

THE NETWORKED PHENOMENON OF STATE CAPTURE:

Network Dynamics, Unintended Consequences, and Business-Political Relations in Hungary, 2009-2012

By

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Declaration

I hereby declare that this dissertation contains not materials accepted for any other degrees, in any other institutions. The dissertation contains no materials previously written and/or published by any author, except where appropriate acknowledgement is made in the form of bibliographical reference.

Budapest, 05 May 2017

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*To Artak.
We've done it, my friend.*

ABSTRACT

Despite the fact that state capture and grand corruption are pervasive problems across countries, there is little and fragmented empirical evidence to support their understanding. As a consequence, varieties of state capture and business-political networks are largely unexplored. Moreover, current theories that explain state capture are biased towards business capture, and therefore cannot explain with the existing conceptual and analytical frameworks cases of political capture, such as Hungary. I thus re-conceptualize state capture as a system of corrupt relations between business and political actors that hijack a state function to work in their favor, at the expense of the general target group the state function was originally developed to serve. This dissertation investigates patterns of corruption risks in four high value public procurement markets and in one market between Hungary, Slovakia, and the Czech Republic. It assesses the driving actors, dynamics of issuer and winner networks, and the organization principles of political and business capture, as well as clean organizational behavior, between 2009 and 2012, before and after the government change in 2010.

Using bipartite network motif analysis, regression analysis and dynamic network analysis of cross-sectional public procurement networks, I developed a standardized and robust empirical vocabulary of corruption risk network configurations, which compares varieties of state capture across procurement markets and countries, is easy to replicate, and has generalizable applications to other types of corruption networks. I also built cross-sectional statistical models using micro-level public procurement predictors to explain four types of organizational behaviors derived from the vocabulary of corruption risks: political capture, business capture, clean political behavior and clean business behavior. Finally, the dynamic network analysis was used to describe differences between mechanisms at work in the four types of behaviors.

The main findings from the analyses show that in Hungary it became easier after 2010 for issuers (mostly at the regional and local levels) to get involved in political capture. Corruption risks have transformed from centralized practices around state institutions in 2009 to diffusion of high corruption risk contracting throughout the network of both business and political actors by 2012. As expected, political capture increased after 2010, while business capture weakened significantly. These trends are divergent from what can be seen in Slovakia and the Czech Republic, where political capture is much lower by 2012 and there is a significant increase in clean behavior, while no such change is registered in Hungary. Regional and local level issuers seem to be the drivers of political capture, using the public procurement process to bend the rules in their favor, especially after 2010. By 2012, the business environment changed so much that companies became more likely to engage in corrupt behavior, despite their preference so far for clean contracting. Also, by 2012, the formation of business-political cartels around construction work procurement is clear. While business companies are more susceptible to network effects, public institutions are more susceptible to administrative effects, and therefore can be easily punished and rewarded through administrative procedures based on political will. As long as the party controls the administration of public institutions, it also controls the opportunities and instruments for engaging in state capture, typically through coercion.

The dissertation contributes to advancements in the comparative, empirical, and objective measurement of varieties of state capture through the theoretical and analytical frameworks developed. The results have implications for anti-corruption public policy development and can inform the design of criminal investigations based on objective data and realistic and stable corruption networks.

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Needless to say, studying corruption and even a more elusive phenomenon such as state capture is hard work. There is a lot of searching in the dark, a lot of resistance and denial, a lot of refuting of my own arguments, being thoroughly critical of the approaches of others but also my own approach to the topic. This dissertation has been the most challenging project I undertook so far, and the progress and process have been riddled with all sorts of personal, technical and intellectual obstacles to advancing our knowledge of this topic and delivering a few working ideas about how we can approach anti-corruption in practice.

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Introduction

State capture is the process through which a narrow group of business and/or political actors manipulate various aspects of their institutional and organizational power to extract state rents. State capture is based on personal relationships (informal and formal) that get formalized into legal and social precedents that act as the norm of operation at the highest echelons of power. These networks tend to be sticky – participants/actors perceive these as the operating norm for successful goal attainment, be them business or political goals. They usually damage state functions, such as redistribution processes or legislative outputs. When these are frequent and systematic occurrences, they tend to institutionalize corrupt practices and turn state functions into politically or business captured ones. The main mechanism of state capture is the institutionalization of grand corruption. The phenomenon is mostly associated with countries in Eastern Europe and the former Soviet bloc, but different degrees and evidence of state capture have been found in most countries across the world, both developed and underdeveloped (Innes 2014, Leitner and Meissner 2016, Rose-Ackerman 1996, Della Porta and Mény 1997, Grzymala-Busse 2008).

The complexity of state capture and its peculiarity arise from that fact that business and politics work together to systematically skew the redistribution of resources in favor of a few individuals and groups, at the expense of the public good. Examples of different methods of capture are the following: politicians using business companies to derail public funds; business companies pressuring politicians to include favorable legislation for the business; politicians using their influence/administrative positions to reward businesses for loyalty and support; businesses using their resources to constrain political actors into acting on their behalf.

State capture is more than just corruption. In the case of the former, corruption acts are systematic and institutionalized. Bribes are often part of the phenomenon, but so are barter using public goods, or selling legislation. State capture can also be legal in nature, and its realizations are often more subtle than one can spot at first sight, and the networks forming involving politicians and business people are far from trivial. What investigative journalists manage to uncover are a few notable *instances* of state capture¹. The reality, however, is that state capture situations are so diverse and covert in nature, that it is hard to generalize them or categorize them into well-defined blocks of behavior, mechanisms of operation or outcomes.

Corruption acts either have long-term effects, or they appear repeatedly. For example, long term effects are when a company or a group of companies manage to change legislation that favors them primarily. These kinds of intervention can be rare, but legislation can remain in place for years (see literature of regulatory capture). Another example comes from the case of public procurement, where many contracts are awarded based on favoritism and particularism. These kinds of intervention appear frequently.

High level corruption acts are rarely carried out by actors single handedly or independently. In the majority of cases, the actors involved are interdependent, which means they act collectively, either by helping each other extract rents, or by constraining each other in doing so. Although cases of grand corruption that lead to state capture are diverse, they have a few things in common. For example, a company that wants to influence legislation cannot do so without involving political decision-makers. Conversely, political decision-makers often use private companies to extract rents from the state.

¹ <http://gijn.org/2017/04/05/taco-kuiper-award-we-need-probing-fact-checked-fearless-journalism/>; <http://mediaobservatory.net/investigative-journalism/how-did-viktor-orb%C3%A1n-lajos-simicska-media-empire-function>; <https://www.pri.org/stories/2017-04-21/disrupting-kleptocrats-playbook-one-investigative-report-time>.

I.1 Relevance of the phenomenon and gaps in the literature

The 2014 Special Eurobarometer on Corruption shows that suspicions of widespread corruption in public procurement - one of the most visible areas of state capture - are alarming: 69% of respondents in the Czech Republic, 64% in the Netherlands, 55% in Greece, 60% in Slovenia, 58% in Croatia, 55% in Italy think public tenders in their countries are awarded in corrupt ways. At the lower end, but still surprisingly high, 22% in Denmark, 31% in Finland, 32% in Ireland and Luxembourg, and 33% of the respondents in the UK perceive public procurement in their country as one of generalized corruption. Moreover, 32% of companies in the Member States that participated in the survey and have been involved in procurement processes say corruption prevented them from winning a contract (Special Eurobarometer on Corruption 2014, p. 25)².

Despite the fact that state capture and grand corruption are pervasive problems across countries, there is little and fragmented empirical evidence to support their understanding. Previous theoretical and empirical approaches largely ignored the interplay between business and political actors in capturing the state, and focused disproportionately either on the influence of business actors or that of political actors, or relied primarily on subjective measures of corruption. More recent studies re-conceptualized state capture as a networked phenomenon, however, they either use limited conceptualizations of networks or use inappropriate methods for the type of data and questions they ask.

Both corruption and state capture are collective action rather than Principal-Agent phenomena (Persson, Rothstein and Teorell 2013; Mungiu-Pippidi 2013; Marquette and Peiffer 2015).

² The survey was conducted across EU 28 countries, with sample sizes varying from 500 to 1,545, in total, 27,786 individuals interviewed during the period 23.02-10.03.2016. For more details on the survey methodology, see Technical Specifications, pp. 121-124 in the Special Eurobarometer on Corruption Report, http://ec.europa.eu/public_opinion/archives/ebs/ebs_397_en.pdf.

They involve multiple interdependent actors that work together in cooperation or constraint to commit corrupt acts and receive state rents. It is rarely the case that either business or political actors work independently to achieve these goals. Given this relational aspect, it is somehow puzzling that so little attention has been given to understanding corruption and state capture by looking conceptually and analytically at the resulting networks of business-political interactions.

The literature suggests several reasons for the lack of efforts in this direction: one, it is very hard to meaningfully detect and operationalize informal relations, mostly because the inherent logic of corruption is overt and actors work proactively in hiding any incriminatory relations. Where scholars have tried to take these into account, their studies of informal relations fall short of comparability across situations and explanatory power over time. A second argument from the literature is that approaching these phenomena from a formal angle is bound to omit critical details.

Relying on proxies of corruption is perhaps the most common strategy in the corruption literature. However, state capture suggests systemic corruption acts that affect state capacity. In order to understand the problem holistically, one of the most viable strategies is to investigate formal relations over time. With the increasing availability of reliable and relevant relational data, and with the development of network analytical tools, advances in the investigation of what leads to institutionalization of corruption are much more encouraged and supported. Also, they uncover a whole new perspective that is informative and revelatory.

The literature on state capture, extensively discussed in Chapters 1 and 2 recognizes conceptually these interdependencies, but analytically, very few studies treat these relations between the two types of actors, business and political, objectively and systematically. On the

one hand, political science literature focuses predominantly on the actions of political actors, scholars assuming political power and dominance as givens, and so ignoring the systematic involvement of business actors. On the other hand, economics literature emphasizes the power of business firms, ignoring this way the systematic involvement of political actors. I argue that this debate is counterproductive and obscures reality, because it does not treat the interaction between these two types of actors in an equal, objective and systematic way. This disparity between the two literatures hinders and delays accumulation of knowledge about state capture.

These limitations of traditional and current approaches impede the accumulation of knowledge about state capture and institutionalization of grand corruption and highlight a gap in the literature that needs to be addressed. Varieties of state capture and business-political networks are largely unexplored. We know very little about the mechanisms at work in the process of institutionalization of grand corruption. There is still little empirical support for state capture measured through objective indicators and there is a lack of comparability and standardization of corruption networks because of the fragmentation of analytical tools, lack of replication, and lack of statistical validation of empirical network patterns.

One of the clear goals of this dissertation is to make explicit complex interaction networks between private firms and political actors that raise the risk of state capture and of institutionalized grand corruption. This dissertation makes an effort to bridge interdisciplinary literatures, both theoretically and conceptually, as well as analytically, by looking at the networks of relations between business companies and political actors, thus making the interaction between them explicit. I propose to analyze large amounts of data relevant to the general context and extent of state capture in a country. The aim of this network approach is to detect the situations in which either political or business actors manage to drive and control

situations that lead to state capture, and understand the dynamics and mechanisms that lead to the institutionalization of a relational logic of action (network logic).

In light of this research context, this dissertation aims at answering the following questions:

- *Who are the driving actors of state capture? Why do sometimes political actors control these situations and other time business actors?*
- *What are the institutional dynamics of state capture? If we account for the situations of direct and indirect formal relations between business and political actors, what is the process that leads to state capture?*
- *Why do political and business capture form?*

Hungary displays a peculiar type of capture, where political polarization, party colonization, and party discipline are strong, and so business capturing state resources rarely happens without the assistance of political actors who tend to dominate the process of resource redistribution. Hungary differs from cases such as Romania or Poland, where big business has more leverage over politics, at least in areas that are not directly controlled by a strong political party (Hellman, Jones and Kaufmann 2000a, 2000b). Using Hungary as a longitudinal case study, and the strategy of analysis through objective, public data and corruption risk proxies, this project aims at answering further questions: what is the extent of each of these phenomena in Hungary and what are the causes and mechanisms that lead to the dominance of one over the other?

I.2 Theoretical and Conceptual Framework

To be able to understand how state capture comes about and how it plays out, an analysis of the interaction networks between business and political actors is necessary. These networks represent the main mechanism through which the two types of actors influence and constrain each other in opportunities for high level corruption, for extracting state rents, as well as through which they systematically affect state functions.

It is not productive to treat state capture as a performance-based outcome. A much more productive avenue for understanding the institutionalization of grand corruption is by treating state capture as a process and a networked phenomenon. It thus needs to be investigated over time, and the focus must be on the dynamics of networks of relevant actors.

These inter-organizational networks become legal and social precedents that come to be perceived as unwritten rules that facilitate or constrain action in obtaining economic and political partnerships. For example, the institutionalization of a relational logic of action is when, as a business company that wants to win a public procurement contract, one needs to first connect politically to have a chance at winning the contract. Another example of the institutionalization of a relational logic is when, as a politician that wants to ensure a future public office mandate, one needs to connect to a business company that would financially support the political campaign.

In understanding these phenomena, network structure and the positioning of actors in networks are two key explanatory variables. Intuitively, these networks are complex. It is hard to understand what the most important players that exercise influence within the network are, and what the extent of their influence in these systems is. By operationalizing networks through the two types of relations mentioned above, and by using network analytic methods, these networks

can be mapped and one can determine mathematically and statistically who are the important players, what their influence in the network is, and how large their influence actually is.

The dynamics of network structures offers clues about the institutionalization of relational logics of action – either business or political. The positioning of different actors in the network or how they navigate the network structures over time offers clues about their direct and indirect influence potential over the network. These clues indicate why sometimes business actors other time political actors manage to capture state functions, assets or resources.

Below are a few general hypotheses I test in the analytical chapters 3 and 4 and which I discuss extensively in the theoretical Chapters 1 and 2. They are organized in three categories: driving actors, dynamics of state capture, and mechanisms of state capture.

Driving actors

H1: In Hungary, state capture is driven primarily by political actors, and less so by business actors.

Dynamics of state capture

H2: The intensity of state capture has increased in Hungary after the change in government in 2010.

H3: Political capture in Hungary increased after 2010.

H4: Business capture in Hungary decreased after 2010.

Mechanisms of state capture

H5: Corruption risks centralize around national institutions.

H6: Political captor actors use power (coercion) to control capture situations.

H7: Business captor actor use socialization and imitation to control capture situations.

To test these hypotheses, I used public data on issuers and winners of public procurement tenders in Hungary between 2009 and 2012. The data used information about public procurement transactions among over 9,000 business organizations and public sector institutions (national/local), in the top four highest financial value procurement markets in the country, over the four years of the analysis. For different analyses I used different samples of these public data.

The research design of the analytical chapters included three steps: first, I conducted the empirical categorization and statistical validation of network motifs using data on four markets over four years. This resulted in 16 networks analyzed. I used six motif indicators (issuer-controlled versus winner-controlled corruption risk configurations – high, mixed, low corruption risks) to measure two types of state capture (political and business capture), and test one type of capture (business) across three countries (Hungary, Slovakia, the Czech Republic). Second, I tested four models on the Construction Work procurement market: micro-level public procurement determinants of political capture, business capture, and clean political and business behavior. Third, I analyzed the network dynamic, discussing the similar and distinctive network mechanisms at work in these organizational networks.

I.3 Data

One of the reasons why researchers avoid studying corruption and state capture is the fact that these acts presuppose informal and hidden relations that can hardly be identified and quantified.

However, in recent years, two things facilitated research in these areas: 1) more relevant data on the interaction of business-political relations are made public. And 2) the methodological development, primarily of network science, that offers the unprecedented possibility of objectively and systematically quantifying these relations. Given this progress, it is easier today to operationalize valid and informative relations and interactions between the business and the political sphere that directly and explicitly affect levels of corruption risks and state capture.

The data I use in this dissertation is public procurement data, contracts between issuers and winners of public procurement contracts in Hungary, between 2009 and 2012.

Data on public procurement contracts between public institutions as issuers of procurement tenders, and business companies as winners of these contracts, between 2009 and 2012. The database is part of the largest data collection project on standardized public procurement information in Europe, across 35 countries. This database too contains network data of business-political relations. For Hungary, the database contains information about all the public procurement contracts signed between 2009 and 2012, in 44 procurement markets, involving both small and medium-sized companies, as well as the largest domestic and multinational companies in the country.

The networks are operationalized in the following way: nodes are public institutions that issued tenders for public procurement of goods and services and business companies that won these tenders. The links between these actors are the public procurement contracts. To be able to determine the level of corruption risk associated with each contract, I use the Corruption Risk Index. The composite index proposed by Mihaly Fazekas and his collaborators (2013, 2016) was developed for Hungary, Slovakia and the Czech Republic, in conformity with each of the countries' legislation on public procurement, and represents the programmatic deviations of

each contract at three stages of any procurement process: the submission, assessment, and delivery stages. It uses 14 indicators of corruption risk in public procurement to categorize contracts in terms of how clean or suspicious of corrupt practices they are. CRI is an objective measure of corruption *risks* based on micro-level data. In network terms, these networks represent bipartite graphs. Throughout most of the analyses, I use methods for bipartite, valued networks. Some analyses involve network projections. Although much criticized, these projections show interesting patterns of institutional pressures that reflect the network logic in organizational decisions that lead to state capture.

I.4 Research Design and Methodology

The standard definition of state capture suggests the phenomenon can be driven by both business actors, as well as by political actors. Despite this explicit definition, the literature on state capture very rarely looks at the influence and success of these two types of actors in parallel. To overcome these limitations, this dissertation uses a research design that makes the interaction and development of the two phenomena explicit and analyzes objectively the impact of either and both types of actors in driving the process.

Typically, state capture is studied as an institutional performance-based outcome, in that the effects on state institutions are detected, and the consequences of capture on their functioning in assessed. While this strategy is useful, the results do not indicate the process through which these state institutions become captured by business or political interests. Therefore, an alternative strategy is proposed in this dissertation for studying the phenomenon as a self-standing process. This means that the formation, evolution and transformation of business-political networks is analyzed over time. The results provided by this strategy offer direct

evidence for the institutionalization of corruption risks, an important process that could not be identified by previous methodologies.

To better understand how state capture comes about and who the driving actors that control high corruption risk situations are, this dissertation proposes a comparative research design on three dimensions: areas of interaction, levels of analysis, and administrative levels.

The analyses of public procurement networks in Chapters 3 and 4 reflect actions indicative of two varieties of state capture in public procurement: political capture and business capture. The purpose for choosing it is to allow us to detect the mechanisms through which certain actors manage to capture the state. The two types of networks have different structures and logics. If one looks only at one of them, one is bound to draw incomplete pictures or wrong conclusions. To better understand how individual action translates into organizational action, we must separate the two levels of analysis, but look at them concomitantly. Moreover, this research strategy has the advantage that it makes explicit the mechanisms through which the phenomena we observe at the macro level emerge from individual level behavior. Network science is the most appropriate toolbox for investigating the two levels of analysis in parallel. In the analyses, I compare two different administrative levels: a) organizations at the national (ministries, state agencies, national firms, etc.); and b) organizations at the regional and local levels (municipalities, local councils, firm subsidiaries at the local level, etc.).

The methods for researching corruption are very diverse. The most employed methods however are the qualitative ones, through interviews, and the quantitative one through answers to surveys about the perception of different stakeholders of high level corruption. Among the most notable limitations of these approaches are the fact that interviews and perceptions of corruption are subjective and cannot really be generalized. The studies that use objective

measures of corruption, although conceptually talking about networks, very few of them actually analyze networks explicitly. To fill in this gap, this dissertation uses quantitative and statistical methods on big data to map relevant business-political networks, and measure the importance of different actors and structures that lead to the institutionalization of high risks of corruption and the emergence of state capture.

The dissertation relies on three types of statistical analyses: network motif analysis, regression analysis, and dynamic network analysis. An important limitation of most previous studies on state capture is that they analyze this phenomenon interstitially in one or a few years only. This choice goes against the definition of state capture itself as a long term process. To overcome these shortcomings, this dissertation proposes the analysis of the formation, evolution and transformation of business-political networks over time, from the beginning of the democratic regime in Hungary in 1990, until 2012. The analysis of network dynamics is important and reveals the process and mechanisms through which the interests of a narrow groups of actors prevails in controlling and incapacitating state functions.

I adapt a motif discovery algorithm (a methodology used in bioinformatics and the study of gene interactions) to statistically validate the elementary building blocks of business and state capture in public procurement. The aim of this methodology is to create a vocabulary of clean and high corruption risk configurations using a standardized, fast, and precise framework for the comparative analysis of business-political networks, in different procurement markets and different countries, over time. This analytical framework allows for the identification of the levels of business and political capture, as well as the network mechanisms through which certain public or business actors manage to control the particularistic distribution of public contracts.

I then use regression models for network data to validate the network mechanisms and the most important variables explaining political and business capture, as well as the determinants of clean behavior.

With respect to the justification of the case study, Hungary has become one of the most clearly politically captured states in the region (Bozóki 2011, Meyer-Sahling and Jäger 2012, Fazekas et al. 2016, Ágh 2016), which renders it appropriate for the study of the phenomenon and the mechanisms through which high level corruption become institutionalized. Hungary offers ripe conditions for developing and testing the analytical framework developed in this thesis, which allows for the objective analysis of business-political networks that lead to state capture. The methodology can be replicated and applied to any other country for which the Corruption Risk Index has been developed³.

Hungary was considered a successful case of democratic and economic transitions after 1989, with the highest FDI contribution to the national economy, fast and steady economic growth, with a consolidated political system and low electoral volatility (Endyedi and Toka 2007). After Orban's aggressive and ample political moves since 2010, categorizing Hungary as a politically captured state was inevitable (Magyar 2015, 2016, Bozóki 2011). However, the literature on state capture offers little explanation about the process through which a state becomes politically captured, the focus being predominantly on state capture by business interests (Hellman, Jones and Kaufmann 2000a, 2000b; Kaufmann et al. 2000; Bardhan 2006).

I chose the area of public procurement, because it is one of the most affected areas of capture, through which large sums of public money are redirected for the private gain of a small group

³ DIGIWHIST, link to data: <http://digiwhist.eu/resources/data/>.

of interests, at the detriment of the public good. It is also an area where state capture can be measured more directly (Fazekas et al. 2016; Rose-Ackerman 2009; Søreide 2002; Innes 2014).

I.5 Contributions

This dissertation aims at making three interconnected contributions: 1) from a theoretical point of view, the thesis proposes the explicit modelling of relational factors and the influence of business-political networks in the formation of state capture both driven by business actors, as well as by political actors, and of the institutionalizations of high corruption risks. 2) From an analytical point of view, the thesis proposes the development and testing of a standardized analytical framework that allows the objective, systematic, and effective measurement of state capture using public data. 3) From the point of view of anti-corruption policy development, both the theoretical as well as the analytical frameworks developed in this thesis allow for the objective and concrete identification of the actors involved in state capture, both business and political, and the efficient identification of the level of institutionalization of high corruption risks in public procurement that can be compared across markets, countries and over time.

I.6 Structure of the Dissertation

The dissertation is structured in six chapters. In this Introduction, I motivated the saliency of the problem and briefly surveyed the gaps in the literature that motivate these research questions, design and methodology.

Chapter 1 provides a critical review of the literature on state capture and institutionalized grand corruption. The analysis highlights the progress made by previous research for understanding

these phenomena, as well as their limitations. Using the critical review of the political science and economics literatures, I argue for the necessity of the relational and structural approach for understanding how state capture comes about and who the driving actors are. The first chapter ends with the theoretical and conceptual framework for the networked phenomenon of state capture.

Chapter 2 presents the case of state capture in Hungary – critically reviews empirical and theoretical approaches and evidence of the evolution of state capture in the country. It also justifies the within-case comparisons in the following empirical chapters and argues for the generalizability of the Hungarian case across countries on clear conceptual grounds.

Chapter 3 develops a standardized analytical framework for statistically validating the elementary building blocks of business and political capture in public procurement, with application to four high value procurement markets in Hungary and the comparison of a peculiar market in Hungary, Slovakia and the Czech Republic between 2009 and 2012. The framework allows for the precise and fast identification of the levels of business and state capture in different procurement markets, as well as the evolution of the phenomenon over time.

Chapter 4 develops the results from the previous chapter and identifies the factors that lead to business capture in comparison to those that lead to political capture, and clean issuer and winner behavior. The dynamic network analysis in this chapter reveals the mechanisms at work through which state capture happens.

The Conclusions chapter summarizes the main arguments and critically discusses the findings of the research conducted in this dissertation. It reiterates the advantages offered by the research strategy of analyzing business-political networks to understand state capture, as well as the

limitations of the current analyses. It also discusses the implications of the results for the development of anti-corruption policies, the main contributions of the dissertation, and the plans for further research that capitalize on the learnings from this research.

Chapter 1 - State Capture, Institutionalized Grand Corruption, and Business-Political Networks. An Alternative Theoretical Framework

1.1 Introduction

In this dissertation, I define state capture as a system of corrupt relations between business and political actors that hijack a state function to work in their favor, at the expense of the general target group the state function was originally developed to serve. The phenomenon comes about through repeated corrupt interactions. Over time, these informal rules of corrupt exchanges form stable networks and institutionalize in the formal and legal system they operate in, becoming hard to identify and limit. Most research focuses on business capture (businesses hijacking the formation of laws, rules, and regulations to work in their favor). However, qualitative and quantitative evidence show there are numerous and important processes of political capture, operating either in parallel to business capture or dominating a state domain, that have to be understood as well.

State capture is an increasingly relevant issue, because it is pervasive across countries, both developed and underdeveloped, varying in degrees of capture or state functions captured by various narrow interest groups. The costs and consequences of the phenomenon are usually biased distribution policies, suboptimal outcomes that affect the larger groups that should benefit from these policies. In a democratic system, how state institutional interactions with other actors are able to translate citizens' preferences into policy outputs and outcomes is critical for assessing the quality of the system itself.

One of the main aims of this chapter is to bridge the fragmented terrain of disciplines investigating state capture, in an effort to provide a holistic view of the problem, to facilitate better intervention designs to limit the phenomenon.

With the network approach, we can map the spread and depth of the phenomenon, which we can then reliably quantify. Knowledge about social, political and economic networks of corrupt exchanges allows us to form predictive models that can aid the work of political decision makers, legal experts, researchers, and the general public to curb these efforts.

The network approach also allows for progress in comparability of state capture as a networked phenomenon. The analytical framework proposed in this thesis is standardized, comparable, replicable, generalizable, and parsimonious, yet it reveals complex patterns of corrupt behavior and it estimates their causes and consequences. The methodology allows to design and test disruption scenarios on empirical objective data, assessing the personnel, institutional, local and systemic-level impact of different intervention strategies.

The main argument put forward in this chapter addresses three aspects of state capture:

1. The relational character of the phenomenon (personal relationships, informal rules, power, dominance, control, influence, and exchange);
2. Its institutional dynamics (interorganizational networks, the role of the state vs the role of elites, path dependency, increasing returns, unintended consequences, turning points, complexity of governance, institutionalization of corruption, spread of corrupt practices);
3. The methodological complementarity of systematizing the concept (objective data, comparability, replication, generalizations, interpretations).

I thus argue that state capture as a networked phenomenon reveals a perspective on institutionalized corruption that is more productive, because it can handle both theoretically and analytically the phenomenon, helping decision-makers design and test better intervention programs.

The main argument allows me to develop an alternative theoretical framework based on micro-level institutional behavior in the context of institutional network structures, as operationalized as financial flows between public institutions and private organizations in signing public procurement contracts. The theoretical framework makes use of a parsimonious model of the elementary building blocks of business-political institutional behavior that give rise to complex networks of interactions which constrain and offer opportunities for high level corruption to become institutionalized and corrupt practices to spread. The approach builds on network institutionalism, a hybrid theoretical framework between two varieties of new institutionalism, historical and sociological, with the added value of having an in-built conceptual and analytical framework for measuring influence, dominance and control, as well as revealing path-dependency, unintended consequences, and increasing returns of building stable, predictable corruption networks.

This chapter has three main aims:

1. Redefine state capture and make explicit two varieties of the concept, political and business capture;
2. Challenge the dominant assumptions of the phenomenon and propose an alternative perspective that better addresses the problem of the institutionalization and spread of corrupt practices; and

3. Develop a parsimonious operationalization of state capture as a networked phenomenon that allows for a replicable, generalizable and comparable concept across countries.

The first aim of the chapter is to address the current definitions and interpretations of state capture, and highlight their limitations of explaining key empirical developments, among which Hungary stands as perhaps the most puzzling case. Building on a theoretical, methodological and empirical critique of the dominant explanations, I propose an alternative perspective which has previously been documented in theoretical terms, but which lacks a strong analytical framework to support it.

The second aim is to challenge the dominant assumptions underlying the current definitions of state capture, arguing that they fail to address the complex interactions between multiple individual and institutional actors that struggle for power, domination and control.

By differentiating between two varieties of the concept, political and business capture, as parallel and interacting processes, I provide a novel, interdisciplinary account of dominant captor actors and the mechanisms of institutionalization of grand corruption. I thus formalize the third aim of the chapter as a parsimonious operationalization of state capture as a networked phenomenon, and highlight the advantages of such an approach to advancing knowledge on the topic from both an empirical, as well as a theoretical point of view.

The chapter is structured as follows: first, I discuss the current dominant definitions and explanations of state capture and grand corruption and highlight the main contributions of these efforts to understanding the measuring the phenomenon. I then offer a critique of their main assumptions, conceptualizations and methodological approaches, and argue for an alternative approach. I discuss the contribution of the new institutionalist traditions, and argue for network institutionalism and institutional isomorphism as viable alternative approaches that better

capture the more realistic nature of corruption – personal relations and informal rules. In supporting this approach, in the operationalization of state capture I bring in arguments from the governance and complexity and political networks literatures. I finally discuss the normative aspect of state capture, the role of the state and political and business elites, and the role of party politics in driving this process.

1.2 State capture: subfields, approaches and definitions

The typical approach to state capture continues to be the Principal-Agent framework developed analytically mostly by rational-choice economists, where the focus of state capture prevention should be the incentives system to principals to avoid corrupt behavior, which the agents have clear and effective mechanisms to hold the principal accountable for their behavior. Although this approach is helpful in understanding the system of incentives and accountability mechanisms which should be enforced in different contexts, the principal-agent framework limits out understanding of dependence and complexity in the multitude of activities individuals and state institutions perform.

Even if particular transactions are dyadic (between two actors), they are happening and are encouraged by precedents. These precedents, when carried away over long periods of time, form a system of players and relations where expectations of behavior are well known, the players themselves, even if formally not advertised, are well known, and the nature of the transactions or exchanges are equally well known. The repeated dyadic interactions when the players involved are among the leadership of private and public organizations, inevitably carry the official and legal forms of interactions between institutions and organizations into

misconduct, offering a cushion of precedent that allows players to free ride and take advantage of corrupt deals done in the past, legitimizing in this way further acts of corruption.

The development of multilevel principal-agent interactions, the analytical framework for studying these complex interactions still assumes a fix and *a priori* distribution of power instead of a reflexive distribution of power that comes from the multiple interactions that public institutions have with other actors. In these continuous interactions, public actors are continuously changing their power perspectives, both intentionally, as well as unintentionally. The network analytic framework builds on precisely this assumption, treating these multiple interactions from a continuous process perspective.

I argue that multilevel principal agent interactions still hold the assumption of dyadic independence, which is unrealistic, suggesting that just nesting dyadic relations is sufficient to understand the dynamic distribution of relative power of both principals and agents in their multiple interactions. But what the network approach reveals is that institutions can and do exert influence and shape their local and distant environment through institutional memory, transparency, repeated interactions that create precedents, and path dependence. Even when they are not directly interacting, institutions project reputation and visibility, and their actions directly and indirectly affect how other players respond or interact with them.

The main assumptions of the rational choice neo-institutionalist approach are that individuals behave according to a fixed set of preferences which they employ instrumentally so as to maximize their attainment, through intense calculations of strategic action (Elster and Hylland 1989). The approach is set out to understand how the actors' behavior is capable of overcoming collective action problems (Hardin 1982), and how strategic behavior influences political outcomes. The role of institutions then is to provide the 'rules of the game,' the arenas in which

actors consciously operate and tailor their preferences and actions. Finally, they are themselves shaped by actors, usually with very specific goals in mind, for example, designing rules that would enhance coordination and cooperation.

Organizational theory or sociological institutionalism, on the other hand, investigates the tensions between rationality and culture as they manifest within institutions and among them. Instead of focusing on a predefined means-ends scheme, this approach seeks to understand how cultural practices and symbols affect behavior (Meyer and Rowan 1977; Scott and Meyer 1983), or how, despite cultural variance, some institutions display many similarities (DiMaggio and Powell 1991). They seek to emphasize the “highly-interactive and mutually-constitutive” character of the relationship between institutions and individual behavior (Hall and Taylor 2006, , p. 948). Central to this approach is the question of the legitimacy of institutional arrangements. These questions bring to the core the ideas of power, authority, domination and influence, concepts that mediate the interplay between intended individual behavior and actual outcomes. Thus, collective action problems could be resolved by means of legitimacy, authority and power.

The main assumptions of this approach are that institutions incorporate not only formal rules, but informal norms as well. They posit that, given the limited amount of available information, actors cannot devise an exhaustive plan of action; instead, they are purposive and goal-oriented, but they are also rationally bounded and rely on cognitive shortcuts and organizations procedures to perceive their “role” and to guide their behavior (Almond and Verba 1989; Friedland and Alford 1991; Immergut 1998; Zucker 1987).

Finally, historical institutionalism emphasizes the role of instrumental rationality of actors, as the product of particular historical developments of institutions and beliefs. This approach

allows for contextual causality of behavior and multiple pathways to the same outcome. At the center of this approach is the phenomenon of contingent developments of history, in other words, accidental combinations of factors that may have unintended consequences and lasting effects. The main assumptions of this perspective are that power relationships are asymmetric both in the operation and development of institutions through the constructed structures of political opportunities (Hall and Taylor 2006; Immergut 1998), thus, people act strategically, with the knowledge and information they have available, and try to shape their environments to increase their future chances. At the same time, by the actions they take, they implicitly form their preferences and identities (Immergut 1998). Last but not least, historical institutionalists “take time seriously” (Skocpol & Pierson 2002, , p. 3), by specifying sequences and transformations of processes at different times scales. Such an approach suggests that actors trying to solve problems of cooperation would try to understand the nature of the environment they act upon and would look for entry points in the structure of opportunities.

Various authors of new institutionalism have attempted to compare the three streams presented above, with the specific recommendation of combining them. They pose significant differences among each other, both with respect to basic assumptions of rationality, and with respect to institutional development and policy outcomes. But they also do share a number of commonalities, making scholars think of ways to combine to three in order to allow for innovative theoretical frameworks and research designs dealing with the complexities of the political phenomena investigated (Ansell 2006; Hall and Taylor 2006; Immergut 1998). When the problem of coordination is coupled with the increasing complexity of decision-making institutions, one could fall short of explanatory power by sticking to just one of these particular frameworks.

For example, Rhodes (2003), March and Smith (2000), and others, suggest that the problem of coordination is exacerbated by the increased growth of the executive branch of the state, by incorporating different types of actors involved in the policy formation and implementation processes (Marsh 2000; Rhodes 2003). These developments involve considerations of both formal and informal rules governing action, an understanding of possible combinations between “markets and hierarchies” (Ostrom 2011).

Although from the economics side, Klimina (2009) argues for an evolutionary-institutionalist concept of business capture that links capital accumulation to open-ended path of institutional change to explain why businesses engage in capture situations. Her methodological framework emphasizes the role of uncertainty and non-equilibrium processes that shape the level of involvement and the nature of involvement of companies in state capture. Building on previous contributions, she defines state capture as a path dependent, evolutionary-institutionalist phenomenon, understood in terms of open-ended cumulative causation.

Innes (2014) captures very well the macro-structures that distinguish state capture from other phenomena. Using the example of the Czech Republic, she argues that formal business-state partnerships were both opportunities for improving public services provision, as well as for political corruption.

“The extent to which these methods were likely to increase the efficiency of public services provision or to enable political corruption was contingent on the motivations and skill-sets of the politicians and public officials involved and the regulatory framework in which they operated. But the financial resources involved were quickly huge.” (Innes 2014, p. 21)

Innes found a “non-party” differentiation between the involvements of political groups in corruption networks. This means that there are no differentiating strategies between left and right parties on how they build the networks or how they get involved in them.

In this dissertation, I propose a combination of the three types of new institutionalism into the alternative network institutionalism, a theory that seeks to identify stable and recurrent patterns of behavioral interaction and exchange between individuals and organizations (Ansell 2006, , p. 75). This approach views networks as critical mediating variables that affect the distribution of power, the construction of interests and identities, and the dynamics of interaction (Hall 1986, , pp. 19-20). The focus of this tradition is on the relationships between the agents involved in a particular political phenomenon. These relations are often assessed within the framework of power and influence. The agents are considered goal-oriented, but interdependent in terms of action capacities. In other words, one actor's strategy for achieving a particular goal might depend of its connection to other actors and the particular characteristics of those relationships (e.g., access to information or resources).

However, besides the shared purposes with the other theories, network institutionalism, as a self-standing theory, has its own assumptions. The first assumption refers to the relational perspective on social, economic and political phenomena it deals with. While the other approaches tend to emphasize the attributional variables of actors and institutions, the network approach leaves these on a secondary place, focusing instead primarily on the relationships between these.⁴ The second assumption is complexity. The relationships investigated by networks scholars are path dependent, subject to increasing returns, unintended consequences and turning points, and local individual actions lead to the emergence of system-wide phenomena (Ansell 2006). Another assumption is that “networks are both resources and constraints on behavior” (Ansell 2006, p. 76). As resources, they channel information, they

⁴ For a detailed account on the differences between attributional approaches and relational approaches, see Emirbayer, M. 1997. Manifesto for a relational sociology. *The American Journal of Sociology* 103 (2): 281-317.

allow the emergence of self-organizing communities of support, and as constraints they can limit or influence individual capacities for action (Burt 1982).

Finally, another important assumption is the one that networks are highly biased and unequal. They inherently consist of asymmetries (e.g., power, influence, information, support, etc.) (Knoke 1994). Evidence from the network science literature repeatedly confirms that large networks, most often regardless of their nature, display similar scale free structures and mechanisms at work – preferential attachment (Barabasi and Albert 1999). Scale free networks are very inhomogeneous relational structures, where inequalities of power, access, popularity, control and prestige of some actors are striking in comparison to the rest of the network. Due to the dominant mechanism of making connections in such networks, preferential attachment, scale free networks display a rich-get-richer phenomenon, whereby new participants to the network prefer to connect to already well-connected participants, to increase their access to information and other resources through hubs and authorities, to benefit from support from these, and to increase their visibility (Barabasi and Albert 1999).

1.2.1 The normative aspect of state capture

The problem of state capture is, first and foremost, normative in nature. The debate about how state capture comes about requires clarifications of the role of the state, bureaucracy and political parties in shaping the administration and legal actions of the institutions involved and professionals that rule these institutions. The problem of state capture reflects institutional deviations from the ideal standard or model of political representation and bureaucratic professionalization. The concept underlies the role of the state as a multi-institutional player in ensuring the fair and objective distribution and redistribution processes for the people under its

coverage. It also requires one to explain the role of the state, the bureaucracy, and the political parties in these processes, the impact of the politicization of public administration, and its role in the institutionalization of deviant behavior from the legal and moral norms.

At a general level, I reference the classic approach of Max Weber (2009), arguing that a professional public administration can and should reduce the risks of state capture. A system of meritocratic selection of public administrators and public officials, a system of checks and balances, a system of incentives to promote transparency, professionalism and accountability, all play an important part in both day to day activities of public administration, as well as the short-, medium- and long-term planning these institutions develop for a functioning activity.

To be able to grasp the organizing principles of state capture as a networked phenomenon, one needs to switch to an interdisciplinary perspective on the topic, an approach that brings together, in the same picture, the disparate parts that have been investigated separately within different disciplines. This effort is difficult because these different disciplines use different vocabularies that sometimes overlap, other time do not, although they do talk about the same phenomena; or they use theories developed conceptually, not empirically, about how a system works; or they use different methods to test and validate their findings.

The attempt in this thesis is to bridge more comprehensively between these non-communicating areas of research, with the explicit aim to gain a holistic perspective on where we are in understanding state capture and how to tackle it.

First, as opposed to the literature on corruption, which is vaster and longer lived and has become interdisciplinary, the emerging literature on state capture is extremely fragmented. The academic concept was more systematically studied since the beginning of the 2000s, when a

few seminal articles by prominent economists of the World Bank treated the topic as a distinguishable, measurable phenomenon (Hellman, Jones, and Kaufmann 2000).

Hellman et al. (2000) empirically distinguished state capture from two other types of relationships between firms and the state: influence and administrative capacity. Based on statistical analyses of business surveys, they define state capture as “the capacity of firms to *shape and affect the formation* of basic rules of the game (i.e., laws, regulations, and decrees) through private payments to public officials and politicians, influence refers to the same capacity without recourse to such payments. Administrative corruption refers to so-called “petty” forms of bribery in connection with the *implementation* of existing laws, rules, and regulations” (p. 2).

Their definition of state capture, however, is very narrow. It treats the phenomenon from the subjective perspective of businesses affected by it/involved in it. According to the authors, a state is captured when businesses *buy* legislation, rules and regulations from public officials that are supposed to serve the interests of all citizens. This, the authors argue, is a distinguishable phenomenon from influence, where the same outcomes are achieved, although without recourse to corrupt payments. It is also different from administrative corruption, in that state capture appears at the legislative formation stage of the process, which administrative corruption appears at the implementation stage of the legislative process.

The research agenda started by these scholars soon determined the proliferation of investigations, undertaken predominantly by economists and political scientist, into evidence of state capture in different transition economies and underdeveloped democracies in Europe, Asia, Latin America and Africa. Overwhelmingly, researchers found evidence of businesses as the main drivers of the phenomenon via corruption and favoritism (Drope and Hansen 2008).

Only very few studies investigate state capture as a phenomenon driven by state actors through mechanisms such as patronage and clientelism. Some examples are Russia during Yeltsin (Yakovlev and Zhuravskaya 2009), and Hungary under Orban (Bozóki 2011; Ágh 2013, Fazekas 2013, 2014, 2016), and several Asian and Latin American countries (Gryzmala-Busse 2008).

However, even in these studies, authors disproportionately focused on the role and impact of state agencies and political organizations in shaping different degrees of state capture, without equally assessing or controlling for the role and impact of private actors. These studies relied either on data about perceptions of corruption, self-reported enterprise data, or qualitative methods such as interviews. There are few comparative studies across countries (Hellman et al. 2003; Iwasaki and Suzuki 2007), and even less studies comparing the phenomenon systematically in different procurement markets within the same country (Coviello and Galiarducci 2010).

On the one hand, this gap shows older disciplinary divisions and mistrust in each other's methodologies that prevented cross-disciplinary fertilization. On the other hand, lack of communication and cross-referencing impeded the accumulation of knowledge on the topic, which, in combination with other factors, such as lack of comparable data across countries, led to the substantive diminishing of interest in the study of state capture over time.

Even where networks were accurately identified, their measurement fell short of explanatory power, since the overwhelming majority of studies involving business-political networks rely predominantly on statistical analyses that assume independence of observations. Those that used qualitative analyses were not able to create replication and generalizability of their

findings. These particular methodological shortcomings have led to little reliable knowledge on how these networks shape state capture.

The strategy outlined above thus allows us to define state capture as a networked phenomenon, go beyond the convenient separation of the two types of actors that drive it, and reconcile the definitions and intuitive understandings of state capture with better empirical measurements.

1.2.2 Conceptual clarifications

State capture is an interdisciplinary concept by definition. The literature survey on state capture, grand corruption, and political corruption between 1995 and 2010 put together by World Bank researchers (World Bank 2010), shows that some form of state capture is currently treated by political scientists, economists, public administration and public policy scholars, historians and sociologists. The concept appears most frequently in relation to corruption, and in particular grand corruption, the role of the state and elites in fairness, impartiality, and efficiency towards their populations, and the questions of power, dominance and legitimacy of state control, or lack thereof, over distribution and redistribution processes.

One advantage of the concept being covered on so many grounds is that they reveal the different realizations of the phenomenon in various cases, allowing researchers to go in depth in describing how state capture unravels in different contexts. Attempts to compare multiple countries on levels and drivers of state capture have revealed interesting variations over the spread and depth, causes, consequences and costs of captured states.

One disadvantage of this plethora of approaches is that, perpetuated by strong disciplinary boundaries, they have encouraged the development of disparate disciplinary vocabularies, methodologies, and theoretical perspectives that are rarely bridged into a systematic dialogue.

The conceptual terrain around high level corruption is overcharged with definitions trying to separate clear but generalizable cases across various conditions. The spectrum of concepts varies in both breadth and depth, with some concept more crisp, and other more ambiguous, while yet others conflated and tautological. In the remaining sections, I critically compare and contrast some of the main concepts and analytical approaches related to state capture as defined above: state capture as defined by economists (referred to in this chapter as business capture), political corruption, and legal corruption.

1.2.3 State capture in public procurement

Public procurement is an area where state capture can be most visibly detected, where comparable data is increasingly made available, and where the impact of both businesses and political actors can be assessed in tandem. It is also an area where much public money is spent and suspicions of corruption are widespread (OECD 2016). In 2013, OECD countries were spending between 5% (Mexico) and 22% (the Netherlands) of their GDP on public procurement, and between 15% (Greece) and 45% (the Netherlands) of their entire government spending (OECD 2015).

The Special Eurobarometer on Corruption suggested in 2014 that suspicions of widespread corruption in public procurement were alarming: 69% of respondents in the Czech Republic, 64% in the Netherlands, 55% in Greece, 60% in Slovenia, 58% in Croatia, 55% in Italy think

public tenders in their countries are awarded in corrupt ways. At the lower end, although still surprisingly high, 22% in Denmark, 31% in Finland, 32% in Ireland and Luxembourg, and 33% of the respondents in the UK perceive public procurement in their country as one of generalized corruption (Special Eurobarometer on Corruption 2014, p. 25).⁵ Public procurement remains one of governments' most vulnerable activities to fraud, corruption and waste.

The amount of money involved, the lax quality assurance legislation around public procurement, the level of discretion available for decision-makers, and the gains won through corrupt deals make this area very appealing for both companies and public office holders who understand their position and the institutional instruments at their disposal that can be used to extract rents. The fact that regular and serious quality assurance evaluations are not conducted in many countries to ensure that the public money spent on procurement are awarded based on legitimate and balanced criteria encourages various actors to enter this area because of its vulnerability.

Although practices of high level corruption involving business and political actors is pervasive across countries, research on empirically measuring state capture and institutionalized grand corruption, and objectively determining who drives these situations is still lagging behind.

Systemic corruption in public procurement has important practical and policy implications. First, it affects the perceptions of potential actors of the system: 32% of business companies in the European Union reported corruption was the main reason preventing them from winning public procurement contracts (Special Eurobarometer on Corruption 2014, p. 25). On the one hand, by deterring many potential participants from the onset, the pool of suppliers competing

⁵ See survey methodology in European Commission. (2014). Special Eurobarometer 397: Corruption; http://ec.europa.eu/public_opinion/archives/ebs/ebs_397_en.pdf.

for procurement projects narrows to be represented by companies with peculiar characteristics: companies more open to risky business strategies or uncertain results, better connected, etc. This is substantiated by the fact that one of the main characteristics of products and services acquired through corrupt deals are sub-optimal, inefficient or of poor quality (Acemoglu, Ticchi and Vindigni 2011).

On the other hand, perceiving the system as being corrupt shifts the growth and development strategies of organizations to the rules of corruption. Instead of upholding and pushing criteria for professional market competitiveness, companies choose to socialize themselves in the informal rules of influence and corruption – whom to talk to, how much to give, to whom and for what, what to expect in return, etc. For example, most companies, prior to entering a new market, invest time and resources into understanding the social part of doing business in that market.

Second, the failure to control the spread and institutionalization of corruption allows these practices to become legitimized as the only alternatives to getting things done. Legitimized corrupt practices suggest that a peculiar set of beliefs and realities guiding action in corrupt environments are rooted. Successful interventions then have to unearth these long-standing practices and beliefs.

State capture is a vicious circle from which it is hard to escape. Like the vicious circle of poverty, state capture becomes a system within a system, with its own rules, gains and losses, that are often taken for granted.

The costs and consequences of state capture and institutionalized grand corruption in areas such as public procurement can be looked at from different perspectives:

- a) Poor quality of services and products – research shows that one of the commonalities of corruption in public procurement across countries is the poor quality of the products and services acquired through corrupt deals. The overwhelming results of corrupt deals tend to be of poor quality as compared to services and products acquired through competition, where competition incentivizes suppliers to work towards the best quality products they can achieve, so they can have more chances at winning future projects. In areas where corruption is systemic, the logic of the end results (i.e., poor quality products and services) is justified endogenously as consequences of the corrupt system itself, in which the company is only a mere player, a hero in fact for their undisputable courage of competing and actually doing something in a system that completely disfavours them. With limited resources, struggling through loose regulations and legislation, undertaking complex development projects that unconditionally will be modified during the progress of the project, suppliers working in systemic corrupt areas make it look like they are the good Samaritans and eventually losers in these deals, but choose to anyway do these.
- b) Biased distribution of resources – one of the main problems with systemic corruption in public procurement is that the principles of distributing state resources for the benefit of the public are skewed to benefit a narrow group of interests. For example, even if a region would benefit greatly from a road infrastructure, in a corrupt environment, road infrastructure development projects tend to go to geographic areas that are preferred by the supplier companies winning projects, and not by areas based on their needs. As a result, many underdeveloped areas remain underdeveloped and sink even further in problems, because their interests are not defended or prioritized. Many underdeveloped areas become and remain trapped in these situations. Since a well-functioning competitive and unbiased system is very unlikely for these actors, then competition

takes on the logic of the corrupt system, as the only viable alternative or getting things accomplished – i.e., compromising on the legality and fairness of these rules to get their foot in the door.

- c) Erosion of competitive cultural traits – if state capture indicates the presence of institutionalized corruption, then a culture of corruption already prevails in some area of state functioning. Accepting and tolerating corruption as a systemic trait gives priority to a set of values and behavioral expectations that differ from the standard liberal democratic ideals of equality of opportunity, fairness and accountability. Instead, the typical mechanisms of transparency and accountability change their nature. There is a degree of transparency related to the workings of corrupt systems, instead of transparency being applied to instruments of control and accountability. Also, the nature of accountability mechanisms changes. Both office holders, as well as business suppliers, instead of being accountable to the taxpayers whose money one's company or office uses, they become accountable to intermediaries that make deals happen. These lead to the erosion of a healthy culture of business and political opportunities for growth and development, to a culture of dependency on one's social, political and business relations, dependency of one's personal and professional growth and development on prospects of being favored for certain deals, dependency of one's success on other criteria than the agnostic rules of engagement promoted by balanced regulation.

Although one of the most important aspects of corrupt deals is trust, trust is neither the only nor the main mechanism in high level corruption. There is also a great deal of dependency and conformity, when the expectations of corrupt deals are well known, then players involved are constrained in their behavior. The cases of high level corruption in the former communist

countries are a case in point, where participation in corruption is also a political dependency problem. When public office and market share depend on political families, participation in corruption comes as a constraint, whereby one's position and power are dependent on their compliance with party practices. The strongest effects of these are on intermediaries, rather than the main beneficiaries of corrupt deals.

1.3 State capture as a networked phenomenon

I define state capture as a system of corrupt relations between business and political actors that hijack different degrees of state functions to work in their favor. The phenomenon comes about through repeated corrupt interactions⁶. Over time, these informal rules of corrupt exchanges form stable networks and institutionalize in the formal and legal system they operate in, becoming hard to disentangle from correct and legal exchanges. The informal rules that institutionalize create a distinguishable phenomenon of corruption, with known rules, players, and expectations. The backbone of these relationships are personal and social relations. These relations regulate behavior, expectations, attitudes, and opportunities for action.

These informal relations are hard to map. In the literature on high level corruption, the network perspective is appealing, but finding appropriate ways to capture informal relations between different players involved is subject to a harsh debate. On the one hand, there is a debate over choosing the right proxies for these relations. Some researchers manage to capture qualitatively some relations, through interviews. These studies are rare, because they are expensive, both in terms of researcher's resources to pursue, and in terms of the size of the sample of interviewees,

⁶ Types of corruption that, if/when institutionalized, are the main actions that lead to state capture: exchange of favors, bribery, influence peddling, money laundering, embezzlement, kleptocracy, official misconduct, fraud (electoral, judicial, accounting, public service), graft, extortion, nepotism, cronyism, conflicts of interest.

as well as the generalizability of the results based on subjective information. Other researchers argue that subjective accounts should be avoided and replaced with formal proxies for relationships. These too are critiqued for not being able to capture the informality that underlies influence. In this debate, I side with the ones arguing that formal relationships can tell a lot about the underlying informal relations that regulate formal relationships. The case of public procurement then is a case in point. Informality is assumed as influencing the formal opportunities and constraints that we observe. When a contract for public procurement is signed, formal and informal negotiations already took place, and their outcome is the form in which the contract was signed.

Because the repeated interactions institutionalize a particular logic of action, the informal rules are known to participants, and the expectations of behavior are clear. Disrupting such a system without at least roughly knowing its structure, spread and depth, could be inefficient or interventions could have unintended consequences, like damaging other relationships and functions.

In other words, the system of corrupt relations creates an institutional infrastructure for funneling favors, influence and private gains to both business and political actors, to differing degrees. In some cases, business actors are more favored by these relationships and interventions. I call this business capture. In some other cases, political actors control the spoils of corruption, which I call political capture.

The main mechanisms at play in business capture are argued to be corruption and influence (Drope and Hansen 2008, Boehm 2007). Business people bribe politicians or exert influence over them by virtue of their resources inequalities. Business capture is typically associated with strong business companies, and weak political organizations.

Political capture is a process by which the political party/parties in power use business organizations to favor their own narrow interests (campaign support, voter mobilization, money laundering, etc). The mechanisms used by the governing party are patronage and clientelism. Patronage refers to the allocation of jobs and key positions in public institutions to close friends and political allies, in exchange for political loyalty and bureaucratic support. In countries with strong political parties and well defined political orientations, patronage is increasingly used as an instrument of political and institutional control (Kopecky and Mair 2006). Clientelism is a more wide-spread phenomenon, by which the governing party releases public resources to close friends and political allies, such as state subsidies, tailor-made legislation, contracts, etc. (Mares and Petrova 2013). Therefore, clients who receive disproportionate advantages and resources from the state understand that their party connection was crucial in facilitating that (Muller 1988).

The interaction between political-business elites and organizations is viewed in this dissertation as a continuous process that had institutional consequences. Institutional affiliations create histories of organizational ties. These relational precedents at the institutional level create expectations about future collaboration and structure the choice of ties both at the individual level, as well as the institutional levels. They signal awareness about group boundaries, group membership, and key positions within and between groups. The entanglement of political-business ties has embedded a certain logic of action at the highest levels of representation that discriminates heavily between groups of stakeholders. They are inherently damaging for the democratic polity because they entail unequal and selective distributions of incentives and benefits to narrow groups, at the expense of the public interest. If or when they happen systematically, they entrench the particular inequalities in the wider system.

In terms of governance and state capacity, there is a lively debate among scholars and practitioners, according to which state capacity can be measured on two dimensions: on the one hand, the quality of the outputs and outcomes of state activity (such as the quality of the health and education policies); and the other hand, the ability of the state to get things done (whether procedures, capacity and autonomy of the state are unaffected by narrow interests).

The approach to state capture as a networked phenomenon allows us to bridge this debate, bringing the ability to get things done and the quality of the outputs in the same picture, as functions of the quality of state institutional interactions with other societal actors. In this conceptualization then, network analysis allows one to quantify the degree of influence, power, dependency and autonomy of state institutions in relation to actors they regularly interact with. In other words, it takes the state out of isolation, it decomposes it into a system of institutions, and then assesses the quality of outputs and the capacity of getting things done in relation to other actors. The advantage of this approach is that it allows for a more realistic understanding that state agencies and institutions, although with a strong connection to the government, can and do act more or less autonomously, and indeed, the driver actors of corrupt deals are the people heading these institutions, not the institutions themselves.

One of the most pressing problems with state capture comes from the inability to enforce accountability on intermediaries and actors outside of the state in a complex delegation and subcontracting environment. Even if legislation is in place on how to deal with grey areas of state-private actors collaboration, most often than not these laws are not enforced clearly, or the situations become so murky, that assigning blame or figuring out the perpetrators is a rather lost cause. As a case in point stand the CEE countries riddled with institutionalized corruption since the fall of the communist regimes.

Following Max Weber's definition of bureaucracies as rational-legal authorities in which legitimacy is derived from the legal order (2009), the definition of state capture developed in this dissertation argues that legitimacy does not span from the legal order, but rather from the often illegal order, or informal rules.

In this definition of state capture, informal rules become stronger than the legal order through recurrent corrupt practices. In domains captured by business or political interests, behavior is rather regulated by informal rules, rather than the legal order. The Weberian framework of the state and bureaucracy does not explain how states such as Hungary, slide back from a rational-legal order as part of a consolidated democracy to informal practices. The case of Hungary demonstrates that there are unexplored scenarios that reveal the ease with which personal relationships and informal rules pick up incentives and practices.

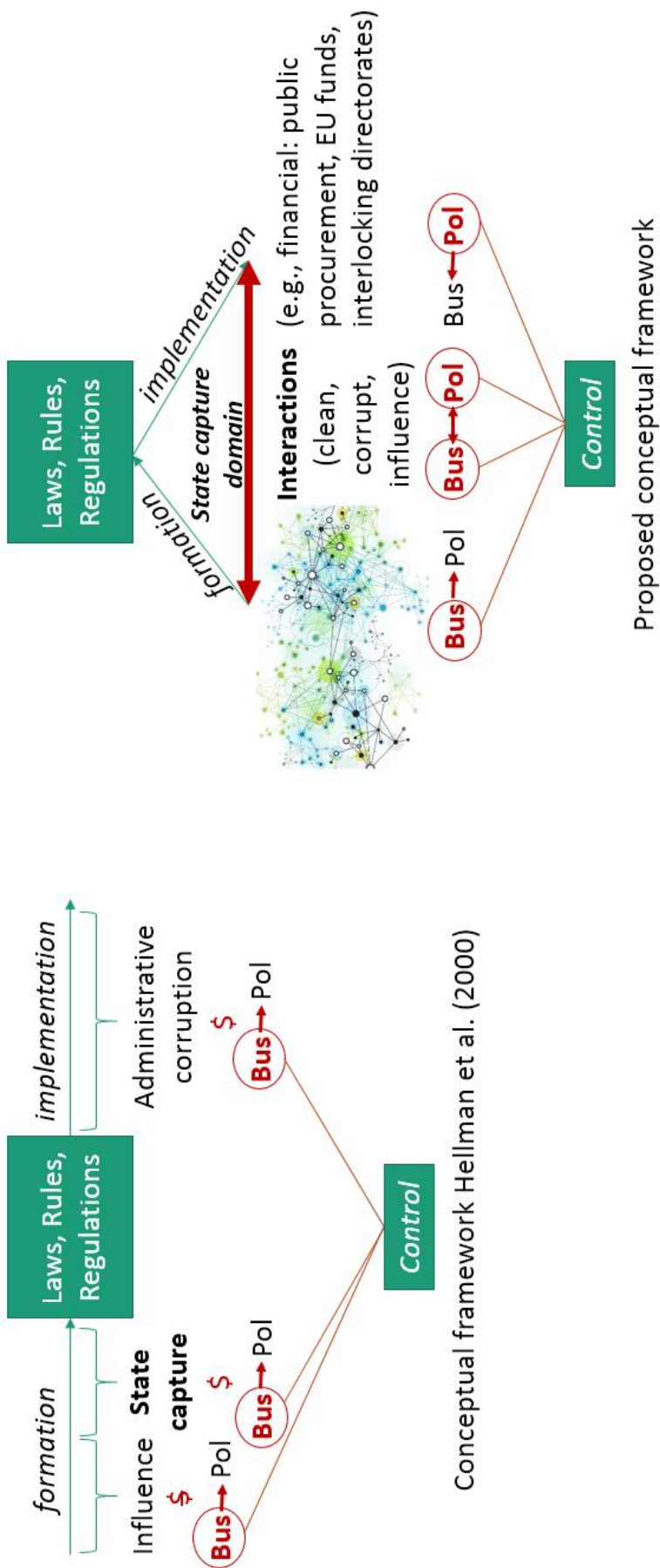


Figure 1. Comparison of the current dominant definition of state capture in the literature versus my definition of state capture as a networked phenomenon

1.3.1 Business Capture

At the moment, there is little disagreement over the definition of state capture across disciplines. Figure 1 illustrates the differences between the dominant understanding of state capture in the literature and my proposed definition of state capture as a networked phenomenon. On the left hand side, the diagram visualizes the dominant definition of state capture in the literature, that proposed by Hellman, Johnson, Kaufmann and Schankeman in 2000, viewing state capture as the outcome of business officials buying favors from political and public officials, in order to gain favorable legislation that would advantage their businesses. They differentiate this narrow relationship as state capture, compared to relations of influence where businesses do not need to pay money for favors. Their influence, prestige and reputation are enough to coerce/convince public officials to skew legislative outputs in their favor. They also differentiate state capture from administrative corruption, based on the distinction between the stages at which businesses try to buy favors, whereby state capture appears in the process of formation of laws, rules and regulations, while administrative corruption appears at the implementation stage.

On the right hand side, state capture is presented as a system of relationships between firms and state institutions. These relationships can involve influence, bribery, and coercion. As opposed to Hellman et al. (2000) framework, which narrows down the interactions as directional from business to political actors, I expand the interaction to allow bidirectionality, so businesses can influence state institutions, but state institutions can influence business as well. State capture then becomes a feature of a particular domain that can bring advantages to a narrow group of players. For example, public procurement is an important domain of interaction between the two types of players, where multiple types of relationships are present: clean contracting, financial exchanges/awards, and influence. When public procurement

interactions systematically favor a narrow group of interests, then the constituent part of the public procurement domain is captured. The task for researchers then is to measure the degree of these systemic biases within the domain of public procurement, to understand the dominant actors that control this system, and how these interactions evolve in time.

I challenge the approach proposed by the World Bank economists to understanding state capture from three perspectives:

1. Understanding the phenomenon as a linear process;
2. The narrow definition of state capture as one type of relationship;
3. The biased view of business control.

I will start by arguing that state capture is not a single type of relationship, but it encompasses multiple types of legal and illegal behaviors, among them administrative capacity, legislative capacity, bribery, undue influence, coercion, etc. State capture, as I define it, is a system of relationships between captor actors and intermediaries that use legal and illegal means to skew the legislative inputs as well as outputs in their favor.

Second, these interactions happen continuously and functionally separating them into the stages of policy making is important to understand the points of intervention in countering these actions. *De facto*, however, these relationships span the boundaries of administrative and policy stages. In reality, these continuous interactions, whether with the same actors or with new ones, cannot be clearly distinguished on the fine lines drawn to distinguish stages of the legislative processes, such as formation and implementation of laws, rules and regulations.

Third, the limited view of business control explicitly defined by Hellman et al. (2000) weakens their contribution, because it does not allow for the conceptual and analytical assessment of the role of political actors and the scenarios when they control business.

While the approach systematized by Hellman et al. (1999, 2000, 2003) has generated important results in understanding the phenomenon, fails to explain cases of clear political capture such as Hungary under Orban, Russia after Yeltsin, or South Africa under Zuma, nor less clear cases, where business and political capture coexist, or where state functions are divided between business and political actor controls. The framework also fails to account for the intrinsic relational aspect of state capture. Personal and institutional relations cross-cutting and complementing each other, hijacking the institutional system to work in their favor. Conceptually, both these approaches agree on the fact that institutional change is path dependent, subject to increasing returns, turning points and unintended consequences. State capture is an epiphenomenon, with multiple alternative paths to realization, both theoretically, as well as empirically. The network approach, however, is methodologically better equipped to deal with these interdependent systems of interaction.

1.3.2 Political corruption

Political corruption is a well-developed area of corruption that has been extensively studied by scholars and practitioners for over 40 years (Heidenheimer, Johnston, and LeVine 1970; Scott 1972; Heywood 1997; Della Porta and Vanucci 1999; Heidenheimer and Johnston 2011). Political corruption, in broad terms, represents the abuse of office for private gains, and it includes, according to scholars, forms of corruption such as: bribery, abuse of power, graft, fraud, embezzlement, undue influence, etc. These are typically called forms of political corruption. However, it is easy to realize that the charges brought by prosecutors all over the world to both political and business corruption are the same. So the methods of corruption are similar across cases, whether we talk about political or business actors involved. So rather than

duplicating relations across two domains that rarely intersect, I propose to consider the methods of corruption the common ground for the interaction between business and political actors.

As the definition of state capture, political corruption, although broader, is still rather focused on the public officials as the perpetrators of high level corruption acts. As opposed to the concept of state capture as defined by the World Bank economists, which I argue is too narrow, political corruption is too broad, encompassing the same types of behaviors as found in corrupt deals in which businesses buy favors or use their influence over political officials.

1.3.3 Legal corruption

My definition of state capture is closer to the subsequent definitions proposed by Daniel Kaufmann and Pedro Vicente (2011) of legal corruption, than to the concept of state capture as defined by Kaufmann and his colleagues in the 2000s (1999, 2000, 2003). Legal corruption, as they define it, are patterns of corporate corruption, where the political elite is obliged to sustain the political and social costs to deceiving the population about their corrupt deals. Furthermore, in the case of legal corruption, elites prefer to hide corruption from the population by investing in legal barriers to their discovery (p. 4). Not only is legal corruption a form of institutionalized corruption, but the authors make explicit the active role of the political elite in hindering transparency and accountability. Despite these welcome advancements, however, I argue that this approach is still too narrow of three accounts:

First, it does not make explicit the mechanisms of reproduction of legal corruption. The main assumption unquestioned in this account is that political dominance over the legislative process is uncontested. This does not sit well with cases of political turnover and the political struggle over legislative power. In many post-communist countries, it is quite common that once

opposition parties come to power, they dismantle and reshape legislation that previously favored their opponents to now favor themselves and their activities. But what this account cannot explain are the institutionalized corrupt networks that remain in place, regardless of who comes to power. If the mayor's office in a locality is known to be involved in corrupt deals, this creates precedents and incentives for the next mayor to come to use the tactics and institutional infrastructure to continue doing corrupt deals. Although the actors of these networks might and often do change, the institutional structures and signals remain in place.

The institutionalization of corrupt practices stabilizes in time, reducing costs on participants, creating clear expectations, rewards and punishments.

Second, it still conceptualizes business-political relations as dyadic relations rather than more complex relations. While I do agree that dyadic interactions are the building blocks of corrupt exchanges, because the actors use public institutions and private organizations to conduct, hide and insure these practices, their repeated interactions with different actors create large inter-organizational networks. The structure of these networks, although invisible to many, is quite correctly approximated by participants, due to the visibility of some institutions and organizations, the informal nature of information exchange about them, and the constraints that informality and illegality impose on the participants.

Although some scholars argue that trust is the key element in high level corruption deals, I argue that in some societies where corruption is endemic, trust is rather a weak component of these relations. The Romanian case of anti-corruption is illustrative here again. Since legislation was passed to ensure the protection of whistleblowers, the number of informants of corruption deals and networks increased substantively, suggesting that trust and punishment are closely connected. When the capacity for punishment is minimized, the trust assumed by participating or observing corruption deals weakens and people speak up.

And third, the treatment of political actors is still rather assumed than explicitly modelled against their business partners. Although I appreciate the endogenous model they propose for understanding the role of political actors, this endogeneity of political power is envisioned only between politicians and the population. A politician's involvement in corrupt deals depends, in part, on the strength of the relationship between the politician and their constituency for getting re-elected. The more dependent they are of the voters, the likelier it is that they will use deception and act accordingly to hide their involvement. While this is certainly an important dimension of constraint, I also argue that the relationships themselves between business and political actors have endogenous effects on constraints and opportunities for action, and that this dimension too has to be accounted for. Rather than constantly initiating new corrupt partnerships that require costs on behalf of both partners (e.g., building trust, navigating legislation), the trait of institutionalized grand corruption is that it stabilizes corrupt networks as infrastructures.

1.4 Discussion and Conclusions

There are two main risks in confounding institutions and networks, as I argue is the case of state capture: one, to fall into the trap of mixing the governing rules of the two systems, thus suggesting a theory with little explanatory power; and two, some sort of ecological fallacy, by directly observing institutional behavior, and indirectly drawing inferences about the underlying networks. Both claims require a clear definition of the research design, and how I plan avoiding these risks.

First, my primary focus (Chapter 3) is on the overlap of formal institutions (public institutions and business organizations) and formal networks (networks derived from the public procurement contracts signed by the two types of actors). Using empirical data about these

formal relationships, I create the maps of these formal partnerships between business and political institutions. Since I do not have direct data to measure the underlying informal personal networks behind these partnerships, I do not make any claim about them.

My secondary focus (Chapter 4) *is* on directly observing institutional behavior from which I draw inferences about the underlying networks, but with two important qualifications: 1) network analysis is precisely equipped to meaningfully and mathematically transform direct institutional linkages between two types of actors and then transform those into two indirect sets of linkages among the same type of actors that accurately reflect the original set of linkages. In technical terms, bipartite networks between business and political institutions can be projected into monopartite networks. In the projected (inferred) networks, two business are connected only if they are originally connected to the same political institution. Conversely, two political institutions are connected only if they are originally connected to the same business organizations. The resulting projected networks then reveal the underlying potential pressure linkages and positions among similar institutions and organizations.

For example, if two business companies sign, independently, two high corruption risk contracts with the same issuer in the original bipartite network, then these two businesses will be connected in the projected network. This connection itself does not prove a real coordination linkage between the two businesses (although it might) in striking high corruption deals with the issuer, it does demonstrate however a likely institutional pressure for conformity, flight, or some degree of learning that businesses later adapt in their dealings with other issuers. Consider that the functional separation of the analysis along market types reveals the companies within the same industry and often sectors that win state contracts. As expected, business companies, before they engage in public procurement tenders, do extensive research on competitors, winning strategies, and observe the behavior of the market. As illustrated in the beginning of

the chapter, newcomers to a particular market often refrain completely from entering public procurement tenders, because of their perceived corruption of the system.

By the same logic, if two issuers sign, independently, two high corruption risk contracts with the same supplier in the original bipartite network, then these two issuers will be connected in the projected network. Here too, the connection itself does not prove any conspiracy between the two issuers in favoring the same supplier, but it does demonstrate a likely institutional conformity, flight, or some degree of learning that public institutions later adapt in dealing with other suppliers. When these linkages are strong (there is a high number of contracts signed between the same issuers and suppliers), the resulting clusters of underlying institutional pressures indicate the incentives *and* opportunities for coordination in perpetuating or changing their corrupt partners. In other words, they reveal likely opportunities for political coordination of state institutions in favoring the same supplier.

The same logic as exemplified for the corrupt deals applies to clean contracting as well, with the difference that indirect clean linkages suggest opportunities for support and coordination of both businesses and state institutions in driving clean contracting in particular markets. One added value of this dissertation is that it directly measures and confronts clean contracting with high corruption risk contracting, and mixed situations. The conceptual as well as the analytical frameworks proposed then allow for an unbiased and comprehensive, data-driven, evidence-based understanding of the organizing principles of the three situations.

Finally, the projected networks are likely to capture underlying personal networks (used for negotiating contracts, communicating, or constraining behavior related to the outcome linkage we observe), business collusion and political coordination.

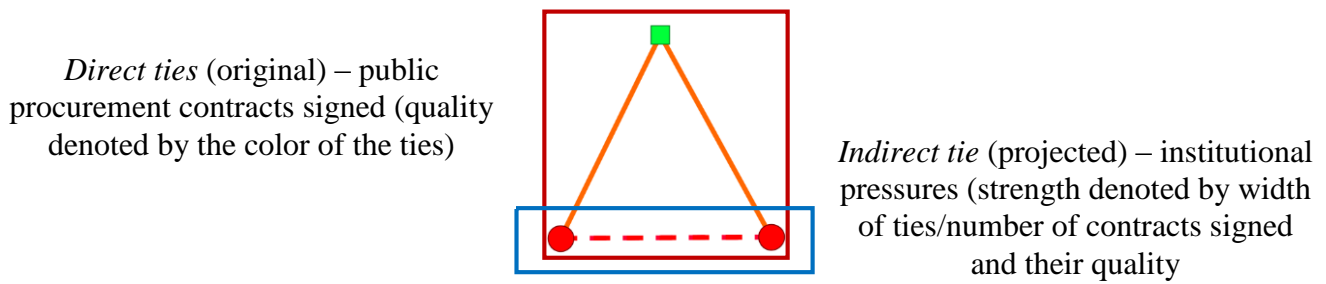


Figure 2. Interpretations of direct and indirect linkages between issuers and winners of public procurement contracts

The example above illustrates the simplest types of connections, spanning from these elementary building blocks of complex business-political networks. The networks mapped from public procurement empirical data also allow one to measure degrees of interdependencies among business organizations and among public institutions, respectively; determine key players in all three networks, and follow the dynamics of these networks over the years, observing the change in clean, high corruption risk and mixed configurations.

In this chapter, I redefined state capture as a system of corrupt relations between business and political actors that hijack state functions to different degrees to work in their favor. This dynamic system of corrupt relations creates an institutional infrastructure for funneling favors, influence and private gains to both business and political actors, by minimizing costs for defection and increasing pressures for conformity. I argued that business capture is represented by situations when business actors predominantly control these semi-formal relational structures. Conversely, political capture is represented by situations when political actors control the situations and spoils of corruption.

Building on previous literature, I developed an alternative theoretical framework based on micro-level institutional behavior in the context of institutional network structures, operationalized as financial flows between public institutions and private organizations in signing public procurement contracts. The theoretical framework proposed in this chapter makes use of a parsimonious model of the elementary building blocks of business-political

institutional behavior that give rise to complex networks of interactions which constrain and offer opportunities for high level corruption to become institutionalized and corrupt practices to spread. The approach builds on network institutionalism, a hybrid theoretical framework between two varieties of new institutionalism, historical and sociological, with the added value of having an in-built conceptual and analytical framework for measuring influence, dominance and control, as well as revealing path-dependency, unintended consequences, and increasing returns of building stable, predictable corruption networks.

The theoretical framework presented addressed three aspects of state capture: 1) its relational character, 2) its institutional dynamics and the complexity that arises from local level interactions, and 3) the methodological complementarity to previous studies, by allowing for the systematization of the concept.

I have also built on previous literature, defining the main mechanisms at play in business capture as corruption and influence. Business people bribe politicians or exert influence over them by virtue of their resource endowments. Political capture is a process by which the political party/parties in power use business organizations to favor their own narrow interests (campaign support, voter mobilization, money laundering, etc. The mechanisms used in political capture are patronage and clientelism.

1.4.1 Why do anti-corruption efforts fail?

This is already a recurrent question in the past decade, after the realization that despite the professionalization of anticorruption efforts, the financial investments and support for these initiatives, and the increasing transparency around governance, most initiatives failed to sustainably reduce levels of corruption. An estimated 6.7 billion US dollars has been spent

worldwide between 2007 and 2013 to support the anticorruption initiatives (Mungiu-Pippidi 2017, p. 1). It is puzzling in itself that all these efforts have been inefficient and ineffective in systematically reducing the incentives for, the long-standing practices, and the results of corruption.

In this dissertation, I argue that interventions fail because they fail to address the organizing principles of state capture – the relational perspective – the human and institutional networks formed that facilitate, initiate, reinforce and protect corrupt practices. By understanding the structure and nature of these relations, their logic and substance, one can design better intervention programs that target key players and areas of the structure. One of the characteristics of corrupt networks is that these structures are longer lived than the individuals that occupy them. Institutionalized informal structures become a system in itself. When some individuals leave, others take their place. In areas where corruption is systemic, individuals also compete for key positions in these structures that they know will generate opportunities, protection, or revenues.

For sure, many activities and initiatives are paramount to our understanding of corruption, but they should be complementary to a systematic and reliable way of mapping the relationships that make corruption possible. Applications that allow citizens to anonymously report corrupt activities show us the spread of corruption within a geographic region, but they do not show the spread of the corruption networks, the key players, or coordinated groups of actors that participate in corruption.

One of the main problems with this approach is that state capture combines corrupt behavior with clean deals, and the boundaries between the two types of practices are hard to draw. Because of this semi-legal nature of state capture, interventions are hard to justify, because it is difficult to unequivocally disentangle legal behavior, incompetence, undue influence, and

corruption from each other. Not being able to *prove* illegal behavior sets important hurdles for agencies that need to intervene: the backlash of an inconclusive investigation on an initiating institution can be harsh, leading to a serious loss of legitimacy, legal suits, bad reputation, and can even start a path towards the dissolution of the institution by decision-makers that would want it gone.

I argued that state capture as a networked phenomenon reveals a perspective on institutionalized corruption that is more productive, because it can handle both theoretically and analytically the complexity of the phenomenon, helping decision-makers design and test better intervention programs. By differentiating between two varieties of state capture, political and business capture, as parallel and interacting processes, I provide a novel, interdisciplinary account of dominant captor actors and the mechanisms of institutionalization of grand corruption. The next chapter presents the case of Hungary – its unique conditions for the development of state capture, as well as the main commonalities with other countries in the region and at the global level.

Chapter 2 – The Case of Hungary. Political or Business Capture?

2.1 Introduction

In Chapter 1, I have argued that a more productive avenue for understanding state capture is to treat it as a networked phenomenon. Corruption networks of business and political actors *institutionalize* corrupt practices, and in doing so, they systematically debilitate state functions, such as public procurement, to serve particularistic and narrow interests, rather than the interests of the general public. In this chapter, I argue for the relevance of understanding the dynamics of state capture in Hungary, as an example which features both unique circumstances, as well as generalizable projections relevant not only for the region, but also at a global level.

The aims of the chapter are two-fold: on the one hand, to reveal the background context of the empirical analyses to follow. On the other hand, to shed light on the backbone structure on which Hungary can be compared to other countries in terms of how state capture and the institutionalization of grand corruption work. In pursuing these goals, the chapter helps answer the general research question of the dissertation of how state capture comes about from a more theoretical and macro-level longitudinal perspective, preparing the micro-level analytical approach conducted in the following two chapters.

To this end, I structure the chapter as follows: first, I problematize the recent developments of the Hungarian case, proposing both theoretical and empirical arguments for understanding state capture. Second, to better understand the macro-level perspective, I present the political and economic context in which state capture has evolved in the country. Third, I critically assess the strengths and weaknesses of previous scholarly work on grand corruption and state capture

in Hungary, and argue for ways to move forward. I conclude the chapter with a summary of the contributions and limitations of the case study in this dissertation, and propose avenues for improving the current work.

2.2 Relevance of the Hungarian case

In 2014, Viktor Orban, the Hungarian Prime-Minister, declared while in a youth camp in Miercurea Ciuc, Romania, his and his government vision for Hungary as an illiberal democracy⁷. Three years after the beginning of his second mandate (the first mandate was between 1998 and 2002), Orban's declaration did not come as a surprise. His entire mandate from 2010 onward was perceived by political analysts, citizens, and international media as an anti-democratic one – he changed the Constitution to favor his political power; he changed the judges of the Constitutional Court with political marionettes; he started harassing opposing media outlets; he placed loyal political people at the leadership of some of the most important public institutions and even private business organizations.

What did come as a surprise, however, and was not predicted by political analysts, was Hungary's decline from the top of consolidated democracies in Central and Eastern Europe (Figure 2), towards a self-proclaimed illiberal state, where political power is concentrated in a disproportionate and uncontrolled manner in the hands of a small group of political people closely controlled by the Prim-Minister himself, that use this power for private gains (CRCB 2014; Magyar 2016). Hungary was considered a successful case of democratic and economic transitions after 1989, with the highest FDI contribution to the national economy, fast and

⁷ The English translation of Prime Minister Viktor Orban's speech at the 25th Balvanyos Free Summer University and Youth Camp, July 26, 2014, Baile Tusnad, Romania: <http://www.kormany.hu/en/the-prime-minister/the-prime-minister-s-speeches/prime-minister-viktor-orban-s-speech-at-the-25th-balvanyos-summer-free-university-and-student-camp>.

steady economic growth, with a consolidated political system and low electoral volatility (Enyedi and Toka 2007). After Orban's aggressive and ample political moves since 2010, categorizing Hungary as a politically captured state was inevitable (Magyar 2016, Bozoki 2011). However, the literature on state capture offers little explanation about the process through which a state becomes politically captured, the focus being predominantly on state capture by business interests (Hellman, Jones and Kaufmann 2000; Kaufmann, Hellman, Jones and Schankerman 2000).

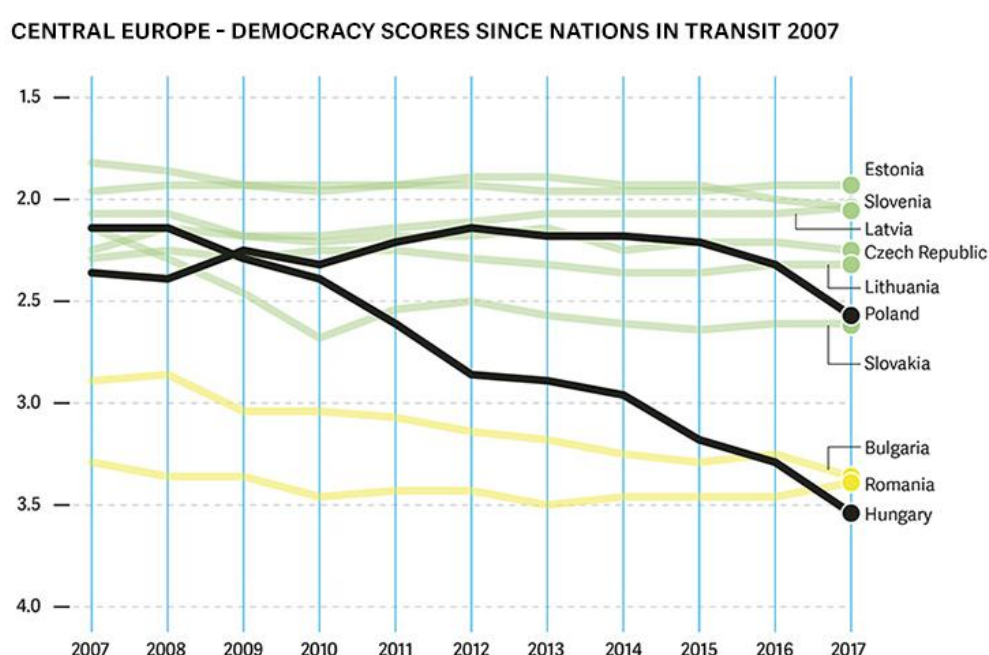


Figure 3. Hungary's backsliding on quality of democracy compared to other countries in the region

Source: Freedom House – Nations in Transit Report 2017

Hungary is one of the most clearly captured states in the region (Bozoki 2011; Stark and Vedres 2012; Fazekas, Chvalkovska, Skuhrovec, Toth and King 2014), which renders it appropriate for the study of the phenomenon and the mechanisms through which high level corruption become institutionalized. Hungary offers ripe conditions for developing and testing the analytical framework developed in this thesis, which allows for the objective analysis of

business-political networks that lead to state capture. The methodology can be replicated and applied to any other country for which the Corruption Risk Index has been developed⁸.

Hungary is an interesting case of state capture. For most of the past 25 years, the country was a fore-runner of transition economies and post-communist democracies, with the highest foreign direct investment and economic growth, and with the fastest stabilization of the new political regime in the region. Its accession to the European Union in 2004 brought further opportunities for development. However, based on a peculiar political culture, Hungary also grew to be one of the most polarized political and social systems in the region. Furthermore, the party system transformed over time from a highly fragmented and diverse structure in the early 1990s to a de facto two-party system by the early 2000s, featuring strong political blocks, low electoral volatility, and decreasing voter participation (Enyedi and Toka 2007).

Despite the country's evident growth and appraisal by the international community, evidence of corruption have been notified by scholars from the very beginning – first, as legacy of the communist regime (1990s) (Stark 1990), then as actions of strong business representatives and political figures in connection to privatizations and administrative and economic reforms (early 2000s) (Bozóki and Simon 2010). Finally, evidence of corruption by organized networks of business and political interests increased, especially during the second Orban government (2010) (Magyar 2016). During his second government, with the support of a super-majority from his own party in Parliament, Orban started a sweeping administrative cleansing of public institutions of political opponents, organized a systematic crackdown on liberal and critical media, changed the constitution overnight and without much public scrutiny, all while actively

⁸ “The Digital Whistleblower. Fiscal Transparency, Risk Assessment and Impact of Good Governance Policies Assessed” - Horizon 2020 European Commission funded project.

favoring companies close to him and his party in winning public procurement contracts, especially in markets such as construction work or business services (Bozóki 2011; Ágh 2013).

Hungary's corruption development seems to fit quite well the process of post-communist corruption described by Rasma Karklins in 2002 and illustrated in Figure 4 below:

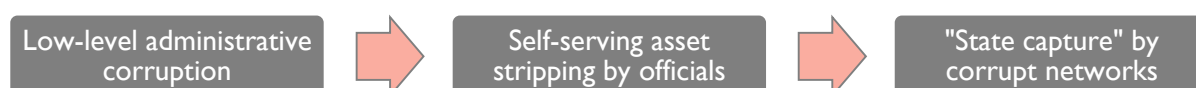


Figure 4. The process of post-communist corruption (Karklins 2002, p. 24)

“Hungary offers itself as the worst-case scenario, which demonstrates all the weaknesses of the CEE developments (...). The general tendency of administration developments in CEE, i.e., weak participatory governance combined with the state capture by the political parties through the closed patronage system can be seen in Hungary most clearly” (Ágh 2013, p. 756).

This development however is not unique to Hungary. In Europe, a somewhat similar pattern of interactions between business and politics in a democratic state happened in Italy under Berlusconi, or in Turkey under AKP (Justice and Development Party). Nevertheless, what makes Hungary unique is (1) the sharp control of the ruling party over the state's key institutions, a relatively stable voter base, a hierarchical and loyal party structure, and a majority in parliament; (2) the speed with which this happened; and (3) the fact that this U-turn in Hungary's liberal democratic development was not expected.

I argue that Hungary is a case of over time de-democratization, and test empirically the extent of the process visible in the formation, development, and evolution of networks of trust between political and business elites. In post-communist Hungary, interpersonal business networks have moved from evasion of governmental detection and control towards involvement of government agents, but not as a consequence of protected consultation. In other words, not because of more democratization. That would have entailed the parallel

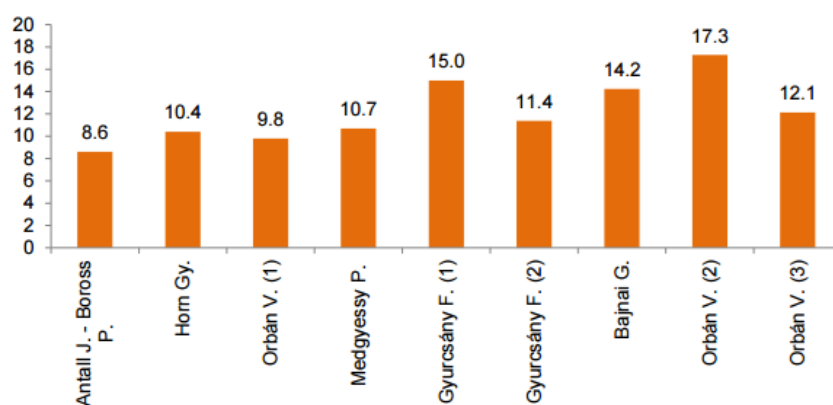
development of collective actors and institutions fostering market and political coordination and competition.

On the contrary, in an environment where these institutions are weak, but there are strong political parties, high polarization of the political competition, and a fragmented public, networks of trust become politicized, moving away from protected consultation towards skewed representation. Political parties compete for places in interpersonal business networks to be able to better detect and control risky long-term business enterprises (Stark and Vedres 2012).

The argument entails three important further implications: 1) that state resources (e.g., discretion in law formation) are highly valuable for both businesses and political parties; 2) that the parliament and government, as opposed to business enterprises, play a key role because they are the institutions that enable state resources for a narrow group of people; 3) that strong political organizational structure and networks can abuse authority to their own advantage, instead of pursuing the public good, in a highly polarized environment.

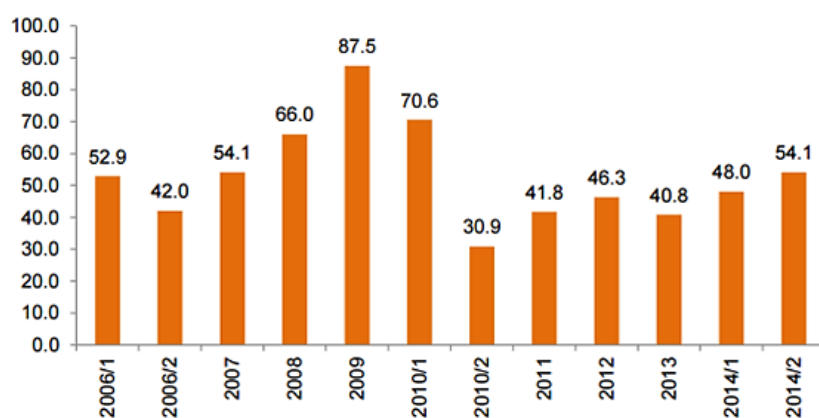
Point number two above might seem a trivial one, but the literature on business-government relations (Coen, Grant and Wilson 2010) and state capture (Hellman et al. 2000) overwhelmingly fail to include in their theoretical and empirical models these key political institutions as explanatory variables.

Although in this dissertation I focus on state capture in public procurement, one of the clearest indications of a captured state is the quality of the legislation-making process. Agnes Csibik and Istvan Janos Toth (CRCB 2014) offer a comprehensive quantification of the quality of this process between 1990 and 2014 in Hungary, on two dimensions: a) number of published laws; b) average number of days between introduction and publication of bills; c) share of bills submitted by MPs of ruling parties. Figures 5 to illustrate their findings:



Note: In the last examined period (OV (3)) only 8 months were analysed (May 2014- Dec 2014). Source: calculations by CRCB

Figure 5. Number of published laws under each government, monthly average 1990-2014

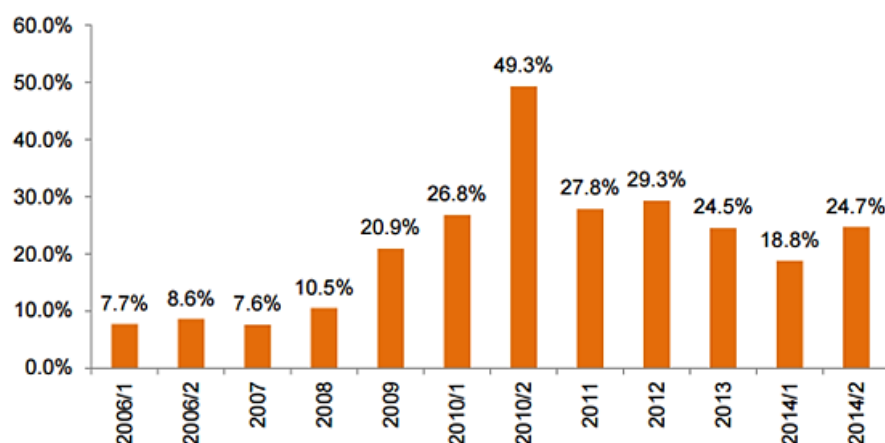


n=52, 81, 184, 114, 163, 41, 150, 212, 225, 212, 16, 97

Note: When data concerning one year are represented in two parts, an election took place or the prime minister was changed. A list of prime ministers is available in Appendix 1.

Source: calculations by CRCB

Figure 6. Average number of days between introduction and publication of a bill, 1998-2014



n=52, 81, 184, 114, 163, 41, 150, 212, 225, 212, 16, 97

Source: calculations by CRCB

Note: When data concerning one year are represented in two parts, an election took place or the prime minister was changed. A list of prime ministers is available in Appendix 1.

Figure 7. Share of bills by MPs of ruling parties, 2006-2014, %

As it is apparent from Figure 5, the second Orban government features the highest number of laws published per month as compared to the other governments. The calculations for the third Orban government include only the first eight months. Higher monthly average of laws published indicates less time for consultations, debates, and contestations, therefore indicating lower quality of legislation.

As shown in Figure 6, the first years of the second Orban government stand out, with the shortest average number of days between the introduction and publication of a bill, as compared to the other governments. Shorter periods signal lower quality of the legislation passed.

With supermajority in Parliament and a well-defined plan to radically change the outlook of his second government, Orban's first six months in office shown in Figure 7 feature 50% more activity by the MPs of Fidesz and KDNP than in any of the other governments. A higher share indicates more top-down political control of MPs.

The accelerated lawmaking process during the second Orban government affected the stability of the legal environment, and the quality of the legislation passed, with less transparency, less time for preparation, consultation and debate, and an increased risk of regulatory capture.

2.3 The political and economic context of state capture in Hungary

“(...) formal enlargement of the EU in 2004 acknowledges the tremendous success of the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia, and Slovenia in consolidating vibrant democratic states and suggests that the time has come to declare them no longer "in transit".”

(Goehring and Schnetzer 2005)

2.3.1 The inability to predict Hungary's backsliding in quality of democracy

The theoretical puzzle I address in this section is why have political theories failed to predict Hungary's trajectory? I argue that some of the reasons had to do with deterministic assumptions and aggregated data in democratic processes and transitology literatures, while performance-based analyses downplayed the importance of deviations from democratic norms. Also, the separate treatment of either business or political effects assumed errors and deviations would correct themselves in the long run. An alternative perspective though, democratic governance, refocuses on long-term processes and their possible outcomes, and highlights *how interactions between elite and institutional groups affect certain deviations from democratic norms*.

Current theories of political-business relations fail to categorize properly the empirical case of market liberalization and democratic politics co-evolution in Hungary. On the one hand, there are studies that assess Hungary as a successful case of market liberalization in the post-communist region. These studies use economic indicators, such as foreign direct investment (FDI), GDP per capita, urban-rural infrastructure development, or regionalization, to determine the success of domestic and multinational business class formation and interaction, their relative independence from other power contenders – state institutions and business monopolies, and the economic success of the firms themselves.

In such models, Hungary is a success case of market liberalization because it scores high on all of these dimensions, relative to its somewhat laggard neighbors, Poland, the Czech Republic and Slovakia (Freedom House 2005). Small and medium sized enterprises are developing, large domestic companies contribute substantively to the country's GDP, multinationals have a positive economic effect on local communities, and overall politics does not impede economic growth. Within the country, there were however debates about the fairness of the privatization process and its winners, but overall these were still less problematic than in other regions, like the Caucasus.

On the other front, scholars of transition and democratic performance categorized Hungary as a successful case of democratization, with the process being visible and predictable. There are free and somewhat transparent elections, there is a multi-party system (although this developed towards a two-party bloc), cabinets are stable and government turnover is frequent, the formal institutions of checks and balances are in place, the system of government formation and the electoral system induce political discipline, which means a faster and smoother party organizational development and consolidation, and less electoral volatility. There were however earlier signs of the government tinkering with the media, privatization enriching a select few and their families and friends, as well as cases of blunt corruption, but overall Hungary was a successful case of democratization (Bunce 2000; Schedler 2001; Merkel 2011).

However, the parallel stream of literature developing on the case of Hungary from a democratic governance perspective brings strong evidence that the country's economic and political development are intertwined to such a degree that their interaction skews political and economic competition rules in favor of the ruling party and their close business supporters (Holme 1997; Szanto, Toth and Varga 2012; Sajo 1998). Recent political and economic developments in the country stand as a case in point.

The literature on democratic governance demonstrates that state capture by private interests and political party colonization of the state are processes that have developed in parallel in Hungary, but have gone mostly undisturbed because the attention was focused on the country's high scores on democratic performance (Hofferbert and Klingemann 1999). Performance-based analyses of democratization hide the processes at work in explaining democratic performance instead of revealing them, because performance indicators fall short of informing about interdependencies of institutions and people as they continuously interact.

This approach prevented serious attention to deviations from democratic norms in how the people's representatives carry their representation function in the highest echelons of power and how their decisions give rise to systemic particularism and favoritism (Fazekas et al. 2013). A mechanism-based analysis of democratization highlights the processes and their interaction developing over time rather than imposing a particular ordinal outcome.

Hungary today looks very little as what the two literatures on democratization and market liberalization predicted it would be. These new developments question the extent to which traditional theoretical and empirical frameworks explain the puzzling case of Hungary.

Indeed, Hungary has managed a lot better to develop on both its democratic and economic dimensions, as compared to its post-communist neighbors. Nevertheless, this way of interpreting the processes of political and economic development in the country are not sufficient to understand why Hungary ended up on a radically different path. To understand the current systematic deviations from democratic norms, one has to change the perspective from which one looks at the problem. By looking at performance-based indicators of democracy, one categorizes Hungary as below the CEE region average in terms of state capture (Kaufmann et al. 2000). When looked at it from the perspective of democratic governance, Hungary looks

like a fully-fledged captured state, by both political as well as business interests (Fazekas et al. 2013, 2014).

Previous studies assessing the interaction of political and economic elites in Hungary have uncovered the fact that politicization on the Left-Right political divide of large corporations reaches around 20% of the companies in the large corporate sector (Stark and Vedres 2012, p. 31). Formal rules of party financing and campaign contributions suggest that political elites in Hungary are still strong rulers over the policy process, not being dependent on the resources offered by private corporations, because of the high reliance of parties on state funding (Enyedi 2007; Dalton, Farrell and McAllister 2011). Even more so, some studies have highlighted the reverse phenomenon, by which the economic elites depend to a significant extent on political affiliations (Stark and Vedres 2012).

The recent developments in Hungarian politics though raise an important concern about the claim of dominance of political actors. Since the ruling coalition Fidesz-KDNP have won two-thirds of the Parliament in 2010, their actions have raised significant domestic and international concern about the extent of political influence over the most important institutions designed to check and balance political power (the State Audit Office, Budgetary Council, Prosecutor's Office, judiciary). The lack of transparency and accountability in rules of party and campaign financing offers a major space for political parties to maneuver non-state sources of income (Enyedi 2007).

On the side of the business sector, companies are subject to heavy regulatory burdens and unpredictable state intervention. In the context of the economic crisis, there is a high risk of corruption in common business transactions such as bankruptcy, liquidation, procurements, and obtaining official permits. In their 2011 report on national integrity in Hungary, Transparency International signaled the danger of the acquired power of the government:

private interests prevailing over public interest, with party financing and the business sector as facing the most alarming corruption risks arising from the “symbiotic relationship” between the political and the business elite (TI 2011).

To reconcile this theoretical and empirical discrepancy, this dissertation investigates the relationship between political-business elites and organizations as a continuous process that had institutional consequences. The entanglement of political-business ties has embedded a certain logic of action at the highest levels of representation that discriminates heavily between groups of interests. The fact that the legislative function has embedded this logic, makes this system a particularly dangerous and consequential one for the democratic development of the institutions themselves, as representatives of citizens’ interests.

They are inherently damaging for the democratic polity because they entail unequal and selective distributions of incentives and benefits to narrow groups of interests, at the expense of the public interest. If and when they happen systematically, they entrench the particular inequalities in the wider system. The main objective of this paper is to demonstrate how a social network perspective might contribute to a greater understanding of power and politics in political-business relations in post-communist Hungary.

2.3.2 State capture versus party colonization, or varieties of state capture?

The phenomenon of state capture has been typically associated with transition and post-communist countries, although state capture is widely conceived as being part of virtually all political systems, varying only in configurations of captor actors and captive institutions, as well as in the degree of capture these different configurations determine. Reconceptualizing

state capture not as a performance-based phenomenon, but rather as a process, generates novel hypotheses about the development of the process in a country, the factors that determine it and the level at which it can be observed. Understood this way then, the risks of state capture become a trait of power and access asymmetries institutionalized in patterns of interorganizational connections. In other words, understanding how networks of political and business ties evolve, leads to a better understanding of what these relationships mean for the institutionalization of selective distribution of state resources, and the inherent lack of fairness such a system acquires.

Party colonization of the state is a process by which the political party/parties in power instrumentalize the state apparatus to favor their own narrow interests. The mechanisms used by the governing party are patronage and clientelism. Patronage refers to the allocation of jobs and key positions in public institutions to close friends and political allies, in exchange for political loyalty and bureaucratic support. Clientelism is a more wide-spread phenomenon, by which the governing party releases public resources to close friends and political allies, such as state subsidies, tailor-made legislation, contracts, etc.

The two phenomena share a number of commonalities, as detailed in **Error! Reference source not found.** 1: they are both long-term processes, rather than interstitial events. They both happen through the use of networks of friends and acquaintances (Stark 1990, Dinello 2001). They developed in parallel and are sustained by political polarization (Boehm 2007, Bozoki and Simon 2010). And they involve power relations and games in institutional hierarchies that have consequences for the development of public policy and regulations (Cartier-Bresson 1997, Fazekas et al. 2013, 2014).

Table 1. Similarities and differences between state capture and party colonization

		State capture	Party colonization
Level of analysis Rent-seeking behavior	Agents	Business people	Public officials
	Organizations	Companies	Public institutions
	Target	State infrastructure and resources	State & business infrastructure and resources
	Exchange relationship	Private resources, support	Public resources, support
	Mechanisms	Corruption & influence	Patronage & clientelism
	Time	Lagged visibility, non-transparent	Lagged visibility, non-transparent
	Examples	Purchase of public procurement contracts	Allocation of jobs for party members and loyal supporters in public and private organizations

In this dissertation, I argue that political capture is a subset of party colonization. Political capture as defined here, the control of political actors over their immediate corrupt situations, represents specific instances that are easier to measure than the broad party colonization concept. Furthermore, I argue that political polarization typical for the Hungarian case, but apparent in other countries as well, is an important enabler of both business and political capture.

The phenomenon has been documented to substantively affect political competition in Hungary after 1994, and economic competition after 1998. From a political point of view, competition was less polarized during the Antall and Borross governments (1990-1994). Political polarization started increasing during the Horn government, but more so during the first Orban government, and after 2002, when Medgyessy was Prime Minister. The entanglement produced by the privatization processes at the institutional level, i.e., the interdependencies created by histories of unfair collaboration between political and business organizations, affected economic competition as well.

Stark and Vedres (2012) show that the histories created by political elite in decision-making bodies of business organizations integrated a logic of partisanship in the way business organizations collaborated on the economic market. The authors show that because of their formal affiliation to particular political organizations, some business organizations avoided forming interlocking directorates with companies affiliated to the opposing political camp. The process of political competition for market resources, in turn, created holes in the economy. The various constellations of political-business interests was however bridged by politically balanced firms; companies with politicians in their boards from both opposing camps.

Also, characteristic for both state capture and political polarization are social networks. Some scholars have shown that friendship ties among future political and business elite formed predominantly in high school and college and tended to persist in time (Agh 2013). In addition, social networks were the basis of the second, informal economy, under the last years of the Kadar regime. These networks have transposed to a certain degree in the institutional setting (Stark 1990).

The privatization period is a prime example of the institutionalization of friendship ties at the highest level of political and business decision-making, with a highly unequal character. Social ties explained to a large degree the winners and losers of privatizations (Stark 1990; Stark and Vedres 2006). Later on, the argument is that political ties, not only social ties, matter for who wins and who loses in the legislative game (Stark and Vedres 2012). Companies close to victorious parties often get advantageous contracts. Favoritism and corruption are partially explained by the polarization of the party system (Treisman 2003).

Patronage and clientelism, the main mechanisms at play in party colonization, differ from typical corruption cases in that these are usually disguised as norm application, since many acts are not illegal. However, patronage and clientelism, as well as other forms of corruption (use

of public resources for private gains), have something to do with the perceived lack of fairness in the particularistic distributions of resources.

The political party plays an important and often forgotten role in these processes, because state capture and the colonization of the state cannot be done without political parties and politicians voted and appointed in positions within the state apparatus. Therefore, clients who receive disproportionate advantages and resources from the state understand that their party connection was crucial in facilitating that (Muller, p. 190).

The debate in the literature on the role of political parties in using state institutions to favor a narrow group of elites is divided between those that support the idea that parties in contemporary governing and policy-making are more concerned with the control, management and organization of policy-making than with the impact of party preferences on policy outcomes. Kopecky and Mair (2006) argue that patronage is increasingly used as an instrument of political and institutional control, justifying thus the same logic in political capture.

The importance of party patronage in Hungary is evidenced by the large government turnovers and the obvious political connections of the appointees in high ranking positions within the civil service (Meyer-Sahling 2006, p. 275). “Since the two camps have consolidated, political competition has increasingly taken on a friend-and-foe logic that leaves little room for non-affiliates” (p. 293). Moreover, career advancement in the civil service requires political commitment to either of the two sides (p. 293).

Meyer-Sahling (2006) argues that the politicization of the ministerial bureaucracy in Hungary results from the logic of patronage as an instrument of governance in conditions of high political polarization between the ex-communists and the anti-communists in the early part of the transition period. He argues that under these conditions, parties have an incentive to initiate personnel turnover with politically loyal officials, in order to control the processes of initiation

and implementation of public policy change, as well as the management of particularistic goals for party supporters. The author concludes that, in contrast to the literature on patronage in CEE, the politicization of the state in Hungary is determined by the polarization of political competition, and party strength (rather than party weakness – or the necessity to employ patronage as a form of organizational development) (p. 276).

What is more, Meyer-Sahling shows that parties of both left and right managed to create a stable “mode of partisan politicization,” whereby the replacement of inherited officials is done by returnees, and partisan outsiders with each change in government (p. 283). Thus, patronage is driven by a control logic of action, rather than by organizational survival (Meyer-Sahling 2006, executive politics – personnel policy).

Throughout this dissertation, I argue that in Hungary patronage is used as a management and organization of policy-making tool, a tool of control of the decision-making process, in the context of strong polarization of the political competition (Meyer-Sahling 2006). Patronage in such a context becomes an instrument of governance, a way of initiating and implementing public policies, rather than a strategy for party organization and political network building (Meyer-Sahling 2006; Agh 2013). When systematic, these occurrences become signals of political capture.

The Hungarian political system transitioned, from an institutional point of view, from a more consensual to an increasingly majoritarian model of democracy, as it was evidenced by the growing importance of government over the parliament, the polarization and concentration of the party system. This change also meant moving away from cooperation toward conflict in political life (Bozoki and Simon 2006, p. 33).

Bozoki and Simon (2006) claim that Hungary’s democratic system during the 2000s reminds the observer of a “partocracy, where democracy is reduced to the activity of political parties”.

They continue: “Due to the weakness of independent civil society (social movements, watchdog groups, NGOs, think tanks, trade unions, and the media), almost all democratic channels are subjects of increasing influence of, if not occupation by, the political parties. (...) The colonization of democracy by dominant political parties negatively influences the quality of democracy in Hungary” (p. 227).

Thus, in Hungary, it is more than just state capture by private interests; it is a case of party colonization of the state and of the economy. In other words, the political colonization of state institutions through party patronage affects not only the democratic development of political institutions, but also the internal economic development of the business sector through political favoritism.

2.3.3 State capture and institutionalization of grand corruption in Hungarian public procurement

In this section, I substantiate the theoretical claims reviewed earlier and provide an overview of the main quantitative analyses of corruption in public procurement in Hungary, building the case for measuring varieties of state capture, with an expectation of higher degrees of political capture than of business capture in Hungary. I leave qualitative analyses and comparative analyses for further research that can complement the case study design proposed in this dissertation. Quantitative studies focused on public procurement corruption in Hungary have increased significantly in recent years, so taking stock of knowledge advancements in this area is a necessary endeavour before presenting possible new theoretical and analytical contributions.

Restricting the scope conditions to public procurement: 1) allows me to develop an analytical framework that takes into account high financial flows between public and private organizations; 2) makes use of publicly available data⁹; 3) is an area that has high visibility and impacts a large number of people, as well as the quality of the institutions involved (Campos and Pradhan 2007; Soreide 2002; Pashev 2006; Grødeland and Aasland 2011; Auriol 2006; Boehm and Olaya 2006); 4) is one of the main government expenditures in all countries (between 5% and 35% of government expenditure; in Hungary – almost 15%) (OECD 2016); 5) and has comparable legal mechanisms at work and practices across countries¹⁰. These reasons allow me to develop a theoretical and analytical framework that makes both the input (data), as well as output (measurements of state capture) comparable, replicable and generalizable across procurement markets and countries, and over time.

There are a number of research organizations in Hungary whose very active academic teams focus their work primarily on understanding quality of government and corruption risks in public life: Corruption Research Center Budapest¹¹, Government Transparency Institute¹², Transparency International Hungary¹³. They are the most productive in this kind of research in the country, and often collaborate with international organizations and other research institutes across Europe on expanding their analyses. I build primarily on their recent contributions. I mainly leave out of the results review the studies conducted by Transparency International using the Corruption Perceptions Index, since the indicator relies on perception data, rather

⁹ <http://digiwhist.eu/resources/data/>

¹⁰ The Corruption Risk Index weighting scheme is tailored to each country using in depth knowledge of the legislation on public procurement in the respective country, elementary corruption indicators, review of the international academic literature, media content analysis, review of court judgement, and key informant interviews. For a detailed description of the CRI calculations, see Fazekas et al. 2013b, 2014 and 2016.

¹¹ <http://www.crcb.eu/>

¹² <http://www.govtransparency.eu/>

¹³ <https://transparency.hu/en/>

than objective data. My aim is to offer a brief account of the quantitative analyses based on objective data in Hungary, and assess their contributions and limitations.

One of the most important advancements in the measurement of institutionalized grand corruption came from Mihaly Fazekas and his collaborators. The team started developing in 2013 the Corruption Risk Index, an objective measure of corruption risks in public procurement¹⁴ that estimates the probability of institutionalized grand corruption. The index is a composite measure of 14 elementary (micro-level) risk indicators that allows for the comparison of corruption risks of public procurement contracts across markets and countries.

The authors define institutionalized grand corruption in public procurement as “particularistic allocation and performance of public procurement contracts by bending universalistic rules and principles of good public procurement in order to benefit a group of individuals while denying access to all others” (Fazekas et al. 2016, p. 3). This is the working definition of institutionalized grand corruption I use throughout the dissertation, although I place more emphasis in later chapters on the mechanisms at work in the spread and change of institutionalization, derived from the network institutionalist theoretical framework, tracing mechanisms of institutional isomorphism.

The continuous effort of these researchers to develop, refine, validate and test the Corruption Risk Index is part of a larger sustained effort to reach a stable level of standardization of public procurement records and corruption risk measures across countries¹⁵. These contributions add

¹⁴ For a comprehensive review of other objective measures of corruption risks in public procurement, see Fazekas, M., Cingolani, L., & Tóth, B. (2016).

¹⁵ “The Digital Whistleblower. Fiscal Transparency, Risk Assessment and Impact of Good Governance Policies Assessed” (DIGIWHIST) - EU Horizon 2020 funded project which brought together six European research institutes, with the aim of combating public sector corruption, <http://digiwhist.eu/>; “Anticorruption Policies Revisited. Global Trends and European Responses to the Challenge of Corruption” (ANTICORRP), 2012-2017 - large-scale research project funded by the European Commission’s Seventh Framework Programme - <http://anticorpp.eu/>; Open Contracting Partnership, <http://www.open-contracting.org/>; World Bank, <http://www.worldbank.org/>; United Nations Development Programme (UNDP), <http://www.undp.org/content/undp/en/home.html>.

to the critique of subjective measures of corruption, suggesting that they should be complementary to a more objective, standardized and replicable measurement framework that: a) harnesses the increasing availability of big data, b) the complex legislative and procurement practices contexts across countries, but still making them comparable, c) real-time demands of governments, anti-corruption agencies, and other users, and d) relies on micro-level institutional behavior (Fazekas et al. 2016).

The CRI was constructed in three steps: first, a list of more than 30 indicators was collected from academic literature, qualitative interviews and media accounts (Fazekas et al. 2013a); second, those indicators were tested with regression analyses to determine their significance and effect size in predicting lack of competition and recurrent contract awards to the same company by winner contract share over the past 12 months (Fazekas et al. 2013b); third, the variables that came out as systematically linked to these dependent variables were then weighted to reflect their strength and summed up over all indicators. The result was normalized (0 to 1) to make it comparable, with higher values indicating higher risks of corruption associated with a particular procurement contracts. **Error! Reference source not found. 2** summarizes the input proxies for calculating the CRI.

Table 2. Summary of Corruption Inputs (higher score indicates greater likelihood of corruption)

Phase	Indicator name	Indicator definition
Submission	Single bidder contract ^a	0 = more than one bid received 1 = one bid received
	Call for tender not published in official journal	0 = call for tender published in official journal 1 = no call for tenders published in official journal
	Procedure type	0 = open procedure 1 = invitation procedure 2 = negotiation procedure 3 = other procedures (e.g., competitive dialogue) 4 = missing/erroneous procedure type
	Relative length of eligibility criteria	Number of characters of the eligibility criteria minus average number of characters of the given market's eligibility criteria
	Length of submission period	Number of days between publication of call for tenders and submission deadline
	Relative price of tender documentation	Price of tender documentation divided by contract value
	Call for tenders modification	0 = call for tenders not modified 1 = call for tenders modified
Assessment	Exclusion of all but one bid	0 = at least two bids not excluded 1 = all but one bid excluded
	Weight of nonprice evaluation criteria	Proportion of nonprice-related evaluation criteria within all criteria
	Annulled procedure relaunched subsequently ^b	0 = contract awarded in a nonannulled procedure 1 = contract awarded in procedure annulled but relaunched
	Length of decision period	Number of working days between submission deadline and announcing contract award
Delivery	Contract modification	0 = contract not modified during delivery 1 = contract modified during delivery
	Contract lengthening	Relative contract extension (days of extension/days of contract length)
	Contract value increase	Relative contract price increase (change in contract value/original contracted contract value)

^aThe single bidder indicator is simultaneously an outcome of the submission phase and an input to the assessment phase.

^bCombining annulations by the issuer and the courts.

Source: Fazekas, Toth and King 2016.

The Corruption Risk Index is an integral part of the empirical analyses in the following chapters. I use the CRI characterization of all public procurement contracts in the samples I work with for Hungary, Czech Republic and Slovakia. As argued in the previous chapter as well, the most widely used measures of state capture, the World Governance Indicators, control of corruption and quality of government do not directly measure state capture, and thus are not able to capture important variations. In line with this argument, Fazekas et al. (2014) illustrate this problem on public procurement data in Hungary, between 2009 and 2011.

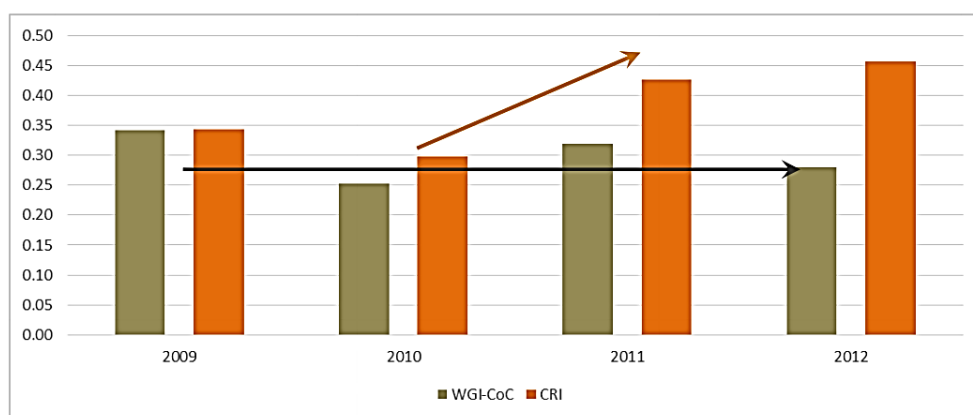


Figure 8. Limitations of the World Governance Indicator, Control of Corruption against the Corruption Risk Index

Source: Fazekas et al. 2014

WGI-CoC – World Governance Indicator-Control of Corruption

CRI – Corruption Risk Index

Fazekas and Toth (2013) investigate what happens to public procurement market leaders following the government change in 2010. Figure 9 below compares the top 30 companies in terms of their market share in public procurement before 2010 with the top 30 public procurement market leaders after 2010. The graph illustrates clearly the political effects on the economy, in this case public procurement, once the government changes. Political favoritism costs these groups of companies around 20% of their market share, either as a favor if they keep close to the political leadership, or as a punishment if they do not.

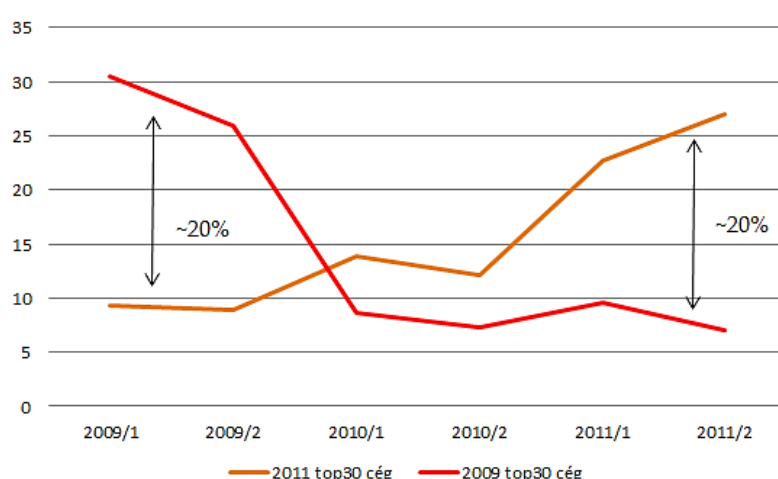


Figure 9. Top 30 public procurement market leaders before 2010 versus top 30 market leaders after 2010

Source: <http://tendertracking.eu/>

The political influence over companies' market performance varies by market as well. The authors show that in construction work, the shift between the old and the new winners is almost 50% of the total market. Over 4,000 companies, even when taking into account their size, location, main procurement market, and market concentration, the effects of the political influence are significant following the government change in 2010.

Fazekas and Toth (2014) analyze for the first time public procurement as networks of issuers and winners in a more systematic way, using cluster analysis to track changes in the concentration of corruption risks in public procurement before and after 2010. By assigning CRI scores to the institutions involved, the authors define issuers and winning suppliers by the corruption risks associated with them signing high corruption risk contracts.

Figure 10 below shows the difference between the public procurement network in 2009 and 2011, respectively.



Figure 10. Contractual network of partially and fully captured actors

Source: Fazekas and Toth (2014), pp. 21-22.

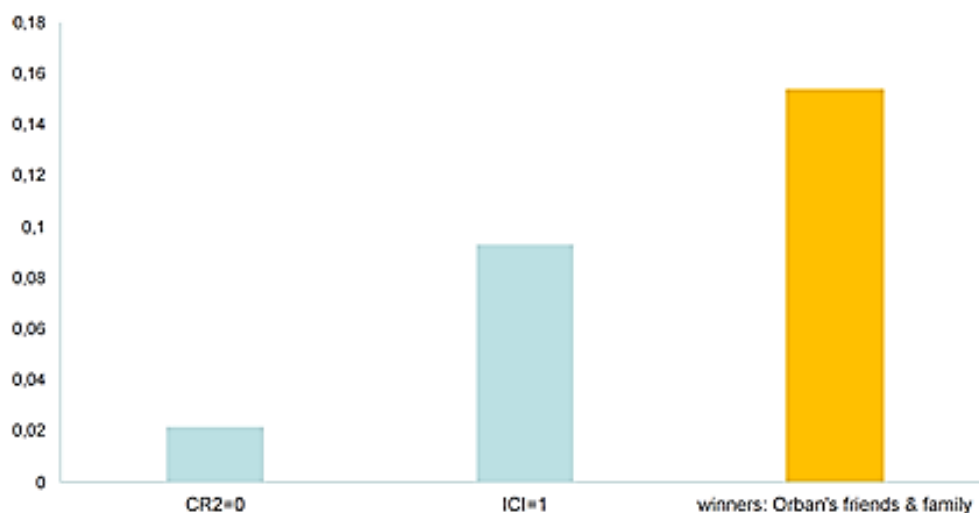
Black nodes – fully captured organizations

Red nodes – partially captured organizations

The graphs show a decrease in the number of fully captured organizations, and an increase in the number of partially captured ones, as well as a visible shift towards a denser and more centralized procurement network after 2010.

I argue that the initial analysis of Fazekas and Toth (2014) can be improved by doing the following: 1) expanding the network - looking at both big actors, as well as smaller ones, removing the 3+ threshold for connecting two actors, analyzing all financial values; 2) making the CRI an attribute of the contract, as it is in fact measured, not of the institution signing the contract, as it was used in this particular analysis; 3) separating procurement contracts by markets rather than aggregating all public procurement contracts into one network.

Based on the analysis of 127,776 public procurement contracts using EU funds in Hungary, Toth and Hajdu (2016) show that in the period 2009 to 2015, the Hungarian public procurement domain is characterized by decreasing competitive intensity and transparency, and increasing corruption risks and overpricing practices. These trends intensified after 2010. The authors demonstrate that contracts using EU funds, between 40% and 60% of all contracts signed in this time period, were at a significantly higher risk than Hungarian contracts on these dimensions. They argue that these are the effects of crony capitalism and political favoritism, whereby contracts using EU funds are more likely after 2010 to be distributed in a particularistic, rather than impartial manner, to bidders that are close friends or family members of the Prime Minister Viktor Orban (see Figure 11). Their analysis revealed that 25% to 40% of Hungarian public procurement during this time were single bids, so virtually contracts were awarded without competition. From the countries Visegrad 4 countries, only Poland during the same period seemed to have been doing worse (44% to 47% of all contracts were without competition).



Source: CRCB

Figure 11. Price distortion/overpricing in several groups of tenders in Hungarian public procurement, $N = 135,300$ contracts, Cramer's V

Source: Toth and Hajdu 2016

CR2: Corruption Risk Indicator $[0, 0.5, 1]$. 0 = low corruption risk (more than one bidder and tender with announcement); 1 = high corruption risk (tender without competition and without announcement).

ICI: Index of Competitive Intensity $[0.301 \leq ICI \leq 1]$. Low value = low competition intensity; high value = high competition intensity.

CRONIES $[0,1]$: winner company is owned by Viktor Orban's friends or family member.

2.4 Research Context – Advantages and Limitations

To better understand the research context of the empirical analyses, I illustrate the case of the biggest corruption scandal in Hungary – the construction of the fourth metro line in Budapest.

In 2016, the European Commission's Anti-Fraud Office (OLAF) mandated with the detection, investigation and reduction of fraud with EU funds, started an investigation into the construction work around building the fourth metro line in Budapest, between 2006 and 2015.

The investigation found serious irregularities involving conflict of interests, breach of the principles of non-discrimination and equal treatment of bidders, fraud, corruption and misappropriation of EU funds in the public procurement process and implementation phases of the construction work. According to OLAF, this is the most expensive EU funded project in

Hungary for the period 2007-2013, at an estimated cost of €1.75 billion (HUF 452 billion), of which almost €700 million came from the European Union's Cohesion Fund). The report¹⁶ concluded that the financial amounts of contracts affected by irregularities amounted to approximately €1 billion (HUF 273 billion).

After excluding a number of complementary financing, OLAF recommended¹⁷ the Hungarian state to return €227 million to the Cohesion Fund (13% of the total cost of the project). Despite the huge cost of the metro line, the 7.4 kilometer route is severely underutilized. The actors concerned by the investigation are the Municipality of Budapest, the private supplier Alstom Transport S.A. (one of 27 suppliers contracted for the construction of the metro line), and Peter Medgyessy, former Prime-Minister between 2002 and 2004.

Figure 12 below shows the summary of OLAF investigation timeline, some of the actors involved, and preliminary conclusions of the investigation. OLAF suspects that potentially three different central governments and two different local governments were involved in some way in the irregularities of the construction and around 50 contracts related to the construction project present irregularities.

Figure 12.A shows the timeline of the OLAF investigation, the timeline of the construction work, and the time frame for which data including comparable CRI is available for analysis. It also shows some of the actors involved in the corruption scandal,¹⁸ the actions that OLAF managed to uncover (continuous arrows), as well as actions that they have suspicions might have happened, but were not able to demonstrate yet (dashed lines). So far, they only managed

¹⁶ http://www.kormany.hu/download/9/54/f0000/final_report.pdf.

¹⁷ OLAF only has recommendation power in national states.

¹⁸ <http://hungarianspectrum.org/2017/02/06/metro-4-the-largest-case-of-hungarian-fraud-and-corruption/>; <http://hungarytoday.hu/news/m4-metro-corruption-scandal-escalates-government-publishes-olaf-report-43873>; <http://budapestbeacon.com/featured-articles/europes-biggest-case-corruption-took-place-budapest-says-government-spokesman/43887>; <http://www.politico.eu/article/budapest-metro-scheme-tainted-by-fraud/>.

to show that in 2006 the company Alstom bribed the former Prime Minister Medgyessy, for the latter to intervene with the former mayor of Budapest for a favorable contract for the construction of the line, which they eventually won. Alstom is also believed to have tried to directly influence the former mayor of Budapest, Gabor Demszky, but this could not be demonstrated. In 2014, Alstom was found guilty of bribery of government officials not only in Hungary, but around the world as well. However, none of the political actors involved was found guilty yet.

Figure 12.B shows who blamed whom for the irregularities, according to media accounts. Continuous lines show the direction of blame, while dashed lines show refraining from blaming. The Orban government blamed Istvan Tarlos, Istvan Tarlos did not blame the current Orban government for being involved, but blamed the Gyurcsany and Bajnai governments, who blamed the former mayor of Budapest, Gabor Demszky, who, in turn, blamed the Medgyessy government.

Figure 12.C illustrates how the network of subjective accounts can be generalized as a network of public institutions (red circles) and business organizations (blue circles). I then propose that instead of relying on subjective accounts that link these actors, these can be replaced with more objective data, such as the public procurement contracts signed between public and private institutions, to which an objective measure of corruption risk associated with the contracts can be calculated (e.g., CRI). The blue quadrants highlight possible micro-level configurations of contracting behavior, where the circled actors are able to control their immediate contractual situations. Given the large amounts of data analyzed, this approach makes it possible to understand whether there is any structural advantage on the part of political actors, making them less liable to convictions in corruption cases, as opposed to business actors, which tend to be more easily punished for transgressing.

This setup forms the basis for the upcoming empirical analyses. It reveals both the elementary building blocks of micro-level interactions controlled by either issuers or suppliers, as well as nested and hierarchical structures of public money spending networks. These networks allow then for a standardized measure of political capture (situations controlled by issuers) and business capture (situations controlled by suppliers).

The purpose of the figures is mainly to illustrate the limitations and advantages of the analytical approach taken in this dissertation. On the one hand, the narrow time window for which reliable public procurement data is available and the restriction to institutions, not individuals, constrains the contextual and qualitative information about high corruption risk contracts, such as the individuals involved, their length in office, or their specific involvement in corrupt cases. On the other hand, I gain analytical depth through the big data approach, which allows me to go beyond a few cases, and investigate all the procurement contracts signed within the available time frame.

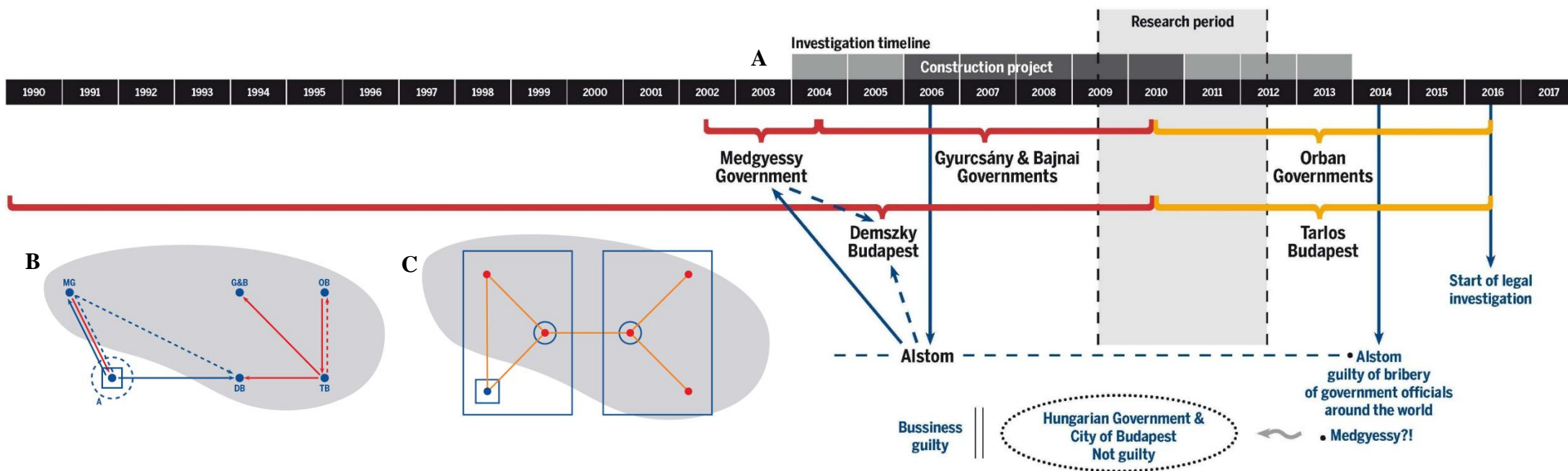


Figure 12. Summary of OLAF investigation timeline, actors involved, and preliminary conclusions of the investigation

A - Red lines – socialist central and local governments

Orange lines – conservative central and local governments

Continuous lines – what OLAF managed to prove

Dashed lines – what OLAF suspects happened, but did not find concrete evidence

Research period – available data that includes the Corruption Risk Index for each public procurement contracts signed between an issuers and a winner

B – Who blames whom in the scandal (red lines); OLAF detected corrupt behavior (blue lines)

C – Network **B** generalized: red circles – public institutions; blue circles – business supplier; grey area – structural advantage of political actors

2.5 Discussion and Conclusions

In this chapter, I argued that Hungary is a relevant case for developing a theoretical and analytical framework of state capture because it has clearly defined empirical features: periods of high and low features of liberal democratization processes, deep levels of political polarization, decentralized and centralized political power, high political turnover, well-documented evidence of corruption, influence, patronage and clientelism. These features, some of them unique to the country, others present across post-communist countries, as well as some featuring other regimes across the globe, make it easier to disentangle, at least analytically, the determinants and mechanisms at work in different varieties of state capture.

Firstly, previous efforts that quantify the institutionalization of grand corruption and state capture in Hungary suggest clear expectations for the empirical analysis following in the next chapter: in the time frame 2009-2012 over which public procurement in Hungary is analyzed, an increase in corruption risks is expected after 2010. Although previous studies only touch the surface of corruption networks involved in public procurement, they do emphasize a more detailed and systematic approach to it. Using indirect indicators of political interference in the public procurement process, previous studies suggest the political capture increased after 2010, and implicitly indicate that business capture decreases, because companies become more dependent on political actors.

In the following empirical analyses (Chapters 3 and 4) I build on these results to make explicit and expand previous shortcomings in a number of ways: 1) I make explicit corruption networks and their elementary building blocks (i.e., contractual configurations controlled by issuers and winners of public contracts, respectively); 2) I redefine institutionalized grand corruption as state capture based on the stability of these networks over time; 3) I define political and business capture based on objective, replicable and generalizable analytical tools; 4) I investigate dynamic changes of

both political and business capture; 5) I analyze the mechanisms at work in the spread of corrupt practices within different procurement markets; and 6) I test the determinants of political capture, business capture, as well as clean behavior, to better understand what sets these behaviors apart.

Secondly, given the unintuitive development of the country, Hungary presents a unique opportunity to understand state capture by taking into account both macro-conditions that favored its demise, as well as its strengthened recent institutionalization. The overview of the country's political and economic development presented in this chapter revealed the duality of scholarly interpretations of democratization and marketization processes and their predictive shortcomings.

It is in this context that I propose a re-assessment of the perspective through which one approaches the study of state capture. First, measuring it indirectly through indicators of the opposite to corruption (e.g., control of corruption) or as performance-based institutional indicators (e.g., quality of government) is misleading and counter-productive in understanding the phenomenon. As straight-forward indicators, these are useful and complementary measures to the context of state capture, but they cannot be the standard by which we measure it. Second, measuring it directly through corruption risk indicators associated with the contracts signed is a very welcome addition. However, here too, one cannot empirically disentangle how state capture comes about or how the phenomenon replicates or dissolves by not systematically assessing the underlying corrupt *and* non-corrupt networks of individuals, institutions, and groups.

2.5.1 Is there a causal link between regime type and state capture?

Although not the main focus in this thesis, the chapter raises an obvious question: to what extent does regime type predict state capture? To be sure, state capture is a phenomenon that can and does exist to different degrees in both developed and underdeveloped democracies, as well as in

hybrid regimes and full-fledged autocracies. At a general level, what the regime type can affect is the spread and depth of state capture, as well as the dominant captor actors.

In democratic regimes with strong checks and balances, transparency, accountability mechanisms, and anti-corruption legislation can limit the amount of grand corruption to interstitial, independent events, where perpetrators can be punished, either legally or politically, thus preventing state capture to form as a stable phenomenon in the first place (Hellman et al. 2000).

In less developed democratic regimes, such as post-communist democracies, grand corruption and state capture have evolved at the same time with democratic institutions, dynamically affecting each other. Corruption as a pervasive practice was an inherent part of the early development period of democratic transition. Institutions were weak because of corruption, and corruption became institutionalized because of weak institutions. These regime types are the most fertile ground for power struggles among driving actors of state capture, whether business, political actors, or other types of actors, such as the army, religious groups, etc. (Rose-Ackerman 2007).

In hybrid regimes and full autocracies, state capture becomes national policy, the very logic by which governments remain in power. In these regimes, political capture dominates – the driving actors are the political actors in power, while business interests and rewards are allowed by political actors to those they deem worthy. The institutional arrangements, and the control of these by the ruling elite are developed so that the system of institutional functioning and interactions serve the narrow interests of the rulers (Heywood 1997, Diamond 2002).

Since the beginning of the second Orban government in Hungary, the country's levels of state capture have likely risen, and political capture is likely to have increased at the expense of business capture. The illiberal nature of the regime allowed the Orban government with its majority in Parliament to centralize power and legislate unabated to strengthen their political position vis-a-vis opposition parties, businesses, and even civil society organizations. The significant changes

imposed by this government in two terms already have been massively criticized by scholars, media, international organizations, as well as civil society for serving the narrow interests of the Prime Minister himself, his circle of close political and business associates, and the Fidesz voters, at the expense of potential opposition voters, the opposition parties themselves, and even large parts of the economy.

2.5.2 Contributions and limitations of the case study

The case study argued for in this chapter makes two important contributions: first, it reviews the macro-conditions under which state capture and the institutionalization of grand corruption were possible at different stages of the country's post-communist development. Second, it critically reviews the most important scholarly contributions on state capture and grand corruption in Hungary, with a focus on corruption in public procurement. The aim of these research foci is to build informed expectations about the hypotheses formulated in the next two empirical chapters.

The case study approach also has important limitations as well: first, it is still a single case study, and as such, unless systematically compared with other countries on the commonalities and differences of macro-level contexts of the evolution of grand corruption, it cannot reveal too much about the general conditions that lead to state capture across contexts. Secondly, the previous studies conducted have not treated the topic of grand corruption or state capture comprehensively and historically, but only interstitially, except for general reports on the country conducted by international agencies such as Transparency International using perceptions of corruption. Because of that, there are no systematic, comparative approaches within the country, over time.

In this dissertation, I try to overcome some of these limitations in the following ways: 1) the single case study of Hungary will be compared in the next chapter to Czech Republic and Slovakia, albeit

only on one public procurement market, between 2009 and 2012. The main aim of the comparison is to validate the analytical framework proposed in that chapter, and demonstrate the comparability of varieties of state capture across countries. 2) Unfortunately, also because of lack of reliable and comparable public procurement data across time, this dissertation either cannot cover a longer period aside the 2009-2012 data frame. However, I have tried to comprehensively capture the most important scholarly contributions about the evolution of the phenomenon in Hungary.

The next chapter formalizes the parsimonious operationalization of state capture as a networked phenomenon, distinguishes between empirical configurations of political and business capture, and highlights the advantages of such an approach to advancing knowledge on the topic from both an analytical, as well as a theoretical point of view.

Chapter 3 – The Vocabulary of Corruption Risks in Public Procurement. Advances in the Comparability of State Capture across Procurement Markets and Countries

3.1 Introduction

This chapter proposes an innovative and interdisciplinary analytical framework applied to public procurement that facilitates the advancement of comparable empirical research, across any procurement market or country, over time, with standardized results, and intuitive interpretations.

The framework relies on conceptualizing the public procurement process as a dynamic network that changes over time. The actors involved are issuers of procurement calls (e.g., state agencies and public institutions) and winners (e.g., business companies and private organizations), connected by public procurement contracts. Contracts have as attribute a Corruption Risk Score derived from the Corruption Risk Index (CRI) (Fazekas et al. 2016) – a composite, objective measure of corruption risks, based on deviations from the submission, assessment and delivery rules of the procurement process in a given country.

The chapter has three aims:

1. Filling in the conceptual and analytical gap in studying state capture and institutionalized grand corruption as networked phenomena. Answering questions about levels and types of state capture in Hungary, and who drives these.
2. Developing an objective and standardized framework for comparing levels of political and business capture in different procurement markets and countries, over time, from a network perspective.

3. Test the analytical framework on Hungary, by comparing four high value procurement markets, and validating the framework by comparing the Construction Work market in Hungary, Slovakia and the Czech Republic.

Using a network motif discovery algorithm borrowed from bioinformatics, I identify and statistically validate recurrent patterns of high and low corruption risk contracting in four high value public procurement markets in Hungary, and compare a peculiar type of procurement market in Hungary, Slovakia and the Czech Republic. The resulting configurations represent stochastic actor-oriented situations, controlled either by issuers or suppliers of procurement contracts that indicate how low and high corruption risk procurement practices developed after the change of government in 2010, and the changes in dominant type of political or business capture within each market.

The chapter is structured as follows: first, I present the conceptual and analytical framework used to develop the vocabulary of corruption risks in public procurement and formulate several hypotheses. Next, I describe the data and methods employed, and the indicators used to measure state capture. I then present the findings of the analysis, grouped into two broad categories – state capture across the four markets in Hungary between 2009 and 2012, and comparisons across Hungary, Czech Republic and Slovakia, over the same time frame. I discuss the findings of the empirical analysis along four dimensions: network structures and positions of control, trends in political and business capture, network institutionalism, and the reliability and validity of the framework tested in this chapter. Finally, I conclude by highlighting the main findings, contributions, implications and limitations of this approach, and the further work made available by this initial exploratory analysis.

3.2 The Vocabulary of Corruption Risks in Public Procurement

Network motifs represent the building blocks of complex networks (Milo et al. 2002). They are defined as local-level patterns of interaction between sets of actors that occur frequently than at random in a given network. The concept was first introduced in 2002 by a team of systems biologists and bioinformaticians who were interested in the structural design principles of complex genetic networks. The authors analyzed different types of networks and concluded:

“We found such motifs in networks from biochemistry, neurobiology, ecology and engineering. The motifs shared by ecological food webs were distinct from the motifs shared by the genetic networks of *Escherichia coli* and *Saccharomyces cerevisiae* or from those found in the World Wide Web. Similar motifs were found in networks that perform information processing, even though they describe elements as different as biomolecules within a cell and synaptic connections between neurons in *Caenorhabditis elegans*. Motifs may thus define universal classes of networks. This approach may uncover the basic building blocks of most networks.” (Milo et al. 2002, p. 824)

This particular research report has over 4600 citations on Google Scholar, and indeed has determined scholars, particularly in bio-medical sciences, as well as also across disciplines, to investigate network motifs in their own fields. Since then, the study of network motifs has contributed to important advancements network science and the study of complex, dynamic networks (Newman 2003; Boccaletti et al. 2006). Empirical applications enhanced our understanding of genetic functions (Milo et al. 2002), protein-protein interactions (Chen et al. 2006), neural networks (Bullmore and Sporns 2009), drug discovery (Nikolsky et al. 2005).

To my knowledge, there has not yet been any application of network motifs specifically for the study of corruption. There are however good reasons for social scientists to start applying this technique to better understand the basic design principles of complex social, economic, and

political networks, more generally, and to better understand the organizing principles of corruption, in particular.¹⁹

I investigate bipartite network motifs at the triadic level, while preserving the color of the edges, i.e., the procurement contracts, to represent both low and high corruption risks associated with the respective contract. In this case, bipartite motifs of size 3 identify interactions between one issuer and two winners, or one winner and two issuers. These configurations allow us to identify micro-structures where either type of actors controls these low and high corruption risk situations.

Bipartite network motifs of size three (Figure 13) allow us to identify the actors that control a specific situation. I thus argue that an issuer that accepted two or more distinct proposals of high corruption risk, was aware of the deviations those proposals presented from the legislative rules implied by the procurement process in that market. Conversely, if a supplier that submitted two or more distinct high corruption risk procurement proposals to different issuers, did so by being aware of the deviations from the proposals presented from the legislative rules implied by the procurement process in that market. This means that both actors were in position to control the way they constructed their own local networks. These arguments are further supported by the way I define the procurement networks: a supplier in this network is actually a winner of the particular contract, so the choice of submission and acceptance were already made. In other words, the networks represent actual behavior, rather than mere intentions.

These interpretations bring us back to two arguments made in earlier chapters: 1) that actors drive their own local level network structures, and 2) that actors are well informed about the environment in which they operate, and the other competitors on the market. For example, we observe an empirical network of procurement contracts (i.e., choices already made), in a given

¹⁹ In the few occasions where network motifs were the subject of investigation in the social sciences, they typically remained at the level of a triadic censuses on monopartite networks (i.e., networks with one type of actors – e.g. people-to-people) ([Wasserman and Faust 1994](#); [Faust 2008](#)).

market and year. When two suppliers submit high corruption risk proposals to the same issuers in the same market, it is safe to assume the two contracts/links we observe were not signed at the same point in time. Most likely, one supplier signed first, while the other signed another contract with the same issuer later that year. If the arguments that business companies do their research before applying to a procurement call, and that businesses in the same market often adopt and adapt strategies they see at their market competitors stand, then the interpretations we propose are appropriate

This is already a departure from previous studies, which analyzed networks with methods that assume, at best, dyadic independence. The assumption that strategic businesses and state actors are not aware, interested, or dependent on the behavior of their competitors and other participants is unrealistic. A network is by definition a concept that requires at least three actors.

By using an application to public procurement data, I introduce a uniform way of measuring networks that allows researchers to build similar networks in any country or any market where such data is available: nodes are issuers of public procurement tenders and winners of those respective tenders. The links between these two types of nodes are public procurement contracts. I add to these contracts a measure of corruption risks based on objective programmatic deviations from submission, assessment, and delivery rules in public procurement pertaining to either of the two types of actors (Fazekas et al. 2016). The resulting bipartite networks then are an accurate representation of situations that signal high and low corruption risks. My methodological approach models networks using appropriate analytical tools that account for the interdependency of observations.

The assumption of interdependence between network actors is more realistic, especially for the application I refer to: a business company interested in applying for a public procurement call with an institution is very likely to know what the other companies in the market that can compete for

the contract are. Even if once the competition is on, the names of the other tenders are not officially revealed, experienced companies do their research about market competitors likely to apply for the same call, about previous contracts with the same issuer, about their realistic chances of winning the contract, about future possibilities to apply for calls, and so on (Della Porta and Vannucci 2006). In determining their competitive strategies, a great deal of organizational adaptation from available knowledge about competitors is applied – i.e., companies tend to adapt strategies previously employed by the successful firms (Powell and DiMaggio 2012). Interdependency is even starker for companies involved in business consortiums, where their behavior and market strategies are at least softly regulated by the companies in the consortium (Zhao et al. 2007).

In principle, network effects should be less visible in the behavior of state agencies opening calls for public procurement contracts, because they are more constrained by legal aspects of the process, the responsibility of spending public money, and the level of transparency and accountability they should abide to (Rose-Ackerman 2008). However, evidence of network effects among state institutions are overwhelming, specifically in behavior that eludes public scrutiny: from historical records and direct observations of how deals were made in the past by the same institution or similar institutions (Frumkin and Galaskiewicz 2004), to directives coming from official or unofficial leaders at higher institutional levels (especially in politicized and polarized institutional environments), and not least, in relation to business actors themselves – e.g., cronyism (Rose-Ackerman and Palifka 2016).

Network theory argues that the main characteristic of network motifs is that they tend to replicate themselves within a network through implicit relational mechanisms, leading to unintuitive emergent phenomena at the global level (Boccaletti et al. 2006). The network effects specified above are examples of relational mechanisms that could potentially proliferate the patterns of transaction I observe in these procurement networks, leading to unintended consequences, such as

institutionalized grand corruption. Furthermore, given that I am dealing with large private and public organizations and institutions, new institutionalism, and especially network institutionalism add convincing arguments to the interdependency thesis (Ansell 2008). Chapter 4 looks closer at these network effects.

Interactions at the local level determine emergent phenomena at the systemic level. The spread and depth of small scale situations (triadic) high corruption risk contracting within the network, indicates levels of state capture, as well as reveals the dominant actors in these situations, by relying on small group theories of tie formation. In this way, one can categorize procurement markets by the dominant type of capture (political or business) based on the frequency and distribution of high and low corruption risk configurations.

The vocabulary of corruption risks in public procurement identifies all the possible local-level network structures involving issuers and suppliers of public procurement contracts, while preserving the corruption risk attribute of the contract awarded. The vocabulary is a powerful tool that allows for the empirical characterization of any procurement market in terms of degrees of institutionalized grand corruption. It opens up an entirely new agenda for the study of state capture, that is consistent over time and across countries, and that is based on objective, rather than subjective measurements of corruption.

3.3 Hypotheses

As demonstrated earlier, current state capture theories suggest the process is driven primarily by business companies that capture the state's legislative system to work in their favor. In light of above-mentioned new developments, Hungary stands as an empirical puzzle, with previous

evidence of a state-driven capture after the government change in 2010 (Ágh 2013; Bozoki 2006; Bozoki and Simon 2011; Magyar 2016; Enyedi and Toka 2006).

I thus test four hypotheses:

H1: State capture has increased after the change in government in 2010.

H1_{null}: Levels of state capture in Hungary remained the same before and after the government change in 2010.

H2: After 2010, state capture is driven by political actors.

H2_{null}: After 2010, state capture is driven by business actors.

H3: Political capture increased after 2010.

H3_{null}: Levels of political capture remained the same before and after 2010.

H4: Business capture decreased after 2010.

H4_{null}: Levels of business capture remained the same or increased after 2010.

The first hypothesis assesses the general trends in the public procurement context. The expectations are to see an overall increase in high corruption risk configurations after 2010 across all markets. The following three hypotheses specifically look at which are the dominant actors in this context. The expectations are to see a shift from configurations predominantly controlled by suppliers before 2010, to situations predominantly controlled by issuers thereafter. The hypotheses try to answer the following questions: 1) can network motifs generate valid and reliable knowledge about the formation and evolution of state capture? If yes, then the research strategy is a good starting point of further investigations into degrees and forms of state capture. 2) The research strategy employed in this chapter allows for the equal treatment of business and state captor actors.

Given this framework, is there a general type of state capture that can be classified as either a phenomenon driven by business companies, or one that is driven by state actors? If more diverse patterns are discovered, then this initial analysis offers a good basis for further research to re-evaluate the definitions of and empirical evidence of forms of state capture across procurement markets and countries.

3.4 Data

To test these hypotheses, I used public data on issuers and winners of public procurement tenders in Hungary between 2009 and 2012. The final analysis samples used information about public procurement transactions among over 9,000 business organizations and public sector institutions (national/local), in the top four highest financial value procurement markets in the country, over the four years of the analysis.

To construct the networks, I use publicly available data²⁰ collected under the DIGIWHIST project (The Digital Whistleblower. Fiscal Transparency, Risk Assessment and Impact of Good Governance Policies Assessed) for Hungary, between 2009 and 2012, and published by the European Commission's Tender Electronic Daily, an online portal dedicated to European public procurement. These data are up to date and standardized across countries. Moreover, the Corruption Risk Index developed under the DIGIWHIST project adds an important objective measure of corruption risks in public procurement that is standardized across countries.

²⁰ <http://digiwhist.eu/resources/data/>.

I operationalize the bipartite networks in the following way:

- Nodes: issuers of public procurement contracts (e.g., state agencies and public institutions) and winners of public procurement contracts (e.g., business companies and private organizations)
- Links: public procurement contracts
- Color of links: green – low corruption risk; orange – high corruption risk. I define low and high corruption risk as scores below and above one standard deviation from the average CRI for each year, in each market²¹.

I focus this analysis on four high value and large size markets, over four years, 2009-2012. These data result in 16 networks that are comparable.

Table 3 below shows the number of issuers and winners involved in public procurement in the four markets selected for the analysis, alongside the sum of the contract values over the four-year period of the study.

Table 3. Focus procurement markets by contract values and number of issuers and winners, 2009-2012^{22,23}

	Issuers	Winners	Total	Contract Values
Construction work	1,611	2725	4336	€ 5,430,055,629
Petroleum products, fuel, electricity, and other sources of energy	235	77	312	€ 604,074,927
Business services, law, marketing, consulting, recruitment, printing, and security	969	1,570	2,539	€ 468,422,751
Architectural, construction, engineering and inspection services	606	1,244	1,850	€ 265,345,244

²¹ See Table 22 and 23 in Appendix 3.2 for details about CRI dispersion scores and cutoff values for defining the network samples for the motif analysis.

²² Complete list of markets in Appendix 3.1.

²³ Descriptive statistics of global properties of the 16 networks analyzed in this chapter are available in the Appendix 3.4.

3.5 Concepts and indicators

I employ a network motif discovery algorithm for the enumeration of triadic empirical configurations in public procurement, where:

- Issuer-controlled procurement configurations are triadic configurations involving low or high corruption risk contracts between two suppliers and one issuer. Substantively, they capture situations of low and high corruption risk, where the issuer awards two different suppliers that year.
- Supplier-controlled procurement configurations are interpreted in the same way as the issuer-controlled situations explained above, by swapping the central player from issuers to suppliers.

Configurations are categorized by the level of corruption risk associated with contracts: low corruption risk motifs, high corruption risk motifs, and mixed motifs.

- Low corruption risk motifs are configurations where contract scores are below one standard deviation from the average CRI score for that year.
- High corruption risk motifs are configurations where contract scores are above one standard deviation from the average CRI score for that year.
- Mixed motifs are a third type of configurations, along with low corruption risk triadic motifs and high corruption ones. They involve an issuer contracting both a low corruption risk proposal, as well as high corruption risk one that year. Mixed configurations signal a context where the central actors need to make case-by-case decisions in awarding contracts or submitting proposals. These situations suggest less institutional constraint on these organizations.

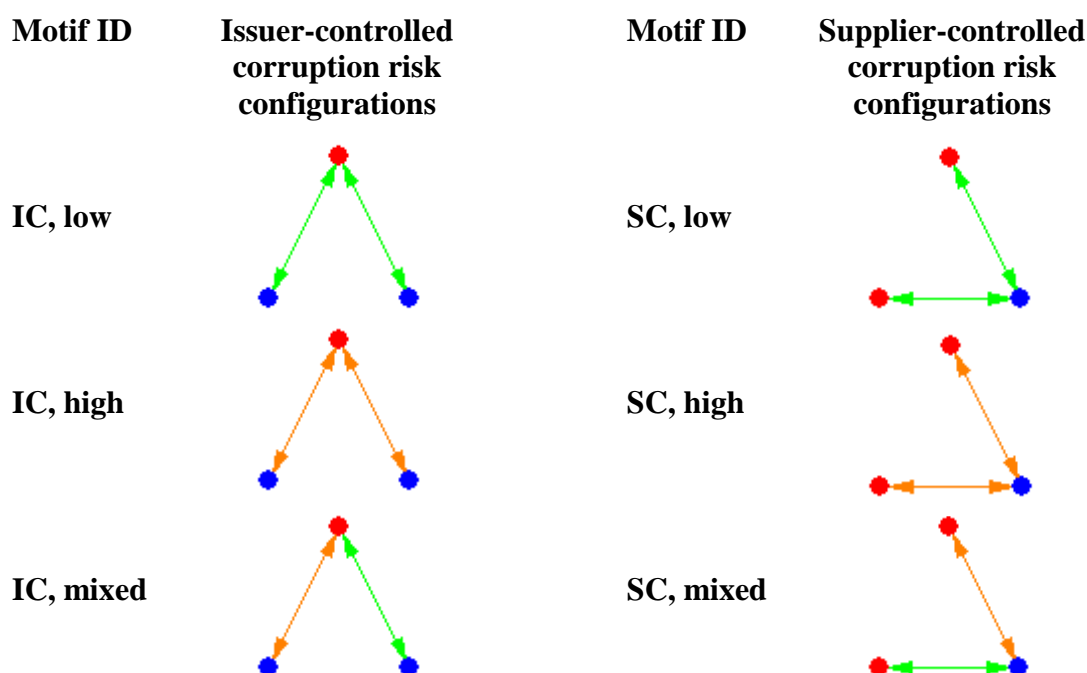


Figure 13. Typology of non-overlapping empirical configurations of low and high corruption risks in public procurement, by type of controlling actors

The combination of the two concepts measures levels of state capture by type of dominant actor:

- Political capture is defined as the frequency of issuer-controlled high corruption risk configurations in a specific procurement market.
- Business capture is defined as the frequency of supplier-controlled high corruption risk configurations.

The motif discovery algorithm implemented in this dissertation measures both the spread and depth of these configurations (frequency of non-overlapping motifs that cover the entire network). Each organization gets a 1 if it appears in one of the six types of configurations, or a 0 if it is not involved in one of the six types of configurations.

From an analytical point of view, this is a stochastic actor-oriented framework, where nodes control their local neighborhood choices (how actors change their outgoing ties) at different points

in time. “The probabilities of tie changes are in part endogenously determined, i.e., as a function of the current network structure itself, and in part exogenously, as a function of characteristics of the nodes (‘actor covariates’) and of characteristics of pairs of nodes (‘dyadic covariates’)” (Snijders et al. 2009, p. 1).

The concept of control in these bipartite triadic configurations is derived from the stochastic actor-oriented logic, and refers to the central actors’ *decision to award and submit* to particular others, respectively, low and high corruption risk documents at least two times within a year. In this chapter, I disregard the question of why these configurations form (Chapter 4), and focus on the question of how many distinct configurations are there, and can one meaningfully categorize them.

Control is also closely linked to institutionalization. Given that these are real contracts between national, regional, local public organizations in a highly polarized and politicized administration, and national, global, and local business companies, control has implications for the organization of the system, and the emerging informal rules of interaction among these organizations.

3.6 Methods

I analyze the bipartite networks using the RAND-ESU network motif discovery algorithm implemented in Fanmod, a statistical package for network motif discovery (Wernicke and Rasche 2006) for the full enumeration of subgraphs of size three, where edges between nodes of the same color are prohibited. The algorithm uses 100,000 samples from the empirical networks to estimate the number of occurrences of size three configurations, preventing over-counting sub-graphs. The

reference model is the configuration model²⁴ for 100 randomly generated graphs, where the size, density and degree sequence are preserved to those of the empirical networks.²⁵

The RAND-ESU algorithm estimates the mean concentration of a sub-graph, according to the formula:

$$\langle C_k^i(G) \rangle \approx \langle \hat{C}_k^i(G) \rangle := \frac{\sum_{G' \in DEGSEQ(G)} |S_k^i(G')|}{\sum_{G' \in DEGSEQ(G)} \sum_i |S_k^i(G')|} \quad (1)$$

where $DEGSEQ(G)$ is the set of all sub-graphs G' that have the same degree sequence in G . Then, the algorithm determines the sub-graph significance by calculating for a given degree sequence, how many such sub-graphs there are, which realize exactly this degree sequence, under the constraint that the particular sub-graph is fixed.

By reshuffling links and CRIs, one can assess whether there is a relationship between the network structure and the distribution of corruption risks. In other words, it tests the null hypothesis that the relationship is driven by the marginal, i.e., frequency distribution of CRI, and degree distributions in the contract network. If the corruption risks are not related to the network topology (degree sequence), the Z scores between the frequency of motifs in the empirical network and the randomized networks should be significantly different.

The number of occurrences of a sub-graph in the empirical graph gives us the sub-graph's frequency. I limit the analysis to over-represented motifs. I define over-represented motifs as patterns that occur at least one standard deviation above the mean frequency of the pattern in the empirical network.

²⁴ Random networks with degree sequences similar to those of the empirical networks. A less plausible random model is the Erdos-Renyi random graph.

²⁵ For alternative network-centric algorithms, see Milo et al. 2002, Kashtan et al. 2004, Schreiber and Schwobbermeyer 2006, and Chen et al. 2006.

The expected number of occurrences of a configuration is determined by the null model, which I define as an ensemble of 100 random graphs based on the configuration model that preserves the properties of the empirical networks (i.e., the same size, density and degree sequence as the empirical networks). In the analysis, I rewire the edges of the random graphs according to a local constraint rule of three exchanges between all pairs of nodes of different classes. This preserves the bipartite nature of the empirical networks. Figure 14 below illustrates this local constraint.

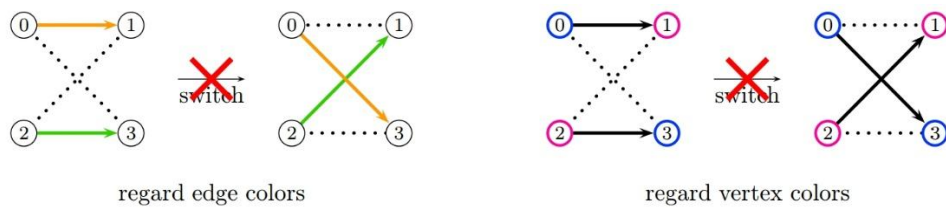


Figure 14. Randomization modes (Rasche and Wernicke, 2006)

In the hypothesis testing, I regard a recurrent patterns as significant, if the frequency of a sub-graph is higher in the empirical network than the arithmetic mean frequency in these 100 random networks. I report the over-represented configurations for which Z scores are above one (i.e., at least one standard deviation above the mean frequency in the random graph ensemble), according to the formula:

$$Z(G') = \frac{F_G(G') - \mu_R(G')}{\sigma_R(G')} \quad (2)$$

where μ_R is the mean frequency of sub-graph G' in the random ensemble and σ_R is the standard deviation of the sub-graph in the random ensemble.

The frequency concept used in this analysis considers all matches of a sub-graph in the empirical network, without double counting, and exact counting methods, as opposed to sampling or pattern growth methods. I deliberately use these methods in this exploratory analysis, to have a full account of the configurations present in the empirical networks. Given the relatively small size of

the networks, the comprehensive method I employ is computationally feasible and substantively necessary.

The larger the Z score, the further away the respective configuration is from random, and the more significant its appearance in the empirical network. The motif discovery algorithm uses the full enumeration of sub-graphs method. To avoid missing out some potentially important empirical patterns, I refrain from reporting p values. Choosing a conventional threshold for the significance test (e.g., $p > 0.01$ or $p > 0.05$), will force us to disregard patterns that, although less frequent than in the thousand randomly generated graphs in the null model, do appear in the empirical networks²⁶ (Altman and Bland 2005). Given that this is a first try at identifying the vocabulary of high and low corruption risk configurations in public procurement, the Z score threshold at above one standard deviation offers a better initial test for statistical significance that is lax enough to include more rather than less patterns. Also, at this point, I assume a random process as indicative of a procurement process where there are no pre-determined rules that govern the appearance of certain high and low corruption risk configurations.

The Z scores associated with each type of configuration within the network indicate deviations of the respective type's frequency of occurrence as compared to 100 randomly generated networks that mirror the basic characteristics, and differ only in the distribution of links connecting the organizations. The higher the positive Z score, the more over-represented the respective configuration is in the empirical network as compared to the random network ensemble.

A more tolerant significance analysis is the preferred strategy in this study. I choose to report Z scores above 1 as significantly different from the average occurrence of the configuration across 100 randomly generated networks. An outlier analysis would consider Z scores above three

²⁶ For a more thorough discussion of the limitations of p values for determining statistical significance, see Altman and Bland 1995.

(standard deviations) above the mean occurrence of the configuration in the random ensemble. However, given that this is a first exploratory analysis, it is more useful to have a more inclusive ranking of configurations in the empirical networks.

Over-represented network motifs indicate the process of institutionalization of different high and low corruption risk practices in public procurement. Patterns emerging from the over-representation of motifs indicate dynamics of business and political capture within procurement markets. Political capture is measured by the frequency of issuer-controlled high corruption risk configurations (bipartite motifs of size 3), while business capture is measured by the frequency of supplier-controlled high corruption risk configurations. Using the full enumeration of network motifs allows one to measure depth as well, because these are non-overlapping configurations, which map the entire network.

3.7 Findings

3.7.1 Typology of non-overlapping bipartite network motifs in public procurement

The motif detection algorithm identified six types of non-overlapping capture situations pertaining to both issuer-controlled and winner-controlled low corruption risk configurations, high corruption risk configurations and mixed configurations. These six isomorphic configurations indicate three types of recurrent contracting patterns, signatures for clean contracting, political and business capture. The results are grouped into four sections: levels of clean and captured markets; dominant actors and levels of political and business capture, and national vs regional and local state institutions' involvement.

Figure 13 displays the typology of non-overlapping network motifs found in the empirical networks. For each controlling actor, the possibilities are that they accept (issuers)/submit (suppliers) low and high corruption risk contracts.

Table 4 details the results of the motif analysis: low and high corruption risk configurations driven by issuers and suppliers, respectively, compared over four years, across four markets. I report the percentage each configuration appears at and draw line charts showing trends in the frequency of each configuration over time. The bottom percentages for each year represent the overall amount of the network sample explained by the different configurations identified (after removing isolated dyads). The statistical significance of the motifs assesses how over- or under-represented particular motifs are within the empirical networks, as compared to the average frequency of their occurrence over the random ensemble.

As argued earlier as well, given that this is an initial survey of the possible configurations, I report both over-represent and under-represented configurations, to get a more comprehensive view of the empirical networks. The grey cells indicate that configurations of that particular type were not found in the empirical networks. I emphasize in bold the most frequent configurations in each year. The results are comparable over time and across markets, regardless of the size of the market or its main domain of activity.

The first observation I highlight is that state capture in Hungarian public procurement varies by market and evidence to support the initial hypotheses are, at best, mixed. In rough terms, in the Construction Work market state capture is driven by both issuers and suppliers. The Petroleum Products market is visibly dominated by suppliers, while in the Business Services and Architectural Services markets the phenomenon is driven predominantly by issuers. Given that these results are based on robust statistical analyses of objective data, it is safe to say that current theories of state capture emphasizing the dominant roles of either business companies or state

actors made sweeping generalizations that do not hold even within the same country, over the same period of time, in different markets.

At a closer look, the most frequent configurations in the Construction Work market are issuer-controlled, low corruption risk motifs. Only in 2010 the most frequent motif is the issuer-controlled, balanced configuration. As can be observed, 2010 stands out in this market because low corruption risk configurations decrease this year, while high corruption risk configurations slightly increase that year, especially in the configurations controlled by suppliers. Judging by the temporal trends, both low and high corruption risk configurations increase after 2010, with the occurrence of low corruption ones significantly more frequent than the high corruption risk motifs. Overall, in this market, suppliers lose control of procurement situations over time.

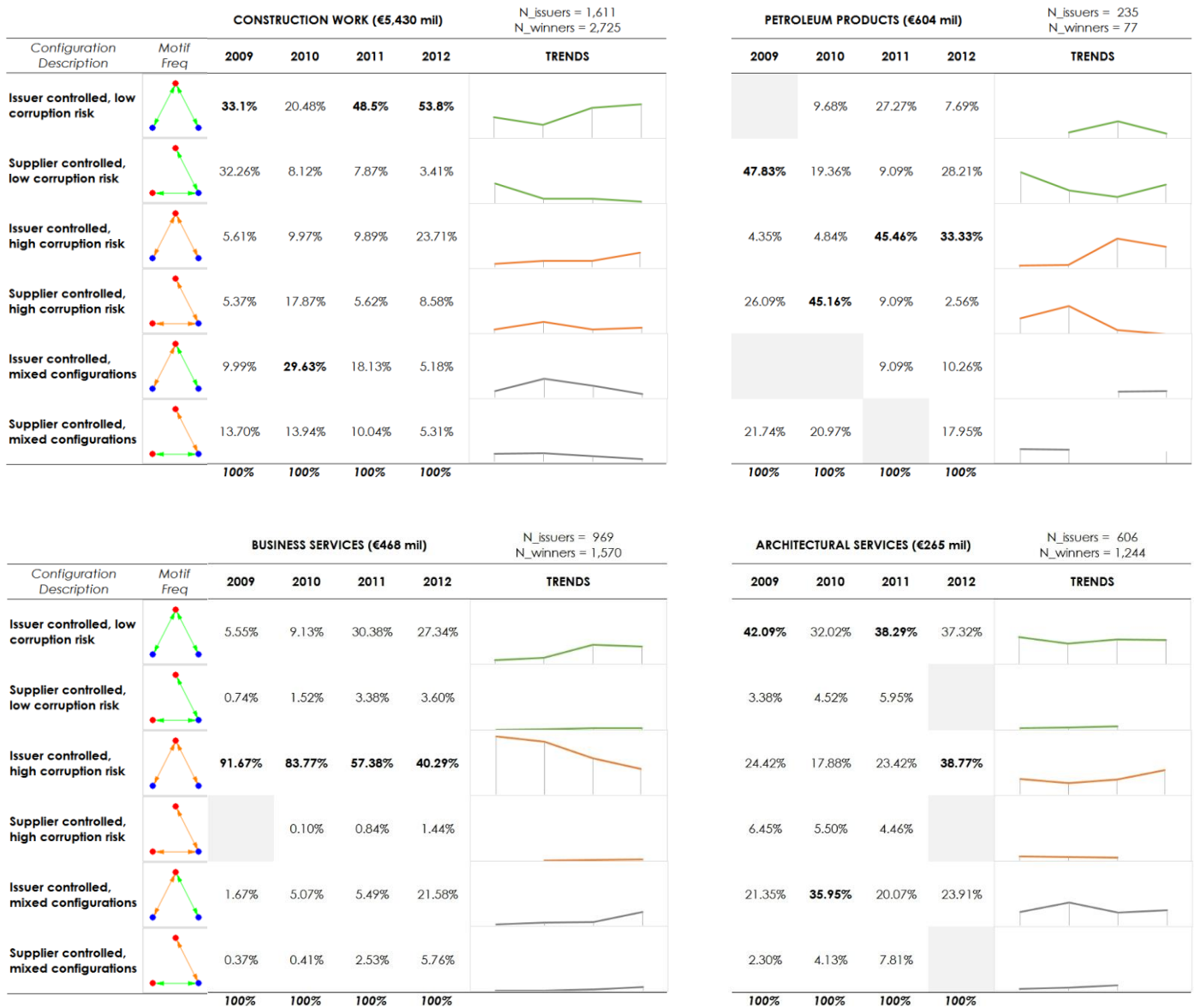
The Petroleum Products market display very different patterns. At this level of analysis, both issuers and suppliers have control over their procurement interactions, however, interesting trends emerge: after 2010, suppliers driving low and high corruption risk situations continuously lose their grip, while issuer-controlled, high corruption risks markedly increase in 2011 and 2012.

In the Business Services market, the situation is very clear: issuers overwhelmingly control the market. However, what is almost shocking to see is their role in driving high corruption risk, which, admittedly decreased in time from almost 92% of the 2009 network being explained by issuer-controlled, high corruption risk situations to a little over 40% by 2012. Suppliers have virtually no power in this market. For those who are familiar with the Hungarian case, this result is not surprising, given that this market includes public procurement in marketing, advertising and printing, legal consultancy and other such activities. Evidence of rigged market competition and issuer-controlled, high corruption risk situations have been previously shown to overwhelmingly describe the relationship of politicians in power and their close crony companies always winning

public procurement contracts. Contrary to one's expectations, however, these configurations decrease, rather than increase after 2010.

Finally, the Architectural Services market is also visibly dominated by issuer-controlled situations, although more of the low corruption risk than the high corruption one, with the exception of 2012, when the latter situations appear most frequently.

Table 4. Trends in corruption risks in four high value Hungarian public procurement markets, 2009-2012



Green edges = low corruption risk associated with the contracts (below one standard deviation from the mean CRI for all contracts in that year)

Orange edges = high corruption risk associated with the contracts (above one standard deviation from the mean CRI for all contracts in that year)

3.7.2 Levels of clean and captured procurement markets over time

Figure 15 reveals that, overall, levels of state capture decrease, while levels of clean markets remain constant. Looking at the aggregate level, there is a similar pattern in the evolution of clean, mixed and high corruption risk contracting in Hungary. The variations in corruption risks seem to converge from a large to a narrow distribution, suggesting that dominant actors might be controlling the institutionalization of corrupt practices through a tighter institutional coordination. Clean contracting has decreased in two out of four markets, while the level of state capture increased in three out of four markets analyzed. Mixed configurations of clean and high corruption risk contracting seem to characterize the elections year. Overall, political capture increased in three out of four markets, while business capture weakened in all four markets. The only market in which political capture decreased was business services.

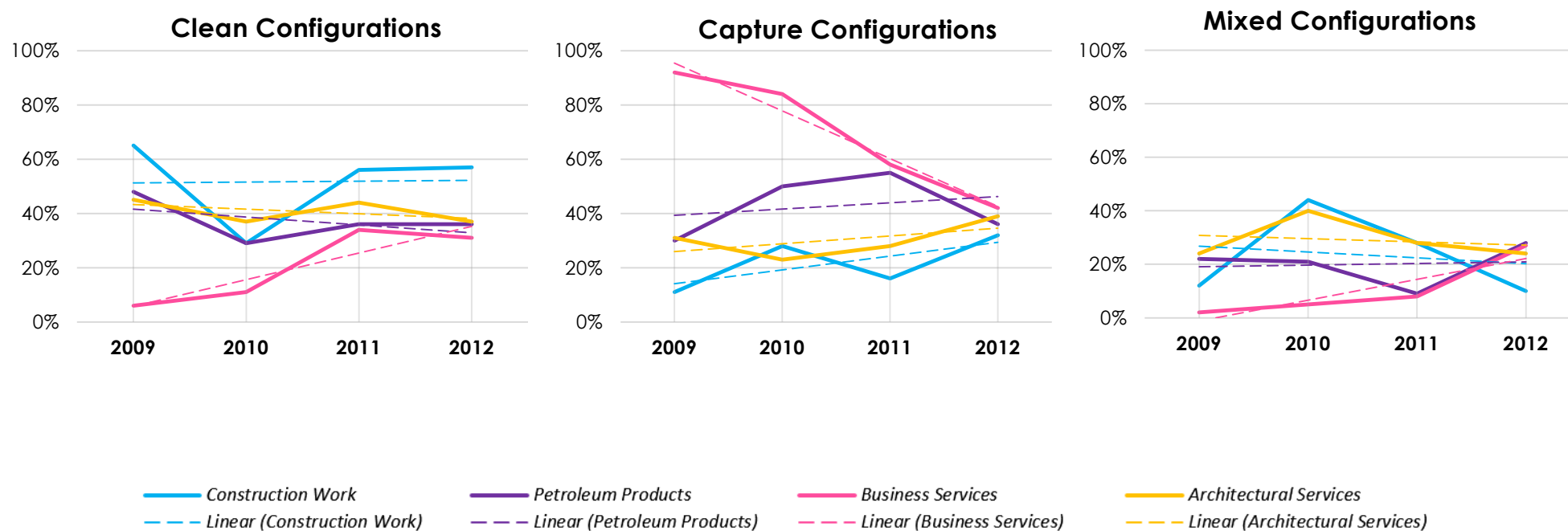


Figure 15. Levels of clean and captured procurement markets over time

Clean = frequency of low corruption risk configurations below one standard deviation from the mean CRI for all procurement contracts that year
Captured = frequency of high corruption risk configurations above one standard deviation from the mean CRI for all procurement contracts that year
Mixed = frequency of configurations with one low and one high corruption risk contracts

3.7.3 Dominant actors – levels of political and business capture across markets

The vocabulary of corruption risks in public procurement reveals interesting patterns. Figure 16 shows an increase in political capture after 2010, and a sharp decrease in business capture. The only market that is decreasing in political capture is Business Services. In this network, high corruption risk configurations controlled by issuers decrease from 92% in 2009 to 40% in 2012. It is also the market where clean contracting situations increased, with state institutions driving the increase in low corruption risk behavior.

The electoral year of 2010 is marked as issuer uncertainty in Construction Work and Architectural Services markets. This suggests that electoral cycles generate uncertainty about engagement in corrupt behavior. Construction work is mostly characterized by issuer-controlled clean contracting, with the exception of 2010 when issuers engage in high corruption risk contracting due to uncertainty in the market. The petroleum products market displays indications of political hijacking of the market: in 2009, 47% of the market was driven by businesses through competition and clean contracting. In 2010 business organizations engaged a lot more in high corruption risk contracting (45%). In 2011 and 2012, issuers take control of high corruption risk contracting in the market.

Business services, although the only one where political capture decreased, still is continuously captured by issuers. In architectural services, the market is characterized by issuer-controlled clean contracting. In 2010 35% of the market engages in occasional high corruption risk contracting due to uncertainty. In 2011 again it is mostly characterized by clean contracting. In 2012, however, the market is captured by issuer-controlled high corruption risk contracting.

Overall, political capture increased in three out of four markets, while business capture weakened in all four markets. The only market in which political capture decreased was business services

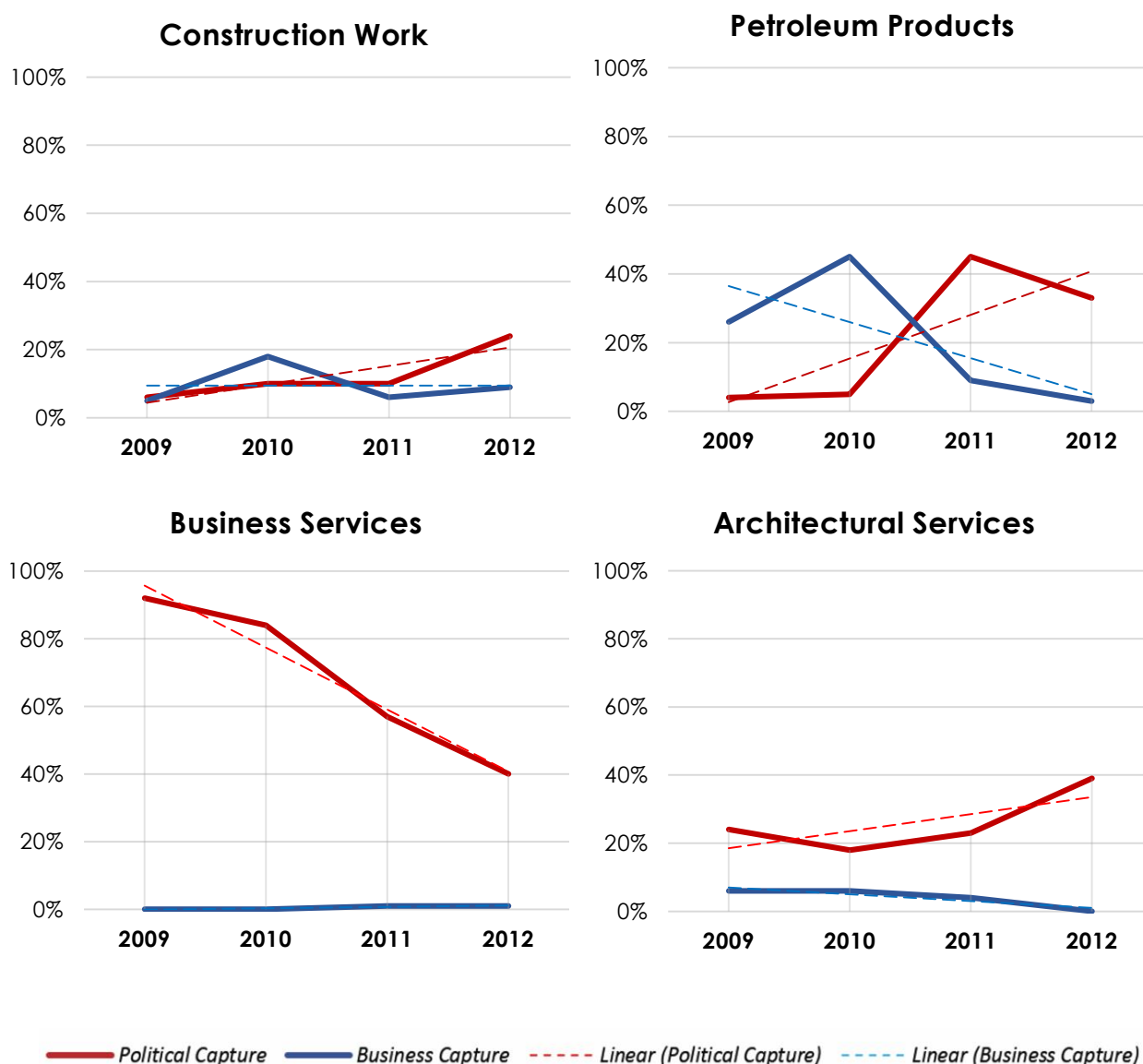


Figure 16. Dominant actors: political and business capture in different procurement markets

Political capture = frequency of issuer-controlled corruption risk configurations in each year
Business capture = frequency of supplier-controlled corruption risk configurations in each year

3.7.4 Issuers' involvement - national versus regional/local administrative levels

The analysis allows one to compare trends in high corruption risk involvement of national and regional/local-level state institutions in public procurement.

The involvement of national and regional/local issuers in high corruption risk contracting displays again variation among markets, decreasing in two markets and increasing in the other two. Figure 17 shows that, overall, regional and local level issuers seem to be more involved in state capture situations, with the exception of the business services market, where national issuers seem to control capture situations. Although the absolute number of regional and local organizations involved in high corruption risk contracting in public procurement has decreased, the estimated amount of the financial flows transacted has increased by 2012. This suggests that fewer players share more spoils.

Figure 18 shows that, at the general level, there seems to be some correlation between patterns in the number of participant state organizations in high corruption risk practices and patterns in financial flow spending associated with these contracts. Minor changes in the number of high corruption risk contracts signed can cause drastic changes in the financial spending patterns, as well as major changes in the number of actors involved can cause minor changes in financial spending patterns. This discrepancy can be explained, in part, by the network structure associated with the involvement of these organizations (detailed in Chapter 4).

In all markets, the estimated amount of public money spent on high corruption risk contracts decreases markedly from 2009 and 2010 to 2011. However, in two markets out of four, estimated money spent on high corruption risk procurement contracts increases after 2011 (Construction Work and Business Services). Both these trends are visible at the regional/local level. Increases in the amount of money spent, increasing involvement of regional/local

organizations, and the transition from corruption risk centralization to de-centralized corruption risks, all indicate the institutionalization of high corruption risk in public procurement at this level. The only market where national level issuers increasingly get involved in high corruption risk contracting, is the Business Services market. However, they seem to get involved in small-valued deals.

The Construction Work procurement market is visibly captured by political regional and local level organizations. These organizations spend most money on high corruption risk procurement contracting as compared to all other procurement markets in Hungary. A decreasing number of contracts signed does not necessarily mean less money spent on high corruption risk contracts. For example, in 2011 there were more contracts signed for less money than in 2012, where less contracts were signed for more money. It does mean, however, that the practice of awarding high corruption risk contracts, overall, decreases over time. National state institutions seem to be significantly less involved in high corruption risk contracting. The year with most suspicions of corruption in this market is 2009, where an estimated €200 mil were spent by issuers on high corruption risk deals.

The Petroleum Products market displays a shift from national issuers driving high corruption risks until 2010, to regional and local issuers driving high corruption risks in 2011 and 2012. The number of state organizational at the regional and local levels increases three times from 2009 to 2012, while only a few state organizations at the national level are involved in high corruption risk contracting in this market. Interesting patterns emerge in the financial flow timeline: in 2009, one national level issuer signed one high corruption risk public procurement contract worth €40 mil. In 2010, around 12 national level issuers signed contracts worth, cumulated, €8 mil. By 2012, about two national level issuers signed high corruption risk contracts for very low sums as compared to the other years. Although the number of regional

and local level issuers involved in high corruption risk contracts increases markedly after 2011, they seem to be doing so over small contracts.

The Business Services market seems to be dominated by national state institutions driving high corruption risks in public procurement. The number of institutions involved in high corruption risk contracting increased five times from 2009 to 2012. This trend was closely followed at the regional and local levels, where increasingly more state organizational got involved in high corruption risk contracting over time. However, while the number of actors involved in high corruption risk activities increases, their spending gets smaller and smaller. Given that there is a considerable spike in 2010, the electoral year, that indicates a disproportionate amount of money being spent on high corruption risk contracts, it could be that financial flows depend somehow on electoral years.

The Architectural Services market is clearly dominated by regional and local level institutions involved in high corruption risk procurement deals. However, their general involvement in these situations decreased over time, as well as the financial flows associated with their behavior.

The results seem to suggest that the change in government brought about a lowering of costs of corrupt deals, *and* a spread of these practices within the institutional system. High corruption risk deals under the first part of the second Orban government seem to be conducted primarily at the regional and local level, and only occasionally at the national level.

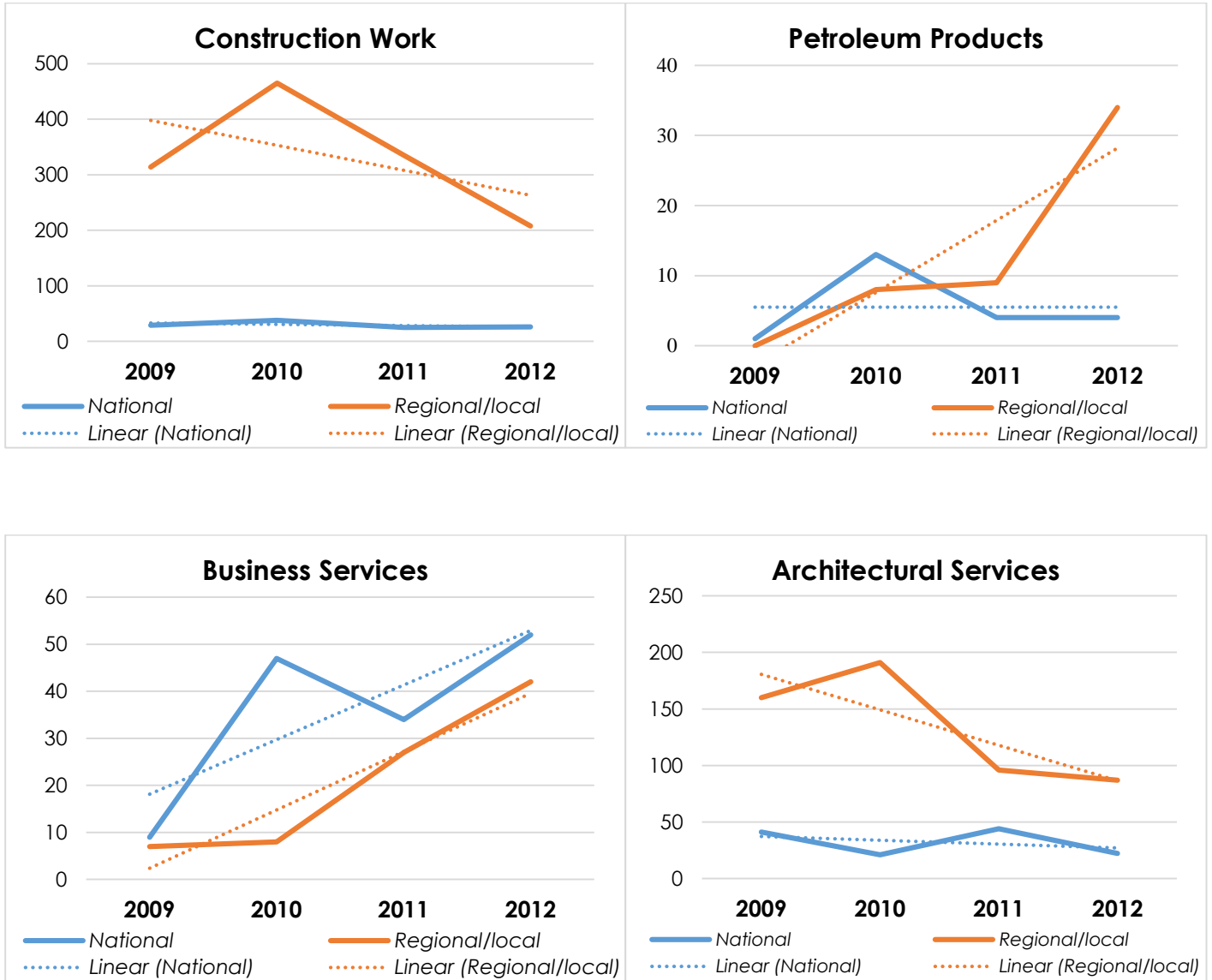


Figure 17. Number of high corruption risk contracts signed, over time, in each market, by national and regional/local state issuers

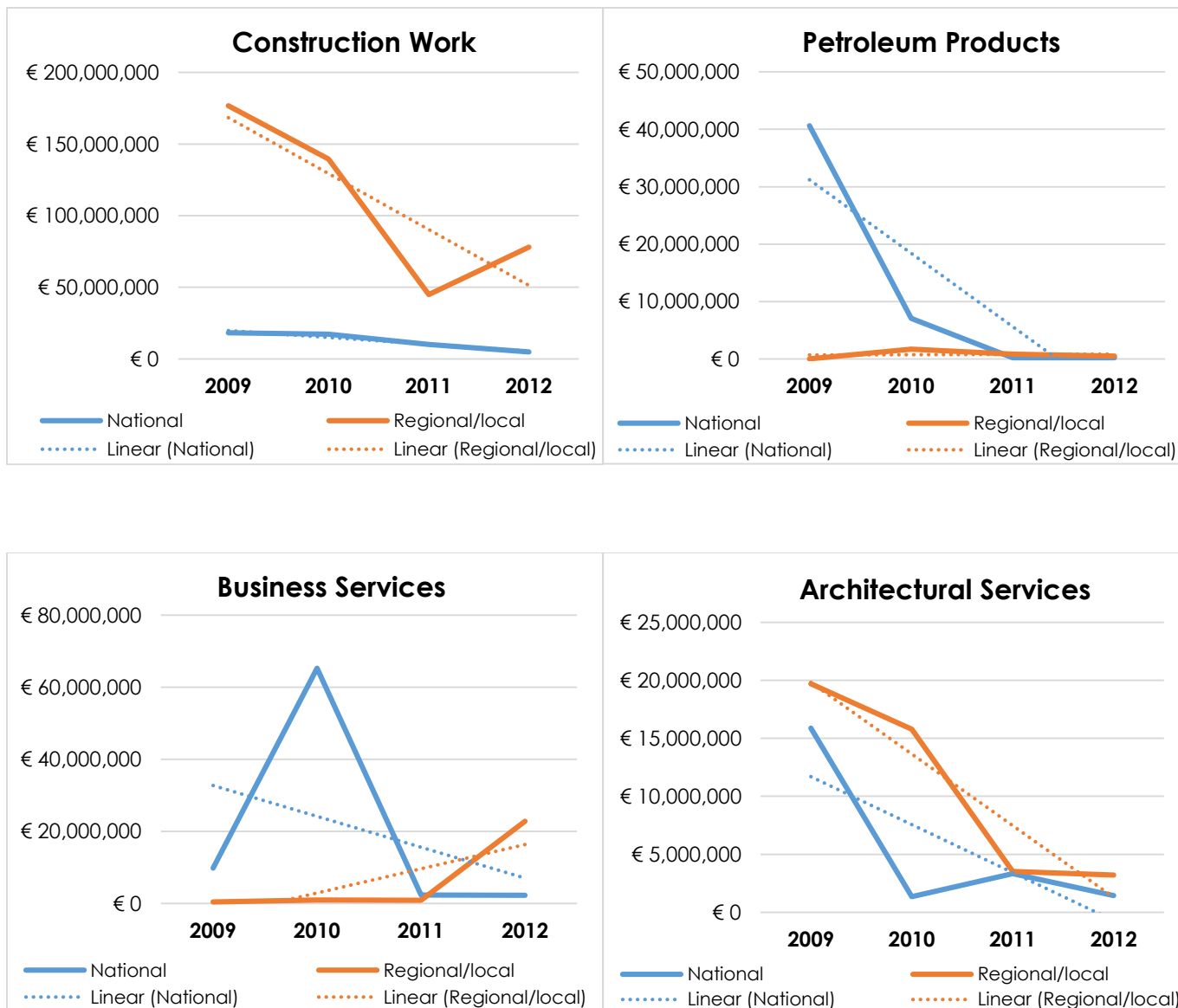


Figure 18. Estimated money spent on high corruption risk contracts in four procurement markets, over time, by national and regional/local state institutions

3.7.5 Comparing State Capture across Countries. The Construction Work Market in Hungary, Czech Republic and Slovakia

Public procurement usually consists of three broad categories of orders: supplies (products), services, and construction work. While previous research looked at contracts by the assumed level of fulfillment (over limit, sublimit, and small size), I argue that all financial flows are important, because they capture the institutional precedents created by contractual interactions between issuers and winners of public procurement. In other words, regardless of the size of the financial flows, a clean or highly suspicious contract using public money is a sign of institutional behavior and conduit that matters.

Figure 19 shows the results of the motif analysis across countries. The interpretation of results remains the same as for the analysis within Hungary. Overall, issuer controlled clean contracting situations increase in all countries, but more so in Hungary than in the Czech Republic or Slovakia. While supplier controlled clean contracting deteriorates in Hungary and Slovakia, these situations increase slightly over time in the Czech market.

Although the level of political capture was higher in the Slovak market in 2010, both in Slovakia and Czech Republic the issuer controlled high corruption risk situations decrease over time, as opposed to an increasing trend in Hungary. Business capture seems to decrease over time in all three markets.

The uncertainty associated with issuer controlled mixed configurations remains constant in the Czech market, decreases in Hungary, and increases in Slovakia. The decreasing trend in the Hungarian market suggest clearer choices for Hungarian issuers in terms of conduit in public procurement. As compared to supplier controlled mixed configurations, it seems issuers are facing much more uncertainty than business companies in Hungary and Slovakia. Suppliers face more uncertainty than issuers in the Czech market.

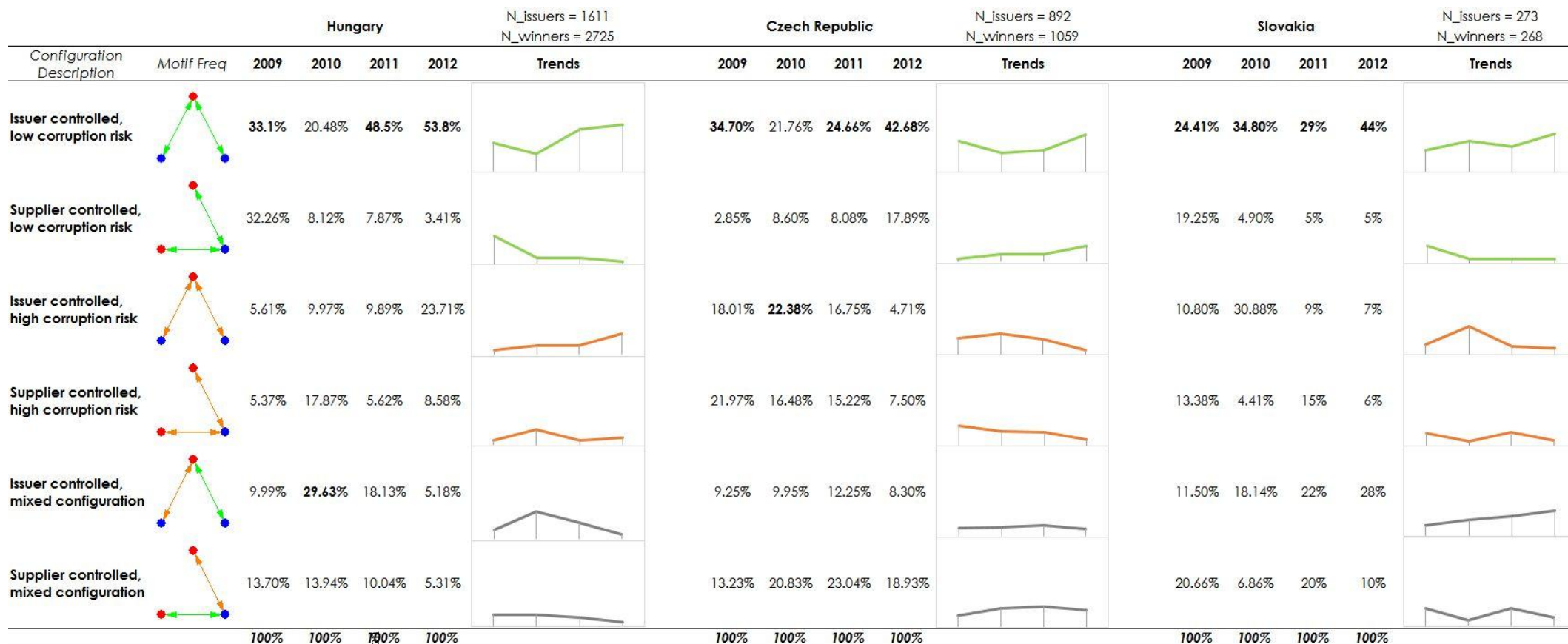


Figure 19. Percentage of issuer and supplier controlled corruption risk network configurations in the Construction Work market, in Hungary, Czech Republic and Slovakia, 2009-2012

3.7.5.1 Cross-country clean vs captured markets comparison

Figure 20 compared trends among the three markets in terms of levels of clean, captured and mixed configurations.

Clean Configurations: Overall, the Construction Work public procurement market in Hungary has the highest share of clean contracts at around 50%, followed by Czech Republic (on average, 40%) and Slovakia (40%). The yearly trends, however, reveal an increase in clean public procurement contracts from 2011 to 2012 in both the Czech Republic and Slovakia, while Hungary's share of clean contracts is relatively constant, with a significant drop in the number of clean contracts in 2010, the year the second Orban government commenced.

The analysis suggests something improved in the Czech and Slovak markets in 2011 that triggered between 20% and 25% increase in the share of clean contracts in public procurement in this market. In January 2011, the Czech government adopted the strategy for electronic public procurement orders using the public procurement information system administered by the Ministry of Regional Development.²⁷ The information system is a very detailed online portal for public procurement orders that contains public data on all the contracts signed by public institutions and business companies of procurement contracts in all markets, legislation, regulations, as well as lists of qualified, certified and prohibited suppliers.²⁸ The purpose of these efforts was to increase the levels of transparency, support non-discrimination of potential and actual suppliers, and regulate equal treatment and mutual recognition, both under national legislation, as well as to support potential cross-border suppliers.

²⁷ Link to the "Strategy for public procurement orders:" <http://www.portal-vz.cz/getmedia/c9711e98-d3fb-4dd9-8360-836a7a5c3eda/Strategie-elektronizace-zadavani-VZ-2011-2015>.

²⁸ Link to the Public Procurement Information System: http://www.isvz.cz/ISVZ/Podpora/ISVZ_odkazy.aspx; Link to the Public Procurement Bulletin: <https://www.vestnikverejnychzakazek.cz/>.

Captured Configurations: When comparing the levels of state capture in the Construction Work markets across Hungary, Czech Republic and Slovakia, the analysis shows a steady decrease in the share of high corruption risk contracts in the Czech Republic from 40% in 2009 to 15% by 2012. Similarly, state capture decreases overall in Slovakia, from the highest level in 2010 at 38% of the market being high corruption risk contracts to around 15% of the market by 2012. Hungary is the only country among the three where the level of state capture increases over time from around 17% in 2009 to 30% by 2012. The level of state capture is higher in 2012 than in 2010, the electoral year marking the start of the second Orban government, when state capture spikes as compared to the levels in 2009 and 2011. Although both the Czech and Slovak markets display higher levels of state capture, these levels are decreasing over time in both countries, while in Hungary the level of state capture is increasing.

Mixed Configurations: As mentioned earlier, mixed configurations signal levels of uncertainty in public procurement contracting. Both issuers and suppliers of procurement contracts make case-by-case choices to accept or submit, respectively, both clean as well as high corruption risk contracts, depending on the available potential partners. In line with the Hungarian story, mixed configurations spike in 2010, the electoral year that featured an overall increase in state capture in the country. Since then, mixed configurations decrease steadily, suggesting the stabilization of a particular logic of contracting that supports high level corruption at the expense of clean public procurement contracting. Compared to Hungary, the share of mixed configurations remains relatively stable over time in the Czech Republic, and increases in Slovakia. The increase signaled in the Slovak Construction Work market suggests that despite increases in the quality of procurement contracts, the nature of interactions is still surrounded by uncertainty. To avoid letting these uncertainties rule the business-state interactions, the system of legal and behavioral incentives should be strengthened.

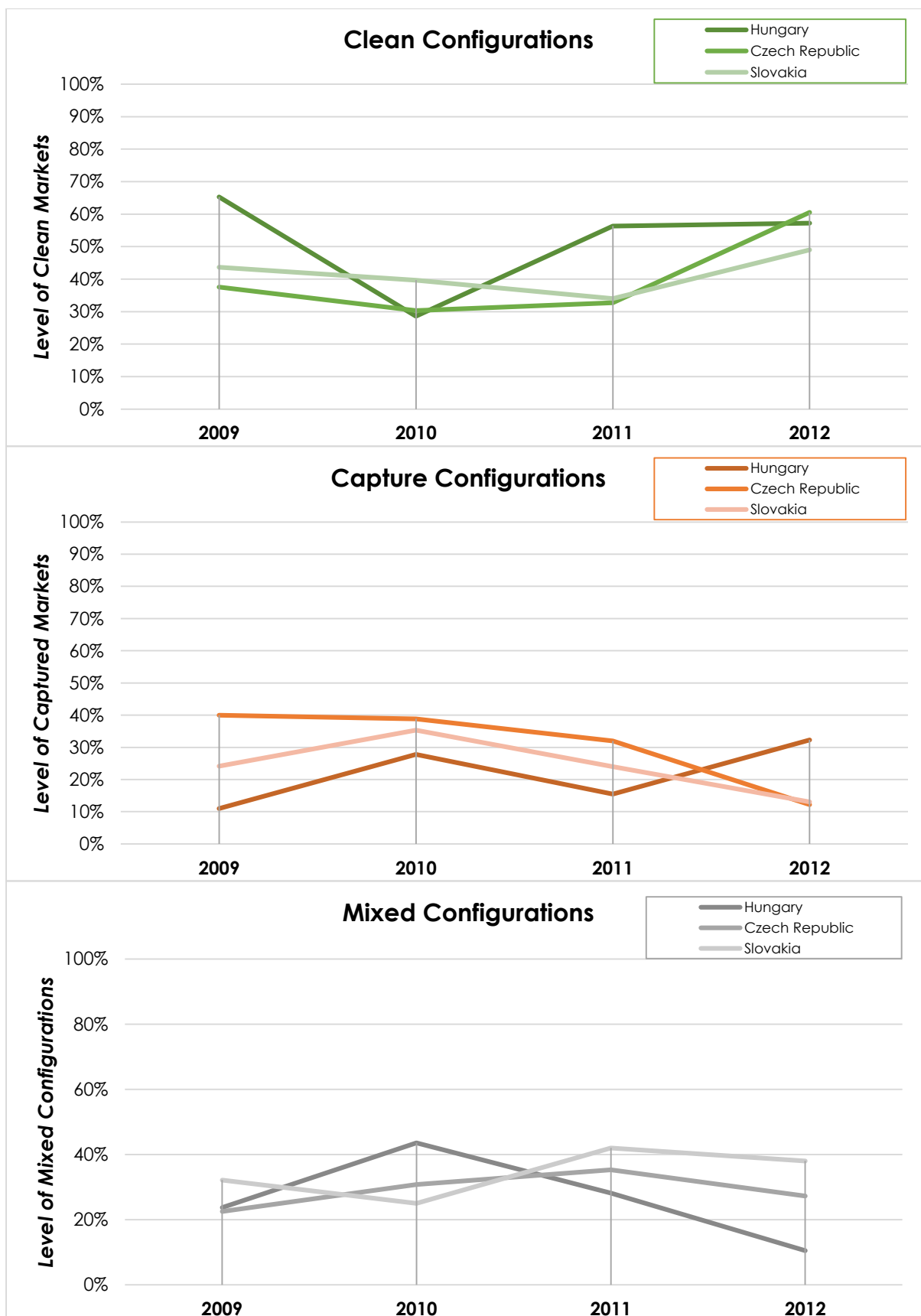


Figure 20. Levels of clean, captured, and mixed configuration in Construction Work markets in Hungary, Czech Republic, and Slovakia, 2009-2012

3.7.5.2 Levels of political vs business capture across countries

Figure 21 displays the interplay of political and business capture in the Construction Work market in the three countries. The analysis shows that Hungary is the only country among the three where political capture increased relative to business capture after 2010. In the Czech Republic, although levels of state capture decreased over time, the control strategies of both political and business actors are not strikingly distinguishable. In 2010 and 2011, political capture seems to dominate over business capture, but not significantly so, and the level of political capture eventually drops below that of business capture. In Slovakia, overall the level of state capture decreases. However, yearly trends show a visible difference in 2010 between political and business capture, where the first dominated the market at the expense of the latter. From 2011, business capture slightly dominates.

3.7.5.3 Comparison of political and business capture across countries

The analysis reveals also differences between trends in political and business capture, respectively, across the three countries, displayed in Figure 22. In terms of political capture, although the Czech Republic and Slovakia were higher in political capture in 2009, 2010 and 2011, Hungarian issuers surpass these levels in 2012, controlling around 20% of the Construction Work high corruption risk procurement situations.

In terms of business capture, the Hungarian market is less captured by businesses than in the Slovak and Czech markets. However, by 2012, the level of business capture across the three countries reaches the same level, at around 10% of the procurement contracts. In Hungary,

business capture decreased since 2010, but the election year seems to be a driver of more business controlled high corruption risks situations.

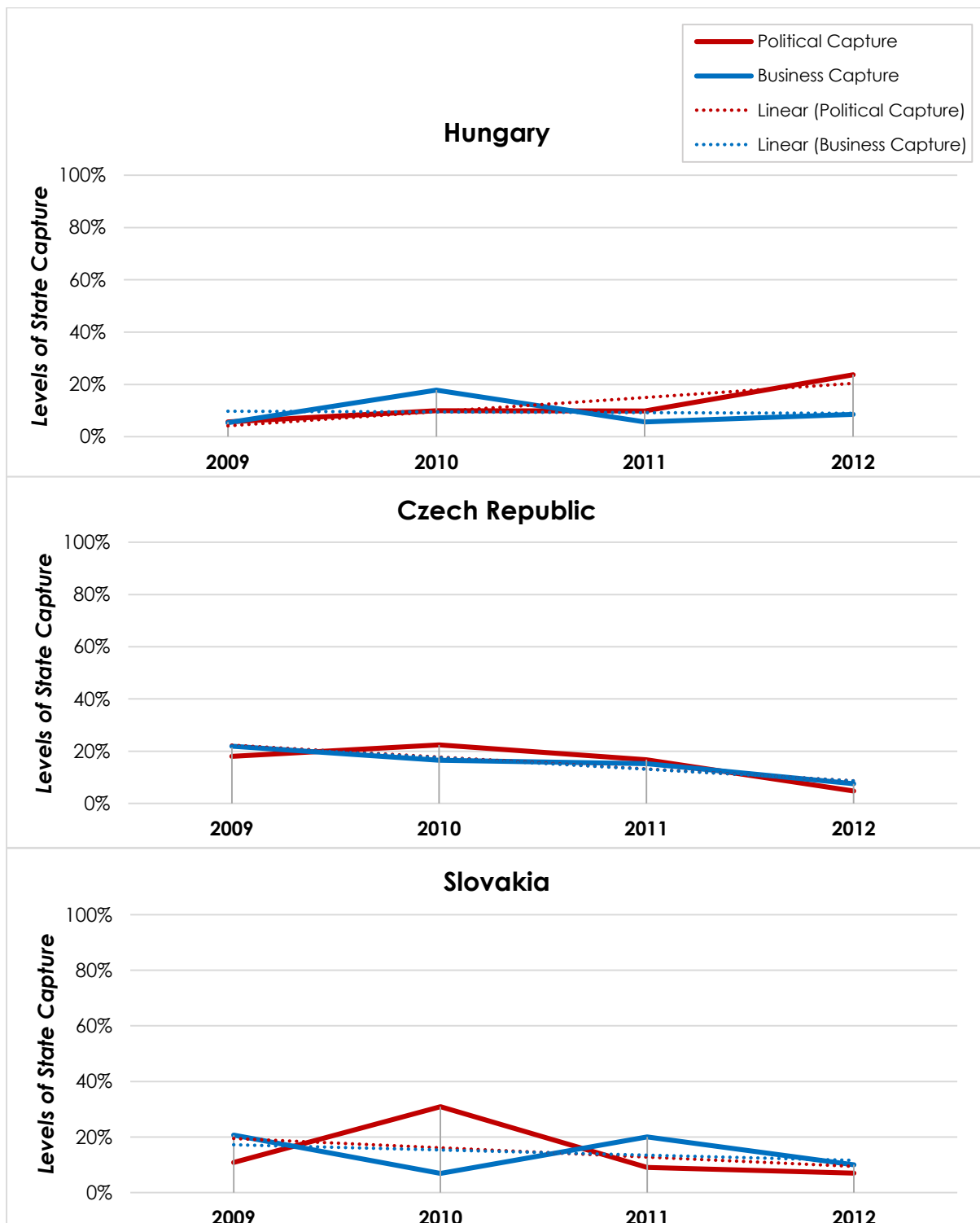


Figure 21. Political vs business capture in Construction Work markets in Hungary, Czech Republic, and Slovakia, 2009-2012

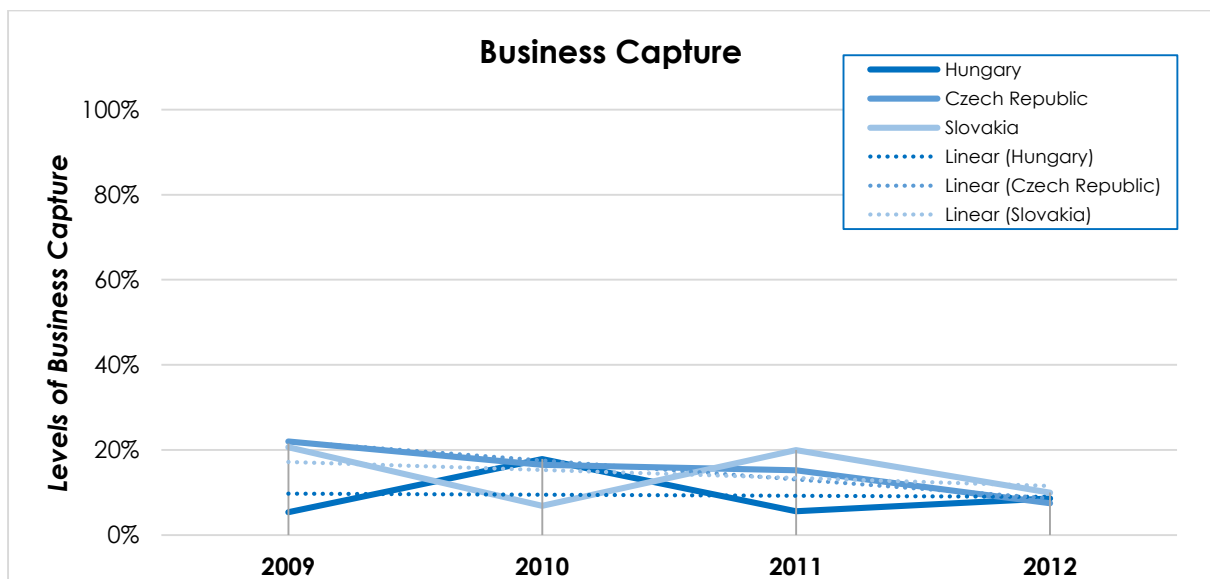
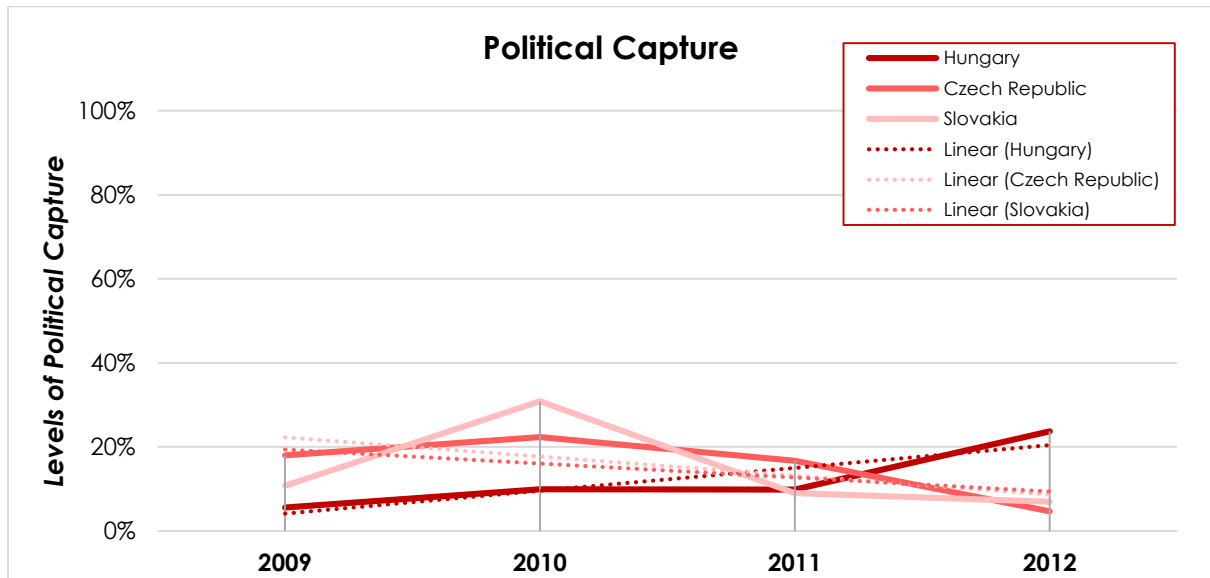


Figure 22. Comparing levels of political vs business capture in Construction Work markets in Hungary, Czech Republic and Slovakia, 2009-2012

3.7.5.4 Patterns of issuer and supplier involvement across countries

The patterns of issuer and supplier controlled involvement in public procurement across countries compare patterns of political and business capture.

Figures 23 compares patterns of issuer involvement in the Construction Work procurement markets in Hungary, Czech Republic and Slovakia between 2009 and 2012. The charts display issuer involvement by the frequency of situations they control, comparing issuer involvement in clean, high corruption risk and mixed configurations. They shed light on the overall procurement environment in which issuers find themselves interacting with business companies for construction work in the three countries. For Hungary, the trends are similar to those shown in earlier figures, but this representation better captures similarities and differences in issuer behavior across the three countries.

Overall, the levels of high corruption risk contracting controlled by issuers is smaller in Hungary than in the Czech Republic or Slovakia. However, the level of clean contracts remains relatively stable over time, while the share of high corruption risk contracts accepted by issuers increases after 2011 in Hungary, and shrinks in the other two countries. The level of uncertainty represented by mixed configurations shrinks in Hungary, suggesting a switch from case-by-case evaluations of suppliers to more high corruption risk acceptance. By comparison, the trends in the Czech Republic show a clear increase in clean contracting controlled by issuers. While uncertainty remains stable at around 20% of the interactions controlled by issuers, the share of high corruption risk contracts shrinks over time. The level of uncertainty is largest in the Slovak market, but the amount of issuer controlled situations of high corruption risk shrinks visibly, which the share of clean contracts accepted by issuers increases over time.

Figure 24 is similar to Figure 23 to show the patterns of involvement of suppliers in clean, high corruption risk and mixed configurations in public procurement. The comparison sheds light on the variation in behavior depending on the dominant actors controlling procurement contracting situations. As opposed to issuers, suppliers seem to face much more uncertainty. At a closer look, levels of supplier uncertainty are lower in Hungary than in the Czech Republic or Slovakia, where, on average, mixed configurations occupy more than 40% of supplier contracting. In all three countries, clean contracting seems to be driven by issuers, not suppliers. Levels of clean contracting driven by suppliers decreases in Hungary and Slovakia, and only slightly increases in the Czech market. The increase in the Czech market could be due to the increase in trust suppliers experience after the implementation of a transparent process of electronic public procurement tool.

Supplier involvement trends shown in Figure 24 are most concerning in Hungary, where they used to drive 60% of the clean Construction Work contracts in 2009, but ended up driving only about 20% of the situations by 2012. All while their involvement in high corruption risk contracting increased from about 10% of their actions in 2009 to around 50% of their actions in 2012. This trend is reverse in the Czech Republic, with a shrinkage of supplier-driven high corruption risk involvement from 50% in 2009 to about 10% in 2012. The behavior of suppliers in the Slovak market does not seem to change much throughout the years. There is a slight increase in uncertainty and high corruption risk contracting to the detriment of clean contracting.

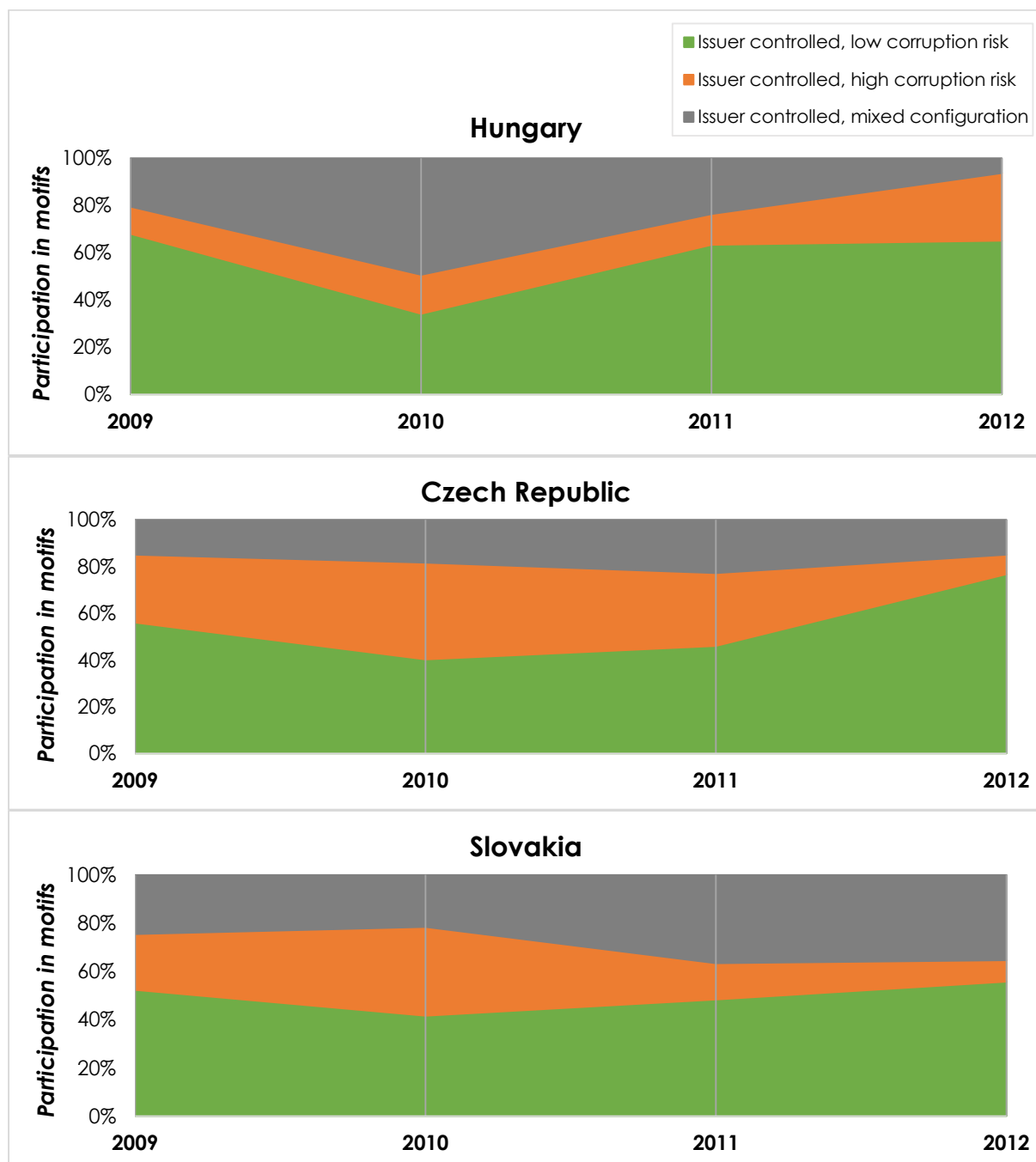


Figure 23. Patterns of issuer involvement in Construction Work procurement markets in Hungary, Czech Republic and Slovakia, 2009-2012

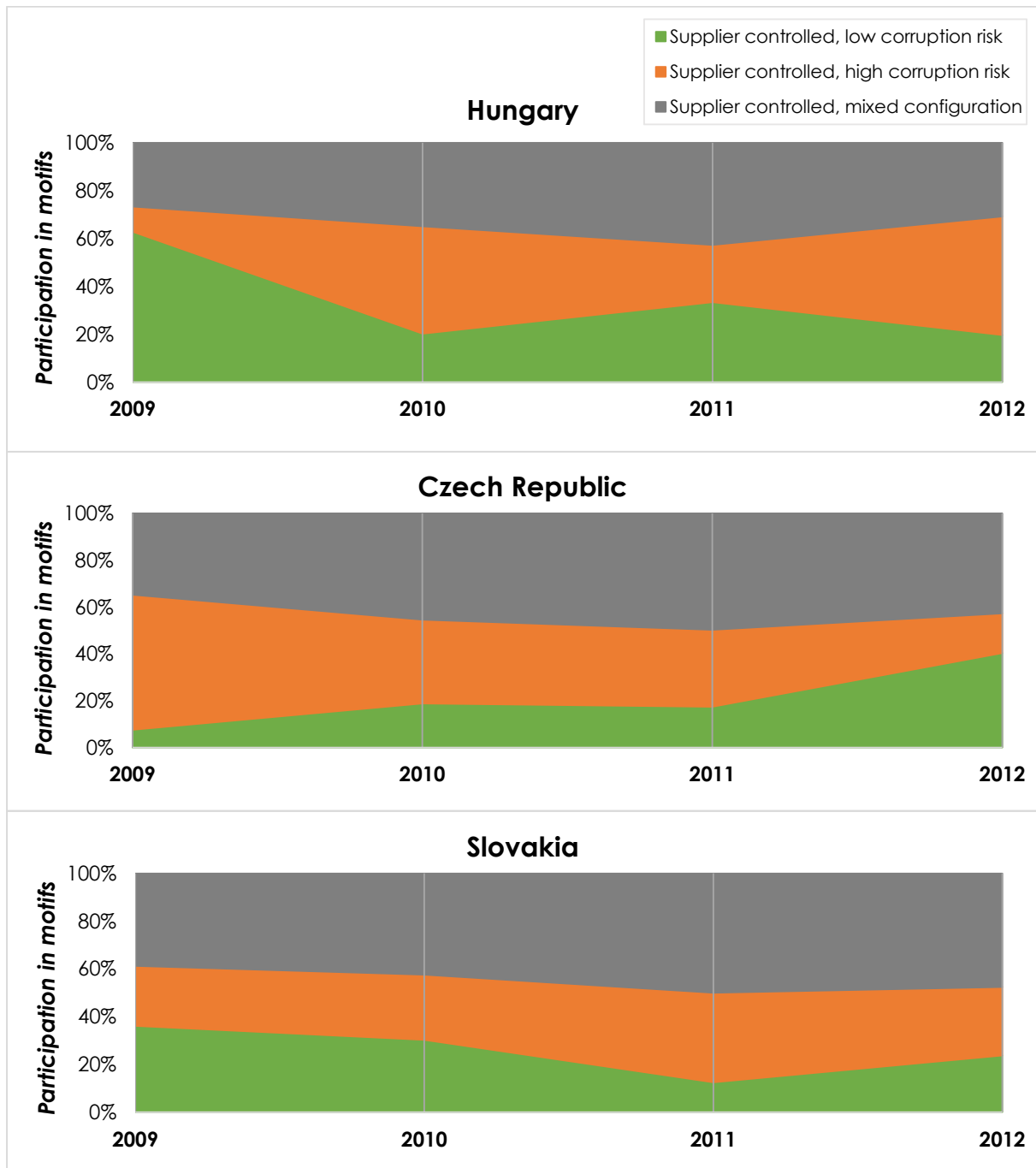


Figure 24. Patterns of supplier involvement in Construction Work procurement markets in Hungary, Czech Republic and Slovakia, 2009-2012

3.8 Discussion and Conclusions

Conceptualizing state capture as a networked phenomenon and going beyond the convenient separation of the two types of actors that drive it, allows one to reconcile the definitions and intuitive understandings of state capture with better empirical measurements. Applying appropriate methods for network data generated new and useful knowledge into the varieties of institutionalized grand corruption. The network motif discovery further allows one to develop a useful empirical vocabulary of corruption risks in public procurement that is simple, intuitive, and easy to replicate in any market and country, over time.

This analysis contributes to advancements in the comparative, empirical, and objective measure of state capture through the theoretical and analytical frameworks developed, that account for both business and political influence, and that allow for comparative analyses of state capture within and across countries.

From a theoretical perspective, this approach makes explicit varieties of state capture patterns and mechanisms of institutionalization of grand corruption. From a methodological perspective, this analysis contributes to the literature with a standardized comparative analytical framework of state capture, and statistical modelling of large-scale empirical data on business-political networks. From a practical perspective, the analysis conducted in this chapter is easy to replicate, has a generalized applicability (EU funds, legislative networks, corruption networks), and features intuitive interpretation of results.

The motif detection algorithm identified six types of non-overlapping capture situations pertaining to both issuer-controlled and winner-controlled low corruption risk configurations, high corruption risk configurations and mixed configurations. These six isomorphic configurations indicate three types of recurrent contracting patterns, signatures for clean contracting, political and business capture.

The vocabulary of corruption risks in public procurement revealed interesting patterns. The electoral year of 2010 was marked as issuer uncertainty in Construction Work and Architectural Services markets. This suggests that electoral cycles generate uncertainty about engagement in corrupt behavior. Construction Work is mostly characterized by issuer-controlled clean contracting, with the exception of 2010 when issuers engage in high corruption risk contracting due to uncertainty in the market. The Petroleum Products market displays indications of political hijacking of the market: in 2009, 47% of the market was driven by businesses through competition and clean contracting. In 2010 business organizations engaged a lot more in high corruption risk contracting (45%). In 2011 and 2012, issuers take control of high corruption risk contracting in the market.

Business Services, although the only one where political capture decreased, still is continuously captured by issuers. In architectural services, the market is characterized by issuer-controlled clean contracting. In 2010 35% of the market engages in occasional high corruption risk contracting due to uncertainty. In 2011 again it is mostly characterized by clean contracting. In 2012, however, the market is captured by issuer-controlled high corruption risk contracting.

Looking at the aggregate level, there is a similar pattern in the evolution of clean, mixed and high corruption risk contracting in Hungary. The variations in corruption risks seem to converge from a large to a narrow distribution, suggesting that dominant actors might be controlling the institutionalization of corrupt practices through a tighter institutional coordination. Clean contracting has decreased in two out of four markets, while the level of state capture increased in three out of four markets analyzed. Mixed configurations of clean and high corruption risk contracting seem to characterize the elections year.

The results bring supporting evidence for all four hypotheses formulated at the beginning of the chapter. Overall, political capture increased in three out of four markets, while business

capture weakened in all four markets. The only market in which political capture decreased was Business Services. The involvement of national and regional/local issuers in high corruption risk contracting displays again variation among markets, decreasing in two markets and increasing in the other two. Overall, regional and local level issuers seem to be more involved in state capture situations, with the exception of the business services market, where national issuers seem to control capture situations. Although the absolute number of regional and local organizations involved in high corruption risk contracting in public procurement has decreased, the estimated amount of the financial flows transacted has increased by 2012. This suggests that fewer players share more spoils.

3.8.1 Reliability and validity of the framework

One of the main strengths of the framework proposed in this chapter is the reliability, and the internal and external validity of the measurements. The internal consistency of the indicators improved after pruning medium corruption risks from the analysis, and relying only on well-defined high corruption risk situations and clean contracting (high, low, and mixed configurations), relative to the peculiar market conditions in each country. This suggests that the framework works well on clear cases of low and high corruption risks, and less well on debatable cases. The reliability of the framework is confirmed by the stable and consistent results the network motif algorithm generates across procurement markets and countries, over time. Internal validity is confirmed by the strategy of enumeration and robust logic for building the random ensemble of networks. External validity is confirmed by the application in this chapter to different procurement markets and countries, over time, with similar and consistent interpretations.

3.8.2 Contributions

The chapter thus makes two important contributions: from a theoretical point of view, it re-conceptualizes state capture and explicitly tests the evolution of the phenomenon over time, and across markets. From a methodological point of view, the interdisciplinary approach we take allows us to empirically pin-point and visualize well-defined corruption signatures in public procurement, and the situations controlled primarily by issuers, as well as suppliers.

The theoretical framework is innovative and allows for understanding state capture in a more comprehensive way that better reflects the empirical realities of the phenomenon, where both business actors and state institutions are able to control their immediate development environment. Moreover, the inclusion of network theory into the definition and characterization of state capture allows us to better understand how local level interactions lead to systemic outcomes that cannot be explained if one makes inferences at only one level of analysis. This framework helps overcome the limitations of previous approaches that were hard to compare across markets and countries, and unilaterally assigned responsibility to one type of actor, respectively. This prevented the accumulation of knowledge about state capture, the development of national and international policies to limit the effect of the phenomenon on state capacity, and the proliferation of fair redistribution processes and anticorruption efforts.

The analytical framework employed is robust and allows for valid comparisons across markets within the same country, as well as across countries in similar markets. This provides a powerful toolbox for further research that brings in a standardized and robust statistical way to 1) identify degrees and typologies of state capture across countries and markets and 2) assess the evolution of the phenomenon in time. the proposed framework contributes to the advancement of comparability and objective measurement of state capture and institutionalized corruption, across procurement markets and countries, over time.

3.8.3 Implications

From a both an academic and a policy making perspective, the framework enables data-driven, evidence-based, objective strategies for curbing efforts of systematic corruption.

This framework offers an example of how public data, objective measurement of corruption risks, and simple network concepts can be used to develop objective, data-driven and evidence-based strategies for corruption investigation and for anti-corruption policy making, for example, in regulating to counter-balance political or business capture in different industries.

Additionally, one can precisely pinpoint, through objective measurements of public data, likely suspects for corruption investigations, which can be ranked by degrees of influence within their operating networks. This would allow investigators to assess how to effectively disrupt these networks with minimal effect on the administrative functioning of the institutional system.

3.8.4 Limitations

The current research approach has some limitations as well. Primarily, understanding the dynamics of state capture is hard in such a limited time window. It is likely that there are electoral cycle effects that, using this data, could only be hypothesized for further research. However, more data to expand the time frame of the study will soon be made available. Another limitation is that these data are narrow empirical data. There is always a tradeoff in information win and loss when choosing to focus either on big data, or on qualitative accounts. The insights provided by the big data approach can be further tested and expanded using other methodological tools. Nevertheless, to overcome this problem I relied on longitudinal analyses, I used within-case triangulation, a stratified research design, and multiple perspectives to parse away insights. Finally, there is a need for a more direct proxy for politicization of the public

sector to support political capture. At the moment, this indicator is inferred from behavior rather than attributes. The strength of the framework is its weakness too. The usefulness of the framework depends on the reliability and validity of the way CRI is constructed in each country.

3.8.5 Further work

The conceptual and analytical framework laid out in this chapter sets the basis for an entirely new research agenda on state capture and institutionalized grand corruption. The comparability allowed by the framework enables researchers and practitioners to more accurately map out corruption networks, and describe and categorize corruption risks in different procurement markets, different countries, over time. Future work can expand on the empirical findings from this research and categorize and compare other countries and procurement markets in terms of actors driving state capture, levels of political and business capture, and mechanisms at work in captured systems. With the increasing availability of comparable data, the vocabulary of corruption risks in public procurement can generate valid, objective, and important knowledge on how corrupt networks form, evolve, transform, and, eventually, how they can be disrupted.

Chapter 4 continues the analysis of these procurement networks to better understand why these network configurations form, and how to disrupt them.

Chapter 4 - Rules of Attraction and Corruption Risks in Public Procurement. Determinants of Political Capture, Business Capture and Clean Institutional Behavior

4.1 Introduction

In the previous chapter, I showed that in the Construction Work public procurement market political capture, operationalized as issuer-controlled high corruption risk public procurement situations, increases over time, while business capture, supplier-controlled high corruption risk situations, decreases after 2010. In general, the Hungarian market features higher levels of clean behavior than Czech Republic and Slovakia, although this trend is rather static over time, while in the other two countries, clean behavior has increased after 2011 and the introduction of electronic public procurement systems. Furthermore, the amount of mixed configurations, signaling uncertainty in procurement deals decreases in Hungary as opposed to the other two countries. The trends suggest that more and more public institutions and business companies in Hungary switch from strategies of choosing high corruption risk together with clean contracts, to strategies preferring high corruption risk contracts.

After determining the level of spread and depth of state capture in four public procurement markets in Hungary, in this chapter, I go one step further and ask the following questions: 1) what are the determinants of political capture as opposed to business capture? And 2) what are the determinants of state capture as opposed to clean behavior? Although both types of institutions get involved in high corruption risk activities alongside clean contracting, the latter is usually less studied than the former (Søreide 2002, Edler et al. 2005, Walker and Brammer 2009, Preuss 2009, Caldwell et al 2005). To fill in this theoretical and empirical gap, I thus

compare four types of institutional behaviors between 2009 and 2012 for the Construction Work market: political capture versus clean political behavior, and business capture versus clean business behavior. This research strategy offers a more comprehensive view of why issuers and suppliers drive state capture, as well as why they do not.

The literature on state capture in public procurement focuses disproportionately on macro-level predictors, such as weak judicial and anti-corruption enforcement institutions, lax anti-corruption legislation, weak institutional oversight of procurement financial transactions, and a generalized culture of corruption that historically developed through petty bribery, inefficient administration and weak institutions (Galtung 2006, Kaufmann et al. 2000, Kaufmann 1998, Søreide 2002). In Hungary, all of these factors seem to be present to a large extent (Hellman, Jones and Kaufmann 2003, Hellman and Schankerman 2000, Grzymala-Busse 2008). Anti-corruption institutions and legislation, although in place, do not have enough legal and institutional power to carry out sustained investigations and effectively enforce punishment for corrupt activities at high levels (Meyer-Sahling 2006, Fazekas and Toth 2012).

This is in stark contrast to, for example, the advances made in Romania, a neighboring country, where the national anti-corruption agency convicted more than 2,000 public officials and business leaders involved in high level corruption since 2010 until today, successfully convicting from former prime-ministers, ministers, MPs, local and regional heads of public institutions, to other lower level administrators who used their organizations to illegally extract state rents (DNA 2016). The difference between the two cases can roughly be summarized by the level of political independence of the institutions designed to investigate and enforce punishment for high level corruption, which is present in Romania, but not in Hungary, especially after 2010 (TI 2016, EC 2014).

Given this general context, it is likely that a further analysis of macro-level predictors of state capture in Hungary will not add much value to existing knowledge of the phenomenon (Fazekas and Kocsis 2015). I choose instead to follow up on recent research on high level corruption that highlights the micro-level determinants of state capture, such as characteristics of the public procurement contracts (e.g., financial value, use of EU funds, possibility to use subcontractors, lack of bidding competition, etc.), or characteristics of the institutions themselves (e.g., whether issuers are government agencies, national or local institutions, or whether the potential supplier is part of a business consortium, etc.).

These analyses show that, even though a country has a successful anti-corruption agency, levels of corruption are likely to remain high if the institutional incentive scheme for corrupt behavior is not changed (Mungiu-Pippidi 2017). Institutionalized corruption means that institutional positions rather than individuals are part of complex networks of corruption that milk the state of personal benefits (Karklins 2002). When some individuals are removed from these networks, they are replaced by new ones, and the machine continues, mildly affected by the changes (Fazekas and Toth 2016, Cartier-Bresson 1997).

I argue thus that a closer look at the micro-level determinants of different types of capture and clean behavior reveal the points of policy and judicial intervention that are likely to affect the levels of state capture and the participation in clean contracting in a systematic way. Moreover, I add to the analyses the variables developed in the previous chapter, namely the relational aspect of corrupt and clean behavior that account for the fact that public and private institutions and organizations do not act in isolation. Their behavior is influenced by what they see happening around them. These network variables quantify the extent to which actors are influenced by their own past behavior, as well as the past behavior of their counterparts. The

inter-organizational networks reveal thus the behavioral expectations institutions respond to, given their perceived position and role in the larger institutional structures.

The main assumption of this approach is that there is active learning among public institutions and private organizations of what is acceptable institutional behavior. In a context of generalized corruption, for example, issuers are more likely to get involved in high corruption risk activities, if this seems to be acceptable behavior. With a sufficient degree of cover-up and discretion, an institution can avoid the weak institutional punishment infrastructure (e.g., audits, prosecutions, etc.). A stronger punishment infrastructure however is developed informally, around the network of corrupt institutions (Ledeneva 2013, Tonoyan et al. 2010). Once a head of a public institution decides to or is coerced to enter high corruption risk deals, the political punishment for defection or whistleblowing is much higher than the fear of a formal anti-corruption investigation. Thus, conformity and silence, on the one hand, and proactively entering corrupt situations for private gain, on the other hand, are two behaviors that can be better understood from a network perspective.

In the following subsections of the chapter, I discuss the micro-level determinants proposed in the recent literature of state capture and institutionalized corruption. I then make the case for including the network variables developed in the previous chapter for understanding what drives political capture, business capture, as well as clean behavior from both types of institutions. I test sets of hypotheses using multivariate regression analyses, and offer an alternative explanation based on a more comprehensive network analysis of the public procurement networks between issuers and winners during the period 2009 to 2012.

4.2 Micro-level determinants of state capture

State capture is more than a form of institutionalized grand corruption. As opposed to simple high level corruption, state capture has a legal component to it, which makes it more evasive than its illegal part. As exemplified in the other chapters as well, the legislative system can become politically captured to the extent that a political party or party coalition in power use the legal means of proposing and passing legislation that favors a narrow group of political and business interests. This seems to be the case since the ascension to power in 2010 of the Fidesz-KDNP coalition, which, favored by a democratically elected and a complicated electoral system, gained a supermajority in Parliament that allowed it to regulate without any *de facto* checks and balances (Innes 2015, Greskovits 2015).

The in-built power of the Prime Minister, backed by the supermajority in Parliament, allowed Viktor Orban and the ruling party to further weaken any opposition: changing the Constitution (Bánkuti, Halmai and Scheppele 2015), changing the main composition of the judges of the Supreme Court (Bozóki 2011), changing the prosecution laws allowing courts to bounce cases from one to another based on convenience decisions of politically friendly judges²⁹ (von Bogdandy and Sonnevend 2015), muzzling independent media (Kerpel 2017, Bajomi-Lázár 2013, Meyer-Sahling and Jäger 2012), tampering with the academic freedom of universities and secondary education institutions³⁰ (Corbett and Gordon 2017), favoring a narrow group of domestic companies, at the expense of the general business environment (Fazekas, Lukacs and Toth 2015, Mungiu-Pippidi 2015), an increasingly radical voice against the European Union (Müller 2013), etc.

²⁹ <http://www.euractiv.com/section/central-europe/news/commission-accuses-hungary-of-transgressions/>.

³⁰ <https://www.nytimes.com/2017/04/02/opinion/academic-freedom-under-threat-in-europe.html>.

Moreover, the self-inflicted wound of the political opposition ousted in the democratic elections of 2010 on a vote of civil disappointment with shallow promises, allegations of corruption, and a continuous factionalization within the left-leaning parties, Fidesz came as a natural alternative in power. Until 2014, there was a 100% government turnover from one general election to the other. After the start of the second Orban government and their blitzkrieg to change almost everything that pertained to the previous government, Orban in part won, in part prepared for himself a third term in government in the 2014 elections, despite some unrest from within the country, as well as from external actors.

What these changes imply for state capture in public procurement is relatively straightforward and has been demonstrated empirically, using objective data, in the previous chapter: public procurement, as a generalized domain on which the Hungarian government spends more than 25% of the government expenditures (OECD 2015), has become implicitly a politically captured domain after 2010. This conclusion is further supported by previous literature, with evidence brought both from analyses using subjective data, such as the Corruption Perception Index (TI 2016), as well as evidence based on objective data, such as the Corruption Risk Index (Fazekas and Toth 2016). The corruption machine in-built in the public procurement system serves, to a large extent, the interests of the narrow ruling elite. With a much disciplined political network of institutions across the country, Fidesz expanded their control over this machine.

Furthermore, business capture, a trait of some of the public procurement markets before 2010 has decreased significantly, especially since 2011. The evidence revealed by previous research indicates that the success of business companies winning public procurement contracts was characteristic of clientelistic business networks around strong political leaders, such as Viktor Orban.

However, the literature failed to systematically account for the difference in the determinants of political and business capture as two related, but distinct phenomena (for conceptual differentiations between the two phenomena, see Innes 2014, Leitner and Meissner 2016, Visser and Kalb 2010). As argued in Chapter 1 as well, the dominant theoretical and analytical framework for measuring state capture focuses disproportionately on business capture, and thus cannot explain, nor accurately detect the case of Hungary as an essentially politically captured case. In order to fill in this gap in the literature, I expand the analytical framework developed in the previous chapter that systematically measures levels and varieties of state capture, to include a systematic way for measuring the determinants of both political and business capture in Hungary, as compared to clean political and business behavior.

To make the findings generalizable and the results comparable in further research, I rely on a set of objective micro-level indicators of public procurement that are the same across EU markets and countries (Bovis 2012). The theoretical role of these indicators is to problematize the impact of the incentive scheme available for actors engaging in public procurement to rig bids and extract state rents. Making explicit the variables with the most significant impact on levels of political and business capture reveals those institutional incentives that are likely to be misused by issuers and winners in order to hide collusive behavior, bid rigging, and the reduction of competition, methods inherent to state capture in public procurement.

These incentives are grouped into three categories: first, the concurrent control of issuers and winners of both high corruption risk and clean contracting situations; second, the attributes of the public procurement contracts; and third, the attributes of the organizations involved in public procurement in the market. The first category captures the relational behaviors organizations are engaged in given the behavior of other participants in the market, i.e., the concurrent participation in high corruption risk and low corruption risk contracting of a focal

organization, given the level of involvement of the other participants in these contracting situations.

The idea captured by the network motifs is not new. The operationalization of this idea is novel for the study of corruption. The influence of one's own behavior on future behavior and the influence of other participants on one's future behavior are long standing arguments with plenty of reliable evidence to support them. Among the disciplines that extensively analyzed these in different contexts are economics (Rutherford 1996, Streeck and Thelen 2005, North 1990), organizational theory (DiMaggio and Powell 1991, Frumkin and Galaskiewicz 2004), historical and sociological institutionalism (Powell and DiMaggio 2012, Kostova, Roth and Dacin 2008), psychology (Reppucci 1973, Bergh and Stagl 2003), and network science (Casciaro 1998, Casciaro, Carley and Krackhardt 1999, Burt 1982, Scherer and Cho 2003). In the study of institutionalized corruption, in particular, the ideas of institutional endogenous and exogenous learning (Ashforth and Anand 2003), of individuals and institutions responding to formal and informal expectations from their perceived surrounding environment and interaction with others (Markóczy 1994), and of strong collective action problems (Persson, Rothstein and Teorell 2013, Ostrom 2014) have been theoretically developed.

However, public policies to prevent grand corruption have not followed from these assumptions of interdependency, but rather these rest on the assumption that institutions, as individuals, are autonomous, independent actors, who respond to top-down imposed regulations, rather than to their day-to-day interactions with actors at different levels. This dissertation aims at stressing the importance of interdependent behavior for developing both anti-corruption public policy, as well as better concepts and tools for detecting public areas prone to corruption and state capture that capitalize on knowledge of the interdependency

between public and private institutions that political and business individuals create in their daily interactions.

The second category of indicators captures the characteristics of the public procurement process itself, which allows for multiple opportunities for organizations to bend the rules of the public procurement process without engaging into outright illegal behavior. For example, the number of bidders allowed per tender call suggests the extent to which prior negotiations and formal decisions have resulted in restricted competition for the specific contract. Or the duration of the call for tenders suggests the extent to which the official call was pre-arranged between the issuer and the potential winners, so that if the final call was very short, it is likely to assume that the amount of time allowed for other bidders to submit tenders was restrictive, and the call was formulated for specific potential winners.

The third category of predictor variables captures potential informal ties among organizations, and the level of discretionary powers, capacity for coordination, and the resource endowment that both public authorities and business companies have to pursue high corruption risk behavior, or whether these characteristics deter them from engaging in such behavior. For example, government agencies could have more discretionary power to engage in high corruption risk behavior, but they might be deterred to do so by the fact that these organizations are very visible at the national level. Being caught in grand corruption can degenerate into a political scandal from which both the institution and the leadership can hardly get out. On the other hand, local governments, although much more responsive to local constituencies, might be easier to coordinate politically, mostly if the central government has substantial powers over the daily operations of the institutions (such as budgeting), or over the political advancements and perks of their leaders.

There are also important limitations of relying solely on these indicators. These variables refer directly to the focal actors engaging in high corruption risk or clean behavior. They do not capture the more subtle forms of informality and the coordination among actors in rigging bids that span from informal negotiations and deals. In the end, an exercise that would capture these aspects of state capture or grand corruption are best illustrated not by academics, but by judicial reviews and an extensive team of financial experts, prosecutors, and procurement specialists. Such a team would have access to all sorts of confidential information, which in some cases is substantiated by evidence that only the secret services can obtain through wiretapping, monitoring or comprehensive transnational financial investigations.

The role of academics is however paramount in helping these anti-corruption teams and institutions in developing robust tools for improving their strategies for detecting high corruption risk cases. To name just one contribution that computational social scientists can make to help anti-corruption agencies is to use big data and statistical analyses to uncover systematic and reliable evidence indicative of high risk markets, sectors, organizations and individuals. The increasing availability of public data related to the financial transactions between political and business actors is a good starting point. The rigurocity of finding meaningful relationships using comprehensive and diverse empirical data is theoretically and methodologically unparalleled by other specializations such as legal studies, finance, or public administration.

Another critique to relying on these predictors alone could be that they do not necessarily distinguish between corrupt behavior and a more general sense of institutional incompetence, or cannot account for the complexity of procurement situations. First, their purpose is not to prove corrupt behavior, but rather the highlight increased risks of corrupt behavior. Proving corrupt behavior is better left, as argued above, to teams coordinated by anti-corruption

prosecutors. Second, administrative incompetence, whether on the side of public authorities or businesses, increases the risks of misuse of public funds.

Whether that misuse is intentional, as in the case of corruption, or collateral, as in the case of administrative incompetence, does not matter as much if the final goal of the analysis is to improve public policy and the overall procurement process. Ideally, both problems should be solved. However, if the goal of the analysis is to start a legal investigation into the misuse of public funds, then an analysis such as the one in the second part of this chapter is more helpful, i.e., an analysis that starts from the general characteristics of public procurement networks, and ends with a ranking of organizations by their risk of corruption and influence within the larger public procurement market interactions.

4.3 Data and operationalization

From the data used in the previous chapter which analyzed only the clear high and low corruption risk contracts (i.e., contract above and below one standard deviation away from the average CRI for that year), I add back to the networks the medium corruption risk contracts. After cleaning the database of missing information, I remain with the following sample on which I conduct further analyses:

Table 5. Main sample data description

Number of Observations	2009	2010	2011	2012
N Issuers	678	598	390	236
N Winners	740	975	618	371
N Contracts	2199	2412	1349	733

4.3.1 Attributes of the contracts

The number of bidders per tender is perhaps the most used red flag for signaling corrupt deals (Fazekas et al. 2016). The message from previous literature is clear: the fewer the number of bidders, the less competition, the higher the risk of corruption (Fazekas et al. 2016, Rose-Ackerman and Palifka 2016). Bidder competition is an important element that regulates the entire quality of the contract, from the value of the contract, to the criteria used to evaluate the winners. This is also the most used element for issuers to favor certain suppliers. Among the most common methods for restricting the competition for public procurement tenders³¹ are formulating restrictive announcements that easily disqualify certain potential bidders, or negotiating in advance with one company and then having a very short call for tenders, not allowing competitors enough time to prepare their portfolios (Fazekas, Toth and King 2013b). A positive and significant coefficient indicates that the higher the number of bidders per contract, the more there is competition, and thus the more likely is it that this encourages clean behavior. A negative and significant coefficient suggests that more competition deters involvement in high corruption risk contracting, whether controlled by issuers or suppliers.

The use of subcontractors is another variable of interest in this analysis. In general, the more complex the project one needs to accomplish, the more subcontractors are likely to be used, to delegate tasks which require specific expertise. There is no inherent problem with using subcontracted companies to get the job done. However, the more actors involved, the more intricate the paperwork around the project, and the more likely it is that delays and problems will occur along the way. Previous research has shown that using subcontractors is also a commonly used method to hide corrupt activities (OECD 2007, 2016). In some situations, subcontracted firms are in fact existing only on paper, to justify the legal distribution of

³¹ For more details about methods of restricting tender competition, see Tadelis and Bajari 2006, Albano et al. 2006, Carpineti, Piga and Zanza 2006, OECD 2011.

finances from the project, while in reality, the main company contracted pockets all the money for private use³².

On the one hand, the use of subcontractors might be a preferred corruption method for both issuers and winners, to mask the corrupt activities. On the other hand, the use of subcontractors is simply a necessity for getting the job done. The variable is coded as 0 or 1, 0 if no subcontractors are used, and 1 if subcontractors are used. For explaining political and business capture, a positive and significant coefficient would indicate that the use of subcontractors makes it more likely for issuers or suppliers to get involved in corrupt activities. For explaining clean behavior, a positive and significant coefficient would indicate that the use of subcontractors made it more likely to stick to clean contracting. A negative and significant coefficient would then mean that subcontractors decrease the likelihood of corrupt behavior, or they decrease the likelihood of clean behavior, respectively.

In Hungary, EU funds are one of the most corruption prone areas of business-political relations, mainly because of the lax control mechanisms of EU institutions on national-level public procurement (Fazekas et al. 2013a, TI 2015). Research by Transparency International has shown that the use of EU funds in public procurement brings between 15% and 25% overpricing rates for the procured services (TI 2015). It is also “European money” rather than “Hungarian tax-payers’ money” being spent, so there is a cognitive distancing that allows organizations to misuse what is perceived as “no-man’s money” (Darley 2004, Weber and Hsee 1998). The use of EU money to fund procurement projects thus makes it more likely that both issuers and suppliers misuse the financial perks. As shown in Chapter 2 as well, even in cases where corruption has been detected in projects using EU funds, the fact that Hungary does not have a strong, independent anti-corruption agency to start prosecuting misbehavior, and the

³² <http://iacrc.org/fraud-and-corruption/summary-of-fraud-and-corruption-cases-in-international-development-projects/>.

fact that the European Commission's OLAF only has recommendations powers in national states, continues to allow high level corruption to happen. This variable is coded as a 0 if no EU funds are used, and a 1 if EU funds are used. A positive and significant coefficient would indicate that the use of EU funds encourages organizations to get involved in high corruption risk contracting. By the same logic, in clean contracting, a positive and significant result would suggest that there are contexts in which the use of EU funds incentivizes this behavior. A negative and significant coefficient would suggest that the use of EU funds deters engagement in high corruption risk contracting. Such a result in low corruption risk behavior would suggest that the use of EU funds deters engagement in clean contracting.

The type of public procurement procedure is also likely to affect the involvement in high and low corruption risk behavior for both issuers and winners. In this analysis, I evaluate each type of procedure used, trying to pinpoint those procedures that most incentivize corrupt activities. The invitation (restricted) procedure allows any business to bid for a project, but the issuer has to select at least five candidates and invite them to submit a tender. In some markets, such as water, energy or transport, the negotiation procedure is standard, but in the construction work market, this is a seldom used method. The public authority has to invite at least three businesses with whom it will negotiate the terms of the contract. The EU authorities advise that “under certain conditions this procedure can be chosen even without publication of a contract notice, for example in case no tenders were submitted in an open or restricted procedure, in extremely urgent cases or in cases where, for technical reasons, the contract can be carried out only by a single business” (emphasis in the original)³³.

The open procedure is the most common one, and it allows any business to submit tenders for public procurement projects. Other types of procedures, such as competitive dialogues and

³³ http://europa.eu/youreurope/business/public-tenders/rules-procedures/index_en.htm.

electronic auctions, are also less common. Competitive dialogue is used for complex infrastructure projects, where the public authority invites at least three businesses and, after careful dialogue about the technical, legal and economic details, it invites the candidates to submit tenders. In the case of electronic auctions, public authorities allow only admissible tenders, based on a prior full evaluation of the proposals. These auctions are more transparent, because they publish the mathematical formula that determines the automatic rankings of the bidders, based on the criteria for selecting the winner candidates. For each of these categories, a positive and significant coefficient indicates the effects of the procedure type on high and low corruption risk behavior for both issuers and suppliers. Negative and significant coefficients suggest that the respective procedure type deters issuers and companies from a particular type of behavior.

The financial value of the contract can determine the likelihood of an organization to get involved in high corruption risk contracting (Celentani and Ganuza 2002, Auriol 2006). The absolute sums of money transacted might indicate whether an organization is likely to engage alone or in coordination with other organizations. Higher sums allow for the spoils to be distributed among all the participants to the corruption act. Smaller sums allow organizations to single handedly benefit from these. Small contract values with high corruption risk shared among multiple organizations might signal something else – either that the procurement process has been of poor quality for administrative reasons, not with the intent to misuse funds, or that the intention of the corrupt contracting is not primarily to derail funds, but rather to build/signal trust between the organizations involved for future questionable dealings (Rose-Ackerman 2001).

The variable contains the absolute financial values of the contracts in Euro. A positive and significant coefficient would suggest that the larger the size of the financial flows organizations

transact contribute to the formation of high or low corruption risk contracting, respectively. A negative and significant coefficient indicates that the higher the value of the contracts, the more organizations feel deterred to do high or low corruption risk contracting. Taken in context with the other indicators, such a result would indicate whether other logics of engaging in high and low corruption risk contracting supersede financial considerations, such as building trust or signaling general administrative problems with the public procurement process.

The duration of the call for tenders can affect the quality of the contract signed. The literature shows that shorter time periods used to evaluate and determine the candidates for tenders are indicative of poorer quality contracts or higher corruption risks, because decisions are made either rashly or deals have already been informally made (Søreide 2002). Public authorities issuing procurement contracts without competition have been shown to use shorter time periods for the calls, to deter competitive bids (Fazekas and Toth 2012). In the analysis, this variable is coded as number of days for the call for tenders. In line with this, a positive and significant coefficient indicates that a longer duration of the call affects the behaviors investigated. Conversely, a negative and significant coefficient suggests a longer duration of the call deters high or low corruption risk behavior.

4.3.2 Attributes of the organizations

The type of contracting body calling for procurement of products or services can influence whether an organization, either public or private, engages in high corruption risk contracting. For public institutions, whether they are a government agency, a national, regional or local institution, a private institution or a state-owned enterprise matters in terms of how much leverage they have in the current institutional system to act on corruption opportunities. For example, in some contexts, local level institutions are constrained by higher level

administrations that oversee internal procurement processes, audit internally for quality assurance in public procurement, or simply do not get a large budget (Bardhan and Mookherjee 2006, Ferraz and Finan 2011). In other contexts, local level institutions have more autonomy, oversight is lax, and accountability mechanisms for public procurement are not strictly enforced. In these contexts, local level institutions are more likely to get involved in high corruption risk contracting without being questioned or hindered (Ferraz and Finan 2011).

For the suppliers entering calls for tenders, the type of contracting body they have to deal with can make a difference for the likelihood of submitting high corruption risk proposals for the calls. For example, in some contexts, business companies are less likely to rig the process when a government agency or a national level institution is involved, simply because the contract is much more visible and up for investigations (even if through media, rather than legal instruments for investigation). By the same logic, they might be more likely to engage in high corruption risk contracting with local level institutions, given their lower profile (Rose-Ackerman and Palifka 2016).

Issuer type also signals the degree of political coordination possible at different administrative levels. For example, in Hungary, the local elections in 2010 brought a sweeping majority of municipalities controlled by Fidesz politicians. Out of 23 largest municipalities, 22 had elected Fidesz mayors³⁴. In this sense, the political control of the Prime-Minister's party over the activities of local governments is undebated.

Table 6. Percept contracts signed by different types of issuers

Type of issuer	2009	2010	2011	2012
Government agency	10.78%	12.48%	18.83%	31.11%
National	9.78%	8.91%	13.79%	15.56%
Private	11.01%	1.70%	5.41%	8.05%
Regional/Local	67.80%	76.53%	61.53%	44.33%
State-owned enterprise	0.64%	0.37%	0.44%	0.96%

³⁴ https://en.wikipedia.org/wiki/Hungarian_local_elections,_2010#cite_note-megyeijogu-5.

Table 6 shows the percentage of contracts signed by different types of issuers across the four years. The number of regional and local institutions issuing construction work procurement decreased over time, from 68% in 2009 to 44% of all the contracting bodies in 2012, while the proportion of government agencies involved and national institutions have increased steadily over the years. The proportion of private issuers and state-owned enterprises involved have decreased from 2009 to 2010, and increased slightly thereafter.

Whether the suppliers bidding for contracts are part of a business consortium can also influence the likelihood of getting involved in high corruption risk or clean contracting. According to the literature, being part of a business consortium is a double edged sword: on the one hand, partners in a business consortium can impose high expectations from one another, and maintain thus a high quality of contracting (Iankova and Katz 2003, Lambsdorff 2013). On the other hand, companies in business consortia can be partners in crime, or consortia can be set up with small and controllable companies, or even with fake companies (Dorn and White 2008). Consortia can also be set up after the call for tenders was announced, and the companies were invited to submit bids (Fazekas, Toth and King 2013b). This last method is often used to mimic competition, when there is informal agreement over sharing the spoils of an overpriced contract.

Finally, whether the issuer and winner of the public procurement contracts operate in the same location matters for the likelihood of getting involved in high or low corruption risk behavior. Based on both an economic and a political logic, public authorities prefer suppliers from the same geographic area, because these companies provide jobs for locals, and pay taxes that remain in the county. Also, it is more likely that the business clientele of a political party or figure are geographically proximate, rather than from a different part of the country, given that clientelism is primarily based on personal relationships. This variable is coded as 1 if the issuer

and winner of the contracts are from the same location, and 0 otherwise. A positive and significant coefficient indicates an increased likelihood for the particular type of behavior, i.e., political capture, business capture, or clean behavior. A negative and significant coefficient indicates that a decrease in the likelihood of that behavior.

4.3.3 Control of corruption risk situations

To the attributes of the contracts and organizations, I add the variables developed in the previous chapter as both response and explanatory variables in different models. Issuer-controlled high corruption risk configurations are indicative of political capture, while issuer-controlled low corruption risk configurations are indicative of clean political behavior. An issuer controls a situation when it decides to award two contracts to two different suppliers, contracts that are either clean or high corruption risk. Conversely, supplier-controlled high corruption risk configurations suggest business capture, while supplier-controlled low corruption risk configurations refer to situations of clean business behavior. A business company controls a situation when it decides to submit two contracts to two different issuers, contracts that are either clean or high corruption risk. Mixed configurations are situations in which an issuer controls a situation when it decided to award both a clean and high corruption risk contract to two different suppliers. By the same logic, a supplier controls a mixed configuration when it decided to submit both a clean and a high corruption risk to two different issuers. The variables are coded as the number of configurations issuers and winners are involved in.

In this arrangement then, to explain political capture, besides attributes of the contracts and of the organizations involved, I also add the participation of issuers in mixed configurations and clean contracting, to understand the impact of other types of issuer behavior on their

involvement in high corruption risk situations. Conversely, to explain business capture, I also add the participation of suppliers in mixed and clean configurations, to estimate the impact of other types of supplier behavior on the likelihood of business companies getting involved in high corruption risk contracting. Finally, to explain clean political and business behavior, I add the mixed and high corruption risk situations to predict the likelihood of issuers and winners of getting involved in clean contracting. A positive and significant coefficient for either of the three variables on political capture, business capture and clean behavior indicates an increase in the likelihood of that behavior determined by the variable. A negative and significant coefficient indicate a decrease in the likelihood of those behaviors.

The available data allows me to construct three types of networks that I can investigate theoretically and analytically, that reveal different types of knowledge about institutional behavior and the emergence and persistence of state capture: issuer-to-winner networks for each year, from 2009 to 2012, issuer-to-issuer networks, and winner-to-winner networks. The first type of network I analyze is the extended version of the one analyzed in the previous chapter – the bipartite network of issuers and winners connected through public procurement contracts. The other two networks are projections of the first one, and are indicative of institutional pressures within each sphere – public institutions and business companies involved in public procurement in the Construction Work market.

4.4 Methods

To answer the research questions, I use several descriptive and inferential methods, from cross-tabulation to correlations and multivariate regression analyses. For the latter, I construct four main cross-sectional models, where the dependent variables are the bipartite network motifs, coded as the number of times an organization, issuer or winner, controlled high, low and mixed

corruption risk configurations. The method used to estimate the parameters is the standard technique in the discipline, ordinary least squares regression. There are some important assumptions about linear regression that the logic of institutional behavior and the nature of corrupt networks defy, such as independence of observations, or normal distribution of the variables. The way I code the dependent and independent variables however corrects for some of these limitations, and allows for straightforward interpretations of the results.

In the second part, I describe the network level characteristics of the three types of networks describes above: issuer-to-winner, issuer-to-issuer networks, and winner-to-winner networks. Although in this chapter I do not explicitly test the influence of network level variables on high corruption risk and clean behaviors, I propose statistical models for network data that can be used to extend the analyses in this chapter in future research.

In the second part of the chapter, where I delve into an alternative explanation of varieties of state capture from a network perspective, I propose a more appropriate way to estimate the effects of the explanatory variables, as well as propose new variables to be tested in further research that account for the endogeneity of interdependent institutional behavior. This is not the main focus of this dissertation however for two reasons: first, the primary interest at this stage of the research is on the exogenous variables that explain political and business capture, as well as clean political and business behavior.

Second, statistical models for network data, such as exponential random graph models (Robins et al. 2007), and stochastic actors oriented models (Snijders, Van de Bunt and Steglich 2010), are very sensitive to degeneracy problems (Handcock et al. 2003), meaning that the models, if not very well specified, will not converge. The estimation procedures, usually maximum likelihood estimation, and the algorithms used, such as Markov chain Monte Carlo, based on simulations of parameters on all possible combinations of links within the observed networks,

often fail to yield results, due to the complexity of the calculations required (Handcock et al. 2003). The more complex the model, the less likely for it to converge.

I argue that the main interest should be on the network effects alongside exogenous predictors, such as attributes of the contracts and or the organizations. However, given the complexity of such models and the limitations imposed by the techniques used for parameter estimation, I propose to first systematically refine the theoretical and empirical relevance of both exogenous and endogenous variables, and only after build network models that are more informed and more likely to yield results. I thus consider statistical models for network data a natural step forward after refining the models with more conventional methods. Once the relevant exogenous variables have been theoretically and empirically determined, and the descriptive network effects discussed, one can confidently build network models.

The cross-sectional models by year also require some explanation. Given the four years of data available, one could have constructed temporal models, either using traditional techniques, such as time series, or more sophisticated network models such as temporal exponential random graph models and temporal stochastic actor oriented models (Leifeld and Cranmer 2014). The main constraint in these cases however is that the observations are not stable over the years. There is only a small fraction of issuers and business companies present in the dataset that overlap across the years (128 organizations). From one year to another, there is a very large turnover of participants. This limitation makes it extremely hard to conduct meaningful temporal analyses of the data at hand, without losing a significant part of the data.

For this reason as well, I am less concerned with the interdependency of observations assumption, and code interdependency from an actor-oriented perspective, i.e., the decisions a focal actor makes in relation to its direct interactions with other actors (e.g., isomorphic motifs, recurrent small scale patterns of interactions). Again, for future research, there could be ways

to overcome this problem, by working with this very small portion of the data that is consistent over the years. However, at this initial stage of the exploratory analysis, losing three quarters of the data is likely to work in the detriment of added value. In line with the justification for not using network models at this stage of the research, here too the decision was made based on the amount of data on which inferences are drawn upon. Also, given the limited generalizability of network models from samples of networks (Frank 1978, Kossinets 2006), the decision to prioritize more over less information was reinforced.

The second part of the chapter, where I conduct a descriptive analysis of the Construction Work network, also supports the argument according to which only certain network characteristics are likely to be theoretically and empirically relevant in an inferential analysis. To avoid model degeneracy, one needs to understand which are the most relevant characteristics and the possible mechanisms at work in the interaction between issuers and winners of public procurement contracts.

In the next sections, I present the main findings of the descriptive and inferential analyses on the current sample, a possible alternative explanation from a network perspective, and discuss the main implications of the results for understanding state capture as a general phenomenon.

4.5 Findings

Before delving into the results of the inferential analyses, a description of the distribution of contracts and their associated corruption risk scores in relation to attributes of the organizations involved in public procurement and the general quality of the procurement process need mentioning.

4.5.1 Descriptive analysis

Figure 25 below shows the distribution of Corruption Risk Index scores for the contracts signed in the four years of analysis for the Construction Work market. There are a few observations to be made about these distributions: first, the ranges of corruption risk scores shrink over time, although more outliers appear. In 2009, the scores range from a little above 0 to 0.7 with only two contracts above this range. By 2012, the scores range from a little over 0 to 0.57, with a group of outlier contracts that reach up to 0.8. Second, the distribution of the scores changed from being right skewed in 2009, with the majority of observations in the lower bound of the Index, to an approximately normal distribution by 2012. These two observations taken together show that, although the general trend indicates a decrease of high corruption risk contracts over the years, their appearance became normalized by 2012.

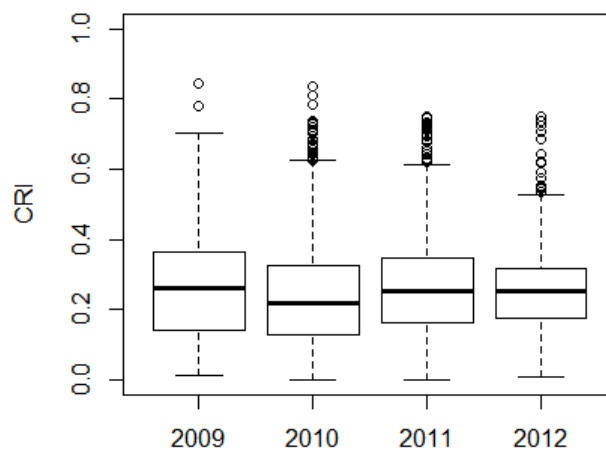


Figure 25. Dispersion scores of corruption risk index across years

Overall, as shown in Figure 26 below, the proportion of low corruption risk contracts decreases over time from 20% of all the contracts signed in 2009 to 5% by 2012. While the high corruption risk contracts remain at a relatively stable 12% of the contracts over the years, the proportion of medium corruption risk contracts increases from 63% of the contracts signed in 2009 to 83% by 2012. The division of low, high and medium corruption risks is calculated at

one standard deviation below the average CRI score for that year for the low corruption risk contracts (i.e., clean contracts), one standard deviation above the mean CRI for high corruption risk contracts, the all the contracts that fall between one standard deviation above and below the mean for medium corruption risks.

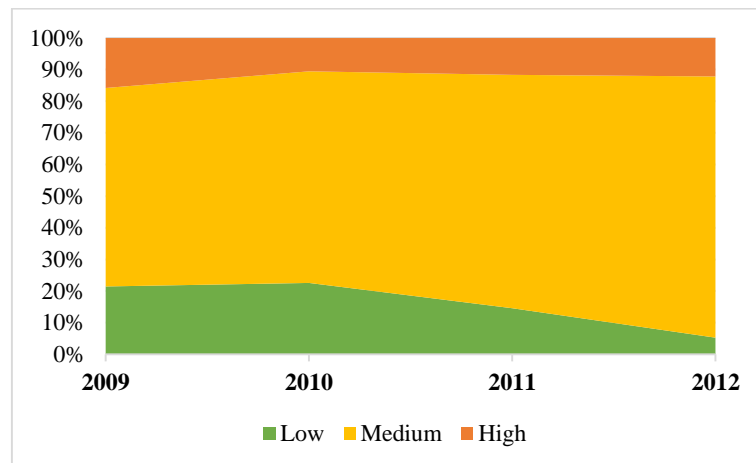


Figure 26. Proportion of low, medium and high corruption risk contracts over time

In line with expectations, the percentage of issuers involved in political capture increases after 2010, from 43% in 2010 to 74% in 2011, while the percentage of issuers driving clean contracting within the market decreases after 2011, from 36% to 19%. The same trends can be observed for business companies as well, with an increase in the percent of companies involved in business capture, from 30% in 2010 to 54% in 2011. The percentage of businesses practicing clean contracting decreases from 45% in 2011 to 20% in 2012.

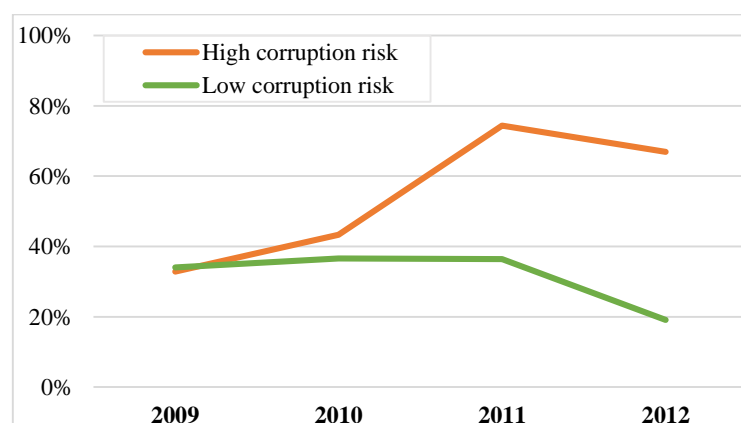


Figure 27. Proportion of issuers involved in high and low corruption risk contracting over time

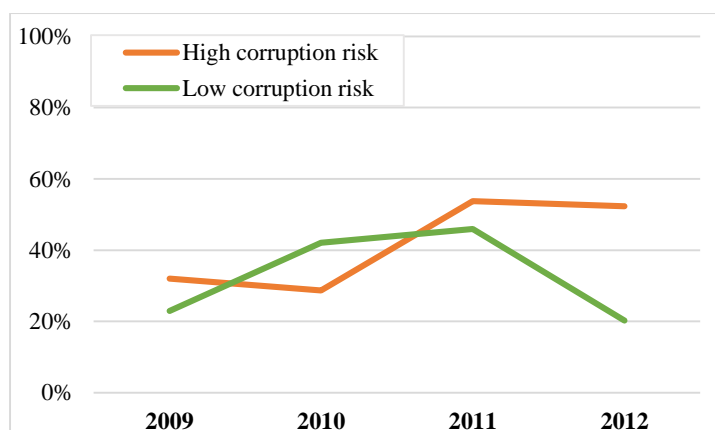


Figure 28. Proportion of winners involved in high and low corruption risk contracting over time

4.5.1.1 Attributes of the organizations

Table 7 shows the proportions of issuer type by involvement in different levels of corruption risks. In terms of the involvement of different types of issuers, private issuers seem to be the only ones that get involved in more clean contracts, but only after 2011, while regional and local issuers, government agencies and national institutions sign less clean contracts over the years. Conversely, regional and local issuers seem to be getting more involved over the years in high corruption risk contracts.

Table 8 shows that most of the contracts signed were with firms that were not part of business consortia. The number of high corruption risk contracts signed by companies which were not members of business consortia decreased steadily over time, from 333 contracts signed in 2009 to 76 signed in 2012, while there are slightly more high corruption risk contracts signed by business consortia in the electoral year of 2010 as compared to all the other years. Interestingly, although there is an increase in the number of clean contracts from 2009 to 2010, these decrease significantly after 2010.

The location of the issuers and winners signing public procurement contracts for construction work services shows the level of construction work activity in different Hungarian counties. Budapest is the only area where the number of contracts issued increased significantly over the years, from a quarter of the contracts signed in 2009 (26%), to more than half signed in 2012 (53%). A similar but more unstable trend was recorded in the counties of Győr-Moson-Sopron and Jász-Nagykun-Szolnok, which do not surpass more than 5% of the contracts issued overall within a year. All the other regions recorded a decrease of issued construction work contracts. The county of Csongrád, although the second largest issuer location in 2009 (14%), decreased steadily over time, to about 6% of the contracts being issued in the county by 2012.

On the side of the location of winners of construction work public procurement contracts, most of the winners are located in the Budapest area (33% in 2009 to 41% in 2012). However business companies from Pest have experienced an increase in winning procurement contracts over time, from 9% in 2009 to 16% by 2012. A slight increase of winners from Borsod-Abaúj-Zemplén, Hajdú-Bihar, and Jász-Nagykun-Szolnok can be noticed, but these do not surpass more than 5% of the contracts won within a particular year. Most of the companies from all the other Hungarian counties experience a decrease in winning procurement contracts in construction work over time. Appendix 4.1 presents the complete table of the 20 Hungarian counties by distribution of contracts across issuers and winners.

Tables 9 and 10 show issuer and winner involvement in low, medium, and high corruption risk contracts, the patterns are interesting: for Budapest issuers, there is a stable 8% involvement in low corruption risk contracts between 2009 and 2011, and a drop to 4% in 2012, while involvement in both medium and high corruption risk contracts increased steadily during the time period. Similar trends can be observed for the involvement of winners in low, medium and high corruption risk contracts over the years. There is a significant drop in the proportion

of clean contracts signed by winners in 2012, and an increase in the proportion of high corruption risk contracts from 2011 to 2012. From 22% medium corruption risk contracts signed by winners in 2009, there was an increase to up to 36% of the contracts signed being of medium corruption risk.

Table 7. Corruption risks and proportions of contracts signed by types of issuers

	2009			2010			2011			2012		
Type of Issuer	Low	Med	High	Low	Med	High	Low	Med	High	Low	Med	High
Government agency	0.55%	7.28%	2.96%	1.58%	9.66%	1.24%	1.33%	15.64%	1.85%	0.27%	29.47%	1.36%
National	3.91%	5.18%	0.68%	3.07%	5.14%	0.70%	3.48%	9.49%	0.82%	1.23%	13.64%	0.68%
Private	2.64%	3.82%	4.55%	0.33%	0.58%	0.79%	0.00%	4.60%	0.82%	2.46%	4.91%	0.68%
Regional/Local	14.28%	46.07%	7.46%	17.58%	51.20%	7.75%	9.64%	43.81%	8.08%	1.36%	33.83%	9.14%
State-owned enterprise	0.05%	0.36%	0.23%	0.00%	0.29%	0.08%	0.07%	0.22%	0.15%	0.00%	0.68%	0.27%
Total	21.42%	62.71%	15.87%	22.55%	66.87%	10.57%	14.53%	73.76%	11.71%	5.32%	82.54%	12.14%

Table 8. Number of contracts signed by suppliers with membership or no membership in business consortia

	2009			2010			2011			2012		
Membership in consortium	Low	Med	High	Low	Med	High	Low	Med	High	Low	Med	High
No	440	1291	333	519	1465	235	170	892	149	38	561	76
Yes	31	88	16	25	148	20	26	103	9	1	44	13
Total	471	1379	349	544	1613	255	196	995	158	39	605	89

Table 9. Issuer involvement in low, medium and high corruption risk contracts in Budapest

	2009	2010	2011	2012
Low	7.73%	7.75%	7.78%	3.82%
Medium	16.51%	18.24%	26.39%	45.57%
High	1.77%	1.99%	1.78%	3.41%

Table 10. Winner involvement in low, medium and high corruption risk contracts in Budapest

	2009	2010	2011	2012
Low	7.64%	7.92%	7.19%	1.91%
Medium	22.10%	23.47%	30.62%	36.29%
High	3.37%	2.74%	2.74%	2.86%

4.5.1.2 Attributes of the contracts

The first indication of the restriction of competition for public procurement contracts is the number of business companies bidding tenders for construction work projects. Figure 29 shows the distribution of the number of bidders per contract for each analysis year. In my sample, in 2009 the maximum number of bidders for a contract was 450. This decreased to 20 bidders in 2010, 22 in 2011, and 24 in 2012. The average number of bidders fluctuated between 3 and 4 across the years, while the minimum number of bidders for each year is 1. In 2009, the proportion of single bidders per contract, the most used red flag of corruption risk in the literature³⁵ (Fazekas, Toth and King 2016, Toth et al. 2014, Lengwiler and Wolfstetter 2006), remains stable at around 18% of the contracts, with the exception of the electoral year 2010, then 30% of the contracts featured single bidders. Over time, the proportion of contracts which had around 3-4 bidders increased, but this is also because the number of business consortia winning procurement projects, featuring groups of 3-4 business companies, increased over time.

In 2010 and 2011, more than 40% of the contracts were using EU funds. In 2012, the proportion of contracts with EU funds decreases to 30% of all contracts for that year.

In terms of the corruption risks associated with contracts using EU funds, the number of contracts with high corruption risks is increasing from 96 contracts in 2009 to 157 in 2010, and decreasing thereafter to 36 high corruption risk contracts in 2012. The number of high corruption risk contracts which do not make use of EU funds decreases as well, from 253 contracts in 2009, to 53 in 2012.

³⁵ <http://iacrc.org/procurement-fraud/the-most-common-procurement-fraud-schemes-and-their-primary-red-flags/>.

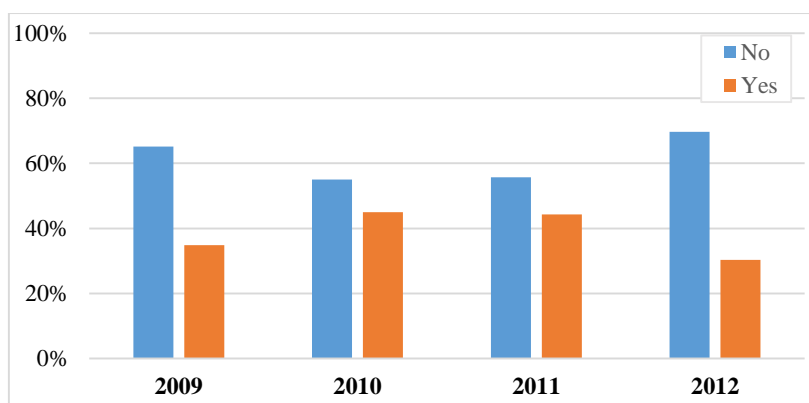


Figure 29. Proportions of contracts using EU funds over time

Table 11. Number of contracts using EU funds by corruption risks

	2009			2010			2011			2012		
Use of EU funds	Low	Med	High	Low	Med	High	Low	Med	High	Low	Med	High
No	332	848	253	383	846	98	126	555	71	26	432	53
Yes	139	531	96	161	767	157	70	440	87	13	173	36
Total	471	1379	349	544	1613	255	196	995	158	39	605	89

The proportion of public procurement contracts using subcontractors (Figure 30) also changes over time. The figure below shows a switch from 2009 to 2010: an increase in the proportion of contracts with subcontractors from around 40% to almost 60%, while the proportion of contracts with no subcontractors decreases from 60% in 2009 to 40% thereafter. This proportion remains stable over the next three years.

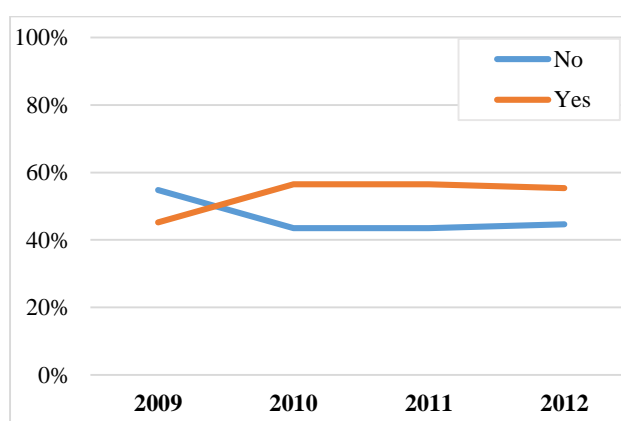


Figure 30. Proportions of contracts using subcontractors

The duration of the call for tenders displays interesting trends. The average number of days shrinks from 250 days in 2009, to around 200 days for a call in 2010 and 2011, after which it increases to an average of 500 days per call in 2012. The minimum duration for a call is 1 day in 2009 and 2011, 2 days in 2010, and 25 days in 2012. It could be that these are simply bureaucratic mistakes, or that indeed some contracts have been awarded from one day to another. The maximum duration for a call for tenders was 2149 days in 2009, almost 3000 days in 2010, and around 1500 days in 2011 and 2012. These long periods of waiting to sign a public procurement contract could be due to complex projects for which no satisfactory tender was submitted.

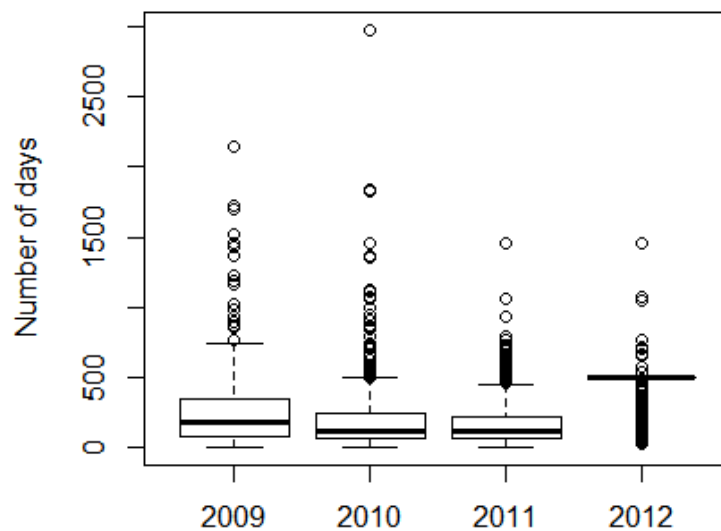


Figure 31. Dispersion scores of number of days for call for tenders across years

The average contract values for the four years under analysis have decreased over time, from around € 550,000 in 2009 to € 350,000 in 2012. For the minimum values shown in Table 12, there either were administrative mistakes with introducing the data, or indeed some contracts were signed at €52 or €83. On the other side of the spectrum, the most expensive projects have been signed in 2009 at €184 million, compared to the lowest maximum contract value in 2011, almost €18 million.

Table 12. Distribution of contract values across years

	2009	2010	2011	2012
Min	€ 83	€ 322	€ 197	€ 52
1stQu.	€ 25,780	€ 38,610	€ 23,570	€ 11,950
Median	€ 90,440	€ 93,340	€ 85,270	€ 70,440
Mean	€ 565,900	€ 402,400	€ 318,200	€ 351,600
3rdQu.	€ 355,800	€ 258,200	€ 280,600	€ 232,700
Max	€ 184,000,000	€ 129,000,000	€ 17,920,000	€ 31,700,000

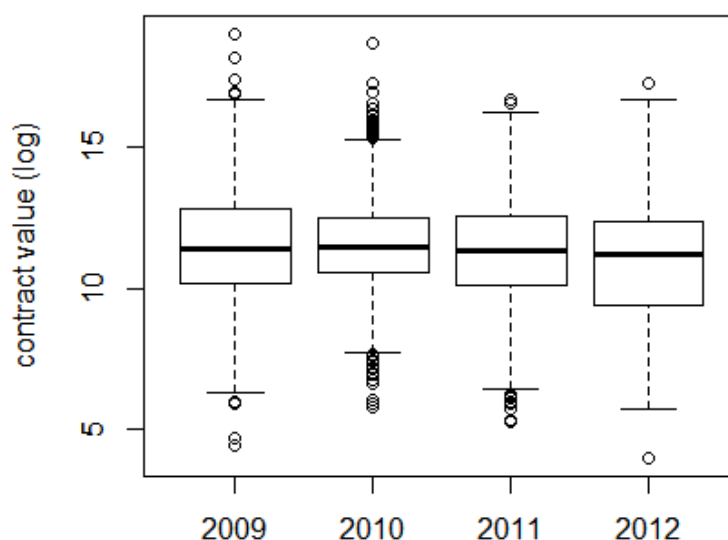


Figure 32. Dispersion scores of contract values across years

The most common public procurement procedure in the Hungarian Construction Work market is the open type. Between 60% and 80% of the contracts were signed using this procedure type, followed by other types of procedures, such as competitive dialogue and electronic auctions, between 10% and 20% of the contracts were signed following these tender procedures. These are also the types of procedures that resulted in the highest proportion of high corruption risk contracts between 2009 and 2011 (5% to 8%). In 2012, 8% of the contracts that were awarded following an open procedure were high corruption risk. The proportion of medium corruption risk contracts increases over the years in the category of contracts signed following open procedures, from 45% in 2009 to 70% by 2012.

Table 13. Proportions of contracts signed by tender procedure and corruption risks

	2009			2010			2011			2012		
Tender procedure	Low	Med	High	Low	Med	High	Low	Med	High	Low	Med	High
Invitation	0%	2%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%
Negotiation	0%	9%	3%	0%	12%	2%	0%	13%	2%	0%	6%	1%
Open	21%	45%	4%	22%	46%	3%	14%	46%	3%	5%	70%	8%
Other	0%	7%	8%	0%	9%	5%	0%	14%	7%	0%	7%	3%
Total	21%	63%	16%	23%	67%	11%	15%	74%	12%	5%	83%	12%

Finally, the trends in award criteria for the public procurement contracts also change over time, from a 50% share of both lowest price and price plus quality in 2009 and 2011, to predominantly price plus quality in 2010 (90%), to a predominance of the lowest price criterion in 2012 (60%).

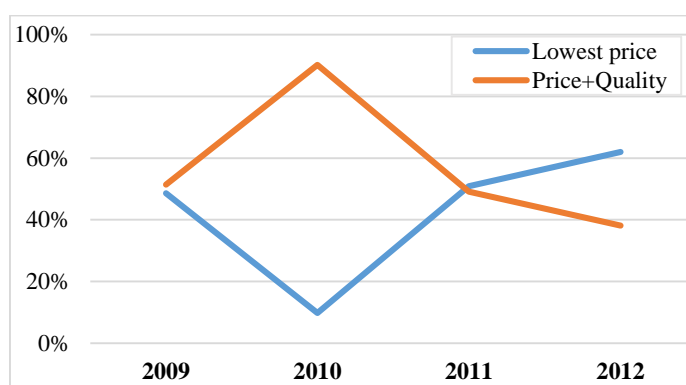


Figure 33. Proportions of contracts signed by criteria, over time

In terms of the associated corruption risks to the type of criteria used to award public procurement contracts, the highest proportion of high corruption risks are associated with the lowest price criterion in 2009, 2011, and 2012. In 2010, 10% of the contracts awarded by price plus quality criteria were high corruption risk, and 60% were medium corruption risk.

Table 14. Proportions of contracts by award criteria used and corruption risks

	2009			2010			2011			2012		
Criteria used	Low	Med	High	Low	Med	High	Low	Med	High	Low	Med	High
Lowest price	14%	26%	9%	2%	6%	1%	9%	35%	6%	2%	53%	7%
Price+Quality	7%	37%	7%	20%	60%	10%	5%	38%	5%	3%	30%	5%
Total	21%	63%	16%	23%	67%	11%	15%	74%	12%	5%	83%	12%

To summarize the findings from the descriptive analysis so far, in the Construction Work public procurement market, the overall corruption risks seem to be decreasing slightly from 2009 to

2012. The proportion of medium corruption risks increases from around 60% in 2009 to 83% in 2012, while the proportion of low corruption risk contracts decrease steadily over time, and the proportion of high corruption risk contracts decrease from 16% in 2009 to 11% thereafter.

Regional and local issuers seem to have been most engaged in signing medium and high corruption risk contracts, with an increase from 7% in 2009 to 9% in 2012 in the proportion of high corruption risk contracts. Almost half of the contracts signed in 2009 by regional and local institutions issuing construction work projects were medium corruption risk, while this amounted to a third of the contracts signed in 2012. Government agencies also signed increasingly more medium corruption risk contracts over the years, from 7% in 2009 to 30% by 2012. National institutions increased the proportion of medium corruption risk contracts signed, from 5% in 2009 to 14% in 2012, while state-owned enterprises increased the proportion of medium corruption risk contracts signed from 0.36% in 2009 to 0.68% in 2012. Most contracts signed were with companies that are not part of business consortia, but those contracts that were signed with business consortia were the most frequent high corruption risk contracts in 2010.

Budapest was the area with most public procurement issuers and winners across the four years, and also the area with most high corruption risk contracts signed. For issuers in Budapest, medium and high corruption risk contracts increase over the years, with 45% of the contracts signed by issuers in 2012 being medium corruption risk, and 3% high corruption risk. For winners in Budapest, medium corruption risk contracts signed also increased over the years, from 22% in 2009 to 36% of the contracts signed in 2012, and 3% of the contracts signed that year were high corruption risk. The county of Csongrád, the second largest issuer location in 2009 (14%), issued less contracts over the years. The county of Pest became the second largest area to win construction work contracts over the four years after Budapest, from 9% in 2009 to 16% in 2012.

During the electoral year 2010, 30% of the contracts signed featured single bidders, while during the other three years a stable 18% of the contracts signed had only one bidder. The average number of bidders remained stable at 3-4 per tender call. Throughout the period, more than 30% of the contracts used EU funds, with a peak of 40% of the contracts signed using EU funds in 2010 and 2011, when also most of the high corruption risk contracts were associated with the use of EU funds. The highest proportion of low corruption risk contracts signed were with those contracts that did not use EU funds. Around 60% of the contracts in 2010, 2011, and 2012 used subcontractors. The average duration of a call for tenders doubled from around 250 days in 2009, 2010, and 2011, to 500 days in 2012. The average contract value decreased from €500,000 in 2009 to around €350,000 in 2012. The most expensive contract signed in 2009 was €184 million, while the most expensive in 2011 was €17 million.

The most common public procurement procedure used for call for tenders was the open procedure, also the one with which most high and medium corruption risk contracts were associated, from 45% medium corruption risk contracts with the open procedure in 2009, to 70% in 2012, and from 4% high corruption risk contracts signed in 2009 to 8% in 2012. Finally, in 2010, 90% of the contracts were awarded using the price plus quality criteria, while only 40% were awarded by this criteria in 2012. The highest proportion on high corruption risk contracts were awarded using the lowest price justification, from 9% in 2009 to 7% in 2012.

The following section uses these variables to determine the best predictors of political and business capture, as well as of clean political and business behavior.

4.5.2 Inferential analysis

The analysis of the public procurement transactions covers four years and a government change in June 2010. Before this date there was a socialist government with MSZP and SZDSZ, while after 2010, a conservative government came to power with Fidesz and KDNP. Previous research shows that the Hungarian state shortly colonized by Fidesz since its leader became Prime Minister of the country in 2010. This led to a strong political coordination of the party's disciplined network to politicize public administration and control the spoils of state capture. The models formulated in this section test the extent of these effects on state capture in public procurement, with application to the highest value procurement market between 2009 and 2012, the Construction Work market.

To test this, I used ordinary least square regression, and construct four cross-sectional models for each year, where I used the same set of micro-level public procurement **explanatory variables** - control of corruption risk situations, attributes of the contracts and attributes of the organizations - to understand their impact on the following **dependent variables**:

1. Political Capture - number of issuer-controlled high corruption risk configurations issuers are involved in.
2. Clean Political Behavior - number of issuer-controlled low corruption risk configurations issuers are involved in.
3. Business Capture - number of supplier-controlled high corruption risk configurations suppliers are involved in.
4. Clean Business Behavior - number of supplier-controlled low corruption risk configurations suppliers are involved in.

I used two samples for the inferential analyses. One sample of issuers, to assess the effect of the explanatory variables on **political capture** and **clean political behavior**, and one sample of

winners, to assess the effects on **business capture** and **clean business behavior**. The largest number of organizations analyzed is 1573 issuers and winners in 2010. Overall, the number of issuers decreased from one year to the other, and by more than a half between 2009 and 2012. The number of winners of public procurement contracts in the Construction Work market increased from 2009 to 2010, and decreased thereafter by an average of 300 companies each year.

Table 15. Issuer and winner sample sizes

	2009	2010	2011	2012
Issuers	678	598	390	236
Winners	740	975	618	371
Total	1418	1573	1008	607

Tables 16 to 19 present the results of the regression analyses, discussed individually in the following subsections³⁶. Overall, the explanatory variables explain between 26% of the variance in the dependent variable (Political Capture 2012) and 92% (Clean Business Behavior 2011), with increasing variance explained over time of business capture, from 52% in 2009 to 72% by 2012. The reference categories used for the categorical variables in the models are: the invitation procedure for the call for tenders procedure type, and the regional/local for issuer type.

4.5.3 Models with versus models without mixed configurations

Overall, control of corruption risk situations have the most stable and consistent effects across years and phenomena, for both issuers and winners. As expected, mixed configurations have strong and positive effects on both capture and clean behavior, involvement in high corruption risk situations deters clean behavior, and involvement in low corruption risk situations deters

³⁶ Model fit statistics available upon request from the author.

engagement in capture behavior. However, in the models without mixed configurations, low and high corruption risk involvement completely lose significance for political capture and clean political behavior models, and maintain strong but divergent and less stable effects for business capture and clean business behavior in 2010 and 2012. This suggests that, although businesses seem more responsive to institutionalization processes of corruption risks and clean behavior, more data would be needed to validate this pattern, preferably also including more electoral years, to be able to account for the electoral year effect. During the 2010 electoral year, business participation in clean situations made it less likely for them to get involved in business capture. Conversely, business participation in high corruption risk situations made it less likely for them to get involved in clean behavior. In 2012, however, business participation in clean situations made it more likely to participate in business capture, suggesting that, by 2012, the environment changed so much that companies were more likely to engage in corrupt behavior, despite their activity in clean contracting.

Other stable and consistent effects on state capture and clean behavior across models are supplier competition (measured as the number of bidders per contract), the value of the contracts, the type of organizations involved, and their procurement capabilities. The other explanatory variables, such as the use of subcontractors and EU funds, the award criteria, being part of a business consortium, or sharing a similar location, are either not statistically significant, or they do not show stability over the years, and therefore inferences based on these might be spurious. They do however signal interesting insights, which might be taken forward in testing their effects on more data.

At first sight, it is very surprising that the use of EU funds does not significantly affect the involvement in neither state capture, nor clean behavior in the full models. However, it is likely that the causal relationship goes the other way around: organizations engaged in high corruption

risk deals hijack EU funds for public procurement, using them in their favor. It is thus not that EU funds motivate corruption, but that corruption targets EU funds. This is in line with one of the most robust findings in the literature, which show that public procurement using EU funds is most prone to corruption risks in Hungary, as well as other new EU member states (Fazekas et al. 2014).

There is a striking difference between the full models and the ones without mixed configurations in the variance they explain, with the full models explaining, on average, more than 50% of the variance, while the shorter models see a drastic loss of explanatory power, at less than 10% for all the four types of behavior investigated. This confirms the expectation that involvement in mixed corruption risk situations is important for engaging in more high corruption risk, or more clean contracting in the future. I will therefore continue interpreting the full models, and leave the shorter ones in Appendix 4.5 for further examination.

4.5.4 Political versus business capture

I am comparing the differences and similarities between predictors of political and business capture, to better understand if they have different logics of action. Knowing this would allow for targeted interventions of different institutional or procedural incentive schemes to curb the two phenomena.

The cross-sectional models explain, on average, 47% of the variance in political capture outcomes and 60% of the variance in business capture. For political capture, there is an increase in the explanatory power of the models from 44% in 2009 to 64% in 2011, but there is a significant drop in the variance explained with this model in 2012 to 24%. For business capture,

the model gradually explains more variance from one year to the other, from 52% in 2009 to 70% in 2012.

Control of mixed configurations has a positive and highly significant impact on both political and business capture. The more involved in these situations organizations are, the more likely it is that they will engage in more high corruption risk contracting. The effect sizes remain relatively constant over time for both behaviors. Furthermore, organizations involved in clean contracting are less likely to engage in capture situations. However, the effect sizes of this variable are very small for political capture, as opposed to business capture. Also, the effect sizes in the business capture case increase from one year to the other, suggesting that participating in low corruption risk situations was an increasingly important deterrent of business capture during the four years studied.

As expected, supplier competition and the value of the contracts have significant effects on the involvement of issuers in political capture, but these variables are less important and stable for business capture. The results show that from 2010 to 2012, the higher the supplier competition, i.e., the more suppliers compete for the same contract, the less likely it was for issuers to get involved in political capture. This effect is present only in 2010 for business capture. Also, the higher the contract value, the more likely it was for both issuers and businesses to get involved in political capture and business capture, respectively. Both these results are in line with the expectations and previous research.

In terms of the attributes of the issuers, although the effects are not consistently significant for each type of issuer, as compared to regional and local issuers, government agencies, national issuers and private issuers were increasingly less likely to participate in political capture. This confirms the expectations that large and visible organizations are less likely to get involved in systematic high corruption risk contracting, possibly because of the potential price to pay if

discovered, while regional and local organizations have more leverage over backdoor deals, either because they are more autonomous (as would be the case in a decentralized administrative structure), or because they are externally coordinated to participate in systematic high corruption risk contracting. Also, being part of a business consortia mattered only in 2010 and 2011, when it deterred companies from getting involved in business capture.

Finally, the size of the procurement capabilities captures the size of the organizations involved, suggesting that bigger issuers and winners have higher procurement capabilities. The results show that business companies with many public procurement contracts were less likely to get involved in business capture in 2009 and 2010, but this effects disappears thereafter. As suggested earlier as well, this implies that large companies have to diversity their attention to many procurement processes at the same time, so their corruption risk potential might be more *ad hoc* than planned. When companies have relatively few contracts the same year, they have more time and interest in focusing their attention on leveraging state rents from them. For political capture procurement capabilities are not very stable either, and they are also inconsistent. In 2010, the larger an issuers' procurement capabilities, the less likely it was for it to engage in political capture. However, in 2011 the larger the issuer, the more likely to get involved in political capture. The effect sizes however are very small.

All in all, for both varieties of state capture the participation of issuers and winners in high, low and mixed corruption risk situations is an important predictor of participation in both political and business capture. Business capture is explained less by the attributes of the contracts than political capture. It seems that in Hungary issuers rather than suppliers use the public procurement process to bend the rules in their favor, especially after 2010. These results confirm the findings in the previous chapter, as well as previous evidence that the Hungarian public

procurement market, at least with respect to the Construction Work market, is politically captured, rather than captured by business.

The more involved organizations are in mixed configurations, the more likely they are to participate in state capture. The more they are involved in clean contracting, the less likely they are to participate in state capture. This is good news. The results suggest that if organizations are encouraged and incentivized to commit to systematic clean contracting, then they might avoid high corruption risk situations.

4.5.5 Clean political versus clean business behavior

Below I am comparing the differences and similarities between predictors of clean political and business behavior, to better understand if they have different logics of action. These insights as well inform the targeted development of public policy, designing interventions into different institutional or procedural incentive schemes to encourage the two phenomena.

The cross-sectional models explain, on average, 40% of the variance in clean political behavior and 84% of the variance in clean business behavior. For clean political behavior, the explanatory power of the models is relatively constant over the year. For clean business behavior, the model explains as much as 92% of the variance in this behavior in 2010, also remaining relatively stable over the years.

Control of mixed configurations has a positive and highly significant impact on clean behavior of both issuers and winners. The more involved in these situations organizations are, the more likely it is that they will engage in more clean contracting. The effect sizes remain relatively constant over time as well. Furthermore, organizations involved in high corruption risk situations are less likely to engage in clean behavior. Moreover, the effect sizes of this variable

are decreasing for clean political behavior, suggesting that this variable is relatively less important over time.

As expected, supplier competition and the value of the contracts have significant effects on the involvement of both issuers and winners in clean contracting. The higher the supplier competition, i.e., the more suppliers compete for the same contract, the more likely it was for both issuers and winners to get involved in clean behavior. Interestingly, the coefficients for the value of the contracts show divergent results both across the years, and between types of actors. For clean political behavior, in 2009, the higher the contract value, the more likely it was for issuers to get involved in clean behavior. However, from 2010 until 2012, the higher the contract value, the less likely it is for issuers to get involved in clean behavior. This corroborates with the findings from the political capture models, making explicit the influence of contract value on incentives to get involved in high corruption risk contracting. For clean business behavior, the pattern is less consistent. In 2009, the larger the value of the contract, the less likely it was for businesses to drive clean contracting. However, this effect is reversed in 2010 and 2011, and contract value loses significance altogether by 2012. These results are also in line with the expectations and previous research.

Interestingly, the use of EU funds made it more likely for issuers to get involved in clean behavior in 2009, but less likely to practice clean contracting in 2011. For clean business behavior as well, business companies do not seem to be incentivized by the use of EU funds in their clean contracting practices. The use of subcontractors used to encourage issuers to sign clean contracts in 2010, but it deterred clean political behavior by 2012.

In terms of the attributes of the issuers, the results for government agencies and national issuers are stable over time. As compared to regional and local issuers, government agencies are less likely to drive clean contracting, while national issuers are strongly driving clean issuer

behavior. The implications of these results are that national issuers consistently involved in clean behavior can be given as examples of good practice, and can be publically promoted and rewarded for their high standards of conducting public procurement. Interestingly, being part of a business consortium does not matter for clean business behavior. While participation in business consortia seems to deter suppliers from involvement in business capture, this kind of cooperation does not seem matter for clean business behavior.

Finally, having a high number of contract signed per year drives both issuers and winners to clean behavior. Again, this implies that issuers with many parallel procurement processes have to diversity their attention in too many places at the same time, so their high corruption risk potential might be more *ad hoc* than planned. For clean business behavior, procurement capabilities show an interesting switch. From 2009 until 2011, the larger the company, the more likely it was for it get involved in clean contracting. However, in 2010, the more successful the procurement winner, the less likely it was to use clean contracting, although the variables is less significant from year to year. A similar pattern is seen for issuers, but the coefficient is not statistically significant in 2012. If it were, it would suggest that also issuers with many public procurement contracts tend to participate less in clean behavior.

To summarize, the results bring support to most of the expectations from the narrative about state capture in public procurement in Hungary, as well as in other parts of the region (Mungiu-Pippidi 2015, Della Porta and Mény 1997, Dorn et al. 2008, Fazekas, Cingolani and Tóth 2016). Moreover, they bring empirical evidence for understanding political capture, and they reveal new knowledge about varieties of state capture.

For issuers and winners involved in clean behavior, the participation in corruption risk situations is an important predictor of participation in clean behavior. Here as well, the incentives inbuilt in the public procurement process are more important for issuers than for businesses. While

clean political behavior seems to be driven by all three types of variables, clean business behavior seems to be driven most consistently by only businesses' control of corruption risk situations and procurement capabilities. These explain a large amount of the variation observed in clean business behavior.

Here as well, in Hungary, only issuers seem to respond to the rules of the public procurement process to ensure clean contracting. Businesses seem to be agnostic to these rules, which also means that interventions to encourage clean contracting should target incentives of the public procurement process only on the issuers' side, while for businesses the incentive scheme should target business behavior more generally, supporting, promoting, and rewarding clean business behavior.

These results reveal important differences between what encourages issuers and business suppliers to get involved in clean public procurement contracting, suggesting that public policy development targeting public procurement should place different degrees of emphasis on the rules of the game for the two types of actors, as well as encourage different incentives for clean political behavior as compared to clean business behavior.

From a different perspective, comparing the determinants of political capture versus clean political behavior, the results show that more variables matter for clean behavior than for involvement in political capture. This means that in Hungary, it became easier after 2010 for issuers (mostly at the regional and local levels) to get involved in political capture. However, as a positive finding, there are more types of incentives at all levels that could push issuers towards engagement in clean behavior. Interventions could prioritize these incentives, to make it easier for issuers to control clean contracting than to control high corruption risk situations.

For both business capture and clean business behavior, the most important variables explaining the propensity of business companies to get involved in these situations are characteristics of

the companies themselves, and relative to their own past and current behavior. The effects of control of corruption risk situations are stronger for predicting clean business behavior rather than business capture. The impact of the success of businesses in winning public procurement contracts is highly significant for both, but the reverse effect of very successful winners on being less involved in clean behavior in 2012 is concerning. To validate the stability and consistency of this transition, one would need data on a longer time span. But if this is the case, then interventions should be conducted by assessing the influence of individual companies on engagement in business capture. Highly successful companies involved in business capture could then be monitored or audited, either by official authorities, or by the business community, since businesses are more likely to respond to peer pressure than public institutions.

Table 16. Predictors of Political Capture over time (DV = issuer-controlled high corruption risk configurations)

Predictors	2009		2010		2011		2012	
	B	SE(B)	B	SE(B)	B	SE(B)	B	SE(B)
(Intercept)	-1.012 ***	0.288	-0.627 .	0.340	-1.131 **	0.415	-0.140	0.684
<i>Control of corruption risk situations</i>								
Mixed corruption risk situations	0.131 ***	0.003	0.147 ***	0.003	0.152 ***	0.003	0.143 ***	0.010
Low corruption risk situations	-0.008 ***	0.000	-0.005 ***	0.000	-0.003 ***	0.000	-0.009 ***	0.001
<i>Attributes of the contracts</i>								
Number of bidders per call	0.000	0.003	-0.052 **	0.016	-0.041 *	0.016	-0.064 *	0.030
Use of subcontractors	-0.096	0.081	0.112	0.083	0.073	0.121	-0.277	0.182
Use of EU funds	0.115	0.092	0.172 .	0.090	0.448 **	0.139	-0.018	0.229
Contract value (log)	0.105 ***	0.025	0.092 **	0.029	0.105 **	0.038	0.077	0.060
Award criteria	0.039	0.077	-0.140	0.159	0.275 *	0.114	0.484 **	0.186
<i>Attributes of the issuers</i>								
Government agency	-0.339 *	0.141	0.048	0.273	-0.820 ***	0.178	-0.826 **	0.289
National issuer	-0.141	0.130	-0.502 ***	0.144	-0.783 ***	0.162	-0.332	0.264
Private issuer	-0.507 ***	0.131	-0.234	0.295	-0.436 .	0.262	-2.443 ***	0.396
State-owned enterprise	-0.413	0.451	-0.645	0.626	-0.622	0.808	-0.578	0.858
Procurement capabilities	0.002	0.001	-0.014 ***	0.003	0.011 ***	0.003	0.004	0.004
Same location as winner	-0.009	0.074	0.002	0.299	-0.055	0.118	0.354 *	0.174
N	678		524		390		236	
Adj. R ²	.445		.525		.642		.268	

Significance codes: 0 '***', 0.001 '**', 0.01 '*', 0.05 '.', 0.1 ' '.

Table 17. Predictors of Clean Political Behavior over time (DV = issuer-controlled low corruption risk configurations)

Predictors	2009		2010		2011		2012	
	B	SE(B)	B	SE(B)	B	SE(B)	B	SE(B)
(Intercept)	-22.018 .	12.988	32.993 *	15.982	108.067 ***	23.745	112.192 ***	17.660
<i>Control of corruption risk situations</i>								
Mixed corruption risk situations	5.049 ***	0.901	3.324 ***	0.185	2.916 ***	0.292	4.106 ***	0.249
High corruption risk situations	-15.921 ***	0.158	-10.995 ***	0.933	-10.919 ***	1.546	-6.366 ***	0.961
<i>Attributes of the contracts</i>								
Number of bidders per call	0.274 .	0.156	3.865 ***	0.767	5.771 ***	0.934	2.130 **	0.795
Use of subcontractors	1.054	3.657	24.224 ***	3.869	5.494	6.938	-13.337 **	4.821
Use of EU funds	12.370 **	4.138	-4.392	4.236	-29.509 ***	7.960	-5.410	6.089
Contract value (log)	3.894 ***	1.120	-3.184 *	1.369	-6.298 **	2.193	-8.400 ***	1.555
Award criteria	-13.745 ***	3.477	-26.174 ***	7.432	-18.135 **	6.557	1.194	4.964
<i>Attributes of the issuers</i>								
Government agency	-19.683 **	6.355	-77.421 ***	12.740	-135.852 ***	9.621	-17.442 *	7.685
National issuer	64.728 ***	5.708	87.061 ***	6.541	22.167 *	9.408	48.812 ***	6.774
Private issuer	-11.078 .	5.936	3.412	13.871	-141.464 ***	14.589	4.120	10.793
State-owned enterprise	-13.238	20.303	-8.046	29.409	-12.218	46.471	-4.007	22.799
Procurement capabilities	0.207 ***	0.045	2.476 ***	0.134	2.485 ***	0.151	-0.137	0.103
Same location as winner	0.280	3.318	4.591	14.051	-19.036 **	6.779	- 3.423	4.637
N	678		598		390		236	
Adj. R ²	.403		.415		.362		.415	

Significance codes: 0 '***', 0.001 '**', 0.01 '*', 0.05 '.', 0.1 ' '.

Table 18. Predictors of Business Capture over time (DV = supplier-controlled high corruption risk configurations)

Predictors	2009		2010		2011		2012	
	B	SE(B)	B	SE(B)	B	SE(B)	B	SE(B)
(Intercept)	-0.015	0.628	-1.863 *	0.765	-2.666 ***	0.773	-0.727	0.755
<i>Control of corruption risk situations</i>								
Mixed corruption risk situations	0.414 ***	0.009	0.444 ***	0.010	0.445 ***	0.011	0.565 ***	0.015
Low corruption risk situations	-0.061 ***	0.002	-0.103 ***	0.003	-0.122 ***	0.004	-0.169 ***	0.006
<i>Attributes of the contracts</i>								
Number of bidders per call	-0.005	0.008	-0.134 ***	0.035	-0.057 .	0.032	-0.035	0.038
Use of subcontractors	-0.083	0.182	0.053	0.184	-0.406 .	0.238	0.123	0.225
Use of EU funds	0.198	0.203	-0.164	0.193	0.334	0.248	0.337	0.272
Contract value (log)	0.027	0.055	0.341 ***	0.065	0.350 ***	0.072	0.113 .	0.066
Award criteria	-0.013	0.168	-0.538 .	0.300	-0.145	0.219	-0.492 *	0.223
<i>Attributes of the winners</i>								
Winner part of consortium	-0.510	0.344	-1.160 ***	0.326	-0.729 *	0.356	-0.482	0.415
Procurement capabilities	-0.028 ***	0.003	-0.106 ***	0.020	-0.022	0.020	-0.015	0.024
Same location as issuer	0.385 *	0.169	-0.204	0.320	-0.380 .	0.229	-0.289	0.225
N	740		975		390		371	
Adj. R ²	.524		.577		.618		.705	

Significance codes: 0 '***', 0.001 '**', 0.01 '*', 0.05 '.', 0.1 ' '.

Table 19. Predictors of Clean Business Behavior over time (DV = supplier-controlled low corruption risk configurations)

Predictors	2009		2010		2011		2012	
	B	SE(B)	B	SE(B)	B	SE(B)	B	SE(B)
(Intercept)	22.651 ***	5.615	-13.075 **	4.243	-8.458 .	4.320	6.595 *	3.157
<i>Control of corruption risk situations</i>								
Mixed corruption risk situations	3.918 ***	0.074	2.166 ***	0.060	3.005 ***	0.038	2.626 ***	0.045
High corruption risk situations	-4.917 ***	0.161	-3.177 ***	0.093	-3.775 ***	0.112	-2.958 ***	0.110
<i>Attributes of the contracts</i>								
Number of bidders per call	-0.016	0.069	-0.286	0.195	-0.134	0.177	-0.215	0.160
Use of subcontractors	9.516 ***	1.618	1.361	1.019	0.029	1.329	0.001	0.943
Use of EU funds	1.094	1.822	-0.695	1.071	0.339	1.382	0.059	1.140
Contract value (log)	-2.297 ***	0.492	0.651 .	0.360	0.968 *	0.403	-0.405	0.276
Award criteria	0.438	1.508	1.054	1.665	0.013	1.222	0.390	0.937
<i>Attributes of the winners</i>								
Winner part of consortium	0.947	3.090	-1.298	1.812	-2.192	1.984	0.387	1.740
Procurement capabilities	0.092 ***	0.028	1.770 ***	0.105	0.366 **	0.112	-0.231 *	0.100
Same location as issuer	-2.325	1.521	-11.269 ***	1.760	-3.699 **	1.272	-1.544	0.941
N	740		975		618		371	
Adj. R ²	.701		.921		.916		.833	

Significance codes: 0 '***', 0.001 '**', 0.01 '*', 0.05 '.', 0.1 ' '.

One of the most important methodological issue, however, is that despite a large variance explained in the dependent variables, these linear regressions do not fit the data very well. The goodness of fit measures show non-linearity. Residuals have non-linear patterns, are not normally distributed, and are not spread equally along the ranges of predictors, the models are heteroscedastic, and they have around one, two outliers every year. All these indicate that the data are much more interdependent than linear regression analysis allows to hold the assumption of normally distributed variables, and independent observations.

Therefore, to substantiate these findings, the data need to be modeled also using statistical techniques for network data, such as exponential random graph models (Robins et al. 2007), or stochastic actor-oriented models (Snijders, Van de Bunt and Steglich 2010), to account for the relational aspects of institutional behavior, i.e., the fact that organizations shape these networks but also respond to the connections in the environment they operate in (Lusher, Koskinen and Robins 2012, Lubell et al. 2012, Albert and Barabasi 2002). This methodological approach allows one to analytically test both micro-level network configurations (e.g., ego-centric configurations such as network motifs), as well as structural effects (e.g., network-level measures, such as betweenness centralization, or transitivity), together with attributes of the links (e.g., contracts) and attributes of the nodes (e.g., issuer type).

4.5.6 Alternative explanation

In the OLS models, control of corruption risks situations tested the importance of ego-centric behavior, i.e., the relationship of issuers and firms with their direct partners in public procurement, and whether they engage in political or business capture, as well as their engagement in clean behavior. However, one argument within the literature is that issuer and supplier involvement in state capture is also influenced by what their peer organizations do

(Farrell and Klemperer 2007, Benson 1975, Tsai 2001). Although the scope of this chapter is not to test this assertion directly, I do however describe the typical characteristics of three networks, to assess the changes in network level measures over time. The purpose of this analysis is to examine which network characteristics might affect institutional engagement in state capture. I thus compare over time the original contractual networks between issuers and winners (Issuer x Winner networks), and the projected co-issuer networks, based on shared suppliers, and the projected co-winner networks, based on shared issuers. The latter two networks reflect institutional visibility, potential for coordination and potential for institutional pressures among each type of organization involved in public procurement.

It is well argued by now in the literature that institutional isomorphism is an active mechanism of change in institutional behavior (DiMaggio and Powell 1991, Kostova, Roth and Dacin 2008, Powell and DiMaggio 2012, Rutherford 1996), and that public institutions are most prone to mimicking the behavior of other public organizations (Frumkin and Galaskiewicz 2004), being coordinated by higher administrative powers (Radaelli 2000), competing with other public institutions (Mizruchi and Fein 1999), or being socialized in long-lasting institutional habits (North 1990). Businesses also respond to these mechanisms, only in the market, it is argued to be harder to coordinate many organizations top-down, especially if there are no strong collective business actors or representative organizations in a country (which is the case in Hungary) (Kohl, Lecher and Platzner 2000), while competition among companies for public procurement contracts seems to be mitigated by informal political connections (Stark and Vedres 2012). In an environment where political corruption is endemic, businesses also tend to socialize in this environment, entering high corruption risk contracts if the situation required it (OECD 2016). In the remainder of the section, I describe these dynamic networks, and lay the ground for further testing the ones that seem most relevant for state capture and clean behavior.

4.5.7 Comparative Network Analysis

The samples used for the analysis include 1418 public procurement contracts signed in 2009, 1573 contracts signed in 2010, 1008 in 2011, and 607 contracts signed in 2012. The densities of the cross-sectional bipartite networks increase after 2010, even though the total number of issuers and winners involved decreases. This means that, given the size of the networks, there were more contracts signed in 2011 and 2012, than during 2009 and 2010.

Table 20. Network descriptives compared

	2009	2010	2011	2012
N Issuers	678	598	390	236
N Winners	740	975	618	371
N Contracts	1418	1573	1008	607
Density	0.003	0.003	0.004	0.005

Figure 34 visualizes the three types of networks over time. Issuers are represented with red circles, while winners are represented with blue circles. The links in the issuer to winner networks are construction work public procurement contracts. In the co-issuer networks, two issuers are connected if they awarded at least one contract to the same supplier, and in the co-winner networks, two winners are connected if they won at least one contract with the same issuer.

The first observation about these networks is that they get more and more disconnected over time, meaning that the core of issuers and winners entering public procurement is smaller from year to year. The figures also support the idea that both clean behavior as well as high corruption risk behavior are rarely happening in isolation, but rather both issuers and winners are able to perceive parts of the network context in which they operate. This perception is likely to become

more accurate by the year, given that the number of players one can interact with shrinks over time.

Another observation revealed by these visualizations is that the number of cliques (highly connected groups of organizations) competing for public procurement contracts decreases over time. This is probably due to the budget cuts to public procurement issued in 2010. The spring embedded layout algorithm highlights the transition from multiple issuer cliques that share the same suppliers in 2009 to a clearly larger and more central clique in 2010, to smaller and more disconnected issuer cliques in 2011, to only a few larger groups of issuers in 2012. A similar transition pattern is visible in the winner-to-winner networks, showing multiple cliques of suppliers winning with the same issuers in 2009, many cliques scattered around the network in 2010, a core-periphery like network structure in 2011, with a few cliques of businesses winning with the same issuers, and around 5 larger and disconnected cliques in 2012. These trajectories seem to suggest that the networks were transitioning from more competition among groups of suppliers in 2009, to a core-periphery structure where organizations in the core were more likely to share common issuers, to a cellular type of network, where groups of issuers and suppliers seem to enter procurement partnerships preferentially.

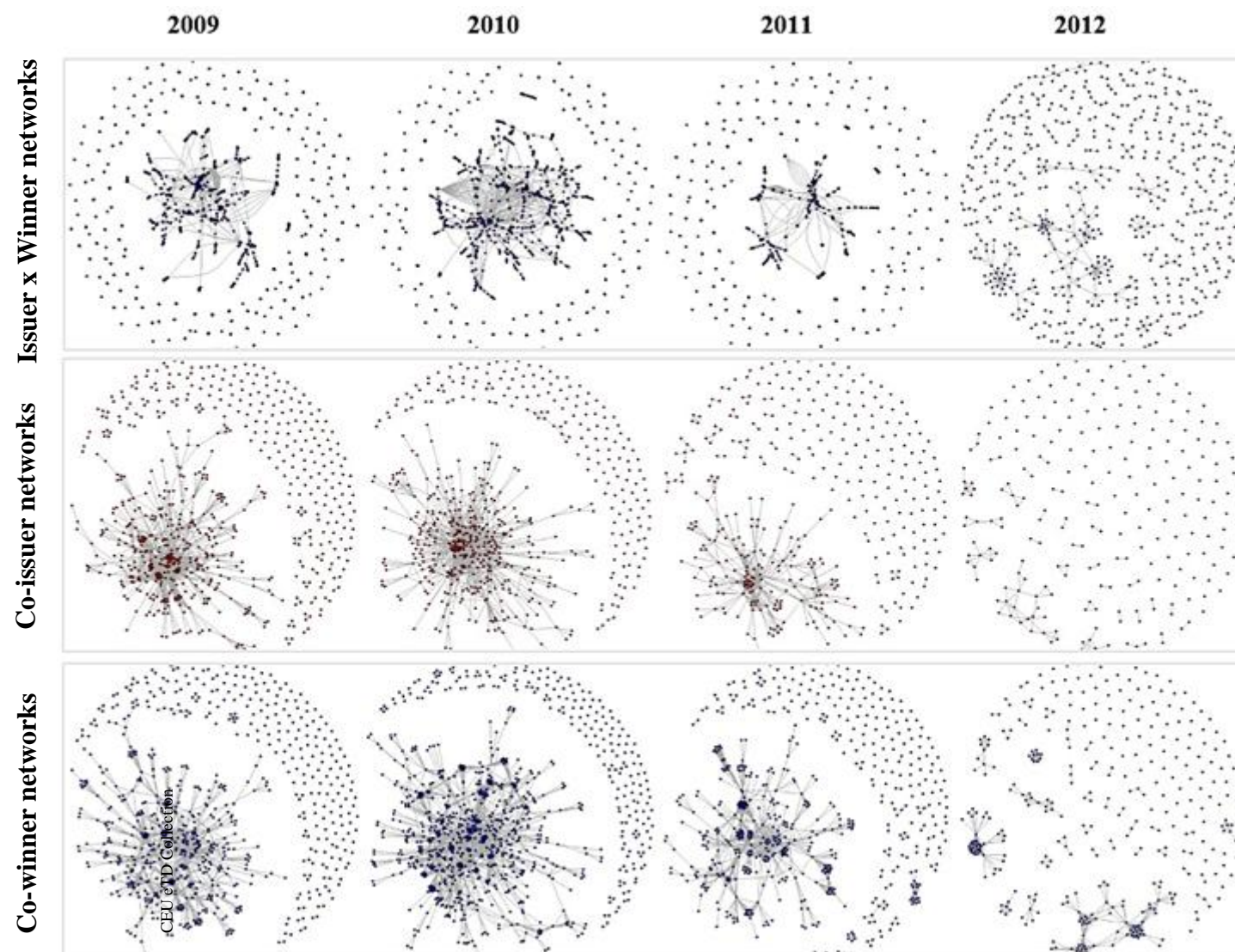


Figure 34. Issuer-to-winner, co-issuer, and co-winner network graphs over time

Figure 35 shows that, although the average number of contracts decreased slightly over time (on average, three contracts are signed between an issuer and a supplier each year), the average number of shared business partners for issuers decreased drastically over the years (from sharing almost 10 common suppliers in 2010 to one common supplier by 2012). Except for the electoral year 2010, when, on average, two winners shared at least seven common issuers, the annual average remained around five common issuers from 2009 to 2012. This shows that after 2010, issuers became more particularistic, preferring a smaller number of companies with which to sign more contracts.

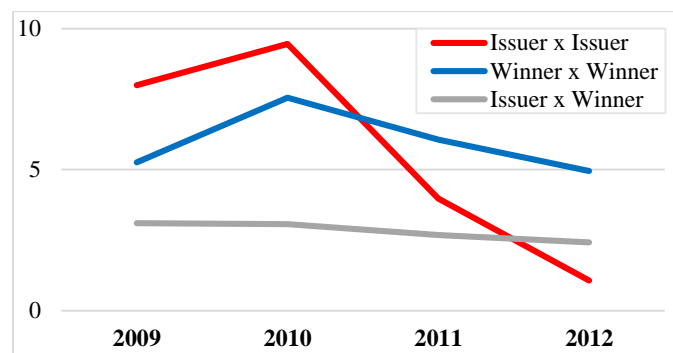


Figure 35. Average degree across the three networks, over time

The density of the networks (Figure 36) also shows interesting trends. The density of co-issuer networks decreased significantly after 2010, suggesting that indeed the number of shared suppliers among public authorities had decreased. Also, the density of co-winner networks increased from 2009 to 2012, indicating that winners' share of contracts with the same issuers increased after 2010.

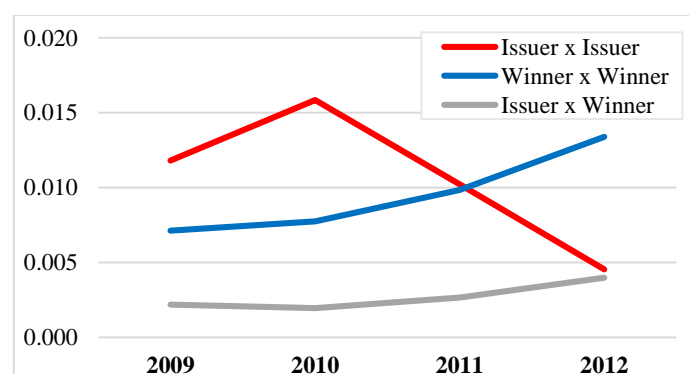


Figure 36. Density across the three networks, over time

The degree centralization measure visualized in Figure 37 shows the difference between the node with the highest degree and the one with the lowest degree, normalized, to give a score between 0 and 1. The closer to zero, the more evenly distributed the number of connections per organization. The highest inequality between the organizations' connections was in 2010 in the supplier network, suggesting the network featured a few hubs, companies that benefited from most shared connections based on common issuers. This inequality most visibly appears in the issuer to winner network, showing that after 2010 the difference in numbers of contracts between organizations was increasingly larger³⁷. This chart again shows signs of increasing favoritism in the contractual public procurement network of construction work services and products.

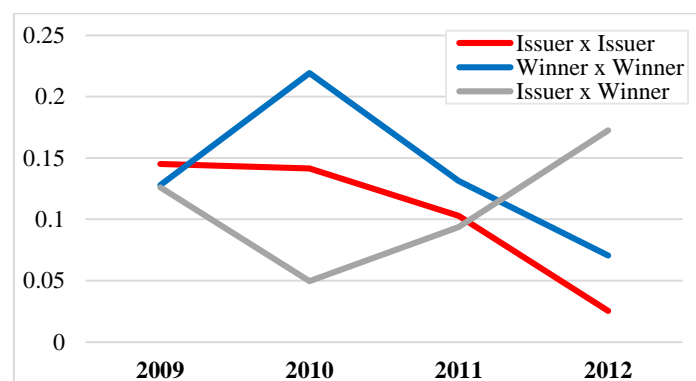


Figure 37. Degree heterogeneity across the three networks, over time

Betweenness centralization (Figure 38) shows a similar hub signature in both the original contractual network in 2010, as well as in the winner-to-winner network. This suggests there are hub suppliers, which have contracts with many issuers, and bridge/broker between different parts of the supplier network, making them influential and visible actors in the construction work market. Their influence decreases after 2010.

³⁷ I have tested whether the networks are scale free and display power law distributions of degrees. None of the tests are significant, which could also be due to the relatively small size of the networks. Figure 46 in Appendix 4.6 shows the pooled degree distributions of the issuer-to-issuer and winner-to-winner networks on a log-log plot.

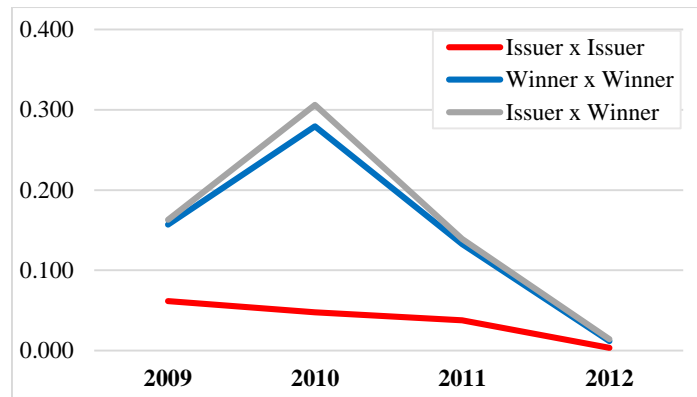


Figure 38. Betweenness heterogeneity across the three networks, over time

Degree assortativity (Figure 39) measures the extent of high degree nodes to connect to other high degree nodes (positive coefficient), and the extent of high degree nodes to connect to low degree nodes (negative coefficient). In other words, in 2009 and 2010, suppliers with many contracts tended to connect with suppliers with few contracts. From 2011 to 2012, there is an opposite trend – suppliers with many public procurement contracts tend to connect to other suppliers with many contracts. Also, big procurement winners tend to share the same issuers in 2012.

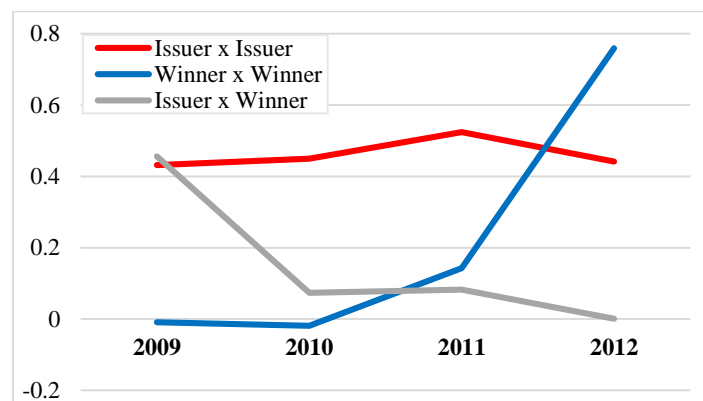


Figure 39. Degree assortativity across the three networks, over time

Transitivity is the tendency of organizations to cluster together (Figure 40). In line with the trends in assortative mixing, suppliers tend to cluster together much more after 2010, while issuers start slowly separating their construction work suppliers in 2012.

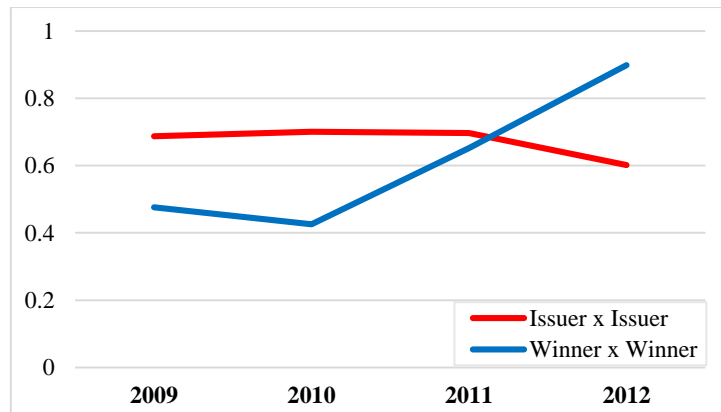


Figure 40. Global transitivity across the three networks, over time

I then extracted the largest connected component and applied an edge betweenness clustering algorithm, with an optimized version for the bipartite network. Figure 41 shows the number of communities found in the largest connected components of the three networks. The most drastic change can be seen in the issuer-to-issuer network, where from 2011 to 2012 the number of communities in the largest component decreases sharply from 85 communities to only 5 communities, due to the sharp decrease in the number of issuers engaged in public procurement in 2012.

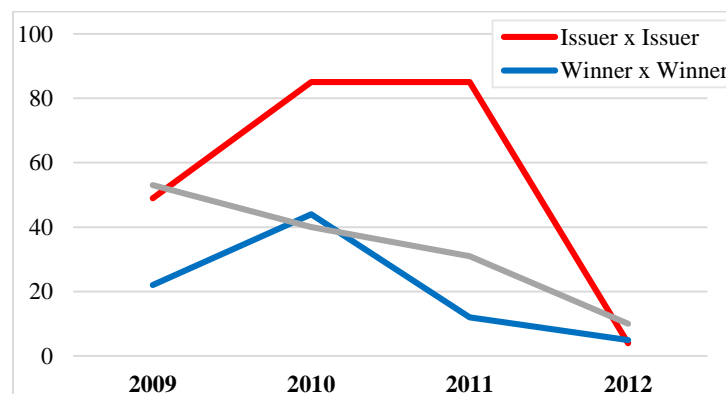


Figure 41. Number of communities in the largest connected components across the three networks, over time

The complete set of network statistics calculated can be found in Appendix 4.6.

To summarize the findings in this section, the quality of the network structure decreases over time, especially after 2010, with decreasing number of issuers and winners involved in public procurement, and a transition from competitively clustered networks in 20109 to small and

disconnected ones by 2012. The networks display increasing disproportionality in the influence of some actors over time, where businesses seem to respond much more quickly to network effects. In this analysis too, the electoral year of 2010 displays different dynamics than the rest of the years.

One of the most important theoretical conclusions from the analysis of the public procurement networks is that the structure of the networks has changed radically after 2010. The descriptive statistics at the network level show that business companies have been more responsive to network effects within the business environment. The issuer-to-issuer networks are more robust over time. Institutional brokerage, degree assortativity and global transitivity are properties of the issuer-to-issuer networks that do not change all that much across the four years. Thus, network models of mechanisms at work in the spread of high corruption risk practices have to include different statistics for political and business capture, as the two types of organizations respond to different peer effects.

One of the most important methodological conclusions of this analysis is that network effects should not be ignored in the analysis of varieties of state capture and what drives issuers and winners to get involved in clean and high corruption risk public procurement. Possible ways forward are to use exponential random graph models on the original issuer-to-winner networks or on the projected ones, to better understand what explains the empirical networks observed. Another possibility, with more strict assumptions about the network change from one year to the other, are the stochastic actor-oriented models, where one models not only the observed network, but also the change in the network parameters. Both methods are extensions of the logistic regression to account for interdependent data. The theoretical aims of the analyses are similar, but the estimation procedures are slightly different (Leifeld and Cranmer 2014).

Some of the most important limitations of these methods, however, are the following: they are very sensitive to degeneracy, so if not very well specified, the models will not converge (Handcock et al. 2003). This analysis has helped spot the variables that are most likely to influence the networks observed, as well as those that can be dropped. These models are computationally intensive, because they estimate node and network characteristics on all the possible combinations of connections for a given empirical network. This means that the larger the network, the harder it is computationally and the longer the estimation time.

Finally, there is an important theoretical limitation. These methods work best on binary networks (either there is a connection or not). Although extensions of the methods to valued (counting how many relations two nodes have or the quality of the relationships) and bipartite networks have been developed, they are still relatively less developed than the ones for binary networks, which either affects the convergence rate, or the estimation time. Binarizing the network might work against the aims of the research, pushing researchers to make atheoretical or ad hoc decisions to transform the networks, which can lead to important loss of information. Again, due to the large turnover of observations in the samples, temporal models cannot be estimated on these networks, so the obvious alternative is to look at annual cross-sectional networks. Also, the more complex the empirical network analyzed, the more convoluted the substantive interpretation of the coefficients resulted from the network models.

4.6 Discussion and Conclusions

The regression results confirmed the most important findings in the previous chapter and some of the main findings in the literature. However, the models also revealed important and novel insights into the differences and similarities among the four types of organizational behavior

in the Hungarian public procurement, which can further be tested on other markets and countries, as well as on more data.

Overall, control of corruption risk situations have the most stable and consistent effects across years and phenomena, for both issuers and winners. As expected, mixed configurations have strong and positive effects on both capture and clean behavior, involvement in high corruption risk situations deters clean behavior, and involvement in low corruption risk situations deters engagement in capture behavior.

For political capture, there is an increase in the explanatory power of the models from 44% in 2009 to 64% in 2011, but there is a significant drop in the variance explained with this model in 2012 to 24%. For business capture, the model gradually explains more variance from one year to the other, from 52% in 2009 to 70% in 2012.

Other stable and consistent effects on state capture and clean behavior across models are supplier competition (measured as the number of bidders per contract), the value of the contracts, the type of organizations involved, and their procurement capabilities. The other explanatory variables, such as the use of subcontractors and EU funds, the award criteria, being part of a business consortium, or sharing a similar location, are either not statistically significant, or they do not show stability over the years.

In Hungary, it became easier after 2010 for issuers (mostly at the regional and local levels) to get involved in political capture. However, as a positive finding, there are more types of incentives at all levels that could push issuers towards engagement in clean behavior. Interventions could prioritize these incentives, to make it easier for issuers to control clean contracting than to control high corruption risk situations. By 2012, the business environment changed so much that companies were more likely to engage in corrupt behavior, despite their activity in clean contracting. Also, organizations engaged in high corruption risk deals seem to

hijack public procurement with EU funds, for personal gain. It is thus not that EU funds motivate corruption, but that corruption targets EU funds. The expectations to see evidence of clientelism based on geographical proximity has found some support, although the effects are not consistently significant across the years.

For both business capture and clean business behavior, the most important variables explaining the propensity of business companies to get involved in these situations are characteristics of the companies themselves, and relative to their own past and current behavior. The effects of control of corruption risk situations are stronger for predicting clean business behavior rather than business capture. The impact of the success of businesses in winning public procurement contracts is highly significant for both, but the reverse effect of very successful winners on being less involved in clean behavior in 2012 is concerning.

With respect to path dependency of institutional behavior, an institution's current and past behaviors seem to have a strong effect on their involvement in high and low corruption risk situations. On the one hand, the results bring empirical support for capture behavior deterring involvement in clean behavior, indicating the degree to which an organization's institutional context features institutionalization of high corruption risk practices, where there are no procedural incentives for the organization to switch their behavior. The results bring however stronger empirical support for clean behavior deterring involvement in high corruption risk situations, indicating that an organization also had strong incentives for clean behavior. However, once other variables are taken into account, it is clear that there is a weakening of path dependency of clean contracting, and an increase in the importance of incentives for political capture. These patterns seem to emerge after 2010, so after the second Orban government started its term, and in line with the expectations and prior empirical evidence of political capture. These patterns are most visible in 2012, which suggests that a longer time

frame for the data is necessary to validate the effects of the government change on corruption risks in public procurement.

On the other hand, there are indications that network effects are at play, and that they might be stronger for business suppliers than they are for public procurement issuing institutions. The results of the descriptive network analysis confirms this finding, by showing that network level characteristics of co-winner networks experiences drastic changes in their structure over time, while the co-issuers networks have been experiencing changes only on a small portion of their characteristics. The public institution network however, responds clearly to network effects induced by procedural interventions. For example, after 2010, there were big cuts in public procurement budgets and expenditure, which led to serious fragmentation of the co-issuer network over time, and to the formation of business political-cartels, small groups of issuers with particular winners. At least descriptively, these findings support the idea that the mechanisms at work in political capture are patronage and clientelism.

Public institutions are thus less susceptible to institutional network effects (i.e., what peer organizations across the country are doing) and more susceptible to administrative effects, such as budget cuts. These findings point to the mechanism of coercion inherent in political capture. The political party in power, or the political leadership of the party in power, can best punish and reward public institutions through administrative procedures. As long as the party controls the administration of public institutions, it also controls the opportunities and instruments for engaging in state capture if this is what they want.

As an important addition to what has been demonstrated in the literature until now, the analyses also reveal the potential of the political party in power to control and drive clean public procurement contracting, although gradually crippled by government changes and budget cuts. This then raises the question of what is the role of the institutional capacity versus the role of

the political leadership. If there is evidence of institutional capacity for clean behavior, then is it the political leadership that drives corrupt behavior? The answer seems to be yes, although a more rigorous testing would be necessary to answer this question.

One of the most important theoretical conclusions from these analyses is that both political and business capture, as well as clean behavior seem to have endogenous mechanisms at play. Whether issuers and winners are systematically involved in clean or high corruption risk behavior matters for their propensity to maintain or change that behavior.

4.6.1 Positive and negative effects on state capture and implications for public policy

The results have implications for how to develop an anti-corruption public policy that targets the incentive structures for clean and high corruption risk institutional behavior in public procurement. While control of mixed corruption risk situations, use of EU funds, contract value, and being a regional and local issuer seem to encourage political capture and controlling mixed corruption risk situations and contract value business capture, clean political behavior seems to be driven by control of mixed corruption risk configurations, supplier competition, and being a national institution, and clean business behavior by control of mixed corruption risk situations. Public policy should then encourage supplier competition and more awareness about the quality of the public procurement environment to incentivize issuers and suppliers to engage in clean behavior.

The incentives that seem to deter political capture are participation in clean contracting, supplier competition and examples from other issuer types. The incentives that deter business capture are participation in high corruption risk contracting, and being from the same location

as the issuers. One way some of these incentives could be nudged to further deter state capture in public procurement is the implementation of an electronic public procurement system that would increase transparency, would offer examples of good practice, would blacklist issuers and winners that sign high corruption risk contracts, and would offer information for correct and clean public procurement.

Some good news come from the fact that issuers and winners seem to be distinguishing between their clean contracting and situations when they can bend the rules in their favor. This suggests that there are still sufficient cases of clean contracting that can be given as examples of best practices to nudge case-by-case decisions away from high corruption risk contracts.

4.6.2 Contributions, limitations and further work

This chapter makes an important contribution to understanding the predictors of varieties of state capture by testing empirically the effects of direct contractual relationships between political and business organizations in public procurement, by revealing the micro-level public procurement incentives that influence whether public authorities and business companies engage in political or business capture, as well as those incentives that drive clean political and business behavior. The study contributes to the debate in the literature that supports data-driven, evidence-based public policy making, and offers support for using micro-level data to understand institutional behavior.

The analyses in this chapter also suffer from important limitations. The very large turnover of observations from one year to the other does not allow one to model these data longitudinally, so one is restricted to using cross-sectional models. This is not entirely limiting, since the fact that so many participant organizations change from one year to the other suggests there is also less interdependence of observations from one time window to the other. This is also why the

linear regressions used worked relatively well in explaining the variance in the dependent variables. However, the organizations are not completely independent, and that has been demonstrated in the descriptive network analysis.

Further analysis should take into account the structural effects in public procurement networks and test the effects of different transformations of the original networks for analytical purposes.

An extension of these statistical models can also focus more on the mechanisms at work in public procurement networks implied by these analyses, i.e., political capture through procedural coercion and business cooperation in this process.

Conclusion

How does state capture come about what why do some times business actors, other times political actors drive this process? What are the differences between political and business capture? And what are the drivers of clean issuer and winner behavior? This dissertation investigated patterns of corruption risks in public procurement and assessed the driving actors, dynamics of business and political capture, and the organization principles of state capture in Hungary, before and after the government change in 2010.

I argued that the dynamics of financial transaction network structures of business and political actors through state contracts offers clues about the institutionalization of informal rules – either dominantly business-oriented or political in nature. The highly unequal structure of the public procurement networks and the significant increase of the political capture increase the chances of particularism, favoritism and undue influence in the interaction between business and politics, the main mechanisms of grand corruption. The institutionalization of this system then increases the chances of state capture. The positioning of different actors in the network or how they navigate the network structures over time offers clues about their direct and indirect influence potential over the network. These clues indicate why sometimes business actors other times political actors manage to capture state functions, assets or resources.

To this end, I proposed a theoretical model that accounts for the ways in which business-political networks in public procurement shape the institutionalization of grand corruption and state capture. Both types of interactions become legal and social precedents that come to be perceived as unwritten rules that facilitate or constrain action in obtaining economic and political rents. By adopting a longitudinal research design, I tracked how changes in these network structures influenced business and political state capture. The dissertation presented a within case comparative design, focusing on the network structures and position dynamics of

business and political organizations, searching for stable patterns of business-political interaction that enable the capture of a part of this state function as a *modus operandi*.

C.1 Main findings

This final section reviews the main findings of the dissertation, discusses their broader implications, addresses the main limitations, and proposes a few possible directions for further research.

The motif analysis in Chapter 3 identified six empirical types of non-overlapping capture situations pertaining to both issuer-controlled and winner-controlled low corruption risk configurations, high corruption risk configurations and mixed configurations. These six isomorphic configurations indicate three types of recurrent contracting patterns, signatures for clean contracting, political and business capture.

The vocabulary of corruption risks in public procurement reveals interesting patterns. The electoral year of 2010 is marked as issuer uncertainty in construction work and architectural services markets. This suggests that electoral cycles generate uncertainty about engagement in corrupt behavior. Construction work is mostly characterized by issuer-controlled clean contracting, with the exception of 2010 when issuers engage in high corruption risk contracting due to uncertainty in the market. The petroleum products market displays indications of political hijacking of the market: in 2009, 47% of the market was driven by businesses through competition and clean contracting. In 2010 business organizations engaged a lot more in high corruption risk contracting (45%). In 2011 and 2012, issuers take control of high corruption risk contracting in the market.

Business services, although the only one where political capture decreased, still is continuously captured by issuers. In architectural services, the market is characterized by issuer-controlled clean contracting. In 2010 35% of the market engages in occasional high corruption risk contracting due to uncertainty. In 2011 again it is mostly characterized by clean contracting. In 2012, however, the market is captured by issuer-controlled high corruption risk contracting.

Looking at the aggregate level, there is a similar pattern in the evolution of clean, mixed and high corruption risk contracting in Hungary. The variations in corruption risks seem to converge from a large to a narrow distribution, suggesting that dominant actors might be controlling the institutionalization of corrupt practices through a tighter institutional coordination. Clean contracting has decreased in two out of four markets, while the level of state capture increased in three out of four markets analyzed. Mixed configurations of clean and high corruption risk contracting seem to characterize the elections year.

The extent of political capture situations grew in three out of four markets from 2009 to 2012, while the extent of business capture decreased significantly. Overall, the variation in corruption risks across these markets decreased over time and stabilized between 30% and 40% of the markets by 2012. However, the dynamics of business and political capture within each market are very different. Business Services is the only market where clean contracts have increased from 90% political capture in 2009 to 40% capture in 2012. High corruption risk situations are entirely politically controlled in this market and in the Architectural Services market.

Overall, political capture increased in three out of four markets, while business capture weakened in all four markets. The only market in which political capture decreased was business services. The involvement of national and regional/local issuers in high corruption risk contracting displays again variation among markets, decreasing in two markets and increasing in the other two. Regional and local level issuers seem to be more involved in state

capture situations, with the exception of the business services market, where national issuers seem to control capture situations. Although the absolute number of regional and local organizations involved in high corruption risk contracting in public procurement has decreased, the estimated amount of the financial flows transacted has increased by 2012. This suggests that fewer players share more spoils.

The regression analyses in Chapter 4 confirmed the most important findings in the previous chapter and some of the main findings in the literature. The models also revealed important and novel insights into the differences and similarities among the four types of organizational behavior in the Hungarian public procurement, which can further be tested on other markets and countries, as well as on more data.

For political capture, there is an increase in the explanatory power of the models from 44% in 2009 to 64% in 2011, but there is a significant drop in the variance explained with this model in 2012 to 24%. For business capture, the model gradually explains more variance from one year to the other, from 52% in 2009 to 70% in 2012.

Overall, control of corruption risk situations have the most stable and consistent effects across years and phenomena, for both issuers and winners.

Other stable and consistent effects on state capture and clean behavior across models are supplier competition (measured as the number of bidders per contract), the value of the contracts, the type of organizations involved, and their procurement capabilities. The other explanatory variables, such as the use of subcontractors and EU funds, the award criteria, being part of a business consortium, or sharing a similar location, are either not statistically significant, or they do not show stability over the years.

In Hungary, it became easier after 2010 for issuers (mostly at the regional and local levels) to get involved in political capture. Also, by 2012, the business environment changed so much that companies were more likely to engage in corrupt behavior, despite their activity in clean contracting. In addition, organizations engaged in high corruption risk deals seem to hijack public procurement with EU funds, for personal gain. It is thus not that EU funds motivate corruption, but that corruption targets EU funds.

With respect to path dependency of institutional behavior, an institution's current and past behaviors seem to have a strong effect on their involvement in high and low corruption risk situations. Over time, there is a weakening of path dependency of clean contracting, and an increase in the importance of incentives for political capture. These patterns seem to emerge after 2010, so after the second Orban government started its term, and are in line with the expectations and prior empirical evidence of political capture. These patterns are most visible in 2012.

There are strong indications that network effects are at play, and that they are stronger for business suppliers than they are for public procurement issuing institutions. Network level characteristics of co-winner networks experiences drastic changes in their structure over time, while the co-issuers networks have been experiencing changes only on a small portion of their characteristics. The big cuts in public procurement budgets and expenditure after 2010 led to serious fragmentation of the co-issuer network over time, and to the formation of business-political cartels, small groups of issuers with particular winners. At least descriptively, these findings support the idea that the mechanisms at work in political capture are patronage and clientelism.

Public institutions are thus less susceptible to institutional network effects (i.e., what peer organizations across the country are doing) and more susceptible to administrative effects, such

as budget cuts. These findings point to the mechanism of coercion inherent in political capture. The political party in power, or the political leadership of the party in power, can best punish and reward public institutions through administrative procedures. As long as the party controls the administration of public institutions, it also controls the opportunities and instruments for engaging in state capture if this is what they want.

As an important addition to what has been demonstrated in the literature until now, the analyses also reveal the potential of the political party in power to control and drive clean public procurement contracting, although gradually crippled by government changes and budget cuts. This then raises the question of what is the role of the institutional capacity versus the role of the political leadership. If there is evidence of institutional capacity for clean behavior, then is it the political leadership that drives corrupt behavior? The answer seems to be yes, although a more rigorous testing would be necessary to answer this question.

A conservative estimation of money spent on corrupt deals suggests that at least 700 million Euros were spent on clear high corruption risk contracts in the Construction Work procurement market between 2009 and 2012. Another at least 100 million Euros were spent in the Petroleum Products market, 181 million in the Business Services market, and more than 81 million Euros were spent in the Architectural Businesses procurement market. In total, over one billion Euros were spent on high corruption risk contracts in public procurement between 2009 and 2012 in the four markets analyzed. These are only the estimates of the contract values for contracts above one standard deviation of the Corruption Risk Index score, which means that the absolute sums of money were much higher, if we were to include the medium corruption risk contracts as well. Even though the amount of money spent on high corruption risk contracts decreased over time, the analysis reveals that during Orban's second government, it converged to a considerable and stable level within the markets.

These findings suggest that state capture comes about through an institutionalization of a dominant actors' relational strategies, and actors become dominant to the extent that they can control their immediate network neighborhood, their direct partnerships.

Political, business capture and clean networks diverge in network structures and network effects by type of public institutional levels (national versus local), participation in high corruption risk configurations (deters clean contracting), participation in mixed configurations (discretion), institutional capabilities (number of contracts signed and related CRI), and influence structures within networks (centralization versus diffusion). The conduit of public sector institutions and business organizations engaged in public procurement seems to reveal vertical (political) versus horizontal (business) structures of institutional pressures that lead to the diffusion of the practice.

C.2 Contributions

This dissertation contributes to advancements in the comparative, empirical, and objective measure of state capture through the theoretical and analytical frameworks developed, that account for both business and political influence, and that allow for comparative analyses of state capture within and across countries. It study illustrates how a biased relational logic of action becomes institutionalized, and how formal business-political interactions shape the redistribution process of state resources. Moreover, the study shows under which circumstances business or political capture are more likely to happen, and they are also informative with respect to how these actors manage to gain control over capture situations. Network structure and the positioning of actors in networks are two key explanatory variables in understanding this phenomenon.

1. From a theoretical perspective, this approach made explicit varieties of state capture patterns and mechanisms of institutionalization of grand corruption. The theoretical contribution of the dissertation stems from reframing state capture as a networked phenomenon, a process that is better understood from the point of view of relations between business and political actors. The theoretical framework developed in this dissertation builds on previous research by formalizing qualitative and quantitative accounts into a conceptual model that more realistically explains how state capture comes about and why sometimes capture is driven by business actors, while other times it is driven by political actors. These networks represent the main mechanism through which the two types of actors influence and constrain each other in opportunities for high level corruption, for extracting state rents, as well as through which they systematically affect state functions, such as administrative capacity, or budget distribution.

2. From a methodological perspective, this study contributes with a standardized comparative analytical framework of state capture, and statistical modelling of large-scale empirical data on business-political networks. The methodological contribution lays in the research design and methods used in this dissertation that allowed for developing a robust analytical framework of public procurement networks which uncover important patterns in business-political relations that lead to state capture. The framework also provides a necessary step forward in the replication and comparability of research on state capture over time, and in different contexts and countries, with intuitive results. The statistical nature of the framework overcomes the critique that structure determines outcomes, by making the whole process stochastic rather than deterministic.

3. From a practical perspective, the analysis conducted in this dissertation is easy to replicate, has a generalized applicability (EU funds, legislative networks, corruption networks), and features intuitive interpretation of results. The theoretical and analytical frameworks presented

and tested in this dissertation have practical contributions for policy development, by allowing scholars, practitioners and policy-makers to focus attention on relevant relations, perform simple yet powerful analyses of objectively assessed corruption risk data, and make data-driven and evidence-based recommendations for policy interventions to curb corruption efforts.

C.3 Implications

The findings of this research have implications for the general research on state capture, making available a robust comparative framework and benchmarking tool that allows multiplex perspectives of business-political networks and the processes that lead to the institutionalization of grand corruption. The dissertation has three main implications: for the research on state capture, for the study of business-political networks and institutionalized grand corruption, and for practical legal investigations in high-level corruption detection, as well as enforcement in prevention.

First, the study has significant implications for the theoretical and empirical research on state capture. Research on this topic remains scarce and more often than not it fails to account for a number of key dimensions, such as the dynamics of the entanglement of business- and political organizational network structure, and positions certain actors take within these networks.

The main findings of the current research directly pinpoint increased risks of state capture in at least two types of business-political interactions, which have practical implications. First, the analyses point to actual individuals and business and political organizations that participate in likely corrupt behavior. Second, the analyses highlight the areas of business-political interactions most affected by likely corrupt behavior, and the mechanisms that lead to the institutionalization of this behavior in different aspects that weaken state functions. Based on

the analyses, anti-corruption policy makers better understand different systemic manifestations of the phenomenon, and can prioritize interventions in policy areas and administrative levels most affected.

Another implication of the empirical results of the dissertation concerns the debate regarding the extent of state capture by business or political actors in a country. The network approach allows us to redefine state capture as a network phenomenon, where partnership choices between business and political organizations institutionalize biased relational logics, which favor dominant actors.

Generalizing or attributing state capture to a single type of actor is bound to be unproductive, because it downplays the importance and consequences of state capture by the other type of actor. The Hungarian state is predominantly captured by political actors in procurement markets such as business services or architectural services, unlike the petroleum products, a smaller but very high value market, which is totally captured by business companies. Boxing Hungary as a politically captured state leads to grossly ignoring an important and expensive procurement market which is dominated by firms.

Given that the two types of capture operate according to different logics of action, anti-corruption intervention policies based on uninformed generalizations will not have the expected effects in curbing corruption efforts. To be able to efficiently intervene, one first needs to understand which markets are affected by what type of capture, what the extents of the phenomena are, and what the impacts for the society are.

The analysis also has practical application. A more practical implication for anti-corruption investigation is a potential change of strategy. The analysis offers an example of an objective analytical framework that can be used in legal investigations in high-level corruption detection

and prevention, by revealing structures of corrupt networks, identifying key players and groups, and conceptualizing network disruption scenarios and intervention optimization strategies.

The main criticism of one of the most successful national anti-corruption agencies in Europe (Romanian DNA) is that their methods of investigating corruption cases comes from 90% whistleblower information. This means their methods of investigating and uncovering corruption cases were through subjective accounts of the practice. In some regions, where local politics was strong, this led to local actors hijacking the process (e.g., through framing political and business opponents in petty bribery situations). A subjective legal investigation of corruption is less effective and can be easily turned into a systematic attack tool. A legal investigation strategy, on the other hand, based on objective measures of corruption networks, offers a better strategy for investigation: less biased, more reliable and precise in pinpointing key players, brokers and clusters. As a result, investigation decisions are better informed. The diversity of information about these cases is ripe with unexplored data, allowing objective data collection and analyses that generate relevant and useful knowledge for intervention and network disruption.

Finally, this study brings a number of positive news for the research on state capture. First, the development of the Corruption Risk Index for assessing public procurement contracts is very welcome. Used in conjunction with large network data, the index reveals objective patterns of corruption risk at the inter-organizational level. A second encouraging finding is the fact that normatively desirable outcomes can be incentivized, such as strictly regulating conflict of interest.

The analytical framework for detecting the institutionalization of corruption risks in public procurement is an essential advancement in the comparative study of state capture. The framework helps identify levels of business and political capture in an objective, robust,

statistically valid, and standardized way, and can be replicated and applied to any procurement market, in any country, over time, with intuitive, fast, and precise results.

C.4 Strengths and Limitations of the Research Strategy

The research strategy presented in this dissertation for analyzing business-political networks to understand state capture presents some clear strengths over previous strategies: objective measurement of corruption risks, longitudinal approach, and comparative design.

The dissertation investigates an important area where the actions of business and political actors work in tandem. Rather than looking at them separately, the strength of the network analyses employed in this study is that they allow to objectively measure both actors' influence, coordination and competition against each other.

Analyzing the evolution of the structures and dynamics of actors' positioning in networks informs us about the processes of institutionalization of grand corruption, leading to state capture, as well as to trace the transformations and turning points of relational contexts that lead to the institutionalization of grand corruption leading to state capture.

The comparisons of different levels of analysis, types of networks, administrative levels, procurement markets and countries carried out in this research, allow for a better understanding of the different manifestations and mechanisms of state capture.

However, there are also important limitations of the research. Among the most notable, relying on formal relations and corruption risks, and the time frame is inconclusive, use of narrow empirical data.

Relying on formal relations allows us to paint only a small part of the actual interactions between business and political actors that participate in corruption and that capture the state. These proxies can be criticized from many directions, but one can also see their usefulness. The relations are operationalized from legal documents that attest actual organizational behavior, not intentions, motivations, or beliefs. Moreover, these legal documents are public information, which means anyone can replicate the analyses. One aspect that the network approach on big data successfully achieves is that it reveals large scale and repetitive patterns that one can observe among thousands of programmatic documents that otherwise do not portray any meaningful message. Moreover, the network projections offer a realistic picture of the structure and distribution of institutional pressures in clean and high corruption risk public procurement contracting.

Relying on corruption risks. The aim of the analysis is not to directly demonstrate corruption, but rather to investigate the relational context of business-political ties that increase or decrease chances of corrupt behavior if intended. To this end, the Corruption Risk Index used in this dissertation offers an informative account of binding formal rules that encourage corruption.

The time frame is inconclusive. Primarily, understanding the dynamics of state capture is hard in such a limited time window. It is likely that there are electoral cycle effects that, using this data, could only be hypothesized for further research. However, more data to expand the time frame of the study will soon be made available. The period 2009-2012 is too short to show state capture in public procurement. However, Public procurement data in Hungary before 2009 is of significantly poorer quality. Data after 2012 is still under development and not yet ready for these analyses. However, given that the analyses track actual behavior, changes in network structure and levels of state capture are traceable immediately.

Another limitation is that these data are narrow empirical data. There is always a tradeoff in information win and loss when choosing to focus either on big data, or on qualitative accounts. The insights provided by the big data approach can be further tested and expanded using other methodological tools. Nevertheless, to overcome this problem I relied on longitudinal analyses, I used within-case triangulation, a stratified research design, and multiple perspectives to parse away insights.

Finally, there is a need for a more direct proxy for politicization of the public sector to support political capture. At the moment, this indicator is inferred from behavior rather than attributes.

All in all, theories and indicators employed in this study were specifically designed to overcome some of the limitations. Also, they pave the way for future research.

C.5 Avenues for Further Research

The current research is the first of this amplitude and scope in the literature, at least for Hungary. The conceptual and analytical models built in this dissertation open the space for an entirely new research agenda that can be pursued further. One avenue for research constitutes using the vocabulary of corruption risks framework to characterize and categorize other countries in terms of the levels of business and political state capture in all their public procurement markets. The database of public procurement contracts across 35 countries developed within the DIGIWHIST³⁸ project offer an appropriate ground for investigation. The results of such descriptive analyses which take into account the relational dimension could offer typologies of varieties of state capture, captor actors, and dynamics. A second point of

³⁸ “The Digital Whistleblower. Fiscal Transparency, Risk Assessment and Impact of Good Governance Policies Assessed” - Horizon 2020 European Commission funded project.

focus in further research could be finding or developing better proxies for corrupt business-political *relations*. Finally, a third area of research is refining the theoretical framework for understanding state capture, based on empirical evidence from comparative studies of business-political networks.

Whichever the path forward, this area of research seems to be very productive. With increasing civil unrest across countries concerning matters of grand corruption and state capture, research on these topics is ever more relevant. With more objective, standardized data being made increasingly available across countries, researchers have a unique opportunity to advance the knowledge of these phenomena. Using objective data and a robust analytical framework, practitioners and prosecutors have a better chance at designing effective and efficient public policy, interventions, and criminal investigations.

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APPENDIX 3.1 - Hungarian public procurement markets

Table 21. Hungarian public procurement markets by contract values and number of issuers and winners, 2009-2012

	Issuers	Winners	Total	Contract Values
Construction work	1,611	2,725	4,336	€ 5,430,055,629
Petroleum products, fuel, electricity, and other sources of energy	235	77	312	€ 604,074,927
Business services, law, marketing, consulting, recruitment, printing, and security	969	1,570	2,539	€ 468,422,751
Repair and maintenance services	155	341	496	€ 388,609,541
Transport equipment and auxiliary products to transportation	231	282	513	€ 344,902,111
Sewage, refuse, cleaning, and environmental services	280	331	611	€ 316,423,453
Financial and insurance services	214	59	273	€ 302,101,961
Medical equipment, pharmaceuticals, and personal care services	206	380	586	€ 301,138,695
Architectural, construction, engineering and inspection services	606	1,244	1,850	€ 265,345,244
Hotel, restaurant and retail trade services	144	142	286	€ 203,270,797
Real estate services	113	227	340	€ 189,908,306
IT services consulting, software development, internet and support	238	399	637	€ 168,037,687
Office, computing machinery, equipment and supplies	506	422	928	€ 152,881,544
Postal and telecommunications services	48	25	73	€ 129,161,565
Food, beverages, tobacco and related products	251	422	673	€ 105,204,211
Printed matter and related products	200	69	269	€ 93,468,196
Furniture, furnishings, domestic appliances, and cleaning products	322	325	647	€ 92,005,687
Health and social work services	115	202	317	€ 67,811,131
Education and training services	358	304	662	€ 63,752,126
Agricultural, forestry, horticultural, aquacultural and apicultural services	90	157	247	€ 53,636,757
Recreational, cultural and sporting services	74	131	205	€ 53,594,457
Industrial machinery	107	217	324	€ 52,889,013
Laboratory, optical and precision equipment	102	241	343	€ 48,607,032

Table 21. Hungarian public procurement markets by contract values and number of issuers and winners, 2009-2012 (cont.)

	Issuers	Winners	Total	Contract Values
Construction structures, materials, and auxiliary products to construction	96	181	277	€ 30,319,437
Installation services	4	18	22	€ 28,002,187
Electrical machinery, apparatus, equipment, consumables, and lighting products	55	105	160	€ 27,638,591
Software package and information systems	155	168	323	€ 23,933,391
Transport services	42	59	101	€ 23,007,428
Radio, television, communication, telecommunication and related equipment	83	103	186	€ 15,990,131
Other community, social and personal services	61	73	134	€ 13,314,371
Machinery for mining, quarrying, and construction equipment	25	43	68	€ 12,393,735
Chemical products	33	78	111	€ 12,039,694
Clothing, footwear, luggage articles and accessories	28	63	91	€ 10,087,023
Supporting and auxiliary transport services, travel agencies services	15	17	32	€ 7,205,263
Musical instruments, sport goods, games, toys, handicraft, art, and other accessories	88	84	172	€ 6,414,972
Security, fire-fighting, police and defense equipment	36	59	95	€ 4,991,936
Services related to the oil and gas industry	5	5	10	€ 4,762,129
Research and development services, and related consultancy services	32	56	88	€ 3,618,614
Administration, defense and social security services	44	29	73	€ 3,399,316
Agricultural, farming, fishing, forestry and related products	17	40	57	€ 1,799,918
Leather and textile fabrics, plastic and rubber materials	11	19	30	€ 1,456,017
Mining, basic metals and related product	7	9	16	€ 817,072
Public utilities	4	2	6	€ 681,224
Agricultural machinery	89	99	188	€ 55,280

APPENDIX 3.2 - Defining high and low corruption risks

Table 22. Defining high and low corruption risks as link attributes across markets in Hungary, 2009-2012

a. Construction Work						b. Petroleum Products					
	2009	2010	2011	2012			2009	2010	2011	2012	
avgCRI	0.279	0.252	0.274	0.263		avgCRI	0.300	0.220	0.239	0.239	
stdev	0.152	0.151	0.147	0.118		stdev	0.105	0.146	0.124	0.162	
highCRI >	0.431	0.403	0.421	0.382		highCRI >	0.405	0.366	0.363	0.400	
lowCRI <	0.126	0.101	0.127	0.146		lowCRI <	0.196	0.074	0.115	0.077	
N_issuers	438	395	387	256		N_issuers	15	31	39	20	
N_winners	516	615	595	356		N_winners	8	18	45	19	
N_total	954	1,011	982	612		N_total	23	49	83	39	
c. Business Services						d. Architectural Services					
	2009	2010	2011	2012			2009	2010	2011	2012	
avgCRI	0.411	0.312	0.264	0.237		avgCRI	0.268	0.262	0.270	0.255	
stdev	0.181	0.187	0.140	0.113		stdev	0.168	0.170	0.154	0.108	
highCRI >	0.592	0.499	0.404	0.350		highCRI >	0.436	0.433	0.424	0.363	
lowCRI <	0.231	0.125	0.124	0.123		lowCRI <	0.100	0.020	0.116	0.146	
N_issuers	85	99	136	94		N_issuers	154	146	136	90	
N_winners	149	193	198	141		N_winners	241	241	203	164	
N_total	234	292	334	235		N_total	395	387	339	254	

Table 23. Defining high and low corruption risks as link attributes in the Construction Work market in the Czech Republic and Slovakia, 2009-2012

Czech Republic						Slovakia					
	2009	2010	2011	2012			2009	2010	2011	2012	
avgCRI	0.378	0.395	0.393	0.326		avgCRI	0.305	0.254	0.202	0.206	
stdev	0.150	0.164	0.176	0.198		stdev	0.151	0.151	0.129	0.139	
highCRI >	0.528	0.560	0.569	0.524		highCRI >	0.456	0.405	0.331	0.345	
lowCRI <	0.228	0.231	0.218	0.128		lowCRI <	0.153	0.103	0.073	0.066	
N_issuers	648	226	228	280		N_issuers	223	57	43	39	
N_winners	662	276	262	389		N_winners	191	84	45	50	
N_total	1310	502	490	669		N_total	414	141	88	89	

APPENDIX 3.3 - Dispersion scores of the CRI

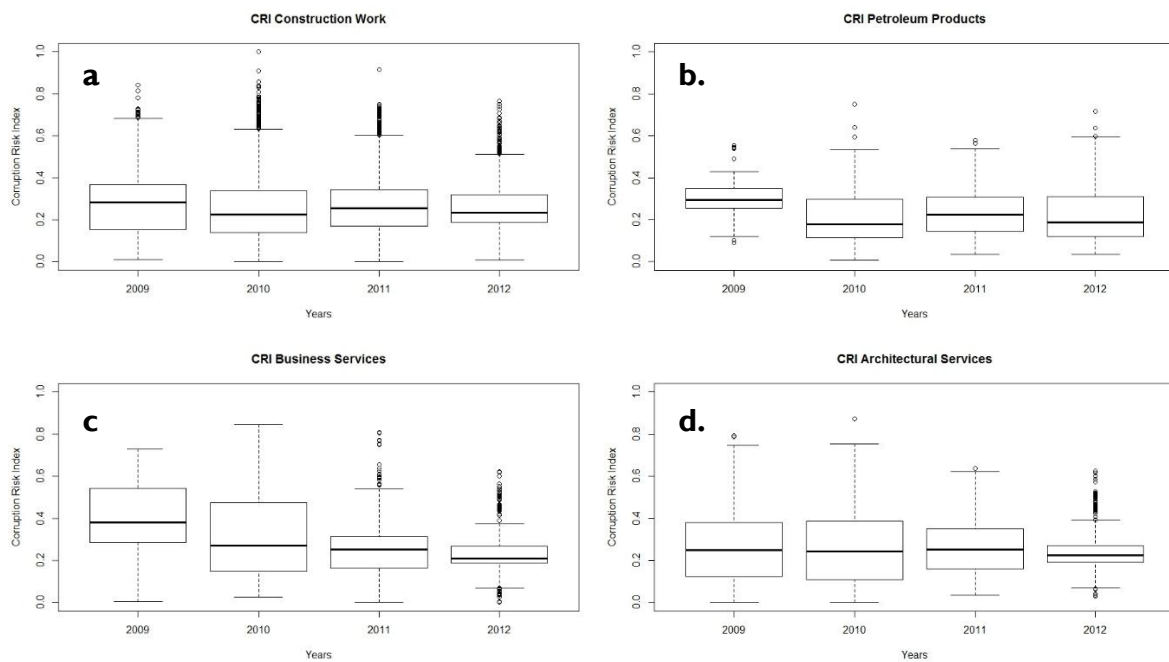


Figure 42. Median and dispersion scores of the CRI in each of the analyzed markets in Hungary, over time



Figure 43. Median and dispersion scores of the CRI in the Czech and Slovak Construction Work markets, over time

APPENDIX 3.4 - Descriptive statistics of the public procurement networks

Table 24. Descriptive statistics of the Hungarian procurement market networks, 2009-2012

	Construction Work				Petroleum Products				Business Services				Architectural Services			
	2009	2010	2011	2012	2009	2010	2011	2012	2009	2010	2011	2012	2009	2010	2011	2012
Nodes	943	962	972	612	24	50	84	40	235	292	335	236	394	386	339	254
Edges (contracts)	1224	1152	1014	602	17	57	52	67	260	434	247	196	402	410	347	188
Density	0.003	0.002	0.002	0.003	0.062	0.047	0.015	0.086	0.009	0.01	0.004	0.007	0.005	0.006	0.006	0.006
Avg Degree	2.596	2.395	2.086	1.967	1.417	2.28	1.238	3.35	2.213	2.973	1.475	1.661	2.041	2.124	2.047	1.48
Component count	224	212	252	173	7	12	37	9	74	81	122	84	103	99	103	90

Table 25. Descriptive statistics of the Czech and Slovak Construction Work procurement market networks, 2009-2012

	Czech Republic				Slovakia			
	2009	2010	2011	2012	2009	2010	2011	2012
Nodes	1312	500	488	668	411	139	86	88
Edges (contracts)	1150	410	409	675	297	104	65	64
Density	0.003	0.007	0.007	0.006	0.007	0.022	0.035	0.034
Avg Degree	1.756	1.640	1.676	2.024	1.445	1.496	1.512	1.471
Component count	264	106	101	86	122	38	22	23

APPENDIX 3.5 – National vs. regional and local issuers: Estimated money spent on high corruption risk deals

Table 26. National vs regional/local issuers. Estimated money spent on procurement deals suspected of high corruption risk, by type of issuer, in different markets in Hungary, over time

Market	Issuer Type	2009		2010		2011		2012	
		<i>High CRI contracts signed</i>	<i>Estimated money spent</i>	<i>High CRI contracts signed</i>	<i>Estimated money spent</i>	<i>High CRI contracts signed</i>	<i>Estimated money spent</i>	<i>High CRI contracts signed</i>	<i>Estimated money spent</i>
Construction Work	National	29	€ 18,339,037	38	€ 17,216,157	25	€ 10,202,834	26	€ 4,911,982
	Regional/local	314	€ 176,717,082	465	€ 139,552,020	335	€ 45,028,114	208	€ 78,050,722
Petroleum Products	National	1	€ 40,613,117	13	€ 7,043,960	4	€ 200,607	4	€ 199,161
	Regional/local	0	-	8	€ 1,711,656	9	€ 851,730	34	€ 482,096
Business Services	National	9	€ 9,788,517	47	€ 65,237,551	34	€ 2,321,920	52	€ 2,226,258
	Regional/local	7	€ 405,533	8	€ 989,386	27	€ 852,143	42	€ 22,803,141
Architectural Services	National	41	€ 15,874,273	21	€ 1,356,698	44	€ 3,326,745	22	€ 1,446,457
	Regional/local	160	€ 19,689,808	191	€ 15,786,295	96	€ 3,522,886	87	€ 3,215,699

Conservative estimates of money spent on high corruption risk procurement contracts. Contract value estimated by the minimum bid. This means that the real costs of the contracts can be much higher.

Corruption Risk Index (CRI) one stdev above mean CRI per year.

APPENDIX 4.1 – Contracts signed by issuer and winner locations

Table 27. Percent contracts signed by issuer location (Construction Work)

County	2009	2010	2011	2012
Budapest	26.01%	27.99%	35.95%	52.80%
Pest	9.28%	9.12%	8.01%	5.46%
Fejér	2.68%	2.45%	2.15%	1.36%
Komárom-Esztergom	2.32%	2.20%	2.30%	1.09%
Veszprém	4.37%	3.40%	3.48%	1.91%
Győr-Moson-Sopron	1.96%	3.77%	5.19%	1.50%
Vas	2.73%	2.74%	2.97%	0.68%
Zala	3.14%	3.94%	2.59%	2.32%
Baranya	2.59%	1.87%	3.11%	1.36%
Somogy	4.68%	3.23%	1.11%	1.36%
Tolna	1.46%	2.82%	1.33%	1.77%
Borsod-Abaúj-Zemplén	3.05%	5.27%	4.67%	4.37%
Heves	4.00%	2.94%	2.00%	1.91%
Nógrád	1.41%	1.53%	0.44%	1.36%
Hajdú-Bihar	3.23%	4.39%	5.78%	5.05%
Jász-Nagykun-Szolnok	2.41%	2.11%	3.04%	2.73%
Szabolcs-Szatmár-Bereg	3.59%	4.39%	2.30%	1.36%
Bács-Kiskun	3.73%	3.86%	3.48%	4.09%
Békés	3.46%	5.39%	2.45%	1.91%
Csongrád	13.92%	6.59%	7.64%	5.59%

Table 28. Percent contracts signed by winner location (Construction Work)

County	2009	2010	2011	2012
Budapest	33.11%	34.12%	40.55%	41.06%
Pest	9.23%	8.62%	11.05%	15.83%
Fejér	2.18%	2.82%	1.41%	2.18%
Komárom-Esztergom	1.77%	2.69%	2.52%	1.64%
Veszprém	2.64%	1.82%	2.74%	1.64%
Győr-Moson-Sopron	1.36%	3.23%	2.97%	1.77%
Vas	2.05%	1.95%	1.78%	0.68%
Zala	3.91%	4.98%	2.97%	2.86%
Baranya	2.32%	1.99%	2.37%	1.77%
Somogy	2.82%	2.32%	0.89%	1.64%
Tolna	0.95%	1.66%	1.41%	0.95%
Borsod-Abaúj-Zemplén	2.68%	4.64%	4.00%	4.64%
Heves	6.50%	2.86%	2.00%	2.86%
Nógrád	0.91%	1.08%	0.52%	0.27%
Hajdú-Bihar	2.23%	4.60%	5.26%	4.64%
Jász-Nagykun-Szolnok	1.68%	1.91%	1.70%	2.32%
Szabolcs-Szatmár-Bereg	4.14%	3.44%	2.08%	1.09%
Bács-Kiskun	7.82%	5.43%	4.82%	5.87%
Békés	2.23%	4.23%	2.15%	1.50%
Csongrád	9.46%	5.60%	6.82%	4.77%

APPENDIX 4.2 – Issuer and winner locations by corruption risks

Table 29. Issuer location by corruption risks (Construction Work)

County	2009			2010			2011			2012		
	Low	Med	High	Low	Med	High	Low	Med	High	Low	Med	High
Budapest	7.73%	16.51%	1.77%	7.75%	18.24%	1.99%	7.78%	26.39%	1.78%	3.82%	45.57%	3.41%
Pest	1.96%	6.18%	1.14%	1.08%	7.01%	1.04%	0.15%	7.12%	0.74%	0.55%	3.96%	0.95%
Fejér	0.86%	1.55%	0.27%	0.50%	1.70%	0.25%	0.67%	0.96%	0.52%	0.00%	1.36%	0.00%
Komárom-Esztergom	0.32%	1.86%	0.14%	0.54%	1.62%	0.04%	0.44%	1.33%	0.52%	0.00%	0.95%	0.14%
Veszprém	0.68%	3.37%	0.32%	1.29%	1.87%	0.25%	0.22%	2.74%	0.52%	0.27%	1.36%	0.27%
Győr-Moson-Sopron	0.27%	1.36%	0.32%	0.66%	2.78%	0.33%	0.37%	3.71%	1.11%	0.00%	1.09%	0.41%
Vas	0.91%	1.73%	0.09%	0.50%	1.82%	0.41%	0.67%	1.93%	0.37%	0.14%	0.41%	0.14%
Zala	0.45%	2.27%	0.41%	2.45%	1.04%	0.46%	0.22%	2.15%	0.22%	0.00%	2.05%	0.27%
Baranya	0.41%	2.05%	0.14%	0.12%	1.41%	0.33%	0.37%	2.22%	0.52%	0.00%	0.68%	0.68%
Somogy	0.95%	2.55%	1.18%	0.50%	2.49%	0.25%	0.00%	0.74%	0.37%	0.00%	1.09%	0.27%
Tolna	0.36%	0.91%	0.18%	0.79%	1.82%	0.21%	0.00%	1.33%	0.00%	0.14%	1.09%	0.55%
Borsod-Abaúj-Zemplén	0.27%	2.55%	0.23%	0.33%	4.23%	0.70%	1.11%	3.11%	0.44%	0.00%	2.59%	1.77%
Heves	1.32%	2.36%	0.32%	1.04%	1.49%	0.41%	0.22%	1.48%	0.30%	0.00%	1.91%	0.00%
Nógrád	0.45%	0.68%	0.27%	0.17%	1.29%	0.08%	0.00%	0.30%	0.15%	0.00%	1.23%	0.14%
Hajdú-Bihar	1.09%	1.73%	0.41%	0.41%	2.94%	1.04%	1.11%	4.00%	0.67%	0.14%	4.37%	0.55%
Jász-Nagykun-Szolnok	0.36%	1.86%	0.18%	0.37%	1.53%	0.21%	0.22%	2.59%	0.22%	0.00%	2.46%	0.27%
Szabolcs-Szatmár-Bereg	0.64%	2.41%	0.55%	1.24%	2.32%	0.83%	0.30%	1.70%	0.30%	0.00%	1.23%	0.14%
Bács-Kiskun	0.64%	2.32%	0.77%	0.62%	2.74%	0.50%	0.30%	2.67%	0.52%	0.27%	2.73%	1.09%
Békés	0.95%	2.46%	0.05%	1.24%	3.48%	0.66%	0.07%	1.85%	0.52%	0.00%	1.77%	0.14%
Csongrád	0.77%	6.00%	7.14%	0.95%	5.06%	0.58%	0.30%	5.41%	1.93%	0.00%	4.64%	0.95%
Total	21.42%	62.71%	15.87%	22.55%	66.87%	10.57%	14.53%	73.76%	11.71%	5.32%	82.54%	12.14%

Table 30. Winner location by corruption risks (Construction Work)

	2009			2010			2011			2012		
County	Low	Med	High	Low	Med	High	Low	Med	High	Low	Med	High
Budapest	7.64%	22.10%	3.37%	7.92%	23.47%	2.74%	7.19%	30.62%	2.74%	1.91%	36.29%	2.86%
Pest	2.59%	5.78%	0.86%	2.16%	5.85%	0.62%	1.04%	8.97%	1.04%	0.27%	13.92%	1.64%
Fejér	0.59%	1.36%	0.23%	0.66%	1.91%	0.25%	0.30%	0.82%	0.30%	0.14%	2.05%	0.00%
Komárom-Esztergom	0.05%	1.55%	0.18%	0.62%	1.95%	0.12%	0.15%	1.85%	0.52%	0.14%	1.50%	0.00%
Veszprém	0.55%	1.46%	0.64%	0.37%	1.33%	0.12%	0.22%	1.93%	0.59%	0.00%	1.50%	0.14%
Győr-Moson-Sopron	0.32%	0.77%	0.27%	0.83%	2.16%	0.25%	0.37%	2.08%	0.52%	0.00%	1.36%	0.41%
Vas	0.59%	1.27%	0.18%	0.54%	1.33%	0.08%	0.59%	0.89%	0.30%	0.00%	0.55%	0.14%
Zala	0.64%	2.82%	0.45%	2.74%	1.37%	0.87%	0.30%	2.22%	0.44%	0.14%	2.46%	0.27%
Baranya	0.50%	1.64%	0.18%	0.21%	1.58%	0.21%	0.44%	1.70%	0.22%	0.55%	0.95%	0.27%
Somogy	0.50%	1.59%	0.73%	0.46%	1.66%	0.21%	0.00%	0.59%	0.30%	0.00%	1.50%	0.14%
Tolna	0.41%	0.36%	0.18%	0.25%	1.24%	0.17%	0.30%	1.11%	0.00%	0.00%	0.68%	0.27%
Borsod-Abaúj-Zemplén	0.32%	2.18%	0.18%	0.41%	3.44%	0.79%	0.52%	3.11%	0.37%	0.27%	2.86%	1.50%
Heves	2.86%	3.23%	0.41%	0.91%	1.66%	0.29%	0.30%	1.63%	0.07%	0.00%	1.50%	1.36%
Nógrád	0.14%	0.64%	0.14%	0.08%	0.95%	0.04%	0.30%	0.15%	0.07%	0.27%	0.00%	0.00%
Hajdú-Bihar	0.59%	1.14%	0.50%	0.50%	2.82%	1.29%	1.33%	3.34%	0.59%	0.27%	3.96%	0.41%
Jász-Nagykun-Szolnok	0.32%	1.09%	0.27%	0.33%	1.37%	0.21%	0.15%	1.33%	0.22%	0.95%	1.09%	0.27%
Szabolcs-Szatmár-Bereg	0.82%	2.86%	0.45%	0.58%	2.20%	0.66%	0.30%	1.56%	0.22%	0.00%	0.82%	0.27%
Bács-Kiskun	1.18%	5.05%	1.59%	0.91%	3.90%	0.62%	0.59%	3.48%	0.74%	0.27%	4.23%	1.36%
Békés	0.41%	1.82%	0.00%	1.24%	2.40%	0.58%	0.00%	1.85%	0.30%	0.00%	1.36%	0.14%
Csongrád	0.41%	4.00%	5.05%	0.83%	4.31%	0.46%	0.15%	4.52%	2.15%	0.14%	3.96%	0.68%
Total	21.42%	62.71%	15.87%	22.55%	66.87%	10.57%	14.53%	73.76%	11.71%	5.32%	82.54%	12.14%

APPENDIX 4.3 – Distribution of number of bidders per call in the Construction Work market, over time

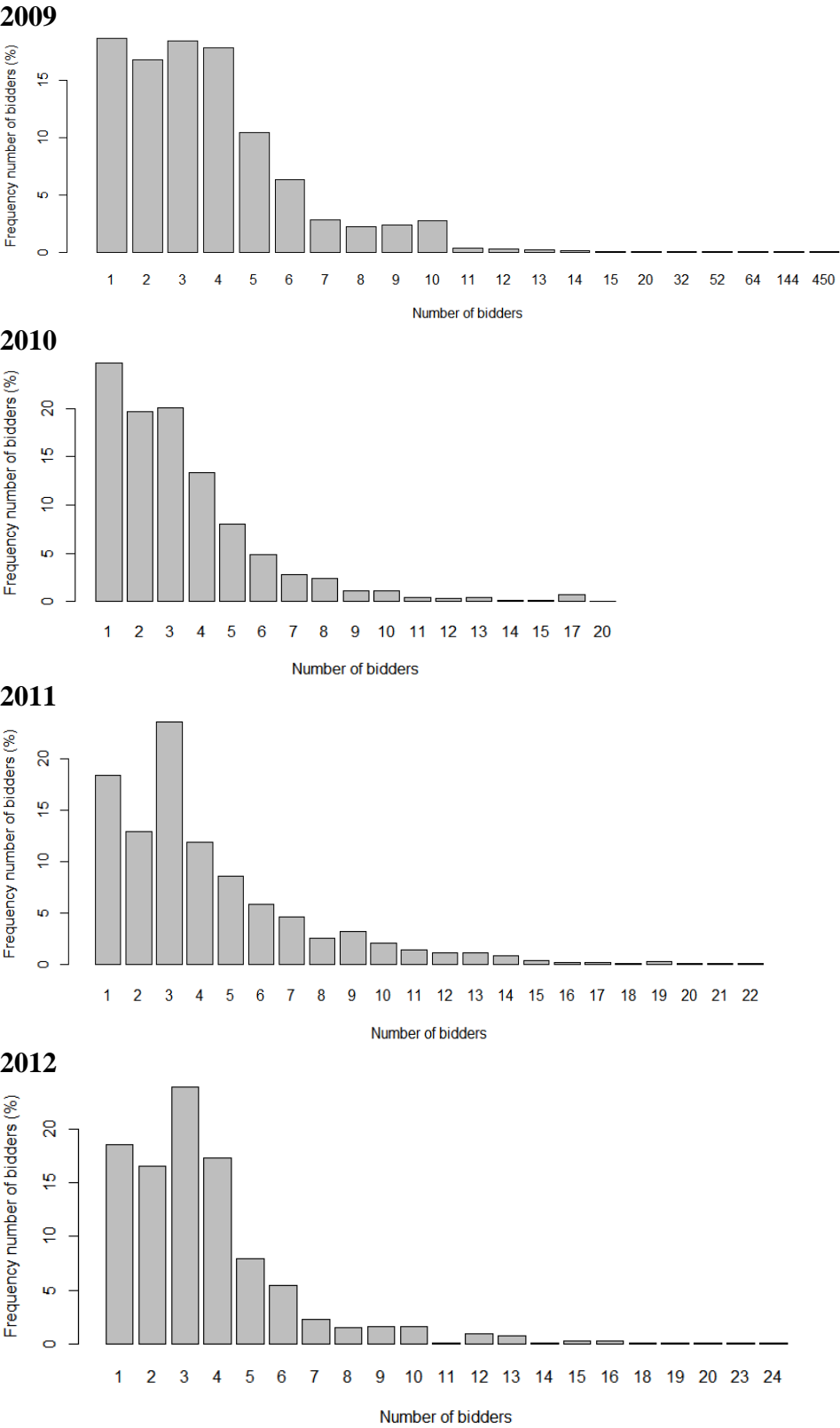


Figure 44. Distribution of bidders per contract over time

APPENDIX 4.4 – Distribution of construction work contracts by tender procedure

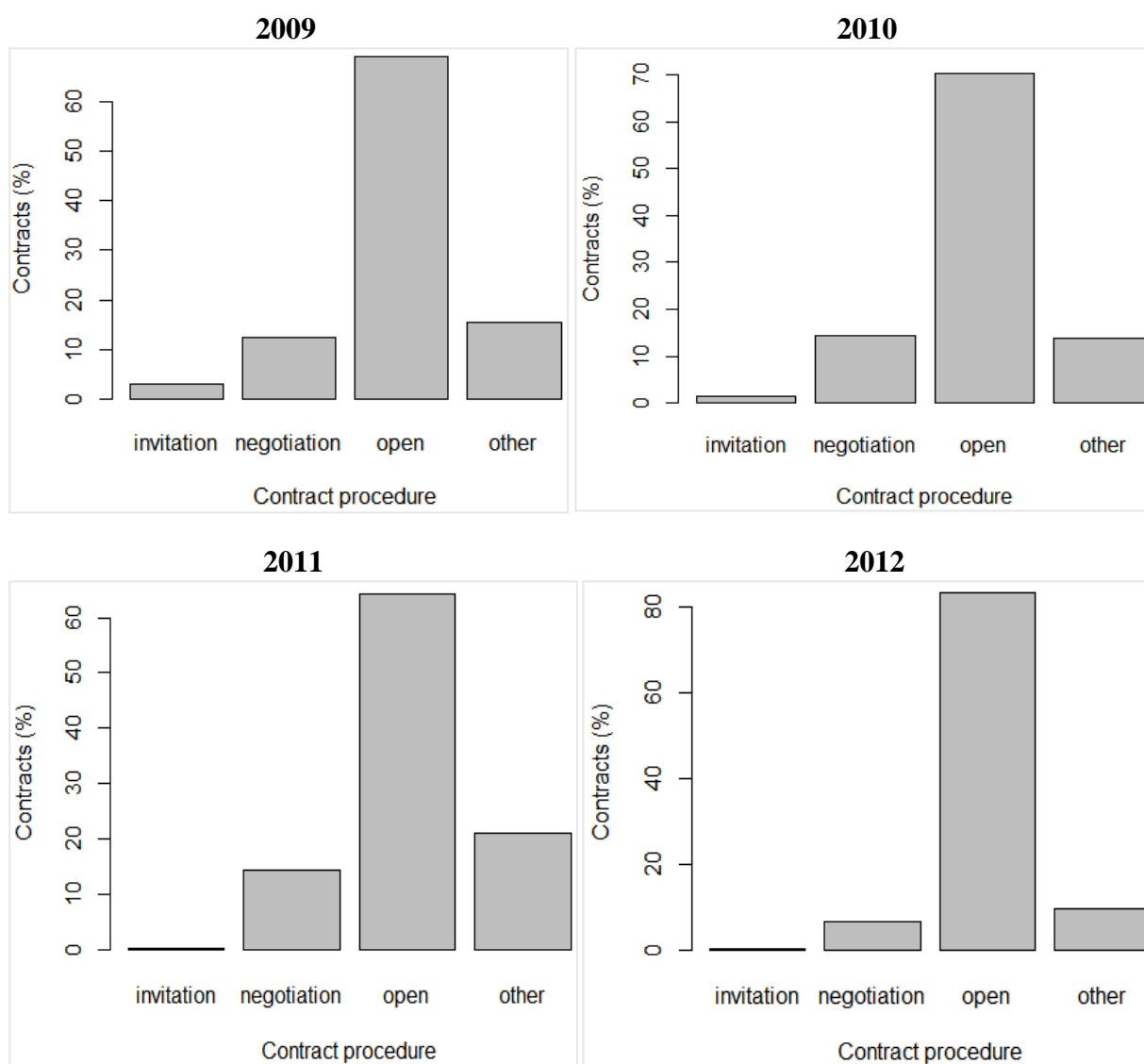


Figure 45. Proportions of contracts signed by tender procedure

APPENDIX 4.5 – State capture models without Mixed Configurations

Table 31. Predictors of Political Capture over time (DV = issuer-controlled high corruption risk configurations)

Predictors	2009		2010		2011		2012	
	B	SE(B)	B	SE(B)	B	SE(B)	B	SE(B)
(Intercept)	-1.004 **	0.382	-1.836 ***	0.485	-2.942 ***	0.671	-0.702	0.780
<i>Control of corruption risk situations</i>								
Mixed corruption risk situations								
Low corruption risk situations	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
<i>Attributes of the contracts</i>								
Number of bidders per tender	-0.005	0.005	-0.105 ***	0.023	-0.032	0.027	-0.098 **	0.034
Use of subcontractors	0.153	0.107	0.220 .	0.119	0.272	0.196	0.198	0.205
Use of EU funds	-0.156	0.122	-0.186	0.128	-0.038	0.224	-0.312	0.261
Contract value (log)	0.151 ***	0.033	0.233 ***	0.041	0.329 ***	0.061	0.154 *	0.068
Award criteria	-0.015	0.103	0.132	0.226	0.207	0.185	0.504 *	0.213
<i>Attributes of the issuers</i>								
Government agency	-0.758 ***	0.187	-0.616	0.390	-1.296 ***	0.288	-0.687 *	0.330
National issuer	-0.543 **	0.173	-0.382 ***	0.206	-0.804 **	0.264	-0.808 **	0.299
Private issuer	-0.800 ***	0.174	-0.447	0.422	-0.669	0.426	-0.746 .	0.434
State-owned enterprise	-0.932	0.598	-1.013	0.894	-1.514	1.312	-0.929	0.981
Procurement capabilities	0.003 .	0.001	0.011 **	0.004	0.002	0.005	0.000	0.004
Same location as winner	0.028	0.098	-0.335	0.427	0.505 ***	0.191	0.415 *	0.199
N	678		598		390		236	
Adj. R ²	.024		.029		.054		.044	

Significance codes: 0 '***', 0.001 '**', 0.01 '*', 0.05 '.', 0.1 ' '.

Table 32. Predictors of Clean Political Behavior over time (DV = issuer-controlled low corruption risk configurations)

Predictors	2009		2010		2011		2012	
	B	SE(B)	B	SE(B)	B	SE(B)	B	SE(B)
(Intercept)	-7.228	15.715	30.437 .	17.014	116.495 ***	24.591	138.936 ***	20.631
<i>Control of corruption risk situations</i>								
Mixed corruption risk situations								
High corruption risk situations	1.131	0.879	0.622	0.715	1.113	1.004	0.526	1.016
<i>Attributes of the contracts</i>								
Number of bidders per tender	0.228	0.189	4.390 ***	0.816	6.798 ***	0.962	2.509 **	0.933
Use of subcontractors	11.894 **	4.409	27.376 ***	4.115	6.521	7.189	-1.436	5.593
Use of EU funds	6.614	5.005	-11.719 **	4.489	-41.263 ***	8.158	-16.165 *	7.102
Contract value (log)	4.651 ***	1.356	-3.055 *	1.458	-6.358 **	2.273	-9.979 ***	1.82
Award criteria	-22.893 ***	4.195	-24.433 **	7.912	-23.562 ***	6.772	-2.259	5.819
<i>Attributes of the issuers</i>								
Government agency	-34.084 ***	7.675	-96.748 ***	13.515	-139.190 ***	9.964	-12.181	9.008
National issuer	85.415 ***	6.867	106.802 ***	6.865	33.717 ***	9.675	55.987	7.931
Private issuer	-13.265 .	7.186	4.255	14.768	-148.248 ***	15.102	79.654	11.466
State-owned enterprise	-26.000	24.577	-5.306	31.310	-12.109	48.157	-10.759	26.743
Procurement capabilities	0.293 ***	0.055	3.303 ***	0.134	2.461 ***	0.156	-0.344	0.12
Same location as winner	1.827	4.017	0.956	14.959	-15.363 *	7.014	-6.146	5.437
N	678		598		390		236	
Adj. R ²	.125		.337		.314		.195	

Significance codes: 0 '***', 0.001 '**', 0.01 '*', 0.05 '.', 0.1 ' '.

Table 33. Predictors of Business Capture over time (DV = supplier-controlled high corruption risk configurations)

Predictors	2009		2010		2011		2012	
	B	SE(B)	B	SE(B)	B	SE(B)	B	SE(B)
(Intercept)	-2.539 **	0.890	-6.693	1.026	-5.652 ***	1.161	-5.022 ***	1.297
<i>Control of corruption risk situations</i>								
Mixed corruption risk situations								
Low corruption risk situations	-0.003	0.002	-0.057 ***	0.004	0.000	0.003	0.026 ***	0.006
<i>Attributes of the contracts</i>								
Number of bidders per tender	-0.009	0.011	-0.136 ***	0.048	-0.036	0.048	-0.061	0.066
Use of subcontractors	0.627 *	0.258	0.415 .	0.248	0.301	0.358	0.122	0.391
Use of EU funds	0.698 *	0.289	0.516 *	0.261	1.402 ***	0.372	1.603 ***	0.469
Contract value (log)	0.210 **	0.078	0.543 ***	0.087	0.558 ***	0.108	0.553 ***	0.113
Award criteria	0.946 ***	0.237	-0.048	0.406	-0.965 ***	0.329	-1.033 **	0.386
<i>Attributes of the winners</i>								
Winner part of consortium	-2.047 ***	0.488	-1.835 ***	0.441	-1.888 ***	0.535	-2.334 **	0.716
Procurement capabilities	0.012 **	0.004	0.444 ***	0.021	0.221 ***	0.029	0.084 *	0.041
Same location as issuer	-0.829 ***	0.238	-2.294 ***	0.429	-0.674 .	0.345	-0.443	0.390
N	740		975		618		371	
Adj. R ²	.036		.224		.131		.11	

Significance codes: 0 '***', 0.001 '**', 0.01 '*', 0.05 '.', 0.1 ' '.

Table 34. Predictors of Clean Business Behavior over time (DV = supplier-controlled low corruption risk configurations)

Predictors	2009		2010		2011		2012	
	B	SE(B)	B	SE(B)	B	SE(B)	B	SE(B)
(Intercept)	24.975 **	8.479	-33.612 ***	5.220	-40.852 ***	10.215	12.799 .	7.534
<i>Control of corruption risk situations</i>								
Mixed corruption risk situations								
High corruption risk situations	-0.300	0.204	-1.478 ***	0.099	0.038	0.240	0.876 ***	0.212
<i>Attributes of the contracts</i>								
Number of bidders per tender	-0.034	0.105	0.010	0.242	0.815 .	0.420	-0.823 *	0.382
Use of subcontractors	30.194 ***	2.372	3.404 **	1.263	20.679 ***	3.095	-2.203	2.250
Use of EU funds	5.666 *	2.749	2.277 .	1.326	12.658 ***	3.262	5.498 *	2.714
Contract value (log)	-3.589 ***	0.742	0.670	0.447	1.478	0.957	-0.444	0.659
Award criteria	11.350 ***	2.256	5.482 **	2.061	-10.564 ***	2.886	6.207 **	2.225
<i>Attributes of the winners</i>								
Winner part of consortium	-8.625 .	4.659	-0.805	2.249	-16.244 ***	4.694	-5.510	4.147
Procurement capabilities	0.934 ***	0.035	5.349 ***	0.042	6.603 ***	0.187	-0.187	0.239
Same location as issuer	-22.449 ***	2.224	-25.261 ***	2.132	-17.684 ***	2.993	-5.032 *	2.243
<i>N</i>	740		975		618		371	
<i>Adj. R²</i>	.318		.879		.527		.049	

Significance codes: 0 '***', 0.001 '**', 0.01 '*', 0.05 '.', 0.1 ' '

APPENDIX 4.6 – Comparative Dynamic Network Analysis

Table 35. Number of participant actors in public procurement over time

	2009	2010	2011	2012
Issuers	678	598	390	236
Winners	740	975	618	371
Total	1418	1573	1008	607

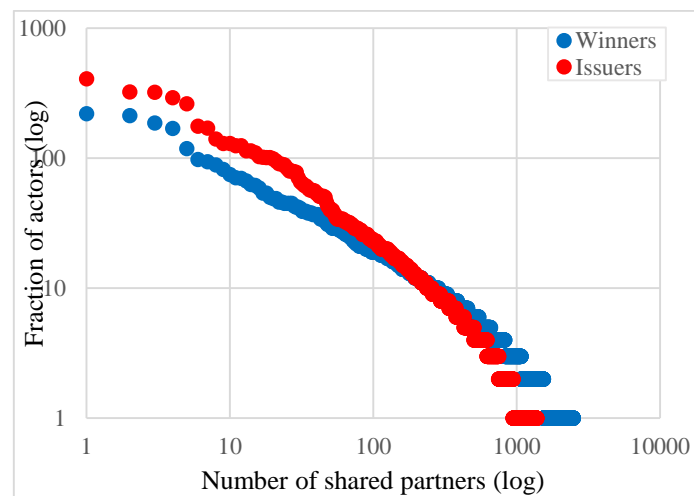


Figure 46. Degree distributions of co-issuer connections based on shared winners, and co-winner connections based on shared issuers

Table 36. Network level measures of the Issuer x Winner contractual network

	2009	2010	2011	2012
Avg Degree	3.102	3.067	2.677	2.415
Density	0.002	0.002	0.003	0.004
Degree Centralization	0.126	0.050	0.094	0.173
Betweenness Centralization	0.163	0.306	0.139	0.014
Closeness Centralization	0.001	0.001	0.001	0.000
Eigenvector Centralization	1.000	0.999	0.999	0.997
Degree Assortativity	0.456	0.074	0.083	0.001
Global Transitivity	-	-	-	-
Diameter	27	20	20	13
Avg Path Length	7.59	7.273	7.360	4.901
Size LCC	876	1167	523	100
Density LCC	0.005	0.003	0.007	0.053
No. Communities LCC	53	40	31	10
Modularity LCC	0.860	0.860	0.880	0.690

Table 37. Comparison of network level measures of the co-issuer (shared winners) and co-winner (shared issuers) networks over time

	<i>Co-issuer networks</i>				<i>Co-winner networks</i>			
	2009	2010	2011	2012	2009	2010	2011	2012
Avg Degree	7.994	9.462	3.979	1.068	5.259	7.549	6.065	4.954
Density	0.012	0.016	0.010	0.005	0.007	0.008	0.010	0.013
Degree Centralization	0.145	0.142	0.103	0.025	0.128	0.219	0.131	0.070
Betweenness Centralization	0.062	0.048	0.038	0.003	0.157	0.280	0.133	0.012
Closeness Centralization	0.002	0.002	0.002	0.001	0.002	0.002	0.002	0.001
Eigenvector Centralization	0.930	0.903	0.932	0.983	0.942	0.967	0.956	0.939
Degree Assortativity	0.432	0.450	0.524	0.442	-0.010	-0.019	0.142	0.759
Global Transitivity	0.687	0.700	0.697	0.602	0.476	0.425	0.652	0.899
Diameter	62	30	20	20	155	46	51	44
Avg Path Length	3.78	3.517	3.614	2.322	3.81	3.705	3.720	2.549
Size LCC	407	418	418	23	469	749	348	77
Density LCC	0.032	0.032	0.032	0.154	0.017	0.013	0.028	0.139
No. Communities LCC	49	85	85	4	22	44	12	5
Modularity LCC	0.280	0.350	0.350	0.400	0.490	0.620	0.700	0.350