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Ph.D. thesis

**Multi-level Corruption Risk Indicators
in the Italian Public Procurement**

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Supervisor:

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Academic Year 2018-2019

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Table of contents:

Summary

Multi-level Corruption Risk Indicators in the Italian Public Procurement 1

Table of contents: 7

Abstract 9

Introduction11

Chapter 1. Public procurement in the Italian context13

 1.1. The International Procurement Framework13

 1.2. Italian procurement regulation16

 1.3. The structure of the market21

Chapter 2. Corruption: concept, determinants and costs25

 2.1. Definition of corruption25

 2.2. Corruption: causes and consequences.....30

Chapter 3. Corruption risk assessment.....35

 3.1. Theories of corruption35

 3.2. Identification of corruption risk.....40

 3.3. Measuring the risk of corruption44

Chapter 4. Estimating corruption risk at the contract level.....51

 4.1. Introduction51

 4.2. The analytical strategy52

 4.3. The estimation method.....54

 4.4. A corruption risk indicator on Italian public contracts58

 4.5. Discussion.....78

Chapter 5. Estimating red flags of corruption at the firm-level.....85

 5.1. Introduction85

 5.2. Identifying red flags of corruption at the firm level.....87

 5.3. A firm-level analysis of corruption red flags91

 5.4. Results of the analysis at the firm-level97

 5.5. Discussion.....100

Concluding remarks	105
Technical Annex	109
References	115
Acknowledgments	135

Abstract

This study develops an original corruption risk indicator at the Italian procurement level and estimates the correlation between the profile of contract suppliers and the corruption risk indicator in question. This corruption risk indicator relies on a residual approach following a two-stage, semi-parametric procedure. First, public work contracts are benchmarked to investigate the relative efficiency of each public work execution based on two predefined variables – cost overrun and time delay – using a data envelopment analysis (DEA). Second, DEA efficiency scores are regressed on environmental and contract-level determinants of inefficiency – excluding corruption which is treated separately. Third, the estimate residuals provide estimates of the potential risk of corruption at the contract level. The aggregated results from an updated Italian public procurement dataset suggest that: (1) the risk of corruption associated with contracting authorities prevails in larger urban areas, especially in Lazio, Tuscany and Lombardy; (2) the risk of corruption in relation to the location of firms is higher in central regions (Abruzzo, Umbria and Lazio) and southern regions (Campania and Basilicata). Then, a risk-based assessment exercise is performed to profile suppliers. The corruption risk indicator is regressed on suppliers' financial and ownership data to identify patterns among firms winning risky contracts. Suppliers associated with high levels of corruption risk in public contracting are more profit-seeking, hold low levels of debts and on average need more days to pay their customers. Finally, suppliers involved in public work contracts at high risk of corruption are more likely to have legal and/or financial connections with off-shore jurisdictions and tax havens which might use financial and corporate secrecy to attract illicit financial flows.

Introduction

The public procurement market is the main means for governments to pursue citizens' needs. Public procurement is a powerful lever for achieving economic, environmental, technological and social goals. To achieve these goals, governments turn to the private sector for the supply of goods and services. A large amount of funds revolves around public procurement. In concrete terms, between 12% and 15% of a country's GDP is spent worldwide in this sector. For this reason, public procurement is also an area rife with corruption opportunities.

Corruption in public procurement occurs within an opportunity structure. Opportunities for corruption can emerge in all stages of the procurement chain, from needs assessment to contract implementation. Identifying corruption opportunities is key to estimating the overall risk of corruption at a procurement level and the correlation between the characteristics of contract suppliers and the risk of corruption in public procurement. According to this framework, this dissertation proposes an innovative methodology to develop multi-level risk indicators in public procurement, both with regards to public work contracts and private firms involved in corruption.

This analytical framework is applied to the case of Italy. Italian public works are analyzed to build a new corruption risk indicator at the contract level. As corruption is a source of inefficiency in contract management, a '*residual approach*' is adopted to develop a risk indicator. The corruption risk indicator is derived from inefficiency in contract execution, intended as the additional time and costs entailed by the actual realization of the public infrastructure. In this way, a new risk indicator of corruption in public procurement is developed, which allows comparing public contracts to determine more precisely which of them are more likely to experience corruption upon execution.

In the second part, a risk-based assessment exercise is performed to profile suppliers. To this purpose, some attributes of winning bidders are identified and empirically tested to raise corruption-related red flags at the firm level. It is suggested that suppliers involved in corruption act in a different manner than 'clean' businesses, which behave in the public interest. Suppliers involved in corrupt transactions act strategically to extract and distribute rents within the corruption network for the achievement of personal and/or political interests. Based on this assumption, suppliers involved in corruption are expected to differ from their peers in their financial performance and corporate structure. The identification and measurement of red flags at the company level provides

interesting insight into new, substantiated hypotheses for a more comprehensive assessment of publicly-funded firms.

This dissertation is highly explorative, as it reflects the inherent challenges of developing reliable and valid indicators of a phenomenon deliberately hidden by its actors through several mechanisms. The construction of multi-level risk indicators opens the path for the implementation of data-driven, anti-corruption strategies to support law enforcement and the judiciary authorities in preventing and/or detecting illegal behaviors in public procurement.

This study is organized as follows: the first chapter illustrates international and national legislation and describes the actual structure of the procurement market in Italy. The second chapter introduces a range of types and definitions of corruption and focuses on the determinants and impact of corruption in public procurement. The third chapter presents the theoretical and analytical framework used to assess the risk of corruption in public procurement. The fourth chapter develops the methodological approach and establishes a new risk indicator of corruption in public procurement. The fifth chapter focuses on suppliers, by identifying red flags at the firm level. The final chapter discusses future research paths and explains the importance of more precise and accurate open data as a key tool for advancing data-driven anti-corruption policies.