CEPI are international organizations with public-private stakeholders that aim to develop vaccines (CEPI) and give equal access to them (Gavi) (see GAVI.org and CEPI.net for more information).

5 Bloomberg Vaccine Tracker at <https://www.bloomberg.com/graphics/covid-vaccine-tracker-global-distribution/>. (accessed on 13 May 2021).

**FIGURE 2 PEOPLE COVERED BY VACCINE PURCHASES****a) By income group (percent of population)****b) By Asian subregion**

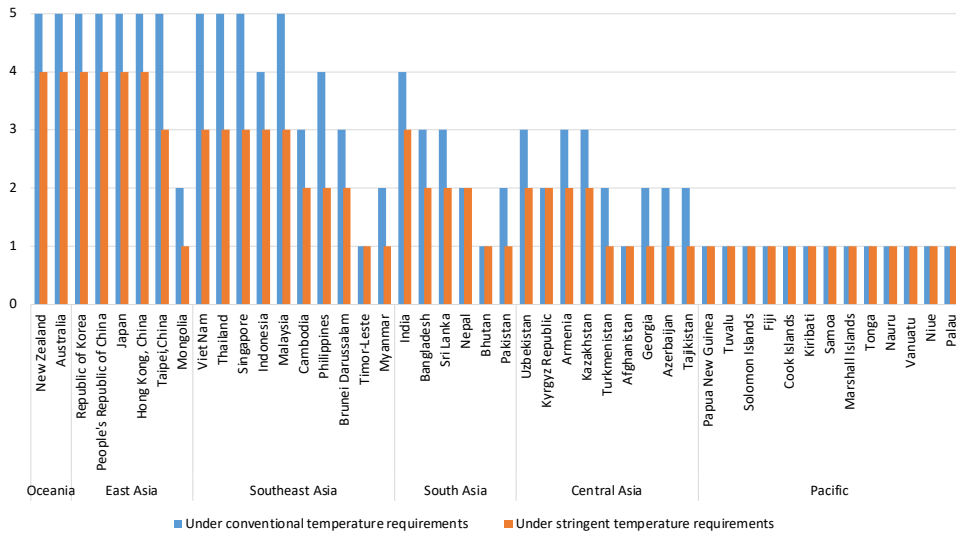
Notes: Based on publicly disclosed information; Number of people covered takes into account the number of doses (mostly two) required by each vaccine; Vaccines in India include those under manufacturing deals that may be exported to other countries. \* includes 92 COVAX Advance Market Commitment eligible economies, including 11 upper-middle-income economies also eligible for International Development Association support. COVAX's supply to upper-middle and high-income economies is based on those economies that submitted non-binding confirmations of intent to participate in the COVAX Facility as of 15 December 2020. COVAX supply includes 2.3 billion doses of vaccines to be provided in 2021 only. COVAX's supply to Asia and the Pacific covers WHO's South-East Asia Region and Western Pacific Region only, thus Afghanistan, Pakistan, and the countries in Central Asia are not included.

Sources: Asian Development Bank based on Bloomberg Vaccine Tracker (accessed 5 April 2021; "GNI per capita, Atlas method (current \$)", World Bank (accessed 25 January 2021); "COVAX publishes first interim distribution forecast", GAVI, 3 February 2021; "COVAX Supply Forecast reveals where and when COVID-19 vaccines will be delivered", GAVI, 29 January 2021; "COVAX", GAVI, 15 December 2020.

Developing economies need to address several logistics issues to successfully immunise their populations.

- **Low air transport capacity.** Closed airports and lack of flights during the pandemic have created additional bottlenecks. The International Air Transport Association said that as of September 2020, 8,000 cargo jumbo jets would be needed to deliver a single dose to the world's 7.8 billion people, compared with the roughly 400 still flying (Mancini 2020).
- **Security and border management.** Distribution of a new vaccine creates additional requirements at the border for customs and public health authorities to eradicate illicit trade of counterfeit medical goods. Shipments should remain secure from tampering and theft at all points in the supply chain. Well-coordinated and timely regulatory approvals, inspection and clearance by customs and health authorities are essential. Priorities for border processes should include introducing fast-track procedures for overflight and landing permits for operations carrying the vaccine and considering tariff relief to facilitate its movement.
- **Inadequate temperature-controlled supply chains.** Temperature-controlled supply chains are limited in developing economies, making it hard to accommodate the various temperature requirements of the different vaccines. UNICEF estimates that the poorest countries would need additional funding of \$133 million to support in-country vaccine logistics and cold chain equipment (UNICEF 2020). Except for a handful of advanced economies, many countries in Asia and the Pacific are not ready for vaccine distribution, with temperature requirements as low as  $-80^{\circ}\text{C}$ , although the region's preparedness significantly improves for conventional cold chain (Figure 3). Qualified and vigilant personnel are critical for successful cold chain management, together with efficient and reliable equipment (Guinebault 1986).
- **Vaccination in rural areas and the last mile.** The toughest challenge in vaccine distribution is delivery to a country's farthest-flung areas. An estimated 25% of vaccines are lost as last-mile challenges strain existing health and cold chain infrastructure (SciDev.Net 2020). For example, only 10% of healthcare facilities in the world's poorest countries have a reliable electricity supply (WEF 2018). Health workers also face poor infrastructure and a lack of proper transportation, which reduces the frequency of outreach visits to these areas. Establishing well-functioning cold chains is a heavy burden for developing Asia, where more than half of the population resides in remote and rural areas.

FIGURE 3 MEASURE OF PREPAREDNESS FOR COLD CHAIN LOGISTICS IN ASIA



Notes: PRC = People's Republic of China. Scenario 1: Stringent temperature requirements (as low as  $-80^{\circ}\text{C}$ ); Scenario 2: Conventional temperature requirements ( $+2$ – $8^{\circ}\text{C}$ ); Measure of preparedness = 1 (lowest) to 5 (highest).

Source: Asian Development Bank based on DHL (2020).

### Personal protective equipment

At the onset of the pandemic, constraints in production and logistics in the PPE supply chain left it unable to meet a surge in demand. Prices of PPE products rose dramatically: a sixfold increase for surgical masks, threefold for respirators, and twofold for gowns between December 2019 and March 2020. Surging demand for masks led to a shortage in nonwoven polypropylene, a key component used to produce the fabric that filters out germs and droplets. An unanticipated increase in orders created a production backlog of key materials and fabric assembly. Reportedly, it would have taken at least five to six months to assemble a single machine production line to make the melt-blown fabric needed for the masks.

However, the surge in PPE demand ultimately spurred a dramatic increase in global PPE production of at least 300%, mainly driven by mask manufacturing growth of as much as 1,200%. Existing manufacturers were able to expand their production capacities, accounting for 50–60% of the supply increase, while the rest came from a shift in production by similar manufacturers, such as those in textiles, and expanded production by smaller local manufacturers (McKinsey & Company 2020).

The pandemic has put a spotlight on the vulnerabilities of global supply chains for critical medical supplies. Important factors that have contributed to the heightened sensitivity of the supply chain to disruptions include the following:

- **Geographical concentration of manufacturers.** The geographic concentration of major manufacturers for vaccines and PPE makes the supply vulnerable to any localised shocks and changes in national security laws and trade policies. For example, during the pandemic, the high dependence on a few major manufacturing centres has led to supply disruptions when major manufacturing facilities in these regional hubs have faced shutdowns, causing disruptions along the entire supply chain for PPE.

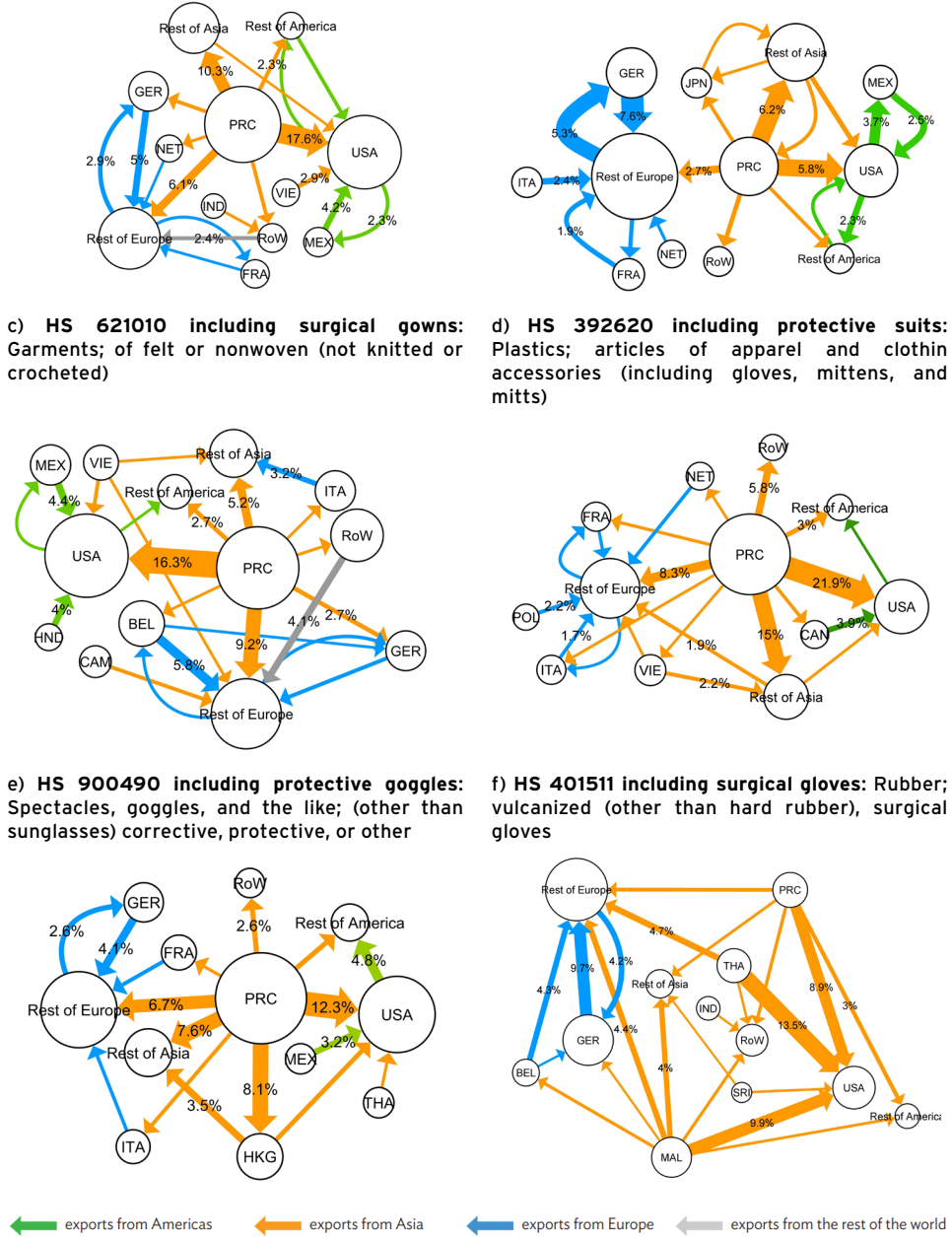
The PRC accounted for half the global supply of masks, with a daily production of about 20 million units before the outbreak. Germany and the United States remain significant producers of face masks for their corresponding regions, but as the world's largest producer of face masks, the PRC plays a central role in producing and exporting masks to both Asia and the world (Figure 4). Similar patterns in regional clustering are observed for protective gowns and goggles. The PRC, Malaysia and Thailand are the top three exporters of gloves. Manufacturers of other types of personal protective equipment that rely on raw materials or products from the PRC have also been affected.

- **Trade restrictions.** The global shortages in vaccines and PPE were worsened by export bans on medical supplies and key materials in a number of countries. As of March 2021, more than 180 restrictive trade measures have been imposed worldwide on medical goods since the beginning of the pandemic, accounting for around 70% of total restrictive measures.<sup>6</sup> Such measures mainly applied to PPE products, banning exports or requiring licenses or permits to export.
- **Other bottlenecks.** Transport and shipping constraints caused by roadblocks and quarantine measures, as well as lower availability of transportation and freight containers, hoarding, profiteering and limited workforce capacity due to illness, also contribute to the shortage.

6 ITC Market Access Map at <https://www.macmap.org/covid19> (accessed 30 March 2021).

**FIGURE 4 GLOBAL TRADE NETWORKS OF SELECTED PERSONAL PROTECTIVE EQUIPMENT PRODUCTS, 2019**

- a) HS 630790 including surgical masks: Textiles; made up articles (including dress patterns), not elsewhere classified (n.e.c.)
- b) HS 392690 including respirators: Plastics; other articles (n.e.c.)
- c) HS 621010 including surgical gowns: Garments; of felt or nonwoven (not knitted or crocheted)
- d) HS 392620 including protective suits: Plastics; articles of apparel and clothin accessories (including gloves, mittens, and mitts)
- e) HS 900490 including protective goggles: Spectacles, goggles, and the like; (other than sunglasses) corrective, protective, or other
- f) HS 401511 including surgical gloves: Rubber; vulcanized (other than hard rubber), surgical gloves



Notes: BEL = Belgium; CAM = Cambodia; CAN = Canada; FRA = France; GER = Germany; HKG = Hong Kong, China; HND = Honduras; HS = Harmonized System; IND = India; ITA = Italy; JPN = Japan; MAL = Malaysia; MEX = Mexico; NET = Netherlands; POL = Poland; PPE = personal protective equipment; PRC = People’s Republic of China; RoW = rest of the world; SRI = Sri Lanka; THA = Thailand; USA = United States; VIE = Viet Nam; n.e.c. = not elsewhere classified. The size of the nodes represents the economy’s total trade (exports plus imports) of the concerned commodity group. The thickness of the lines represents the value of the flow of goods between economies. Some lines show the share of exports to the total global exports of the commodity group. For clarity, only exports with high values are represented by the lines.

Source: ADB calculations using data from the United Nations Commodity Trade Database at <https://comtrade.un.org> (accessed 16 March 2021).

## SUMMARY OF POLICY RECOMMENDATIONS AND THE ROLE OF MULTILATERAL DEVELOPMENT BANKS

The pandemic has revealed issues and challenges in the timely provision of adequate quantities and equitable distribution of vaccines and PPE. Global vaccine rollouts have been painfully slow except for in very few advanced and rich countries, such as Israel, the United Kingdom and the United States. Controlling disease outbreaks has proved most difficult in countries with low incomes, high populations and weak national health systems.

Market mechanisms alone may not be enough to achieve efficient and equitable distribution during crises, calling for the need for public intervention. In addition, individual countries acting in their own national interests will likely lead to suboptimal outcomes for all, leaving mainly poor and underdeveloped countries behind. The Covid-19 pandemic has exposed weak links in vaccine and PPE supply chains. Given acute shortages in global supply of vaccines and PPE, swift international support and cooperation for building a seamless pipeline to ensure continuity of supply is critical. International cooperation and multilateral approaches to facilitate vaccine procurement and distribution will be particularly important to ensure equitable global access, inclusive of low-income developing countries.

Global and regional partners can make important interventions in three major areas to support vaccine procurement and deployment in low to middle-income developing countries: (i) evidence and capacity building, (ii) policy and advocacy, and (iii) financing. Better international cooperation and coordination on the following points can be considered to improve vaccine procurement and deployment.

- **Mitigating the funding gap.** The COVAX Facility has already stepped-up vaccine acquisition for low- and lower-middle-income countries, but funding gaps, delays in deployment amid varying country readiness and short-term supply shortages continue to hamper expansion of vaccination coverage. While supply shortages limit vaccine availability in the Asia-Pacific region, funding and capacity constraints remain critical issues for many developing countries. In December 2020, the Asian Development Bank launched the Asia Pacific Vaccine Access Facility (APVAX), amounting to \$9 billion, to assist in vaccine procurement and distribution for its developing members. A regionally coordinated health policy can also facilitate the uptake of new vaccines and support informed decision making in national vaccination programmes, reducing vaccination gaps across and within countries in Asia and the Pacific.
- **Logistics support and proper handling of vaccines.** Many developing countries in Asia and the Pacific are not ready for the enormous logistical challenges in distributing Covid-19 vaccines rapidly and safely under stringent temperature



requirements. Since much wastage is also caused by mishandling of vaccines, having well-trained personnel is a must, along with properly designed cold-chain management policies and procedures.

- **Maintaining open trade for critical goods.** Given high cross-border interdependence, all nations will benefit from leaving doors open for trade in critical components and medical supplies and to streamline the cross-border freight logistics for these items. International cooperation is essential to provide secure supply chains and logistics, collectively estimate availability and capacity, and accelerate transportation across various of modes.
- **Information sharing and transparency.** Further efforts to strengthen data sharing, mutual acceptance and recognition of manufacturing practices, drug registration, and inspection and evaluation would improve the efficiency and transparency of regulatory decision making for vaccination. It is important to improve transparency along global supply chains, identify a list of critical components and their sources, and mobilise alternative sources and options. An efficient, low-burden mechanism for governments and private sector partners to share situational and supply information can help.
- **Digital immunisation information and vaccine certificates.** These can help effectively monitor and implement vaccination campaigns. Common standards for vaccination documentation and digital tools for verifying test results and vaccination certificates can facilitate monitoring and implementation of vaccination programmes. Digitally verified health status can help economies to reopen and manage the potential risks of cross-border transmission. The international community should also leverage digital technology to improve information exchange through better interoperability of digital immunisation information systems.

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In times of crisis, the importance of local knowledge and a fast response push for autonomy for local decision makers. Covid-19 has served as a global case study for increased discretion in public procurement, with governments worldwide making rules more flexible to increase spending, reduce the damage and save lives. With that, abuse, collusion and corruption also increased. This eBook provides fascinating insights into the tension between rules and discretion in public procurement, including through several country-level case studies.

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