J Bus Ethics (2016) 139:411–428
DOI 10.1007/s10551-015-2675-4

Political Connectedness, Corporate Governance, and Firm Performance

Polona Domadenik[1] · Janez Prašnikar[1] · Jan Svejnar[2]

Received: 26 June 2014 / Accepted: 21 April 2015 / Published online: 9 May 2015

Abstract In this paper, we present and test a theory of how political connectedness (often linked to political corruption) affects corporate governance and productive efficiency of firms. Our model predicts that underdeveloped democratic institutions that do not punish political corruption result in political connectedness of firms that in turn has a negative effect on performance. We test this prediction on an almost complete population of Slovenian joint-stock companies with 100 or more employees. Using the data on supervisory board structure, together with balance sheet and income statement data for 2000–2010, we show that a higher share of politically connected supervisory board members leads to lower productivity.

Keywords Political connectedness · Political corruption · Corporate governance · Productivity · Politicians · State-owned enterprises

Introduction

Why do firms prefer to be politically connected? Is political connectedness always linked to political corruption? Researchers have noted that firms try to achieve economic advantages over their competitors in a variety of ways, including preferential treatment by state-owned banks in obtaining credit, easier access to government contracts, lighter taxation, and a more relaxed regulatory environment (Faccio 2006). Political connectedness was noted in the seminal papers of Tullock (1967), Stigler (1971), and Krueger (1974), and has been further documented in more recent studies of developed economies (e.g., Agrawal and Knoeber 2001; and Kroszner and Stratmann 1998, for the USA) as well as developing and transition economies (e.g., Fisman 2001, for Indonesia; Khwaja and Mian 2005, for Pakistan; Kang 2003, for China; Johnson and Mitton 2003, for Malaysia; Dombrovsky 2008, for Latvia; and Vynoslavaska et al. 2005, for Russia and Ukraine).

The relationship between political corruption and economic performance has been a focus of attention ever since Olson (1982) argued that special interest groups could cause the stagnation and decline of nations. Shleifer and Vishny (1994) developed the argument that corruption is a destructive force in developing countries with weak institutions, and the political connectedness of firms has been viewed as providing fertile ground for political corruption, especially when there is evidence of "abuse of public office for private gains" (e.g., Kaufmann and Vincente 2011). As a result, anti-corruption policies have become a central component of development strategies in many countries and the World Bank alone has supported more than 600 anti-corruption programs since 1996 (Banerjee et al. 2012).

Research on corruption faces important theoretical and empirical challenges. On the theoretical side, there is a need to go beyond the classical understanding of corruption as a generic form of moral hazard in organizations and analyze corruptive practices in different underlying environments (e.g., Banerjee et al. 2012).[1] On the empirical

✉ Polona Domadenik
polona.domadenik@ef.uni-lj.si

1 Faculty of Economics, University of Ljubljana, Ljubljana, Slovenia

2 Columbia University, New York, USA

[1] The term "environment" refers to the nature of monitoring and punishments, as well as to economic decisions in which the bureaucrats participate (Banerjee et al. 2012).

side, the most important issue is one of measurement because corruption is illicit and secretive by nature. We contribute to both theory and empirical evidence in this area.

In terms of theory, we build on Bhattacharyya and Hodler (2010) and present a model of corruption as a game between the elites (politicians) and the population, where the quality of democratic institutions[2] plays an important part in punishing corrupt elites. Our model predicts that, when corruption is not penalized because of underdeveloped political institutions, the level of corruption will increase. In our empirical work, we use unique panel data on firms to test the implication of this prediction, namely whether appointing politically connected individuals to the supervisory boards of firms has a negative effect on the productive efficiency of these firms.

Our paper relates to several studies documenting connections between firms and politicians. Faccio (2006), for instance, finds corporate political connections to be relatively widespread, more evident among larger firms and particularly common in countries perceived as being highly corrupt, imposing restrictions on foreign investment, and having a less transparent system.[3] She shows that corporate value increases significantly when a senior manager (CEO) enters politics and that no significant stock price effect is detected when politicians are appointed to corporate boards. Faccio's (2006) findings are consistent with the hypothesis that politicians extract rents from the companies they control (De Soto 1989; Shleifer and Vishny 1994), and that in equilibrium the cost of connections may offset their benefits. Desai and Olofsgård (2011) extend this notion by presenting a simple model in which politicians require firms to provide goods of political value for economic privileges ("elite exchange"). Based on the World Bank's Enterprise Surveys of approximately 8000 firms in 40 countries, they are able to show that "privileged" firms are rewarded with an improved business environment (lower administrative and regulatory barriers, greater pricing power, and easier access to credit). But these firms also provide politically valuable benefits to politicians through higher employment, bloated payrolls and greater tax payments. These "privileged" firms are found to be worse performers than their non-influential counterparts. Finally, Kaufmann and Vincente (2011) develop a theoretical model where corruption is endogenized and the population offers a credible threat of insurrection. They test the model on a dataset of 104 countries, suggesting that a lack of internal incentives for the political elite is what drives the emergence of corruption.

While existing studies suggest that the entry of a manager into politics can bring benefits to the firm, they are inconclusive regarding when and why a politician would join a firm, and when this would be corruptive. It is obviously easier for a politician to enter the board of a firm if the company is state owned. However, not all politically appointed managers or members of boards of state-owned companies are corrupt. Still, it is plausible to hypothesize that if the state is an important shareholder and politicians are able to appoint less capable but politically loyal managers and board members, there may exist an abuse of corporate governance mechanisms and political corruption. Consequently, if politically appointed managers and board members serve the interest of political parties (e.g. by providing money for their activities) and also serve their individual interests (e.g., achieving promotion and higher pay), the principal-agent framework suggests that the quality of their decisions will be sub-optimal and the firms are likely to be less productive. If this political interference in management decisions occurs in a significant number of firms, the negative effects will also appear at the macroeconomic level.

In this paper, we contribute to understanding of the phenomenon of connections between firms and politicians and are able to quantify the "costs" of such political connections in terms of lower productivity in a dynamic panel setting using a large sample of firms over a substantial period of time. We focus our analysis on the effect of politically connected supervisory board members on the total factor productivity of the firms they supervise. In addition, we are able to examine the performance effects of the composition of supervisory boards in two sectors with different exposure to foreign competition—the non-tradable and tradable sectors of the economy. If the barriers between domestic and export markets are low, there should be no relationship between the composition of the supervisory board and performance because firms in both sectors

[2] The quality of institutions in this paper resembles an approach of Bhattacharyya and Hodler (2010) that compares probability p of electing new politicians in the next period with probability q of not being able to replace the incumbent elite with the new elite if people do not support the incumbents anymore. As we discuss below, a small difference between p and q signals underdeveloped democratic institutions as people's vote has little impact on the probability that the new elite will come to office, while a large difference implies that the incumbents are likely to stay in office only if the people want them to stay.

[3] Faccio (2006) assembled a database of 20,202 publicly traded firms in 47 countries. She identified a firm to be politically connected if at least one of its large shareholders (controlling more than 10 percent of voting shares) or one of its top officers (CEO, president or vice-president) was a member of parliament, a minister, or a person closely related to a top politician or political party. Slightly less than 3 percent of firms in the total sample were identified as being politically connected. However, there is a high cross country variation. In Russia, for example, 86.75 percent of the market capitalization was represented by politically connected firms.

are exposed to world competition.[4] The post-communist economy context hence provides a fruitful setting in which to examine the hypothesis that countries which expose their firms to world competition induce similar economic behavior of all firms, irrespective of their structural and institutional differences.

Slovenia is an interesting country case in which to study the evolution of political corruption and its effect on firms' productivity over time. The country went through a relatively successful transition from communism to a market economy in the 1990s and joined the European Union in 2003 after having adopted the European institutional framework and satisfying the Maastricht criteria for entering the European Monetary Union (EMU). However, Slovenia has also been characterized by widespread political (systemic) corruption,[5] underdeveloped democratic institutions, and the continuation of a high degree of state ownership in many firms. As such, it has been unusually severely affected by the recent financial and economic crisis.

At the start of privatization in the 1990s, 95 percent of Slovenia's GDP was produced by socially owned firms. Although one of privatization's main goals was to find strategic owners who would bring know-how and new investment into the privatized firms, government eventually retained an important ownership stake through state investment funds.[6] Moreover, firms in important sectors such as energy production and distribution, utilities, banking, and insurance remained state owned.[7] Anecdotal evidence suggests that the appointment of supervisory board members in (semi-) state-owned firms has often been based on political rather than professional criteria, and international organizations have increasingly criticized Slovenia for maintaining an inefficient system of corporate governance in these firms. A recent well-known example happened in 2013 when a highly positioned leading party official was appointed the CEO of one of the biggest state-owned Slovenian firms even though he was without any competencies for managing large firms or any experience in that specific industry. Moreover, the CEO of a privatization investment fund that managed over EUR 900 million in assets from privatized Slovenian firms in the 1990s recently revealed that the appointment of supervisory and management board members was not based on professional criteria but on political considerations. However, as Slovenia's GDP growth averaged close to five percent in 2004–2008, the criticism has not been taken seriously. That setting thus facilitated the possible abuse of political power for private gain (political corruption).

In order to study the effects of political corruption on firms' performance, we collected unique panel data on the supervisory board structure in 251 firms that represent almost the entire population of joint-stock companies with more than 100 employees in Slovenia during the 2000–2010 period. In terms of capital, our sample represents 77 percent of the value of assets of all business entities in Slovenia in 2010. We identified 3668 individuals serving as members of the supervisory boards of these firms, with 24 percent of them being politically connected in the 2000–2010 period.

Combining individual characteristics of supervisory board members with their firms' balance sheet and income statement data enables us to contribute to the literature in several important ways. First, we build on Bhattacharyya and Hodler's (2010) theoretical model of corruption to generate a theoretical model that reflects the institutional setting of Slovenia. Second, to the best of our knowledge, we are the first to test the effects of political corruption using detailed firm-level panel data. We find evidence of political corruption, and in Table 9 in Appendix, it shows that its trend is increasing rather than decreasing over time. Third, in terms of empirical methodology, we control for pre-treatment conditions and generate results using the Blundell and Bond (2000) GMM panel data estimator.

The paper proceeds as follows. In the next section, we present the literature review, followed by the theoretical model. In the fourth section, we discuss the institutional setting and empirical specification and continue with a description of the dataset and data collection process. In the sixth section, we present our empirical results and in the last section we draw our conclusions.

Literature Review

Corruption is a world-wide phenomenon that has been studied by many researchers on both theoretical and empirical levels. The definition of corruption varies across studies and is usually driven by the specific corruptive

[4] More generally, with the fall of the communist regime, Central European transition countries moved virtually overnight into the ranks of the most open economies in the world, thus defying the widely accepted infant industry thesis that firms in emerging market economies require a long period of protection before being able to face world competition.

[5] The most recent findings by the Slovenian anti-corruption agency, based on a case-by-case investigation, point to systemic corruption risks mostly related to the privileged position of SOEs in the Slovenian economy, particularly when it comes to access to finance and investment opportunities. The European Commission warns that the distortion of market principles and rent-seeking practices threaten to block the privatization process (European Commission 2014).

[6] We describe the privatization process in more detail in Chapter 4.

[7] The previous (Yugoslav) economic system of self-management was based on social ownership. The firms belonged to society as a whole, but were managed by workers of self-managed enterprises on the principle of one person one voice. See Prašnikar and Svejnar (1993) for details.

behavior being analyzed. The scope of what is defined as corruption has been expanding with studies evidencing new forms of corruption. Nye (1967), for example, defines corruption as "behavior which deviates from the formal duties of a public role because of private-regarding pecuniary or status gains." Todaro and Smith (2014), on the other hand, describe corruption more generally as "the abuse of public trust for private gain" that is likely to appear where there is a distinct lack of trust between governmental officials and the public (Xin and Rudel 2004). Eiras (2003) in turn maintains that corruption is a "form of unethical behavior or wrongdoing," where unethical behavior refers to a social consensus that these actions are bad. Finally, Banfield (1998) defines corruption as a form of anti-social behavior which confers improper benefits on people in power by misusing societal norms and morals.

In the 1990s, it was recognized that a misuse of public power for private benefit does not only include direct ways like "bribing of public officials or embezzlement of public funds" (Transparency International 1997), but also appears in more secretive and indirect cases, especially in developed economies. The most evident example is a situation in which politicians have connections with firms and both exploit these connections for mutual benefit. The benefit might take the form of special legislation or a donation for a political campaign. Exchanging favors can also take the form of an explicit switch in the "position chair" among elite players. A political economy perspective therefore may involve politicians interacting with a population that has the possibility of using political instruments to affect the welfare of the politicians. In order to identify different players in the corruptive games and their linkages, corruption is described in a game theoretic setting as a collusive agreement between certain agents in the economy who are able to exploit political power over time in order to capture private gains and assume that the population can react to corruption by "insurrecting"—making the corrupt agents suffer a sufficiently high penalty.[8]

Corruption in developing countries takes on different forms compared to developed economies where the forms of corruption are profound and difficult to detect. In developing countries, bribing public officials or petty corruption are the most common practices and presumably do not present a serious danger to the national economy. Outright diversion of what should be government revenues into private pockets and multinational companies' bribing of public officials in order to win government contracts and patronage pose a bigger threat to the community because the amounts of funds being transferred are enormous (see Nwabuzor 2005, for the case of Nigeria; or dela Rama 2012, for the case of Philippines, for example). Gupta et al. (2002) demonstrate in their work that corruption contributes to income inequality and poverty by reducing economic growth, the progressivity of the tax system, the level and effectiveness of social spending, and the formation of human capital, an unequal distribution of asset ownership, and under-education in countries at different stages of development.

Growing empirical evidence points to the positive contribution of institutional development to social welfare and to the negative implications of corruption, although this evidence has mostly come from Asian[9] or Latin American countries. Dela Rama (2012), for instance, looks at the experience and familiar examples of corruption by managers and owners of Asian business groups during the course of common business transactions. Based on semi-structured interviews with board members from business groups and senior public sector officials, she highlights the dilemmas faced when trying to operate with public sector institutions that lead to inefficient corporate governance.

Rose-Ackerman (2008) distinguishes two types of corruption: low-level opportunistic payoffs, and grand or systemic corruption. Low-level corruption can be further divided into three categories: the first one being related to opportunistic payoffs in the case of scarce public benefits allowing officials to discretionally assign these benefits to the one with the greatest willingness to pay. The second category is related to poor monitoring by state officials in the case where benefits are rendered to those who are qualified, while the third category is manifested in long queues due to delays in bureaucratic processes providing incentives for officials to speed up the administrative process in return for compensation. The last category of low-level corruption is associated with governmental programs that provide a source of additional revenue for firms (like subsidies). Systemic (or grand) corruption, in turn, implies that low-level corruption has become institutionalized. Instead of being perceived as an anomaly, it becomes part of the system, part of life (Rose-Ackerman 2008). Systemic

[8] In this context, they treat legal corruption as arising when the elite prefers to hide corruption from the population and the costs of hiding are a so-called investment in "legal barriers." Investment in legal barriers and "insurrections" crucially depends on accountability and initial inequality among the population. It can be proven that, in the case of low initial inequality, legal corruption arises in the case of low accountability. In this case, the legal barriers arise in every period as well. On the other hand, in the same case of low initial inequality but high accountability (for example, like in Scandinavian countries), legal corruption and legal barriers do not arise and the economy stays in this equilibrium.

[9] Gill and Kharas (2007) and Lee and Oh (2007), for example, look at the arbitrariness of corruption in East Asia and note that Indonesia and the Philippines were particularly affected by political corruption that occurred during and after the lengthy dictatorships.

corruption profoundly affects the public and private sectors, the citizens, and the reputation of the country.

An important subset of systemic corruption is political corruption as defined by Kaufmann and Vincente (2011), suggesting that a lack of internal incentives for punishing the political elite is the force driving the emergence of this particular type of systemic corruption.

The phenomenon of systematic (or grand) corruption is important as well as universal in its geographical and historical reach.[10] Discussions about the political economy of nations have always incorporated the issue of corruption. While some countries and economic sectors report higher levels of systemic corruption than others (indexes of corruption have for instance been reporting that the rate of corruption in poor countries is much higher than in developed ones), it is important to understand the mechanism of corruption and its subsystems in order to reform and change them. Nielsen (2003) identified 12 subsystems in which the key element appears to be that the subsystem is an integrated network. One important subsystem relates to extortion by government and party officials and their links with the police, prosecuting, judicial, and legislative branches of the government. Extortion is usually a very important phenomenon within corrupt networks as it is reported to be more pervasive and systemic than bribery. Nielsen (2003) thus denotes extortion as "*a threat initiated by a government official to use illegitimately the power of government to withhold permissions and services an individual or an organization is legally entitled and/or initiate illegitimate shut-downs, prosecutions and even arrests unless the individual or organization pays the resources the official demands.*"

We understand extortion and systemic (grand) corruption in a wider context by incorporating into it corruption related to political connectedness within the corporate governance mechanism in firms directly or indirectly owned by the state or municipalities. The power of government can be illegitimately used to appoint party members or affiliates without adequate competencies to supervisory boards of state-owned firms as a reward for previous political engagement or as a special purpose vehicle to extract rents. Either reason results in lower productivity and harms the economic position of the country in the long run.

As pointed out by Nielsen (2003), corrupt networks among different branches of policymakers are those that are not a secret within domestic societies but well known and in this sense they can sometimes increase their power and effectiveness. Several examples can be found in Indonesia, Italy, or Mexico. As reported by various studies, high party officials themselves or members of their corrupt network were appointed as the CEO of state banks or companies exporting natural resources. In order to be appointed and/or keep their positions, portions of the gains were passed back and shared with the leading party officials. Those networks are built in a way that secures increasing political power in the long run. A politically appointed CEO is more likely to employ workers who belong to the same network and/or their family members. Nielsen (2003) suggests that in this case it is important to approach the corrupt subsystem as part of a reform network rather than as an isolated individual.

Theoretical Framework of Political Corruption

Our theoretical model incorporates the reasoning highlighted in the previous section and builds on the theoretical model of Bhattacharyya and Hodler (2010) in order to capture relevant dimensions of political corruption. To identify different players in the corruptive game and their linkages, corruption is defined in a game theory setting as a collusive agreement between certain agents in the economy who are able to exploit political power over time in order to capture private gains. We assume that the population can react to the corruption of incumbent elite players by "insurrecting"—making the corrupt agents suffer a sufficiently high penalty. While keeping the skeleton of Bhattacharyya and Hodler's (2010) model intact, we depart from their model in two distinct ways. First, we assume that corruption decreases the private gains of production and therefore reduces private investment.[11] Second, we allow for the response of the elite to be observable in a dynamic context.

We assume that there are three groups of players in the economy, with each trying to optimize their utility: the incumbent political elite (E) with the incumbent president in power, a challenger in the form of a "new" elite (NE), and the rest of the population. The incumbent and new elite groups are homogenous groups and may be of either a good type (θ_G) with probability α or a bad type (θ_B) with probability $1 - \alpha$. There are two periods: 1 and 2. In period 1, the incumbent elite E chooses its level of corruption c_1. Based on the level of c_1 the population at the end of period 1 supports either the incumbent or the new elite. The level

[10] Collins (1998) reports that some forms of corruptive practices can already be found in 3000 B.C. What has changed during history is the form of corruptive practices. However, the historical perspective shows that the ethical reform of corruption is important as some of the action solutions taken against corruption have been as problematic as corruption from the ethical perspective (Nielsen 2003).

[11] For the sake of simplicity, we also exclude the concept of corruptive income based on natural resources. Resource income largely depends on a country's resource abundance and our model is designed for a country that is not rich in natural resources.

of corruption in period 2 depends on the choice of elite that was elected at the end of period 1. We assume that the good elite always selects a lower level of corruption than the bad elite:

$c(\theta_B) > c\,(\theta_G).$

The main source of income for all three groups of players is domestic production A_t that is primarily determined by the individuals' labor-leisure choice and their decisions over tangible and intangible capital accumulation (Bhattacharyya and Hodler 2010). Corruption reduces the private return on productive activities and hence also the individuals' level of investment. We assume that production A_t is a continuous function of corruption $A_t = A(c_t)$ with $A'(c_t) < 0$ and $A''c_t) < 0$.

Following Bhattacharyya and Hodler (2010), we define the payoffs of the three players as follows. The welfare of the population in period t is

$$W_t = W(c_t) = (1 - c_t)A(c_t). \tag{1}$$

The payoff of the incumbent elite u_t depends positively on corruption revenues $\pi(c_t) = c_t{}^*A_t$ and on people's welfare $W(c_t)$[12]:

$$u_t = \pi(c_t) + \theta W(c_t) = (c_t + \theta(1 - c_t))A(c_t). \tag{2}$$

The challenging new elite is not in power in period t and thus has utility equal to zero. An important novelty of the Bhattacharyya and Hodler (2010) model is the introduction of democratic institutions. The quality of institutions is given by comparing probability p of electing good politicians in the next period with probability q of not being able to replace the incumbent elite with the new elite if people do not support the incumbents anymore. We assume that $0 \le q \le p \le 1$. The quality of democratic institutions is given by $D \equiv p - q$. Low values of D signal underdeveloped democratic institutions as people's vote has little impact on the probability that the new elite will come to office. On the other hand, a high value of D implies that the incumbents are likely to stay in office only if the people want them to stay.

In order to find an equilibrium in this two-stage dynamic game with imperfect information, one applies the principle of backward induction. Assume that the elite in power in period 2 has no strategic incentives (e.g., to be elected in the following period) and it simply chooses the level of corruption that maximizes its utility, given its type θ: $u_2 = u(c_2;\theta)$. The good elite benefits more from being in office in the second period $\theta W(c_t)$ as $\theta_G > \theta_B$. In general, the elite in office chooses c^* that maximizes (2):

$$c^* \equiv \arg\max_{ct} u_t(c_t;\,\theta) = -A/A' - \theta/(1-\theta). \tag{3}$$

If the politicians in power are highly corrupt, θ is close to zero and the level of corruption depends on the ratio between production revenue and the marginal revenue from corruption. Corruption is always positive as $A' < 0$ by definition. In choosing the level corruption, the elite compares the value of production at a given level of corruption with the marginal revenue of increasing corruption by one unit. If politicians are good, with θ being close to unity, the second term dominates and is negative if $\theta \le 1$. As corruption cannot be negative, we assume that the good elite always chooses $c^* = 0$.

If the bad politicians are in power, their chosen level of corruption in period 2 is higher, and the less they benefit from social welfare ($dc^*/d\theta < 0$). In deciding whom to support at the end of period 1, people are aware that their welfare will be higher with good rather than bad politicians in office. In particular, people will prefer the elite with a higher θ. They therefore only support the incumbent elite if they believe that there is a higher probability of it being good than the challenger, or $\mu(\theta_E|c_1) > \alpha$. In equilibrium, a bad incumbent does not obtain people's support if he decides on $c_1 > 0$. If he knows he will not win people's support at the end of period 1, it is better for him to choose the level of corruption that maximizes $u_1(c_1;\theta_B)$. His expected utility in both periods is therefore equal to

$$V(c^*;\,\theta_B) = (1 + q)u(c^*;\,\theta_B), \tag{4}$$

while his utility from choosing $c_1 = 0$ and obtaining people's support is

$$V(0;\,\theta_B) = u(0;\,\theta_B) + pu(c^*;\,\theta_B). \tag{4'}$$

The bad elite therefore chooses $c_1(\theta_B) = c^*$ if $V(c^*;\theta_B) > V\ (0;\theta_B)$, or $D < (u(c^*;\theta_B) - u(0;\theta_B))/u(c^*;\theta_B))$, as shown by Bhattacharyya and Hodler (2010). When $D < (u(c^*;\theta_B) - u(0;\theta_B))/u(c^*;\theta_B))$, the "bad" elite also chooses no corruption.

An interesting case arises when we observe the elite's decisions in a dynamic context in the environment of Slovenian-type underdeveloped democratic institutions, as described in the next section. Improving political institutions and increasing the probability of replacing the corrupt elite raises the opportunity cost of being replaced and therefore makes corruption income less attractive than other benefits of being in power. On the other hand, elites learn how society treats the signal of corruption and change their behavior accordingly, becoming either more or less corrupt. By increasing an elite's willingness to engage in corruption

[12] As noted by Bhattacharyya and Hodler (2010), there are different motives for why the incumbent elite also cares about the people's welfare and the performance of the economy. First, the economic conditions in general determine the salary of the incumbent elite, and second, the status and influence of the elite in the international community depends on the welfare of citizens.

(lowering θ) the benefit of corruption increases, ceteris paribus:

$$d((u(c*;\ \theta_B) - u(0;\ \theta_B))/u(c*;\ \theta_B))/d\theta. \tag{5}$$

Our model hence predicts that where corruption is not penalized due to underdeveloped political institutions, we should expect the level of corruption to increase.

Due to its illicit nature, we measure corruption indirectly—by estimating the productive efficiency of firms with different potential degrees of political corruption. In the next section, we first highlight the development of the Slovenian economic environment and then present our econometric model.

The Institutional Setting and Empirical Specification of the Model

The Institutional and Policy Setting

Slovenia is a post-communist country that started its transition in the early 1990s. One of the most important tasks of economic policy was to carry out privatization. A major difference of opinion emerged between the so-called "left" (old) and "right" (emerging) elites about how to privatize social property. While the new elite advocated a revolutionary approach (first completely nationalizing the socially owned firms and then privatizing them through ten state-owned investment funds), the old elite was in favor of employee and managerial buyouts.[13] After lengthy discussions, a compromise was reached and the Parliament passed the Law on the Transformation of Social Property (1992)—an umbrella law for implementing other laws that followed. In this context, it is to be noted that Slovenia selected a transition strategy in which foreign capital did not play a substantial part.[14] Privatization took place after 1995 when additional laws supplementing the core legislation were implemented. Most firms that were subject to the privatization law[15] prepared their privatization plans between 1995 and 2000.

The 1992 Privatization Law allocated 20 percent of a firm's shares to insiders (workers), 20 percent to the Development Fund which auctioned the shares to investment funds, 10 percent to the National Pension Fund, and 10 percent to the Restitution Fund. In addition, in each enterprise the workers' council or board of directors (if one existed) was empowered to allocate the remaining 40 percent of company shares for sales to insiders (workers) or outsiders (through a public tender). Based on the decision about the allocation of this remaining 40 percent of shares, firms can be classified as being privatized to insiders (the internal method) or outsiders (the external method). In 2000, the first phase of privatization was almost completed, with the majority of ownership in small and medium-sized firms being in the hands of state funds, investment funds, and insiders (managers and workers). In large firms, state funds and investment funds gained control over the decision-making process as these firms: (a) were too big to privatize a substantial part of their capital to insiders; and (b) had many small dispersed owners.[16]

The privatization process was relatively efficient in small and medium-sized firms. Many of them eventually bought the ownership stake of the other parties to the privatization process (the state and investment funds). Large firms, on the other hand, found themselves in a position where the state remained a powerful owner through the indirect ownership of the Funds. The politicians soon realized that a loophole in the privatization law enabled them to control the supervisory boards of these quasi-privatized large firms, thus allowing them to also influence the appointment of their management boards.

In 2001, a managerial buyout of a quasi-privatized company BTC took place, using the cash-flow of the firm as financing. This opened the way for other management teams in big firms to act in a similar way. Following the BTC example, most takeovers were initiated and implemented by managers who were appointed by the political elite or had close ties to it. This constituted a second wave of privatization (2004–2008) that resulted in a few successful cases, while some of the largest firms either ended up in bankruptcy with high debt levels or had their shares

[13] In fact, a third model of privatization was also proposed by Ribnikar and Prašnikar that favors the idea of converting all assets of socially owned firms into preferential shares of retirement funds. New owners were to invest funds in firms and acquire governance power. All three models are described in details in Prašnikar and Svejnar (1993).

[14] In 2002, Sandoz took over Lek, a pharmaceutical company that was one of the largest firms in Slovenia. Although this takeover worked well for the company, speculations that the existing management team reaped substantial rewards by trading on the basis of internal information have never been dispelled. The prevalent position taken by politicians was not to privatize the most successful Slovenian companies to foreigners, if not necessary.

[15] The Law did not apply to enterprises providing special public services, banks and insurance companies, enterprises engaged in the organization of gambling, enterprises that were transformed under the Law on Cooperatives, enterprises that were transformed under the forestry legislation, and firms in the process of bankruptcy.

[16] As reported by the study of Domadenik et al. (2008) that analyzed the ownership structure in 157 big and medium-sized Slovenian firms, slightly more than one-half of those firms were privatized primarily to insiders. The average share ownership was 31 percent by insiders, 34 percent by state and investment funds, 21 percent by other firms, and 13 percent by other owners (banks and direct state ownership).

seized by the banks since the special purpose vehicles (SPVs) established for the leveraged management buyouts were unable to repay their accumulated loans. In the meantime, in firms with prevailing state ownership the political elites continued to appoint politically selected supervisory board members who in turn elected politically selected members of the management board. In view of the underdeveloped governance institutions, the politicians were not "punished" for their mismanagement of these quasi-privatized firms.

After 2005, the OECD started to warn Slovenia about the inefficient management of firms with substantial state ownership. In response to this criticism and growing evidence about the politically motivated appointment of supervisory board members, a new agency for capital investment management was formed to make the appointment of board members transparent. However, anecdotal evidence and our firm-level information suggest that corporate governance in firms with state ownership remained the same. In 2011, under a new government, the agency was in fact abolished.

The Empirical Model

We assume that the production function of an individual firm may be approximated by a Cobb-Douglas form in a standard way (e.g., Acemoglu 2009 and Jones 1998) as

$$Y_{it} = A_t K_{it}^{\alpha K} L_{it}^{\alpha L}, \tag{6}$$

where Y_{it} represents the output of firm i in period t, K_t, and L_t are capital and labor inputs, respectively, and A_t is the Hicks-neutral efficiency level, or total factor productivity (TFP), of firm i in period t.

While Y_{it}, K_{it}, and L_{it} are observable (usually in terms of value rather than in quantities), A_{it} is unobservable and is usually inferred as a residual.[17] The acceleration of productivity growth in the U.S.A. in the mid-1990s has generated the "new economy" view and a source-of-growth model started to stress the potential importance of intangible investments and their capitalization over time. In this context, our test of whether the composition of a firm's supervisory board affects its TFP may be interpreted as a test of the effect of a corporate governance structure on the ability of firms to generate intangible investment.[18]

In order to make the methods of measuring capital and labor more symmetric and capture the quality of the workforce, we use the wage bill as a measure of L_{it}. As argued, for instance, by Fox and Smeets (2011), the wage bill reflects the marginal product of labor better than the number of employees does.[19]

Expressing Eq. (6a) in logs yields

$$y_{it} = \alpha_0 + \alpha_K k_{it} + \alpha_L l_{it} + \xi_{it} + u_{it}, \tag{6a}$$

where lower case letters correspond to the natural logarithms of the variables in Eq. (6), while $lnA_{it} = \alpha_0 + \xi_{it} + u_{it}$. While α_0 measures the mean efficiency level across all firms over time, ξ_{it} and u_{it} capture producer-specific deviations from the mean—ξ_{it} refers to factors such as managerial ability and the composition of the supervisory board that are observed by firm i and are likely to affect its choices of inputs, while u_{it} is an i.i.d. component that captures factors that are unobserved by the firms and hence affect output but not the choice of inputs. It also represents a measurement error in output or errors due to functional form discrepancies. These deviations may be further separated into observable (or at least predictable) and unobservable components.

The identification and estimation of production functions using data on inputs and output is one of the oldest empirical problems in economics with a key challenge of identification arising from the endogeneity of inputs (the transmission bias discussed, for instance, by Griliches and Mairesse 1998). Dynamic GMM panel data models (e.g., Arellano and Bond 1991; and Blundell and Bond 2000) are among the most popular approaches to tackling the problem of endogeneity by exploiting instruments based on lagged input decisions of the firm. We use the Blundell–Bond approach as an alternative to an OLS estimation (which we also present) and specify our model (6a) as a dynamic augmented production function in which different supervisory board structures—contained in the ξ_{it} term in Eq. (6a) above—may affect TFP. The key explanatory variable with which we augment Eq. (6a) is the share of supervisory board members who are politically connected and who are the focus of our analysis. In addition, we include as explanatory variables the shares of board members who are female, the size of the firm, and annual shifts in the average TFP. The share of women is included in order to test whether greater board diversity in terms of gender affects the firm's efficiency.[20] Firm size is included

[17] This is Abramovitz's famous "measure of our ignorance."

[18] Intangible resources in countries with underdeveloped capital and financial markets crucially depend on the ability of firms to generate internal funds. This is especially the case in Slovenia, as shown by Domadenik et al. (2008).

[19] The correlation between an individual's wage and productivity is high even when the markets are not perfectly competitive.

[20] If gender discrimination exists, firm performance would be better off in cases of a more balanced recruitment policy for managers and supervisory board members. Empirical evidence is mixed, ranging from positive effects of diversity management (Carter et al. 2003; Singh and Vinnicombe 2004; Smith et al. 2006) to no effect at all (Kochan et al. 2003).

to allow for productivity differences between small and large firms.

The empirical model is specified as follows:

$$y_{it} = \alpha_0 + \alpha_1 y_{it-1} + \alpha_2 k_{it} + \alpha_3 k_{it-1} + \alpha_4 l_{it} + \alpha_5 l_{it-1} + \alpha_6 * SB\_POLTICIANS_{it} + \alpha_7 * SB\_POLTICIANS_{it-1} + \alpha_8 * SB\_WOMEN_{it} + \alpha_9 * SB\_WOMEN_{it-1} + \alpha_{10} * SIZE_i + \alpha_{11}' * YEAR_t + u_{it}, \quad (7)$$

where SB_POLITICIANS and SB_WOMEN are variables representing the shares of board members who are politically connected and females, respectively, SIZE is a dummy variable that takes on a value of 1 when the firm has more than 250 workers (a large firm) and zero when it has 100–250 workers (a medium-sized firm). YEAR is a vector of dummy variables capturing annual time effects, α's denote parameters, and u_{it} is the error term.

In terms of our conceptual framework, Eq. (7a) permits us to test the core hypothesis about the effect of politically appointed supervisory board members on the productivity of the firms:

H1 Firms with more politically affiliated Supervisory Board members, ceteris paribus, exhibit: (a) Lower total factor productivity in the short run ($\alpha_6 < 0$); (b) The same total factor productivity in the short run ($\alpha_6 = 0$); or (c) Higher total factor productivity in the short run ($\alpha_6 > 0$).

Our dynamic setting enables us to disentangle short- and long-run effects and therefore an additional hypothesis is as follows:

H2 Firms with more politically affiliated Supervisory Board members, ceteris paribus, exhibit: (a) Lower total factor productivity in the long run ($(\alpha_6 + \alpha_7)/(1 - \alpha_1) < 0$); (b) The same total factor productivity in the long run ($(\alpha_6 + \alpha_7)/(1 - \alpha_1) = 0$); or (c) Higher total factor productivity in the long run ($(\alpha_6 + \alpha_7)/(1 - \alpha_1) > 0$).

In order to test whether there is any gender effect on total factor productivity in the short and long run, the relevant hypotheses are as follows:

H3 Firms with a higher share of female Supervisory Board members, ceteris paribus, exhibit: (a) Lower total factor productivity in the short run ($\alpha_8 < 0$); (b) The same total factor productivity in the short run ($\alpha_8 = 0$); or (c) Higher total factor productivity in the short run ($\alpha_8 > 0$).

and

H4 Firms with a higher share of female Supervisory Board members, ceteris paribus, exhibit: (a) Lower total factor productivity in the long run ($(\alpha_8 + \alpha_9)/(1 - \alpha_1) < 0$); (b) The same total factor productivity in the long run ($(\alpha_8 + \alpha_9)/(1 - \alpha_1) = 0$); or (c) Higher total factor productivity in the long run ($(\alpha_8 + \alpha_9)/(1 - \alpha_1) > 0$).

In order to examine the performance effects of the composition of the supervisory boards in two sectors with different exposure to foreign competition, we estimate the empirical model separately for the tradable (TS) and non-tradable sectors (NTS) of the economy (Eqs. 7a, 7b), respectively, as follows:

$$y_{it} = \alpha_0^{TS} + \alpha_1^{TS} y_{it-1} + \alpha_2^{TS} k_{it} + \alpha_3^{TS} k_{it-1} + \alpha_4^{TS} l_{it} + \alpha_5^{TS} l_{it-1} + \alpha_6^{TS} * \mathrm{SB\_POLITICIANS}_{it} + \alpha_7^{TS} * \mathrm{SB\_POLITICIANS}_{it-1} + \alpha_8^{TS} * \mathrm{SB\_WOMEN}_{it} + \alpha_9^{TS} * \mathrm{SB\_WOMEN}_{it-1} + \alpha_{10}^{TS} * \mathrm{SIZE}_i + \alpha_{11}^{TS\prime} * \mathrm{YEAR}_t + u_{it}, \quad (7a)$$

and

$$y_{it} = \alpha_0^{NTS} + \alpha_1^{NTS} y_{it-1} + \alpha_2^{NTS} k_{it} + \alpha_3^{NTS} k_{it-1} + \alpha_4^{NTS} l_{it} + \alpha_5^{NTS} l_{it-1} + \alpha_6^{NTS} * \mathrm{SB\_POLITICIANS}_{it} + \alpha_7^{NTS} * \mathrm{SB\_POLITICIANS}_{it-1} + \alpha_8^{NTS} * \mathrm{SB\_WOMEN}_{it} + \alpha_9^{NTS} * \mathrm{SB\_WOMEN}_{it-1} + \alpha_{10}^{NTS} * \mathrm{SIZE}_i + \alpha_{11}^{NTS\prime} * \mathrm{YEAR}_t + u_{it}. \quad (7b)$$

If the barriers between domestic and export markets are low, there should be no change in the relationship between the composition of a supervisory board and performance because firms in both sectors are exposed to world competition. If firms in the non-tradable sector tend to operate in a less competitive setting and thus have higher potential rents than firms in the tradable sector which tend to compete more in the export markets, the effect of politically affiliated supervisory board members would be more pronounced. The relevant hypotheses hence are

H5 Firms from the tradable sector with more politically affiliated Supervisory Board members, ceteris paribus, exhibit: (a). Lower total factor productivity in the short run ($\alpha_6^{TS} < 0$); (b). The same total factor productivity in the short run ($\alpha_6^{TS} = 0$); or (c) Higher total factor productivity in the short run ($\alpha_6^{TS} > 0$).

H6 Firms from the tradable sector with more politically affiliated Supervisory Board members, ceteris paribus, exhibit: (a). Lower total factor productivity in the long run ($(\alpha_6^{TS} + \alpha_7^{TS})/(1 - \alpha_1^{TS}) < 0$); (b). The same total factor productivity in the long run ($(\alpha_6^{TS} + \alpha_7^{TS})/(1 - \alpha_1^{TS}) = 0$); or (c). Higher total factor productivity in the long run ($(\alpha_6^{TS} + \alpha_7^{TS})/(1 - \alpha_1^{TS}) > 0$).

H7 Firms from the non-tradable sector with more politically affiliated Supervisory Board members, ceteris paribus, exhibit: (a). Lower total factor productivity in the short run ($\alpha_6^{NTS} < 0$); (b). The same total factor productivity in the short run ($\alpha_6^{NTS} = 0$); or (c). Higher total factor productivity in the short run ($\alpha_6^{NTS} > 0$).

H8 Firms from the non-tradable sector with more politically affiliated Supervisory Board members, ceteris paribus, exhibit: (a). Lower total factor productivity in the long run ($(\alpha_6^{NTS} + \alpha_7^{NTS})/(1 - \alpha_1^{NTS}) < 0$); (b). The same total factor productivity in the long run ($(\alpha_6^{NTS} + \alpha_7^{NTS})/(1 - \alpha_1^{NTS}) = 0$); or (c). Higher total factor productivity in the long run ($(\alpha_6^{NTS} + \alpha_7^{NTS})/(1 - \alpha_1^{NTS}) > 0$).

In order to control for potential endogeneity, we apply the Blundell and Bond (2000) GMM system estimation method to annual 2000–2010 firm-level data and supplement the instruments that are directly generated by the system specification with several additional instruments. The first set of additional instruments relates to the privatization process in the 1990s. Based on evidence from Prasnikar and Svejnar (2006) and Domadenik et al. (2008), we categorize the firms in four groups. The first two groups consist of "de-novo" firms owned by either foreigners or domestic private owners, the third group refers to firms that were subject to privatization in the 1990s, and the fourth group is represented by firms that remained fully in state ownership (utilities, telecommunication, and energy production and transmission). We anticipate that the initial ownership structure in the late 1990s is an important factor explaining the input levels in the years that followed. The second set of instruments consists of the contemporaneous regional unemployment rate in the period 2000–2010, the lagged (1998 and 1999) number of employees, and the change in return on equity in 1999.

The Sample

The Data Collection Process

Our sample is drawn from the population of large and medium-sized, non-financial, joint-stock companies and holdings that existed in Slovenia during the period 2000–2010. All the firms employed more than 100 employees and had either a one- or two-tier corporate governance system.

The data were obtained in three phases. First, we collected publicly available data about members of the supervisory boards from the Agency of the Republic of Slovenia for Public Legal Records and Related Services (AJPES). This database ought to contain the first and last name, board position, home address, and country of residence of members of all supervisory boards. In particular, we were able to collect complete data on 308 out of 384 firms that existed in the group of non-financial, joint-stock companies and holdings.[21] The resulting database covers 3668 supervisory board members.

We complemented the official source of supervisory board members' identification with reliable sources published on the Internet to obtain data about the board members' political affiliation and other personal characteristics.[22] We started by scanning online election registers to match the names and addresses of political election candidates with information in our supervisory board database. For the matched individuals, we enlarged our dataset with information about their political affiliation and year of birth.

In the third phase of data gathering, we matched our database of supervisory board members with financial data from balance sheet and income statements for the 308 selected firms. After excluding firms with no balance sheet data available[23], we ended up with 251 firms. Our final data set is an unbalanced set of 251 firms with 2712 firm-year observations on all members of the supervisory board and balance sheet and income statement records. For these firms, we also collected balance sheet and income statement data for the period 1996–1999 in order to use these lagged values as instrumental variables in our empirical model.

Description of the Variables Used in the Empirical Model

In 2010, the 251 sampled firms accounted for 77 percent of fixed assets of all firms in Slovenia and, on average,

[21] Companies were not required to report names of their supervisory board members before 2007, however, and we were hence only able to gather complete information about supervisory board members in 308 firms; 155 of them operated in the tradable sector and 153 in the non-tradable sector. It is important to note at this point that of the 308 companies which had a supervisory board and were used in the analysis, 292 had their own supervisory board. The remaining 16 companies did not have their own supervisory board but were owned and controlled by a parent company with a supervisory board. Thus, for these 16 companies supervisory board data from the parent company were used as a proxy to determine how important business decisions were made. We assumed that political influence from the parent company was also present in the decision-making of the subsidiary company.

[22] In particular, we carefully checked if any supervisory board members had a political affiliation defined as being a candidate for a local and/or state-level elected position, a member of a political party or continuously expressing public support for a given political party.

[23] From the AJPES registry, we were able to obtain balance sheet and income statement data for most of the companies, except companies facing compulsory settlement, companies in bankruptcy procedure, and those companies that had undergone a significant organizational change that prevented us from making a consistent panel of financial data.

Table 1 Supervisory board composition by period

	2000–2003		2004–2008		2009–2010		2000–2010	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Number of supervisors	5.673	2.150	5.247	2.081	4.803	2.023	5.319	2.118
Share of politically affiliated members	0.220	0.216	0.259	0.240	0.258	0.240	0.245	0.234
Share of female members	0.199	0.186	0.185	0.197	0.175	0.201	0.189	0.194

Table 2 Share of politically affiliated supervisory board members by firm ownership

	2000–2003		2004–2008		2009–2010	
	Mean	SD	Mean	SD	Mean	SD
State-owned firms	0.341	0.239	0.389	0.238	0.353	0.248
Foreign-owned firms	0.131	0.212	0.082	0.180	0.075	0.138
Firms owned by a large domestic owner	0.152	0.210	0.172	0.228	0.160	0.189
MBO	0.179	0.184	0.191	0.165	0.225	0.174
Internal ownership	0.228	0.172	0.223	0.234	0.231	0.263
Dispersed ownership	0.169	0.193	0.177	0.200	0.171	0.197

employed 528 employees. In the 2000–2010 period, an average supervisory board had 5.31 members, 18.9 percent of whom were women. In total, 24.5 percent of supervisory board members in an average firm were politically affiliated.

Since the economy and the privatization process went through three important phases during 2000–2010, we carry out our analysis both for the entire period as well as in the context of these three phases. The first phase (2000–2003) is the post-privatization period after the first privatization. During this phase, most firms completed the restructuring envisioned by the 1992 Law on Privatization. This is also a period of the high investment and various other restructuring activities documented by Domadenik et al. (2008). The second phase is the period of economic upturn that lasted from 2004 to 2008 and contains the start of the second phase of privatization which relied primarily on management buyouts. The third phase (2009–2010) corresponds to the recent financial and economic crisis. The three periods also approximate the country's political cycles, with a left-center coalition governing in the first period, a right-center coalition governing in the second period, and a left-center coalition being in charge in the third period (Table 4).

As may be calculated from Table 1, during the three periods firms on average reduced the number of their supervisors by 15.3 percent. On the other hand, the share of politically connected members recorded an increase while the share of female appointees decreased during the period under study.

Based on ownership, we classify the firms in our sample as state-owned firms, foreign-owned firms, firms owned by a large domestic owner, management buyout (MBO), internally owned firms, and firms with dispersed ownership (where no single type of owner has majority ownership). These ownership groups originate from the privatization process in Slovenia, as described in Sect. 3.[24] Approximately one-third of the sample (33.5 percent) consists of state-owned firms, 11.2 percent is represented by foreign-owned firms, 24.4 by internally owned and MBO firms, 13 percent by large domestic owners, and the rest (almost 18 percent) by dispersed owners.

Examining the prevalence of politically connected supervisory board members across the types of firm ownership (Table 2), we find that state-owned firms had the largest percentage of politically connected supervisory board members (ranging, on average, from 34.1 percent in the 2000–2003 period, 38.9 percent in the 2004–2008 period to 35.3 percent in the 2009–2010 period), while firms owned by large domestic owners on average only had 16 percent of politically connected supervisory board members. Politically connected supervisory board members were more common in internally owned and MBO firms (around 23 percent and 20 percent in all three periods, respectively), which is understandable since the political elite in Slovenia was connected with the top management of firms that had had undergone privatization. Not surprisingly, foreign-owned firms had the lowest percentage of politically connected supervisory board members (on average only 13.1 percent in the first period, 8.2 percent in the second period, and 7.5 percent in the third period).

Differences in supervisory board structures can also be seen across industries (Table 9 in Appendix). On one hand, there are industries with a low average number of supervisors and low share of politically affiliated supervisors (e.g., IT, trade, and manufacturing). The electricity sector

[24] Also see Bole et al. (2010) for details.

Table 3 Supervisory board composition by period and tradable and non-tradable sector

	2000–2003		2004–2008		2009–2010		2000–2010	
	Non-tradable	Tradable	Non-tradable	Tradable	Non-tradable	Tradable	Non-tradable	Tradable
Number of supervisors	5.912	5.446	5.528	4.969	5.123	4.479	5.806	5.077
Share of politically affiliated members	0.268	0.174	0.313	0.205	0.287	0.229	0.282	0.205
Share of female members	0.202	0.197	0.185	0.186	0.171	0.180	0.169	0.191

Table 4 Selected balance sheet and income statement variables for the sampled firms by period

	2000–2003		2004–2008		2009–2010		2000–2010	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Employees	521.45	838.53	558.30	1059.6	537.82	1058.8	541.36	985.36
Value added (in million €)	8.92	16.3	11.00	21.70	10.90	23.30	10.20	20.30
Labor costs (in million €)	5.35	9.35	6.36	11.90	6.29	11.80	5.98	11.00
Value added per employee (in 1000€)	19.23	28.19	23.25	38.60	22.89	36.23	21.74	34.79
Labor costs per employee (in 1000€)	16.65	6.50	22.42	9.74	25.79	10.46	20.95	9.50
Fixed assets (in million €)	35.90	135.00	36.40	165.00	39.00	185.00	36.70	159.00

In the next section, we present the results of our empirical analysis

and utilities, on the other hand, have the largest number of supervisors and a large share of them is politically affiliated, with an upward trend in utilities. This finding suggests that it is of interest to examine the extent of board members' political affiliation and its productivity effects separately for firms in the non-tradable and tradable sectors. Firms in the non-tradable sector tend to operate in a less competitive setting and thus have higher potential rents than firms in the tradable sector which tend to compete more in the export markets, a feature that could bring more political corruption into the non-tradable sector.

Separately examining the data for companies in the tradable and non-tradable sectors (Table 3) shows that companies in the non-tradable sector indeed on average have a larger share of politically affiliated supervisory board members and also larger supervisory boards. Hence, our conjecture that political influence would be greater in the non-tradable sector where monopoly power tends to be greater is supported by the raw data. The share of women on the board is on average similar and declining over time in both sectors of firms.

In our empirical analysis, we use selected variables from the balance sheet and income statements: value added (VA) as a measure of output, labor cost (LC) as a measure of the labor input, and tangible fixed assets (K) as a measure of capital. Value added is calculated as sales less the cost of goods, materials, and services. All values are in 1996 prices. The average firm reported EUR 21,744 of value added per employee in the 2000–2010 period (See Table 4). The average value added per employee increased by 21 percent in 2004–2008 relative to 2000–2003 and fell slightly during the crisis period of 2009–2010. Labor costs per employee averaged EUR 20,952 over the entire period and rose by 34 percent in 2004–2008 over 2000–2003. During the crisis years of 2009–2010, labor costs per employee followed an increasing pattern, mostly due to an increase in the minimum wage by 25 percent in 2010. The number of employees went up by a mere 7 percent in the second period, followed by a decrease of 3.6 percent in the third period.

Empirical Results

OLS and System GMM Estimations

In Table 5, we report the estimated parameters of the augmented dynamic production function (7), while in Table 6 we present the corresponding short-run and long-run elasticities. The (robust Huber) OLS and System GMM specifications yield relatively similar results. The estimated coefficient on lagged value added is large and statistically significant, suggesting there is a high degree of persistence

Table 5 Estimates of production function coefficients

Coefficients	OLS	Blundell–Bond system GMM
Value added$_{t-1}$	0.814*** (0.012)	0.740*** (0.068)
Labor cost$_t$	0.763*** (0.031)	0.802*** (0.104)
Labor cost$_{t-1}$	−0.596*** (0.032)	−0.584*** (0.114)
Fixed assets$_t$	0.056*** (0.017)	0.059* (0.031)
Fixed assets$_{t-1}$	−0.014 (0.017)	0.008 (0.031)
Firm size$_t$	−0.032* (0.017)	−0.007 (0.041)
Supervisory board characteristics		
Share of politically affiliated members$_t$	0.055 (0.046)	−0.007 (0.060)
Share of politically affiliated members$_{t-1}$	−0.087* (0.047)	−0.139*** (0.053)
Share of women$_t$	−0.052 (0.050)	−0.042 (0.064)
Share of women$_{t-1}$	0.074 (0.050)	0.116** (0.056)
Year dummies	Yes	Yes
Constant	−0.299** (0.118)	−0.346 (0.332)
N	2430	2174
Adjusted R^2	0.952	–
Hansen test (p value)	–	0.107

Standard errors are in parentheses

***, ** and * denote statistically significant values at 1, 5, and 10 % on a two-tailed test, respectively

Table 6 Estimation of short- and long-term elasticities

Coefficients	OLS	Blundell–Bond system GMM
S-R Elasticity w.r.t. labor costs	0.763*** (0.031)	0.802*** (0.104)
L-R Elasticity w.r.t. labor costs	0.901*** (0.052)	0.838*** (0.090)
S-R Elasticity w.r.t. fixed assets	0.056*** (0.017)	0.059** (0.031)
L-R Elasticity w.r.t. fixed assets	0.226 (0.027)	0.261*** (0.061)
S-R Elasticity w.r.t. share of politically affiliated members on supervisory board	0.055 (0.046)	−0.007 (0.060)
L-R Elasticity w.r.t. share of politically affiliated members on supervisory board	−0.174 (0.129)	−0.566** (0.274)
S-R Elasticity w.r.t. share of women on supervisory board	−0.052 (0.050)	−0.042 (0.064)
L-R Elasticity w.r.t. share of women on supervisory board	0.118 (0.147)	0.284 (0.326)

Standard errors are in parentheses

***, ** and * denote statistically significant values at 1, 5, and 10 % on a two-tailed test, respectively

in value added over time. The short-term elasticity of value added with respect to labor cost is high and similar to the elasticity obtained for the long run. The elasticity of value added with respect to fixed assets is relatively low in the short run, but substantially higher in the long term. Firm size is not found to have any effect on TFP. Note that we control for macroeconomic shocks by including year dummy variables.

Turning to the effect of the political connectedness of board members, in both the OLS and the Blundell–Bond system GMM specifications, there are strong negative effects of appointing politically affiliated members to the supervisory boards on the total factor productivity of the firms. While this TFP effect is not statistically significant in the short run, thus providing support for hypothesis H1b ($\alpha_6 = 0$), it is strong and negative in the long run, supporting hypothesis H2a ($(\alpha_6 + \alpha_7)/(1 - \alpha_1) < 0$). Using the GMM estimates in column 2, we find that increasing the share of politically affiliated appointees by 1 percentage point leads to a 0.139 percent average decrease in value added in the next year and to a 0.566 percent decrease in the long run, *ceteris paribus*. This result suggests that appointing a politically connected member to a five-member supervisory board, and thus increasing the political affiliation of board members by 20 percentage points, would decrease TFP by 2.78 percent on average in the next year and 11.32 percent in the long run. The negative long-run effect of increasing the number of politically connected

Table 7 Estimated production function coefficients for the tradable and non-tradable sectors (Blundell–Bond system GMM)

Coefficients	Tradable sector	Non-tradable sector
Value added$_{t-1}$	0.517*** (0.092)	0.826*** (0.050)
Labor cost$_t$	0.730*** (0.172)	0.903*** (0.098)
Labor cost$_{t-1}$	−0.328* (0.173)	−0.746*** (0.105)
Fixed assets$_t$	0.124 (0.075)	0.047* (0.026)
Fixed assets$_{t-1}$	−0.012 (0.064)	0.005 (0.030)
Size$_t$	−0.044 (0.042)	−0.022 (0.052)
Supervisory board characteristics		
Share of politically affiliated members$_t$	0.011 (0.103)	−0.008 (0.062)
Share of politically affiliated members$_{t-1}$	−0.137* (0.080)	−0.153** (0.063)
Share of women$_t$	−0.209** (0.066)	0.112 (0.073)
Share of women$_{t-1}$	0.227** (0.088)	0.021 (0.060)
Year dummies	Yes	Yes
Constant	−0.336 (0.317)	−0.542 (0.391)
N	1145	1028
Hansen test (*p* value)	0.427	0.753

Standard errors are in parentheses

***, ** and * denote statistically significant values at 1, 5 and 10 % on a two-tailed test, respectively

Table 8 Estimates of short- and long-term elasticities in the tradable and non-tradable sectors

Coefficients	Tradable sector	Non-tradable sector
S-R Elasticity w.r.t. labor costs	0.730*** (0.172)	0.903*** (0.098)
L-R Elasticity w.r.t. labor costs	0.831*** (0.079)	0.906*** (0.163)
S-R Elasticity w.r.t. fixed assets	0.124 (0.075)	0.047* (0.026)
L-R Elasticity w.r.t. fixed assets	0.231*** (0.059)	0.306*** (0.086)
S-R Elasticity w.r.t. share of politically affiliated members on supervisory board	0.011 (0.103)	−0.008 (0.062)
L-R Elasticity w.r.t. share of politically affiliated members on supervisory board	−0.259 (0.217)	−0.932** (0.451)
S-R Elasticity w.r.t. share of women on supervisory board	−0.209** (0.066)	0.112 (0.073)
L-R Elasticity w.r.t. share of women on supervisory board	0.038 (0.249)	0.772 (0.494)

Standard errors are in parentheses

***, ** and * denote statistically significant values at 1, 5 and 10 % on a two-tailed test, respectively

board members is also observed in the negative long-run elasticity calculated from the GMM estimates in Table 6.

Increasing the share of women on supervisory boards has a statistically insignificant instantaneous effect on TFP, while the lagged effect is positive and statistically significant at the 5 percent confidence test level in the GMM specification and a 14.5 percent level in the OLS model. Our estimates hence provide support for hypotheses H3b ($\alpha_8 = 0$) and H4b ($((\alpha_8 + \alpha_9)/(1 - \alpha_1) = 0$).

Tradable v. Non-tradable Sectors

As mentioned earlier, because firms in the non-tradable sector tend to operate in a less competitive setting and have higher potential rents and a bigger proportion of politically connected board members than firms in the tradable sector, it is worth examining whether political corruption is stronger among firms in the non-tradable sector. In Table 7, we present the respective estimated coefficients for tradable and non-tradable firms (Eqs. 7a and 7b), using the Blundell–Bond System GMM estimator.[25]

As may be seen from Table 7, the share of politically affiliated members of the supervisory board has a significant negative effect on productivity in the long run in the non-tradable sector, while the effect is statistically insignificant in the tradable sector. Our estimates hence provide support for hypotheses H5b ($\alpha_6^{TS} = 0$) and H6b ($(\alpha_6^{TS} + \alpha_7^{TS})/(1 - \alpha_1^{TS}) = 0$) in the tradable sector, while hypotheses H7b ($\alpha_6^{NTS} = 0$) and H8a ($(\alpha_6^{NTS} + \alpha_7^{NTS})/(1 - \alpha_1^{NTS}) < 0$) are supported in the case of the non-tradable

[25] OLS estimates may be obtained from the authors upon request.

sector. In particular, increasing the number of politically connected board members by one percentage point in the non-tradable sector on average decreases TFP by 0.153 percent in the next year and by 0.932 percent in the long run. This means that substituting a politically unconnected board member with a politically connected one on a five-member board results in 3.1 percent lower TFP in the next year and 18.6 percent lower TFP in the long run. Increasing the number of politically connected board members by one percentage point in the tradable sector on average decreases TFP by 0.137 percent in the next year but the effect diminishes in the long run. The results suggest that political corruption is indeed stronger in the non-tradable sector.

Appointing a female supervisor to a five-member board in the tradable sector results in 4.18 percent lower productivity[26] in the same year, but a positive and statistically significant effect of 4.54 percent with a lag of 1 year. Appointing female supervisory board members does not appear to have any significant effect in the non-tradable sector (Table 8).

Discussion and Conclusions

In this paper, we present and test a theory of how political corruption (linked to political connectedness) affects the corporate governance and performance of partially or fully state-owned enterprises (SOEs). Our game theoretic model predicts that underdeveloped democratic institutions which do not punish political corruption lead to the political connectedness of firms that in turn has a negative effect on performance. Using firm-level panel data on virtually all medium-sized and large industrial firms in Slovenia, we measure a firm's political connectedness by the share of politically connected individuals on its supervisory board. We show that a higher share of politically connected supervisory board members leads to lower total factor productivity of the firm, *ceteris paribus*.

We also examine the extent of the political affiliation of board members and its productivity effects separately for firms in the non-tradable and tradable sectors. Firms in the non-tradable sector tend to operate in a less competitive setting and thus have higher potential rents than firms in the tradable sector which tend to compete more in the export markets, a feature that could bring more political corruption into the non-tradable sector. Separately examining basic data for companies in the tradable and non-tradable sectors indicates that, on average, companies in the non-tradable sector indeed have a larger share of politically affiliated supervisory board members and also larger supervisory boards. Within the multiple regression framework, we show that a higher share of politically affiliated supervisory board members has a significant negative effect on productivity in the long run in the non-tradable sector, while the effect is statistically insignificant in the tradable sector. The results suggest that political corruption is indeed stronger in the non-tradable sector.

Since the non-tradable sector is characterized by a bigger share of state-owned companies, the political affiliation of supervisory board members in Slovenia is to a certain degree a consequence of the prevailing state ownership in the non-tradable sector. Therefore, an alternative explanation of our empirical results could be that the best companies were privatized first (the cherry-picking effect[27]) and the remaining state-owned companies are those that have been less productive since the early 1990s. When correcting for endogeneity bias, however, the most recent studies on privatization outcomes in transition countries find an insignificant or even negative short-term effect of privatization on productivity compared to state-owned firms largely due to the short-run costs of restructuring and the challenges of mitigating agency and expropriation concerns (Sabirianova et al. 2012; Knyazeva et al. 2013). Moreover, according to this view, setting up property rights and contracting rights before commencing privatization is crucial for the post-privatization performance of privatized firms. These findings are in line with the study by Bole et al. (2014) on the impact of the capital surge in Slovenia before the global financial crisis arose, which showed the stronger interest in the privatization of state-owned companies by all actors involved, including the interest of political parties to increase the representation of politically connected individuals on the supervisory boards, as presented in this study.

Our results relating to the negative effect of the prevalent form of political corruption found in many emerging market economies also open up the important issue of the optimal strategy for privatization. Strengthening property rights protection, mitigating expropriation threats, improving the enforcement of contractual rights and the effectiveness of the legal system (Sabirianova et al. 2012; Knyazeva et al. 2013) can surely contribute to the success of privatization. The political connectedness of firms that gives rise to political corruption will presumably be reduced as democratic institutions become stronger and able to punish corrupt behavior. However, if the development of democratic institutions in "young" economies is slow and the political connectedness of firms is spreading fast, a superior short-term solution may be to carefully implement

[26] The coefficient is statistically significant at the 10 percent level.

[27] Gupta et al. (2008), for example, show on a panel of Czech data that better performing firms were privatized first and that ignoring this selection leads to a biased estimation of the effects of privatization in existing studies.

the privatization of the remaining SOEs. In young democracies with low political accountability and underdeveloped institutions, the ongoing state ownership of many firms may represent more of a curse than a blessing.

The results of this study hold important implications for the literature on corporate governance in general and business ethics in particular. Understanding the mechanisms of corruption in countries with less developed institutions is especially important and contributes to the growing literature on the importance of institutional development for contributing to the social and economic well-being of countries vis-à-vis the cancerous and corrosive growth of corruption. This study also provides important empirical evidence of systematic corruption using Rose-Ackerman's (2008) typology of grand corruption and its important subset, political corruption, as defined by Kaufmann and Vincente (2011). Future research could build from this study and further investigate the dynamics behind the studied phenomena, where the transition toward more efficient corporate governance practices and more ethical forms of doing business is definitely a major condition for their development.

Acknowledgments Domadenik's and Prašnikar's research in this paper was in part supported by the Slovene Research Agency's Grant No. J5-227. Jan Svejnar benefitted from a Grant from the Grant Agency of the Czech Republic (Grant No. P402-15-24642S). The authors would like to thank two anonymous referees and Editor for their helpful comments.

Appendix

See Table 9.

References

Acemoglu, D. (2009). *When Does Labor Scarcity Encourage Innovation?* NBER Working Papers 14809, National Bureau of Economic Research, Inc.

Agrawal, A., & Knoeber, C. R. (2001). Do some outside directors play a political role? *Journal of Law and Economics, 44*(1), 179–198.

Arellano, M., & Bond, S. R. (1991). Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations. *Review of Economic Studies, 58*, 277–297.

Banerjee, A. Hanna, R. & Mullainathan, S. (2012). *Corruption*. MIT Working Paper Series, WP No. 12–08.

Banfield, E. (1998). *The moral basis of a backward society*. Chicago, IL: The Free Press.

Bhattacharyya, S., & Hodler, R. (2010). Natural resources, democracy and corruption. *European Economic Review, 54*, 608–621.

Blundell, R. W., & Bond, S. R. (2000). Initial conditions and moment restrictions in dynamic panel data models. *Journal of Econometrics, 87*, 115–143.

Bole, V., Prašnikar, J., & Trobec, D. (2010). Accumulated financial debt of firms as an obstacle to firms' investments. In J. Prašnikar (Ed.), *The role of intangible assets in exiting the crisis* (pp. 117–130). Ljubljana: Finance.

Bole, V., Prašnikar, J., & Trobec, D. (2014). Policy measures in the deleveraging process: A macroprudential evaluation. *Journal of Policy Modelling, 36*(2), 410–432.

Carter, D. A., Simkins, B. J., & Simpson, W. G. (2003). Corporate governance, board diversity, and firm value. *The Financial Review, 38*, 33–53.

Collins, R. (1998). *The sociology of philosophies: A global theory of intellectual change*. Cambridge, MA: The Belknap Press of Harvard University Press.

Corrado, C., Hulten, C., & Sichel, D. (2005). Measuring capital and technology: An expanded framework. In C. Corrado, et al. (Eds.), *Measuring capital in the new economy, National Bureau of Economic Research Studies in Income and Wealth* (Vol. 65, pp. 11–45). Chicago: University of Chicago Press.

De Soto, H. (1989). *The other path: The invisible revolution in the Third Worlds*. New York: Harper and Row Publishers.

Table 9 Supervisory board composition by period and industry

	Manufacturing	Utilities	Electricity	Trade	IT	Transport	Other
Period 1 (2000–2003)							
Number of supervisors	5.429	5.594	6.164	6.073	5.838	6.500	5.527
Share of politically affiliated members	0.173	0.259	0.402	0.165	0.192	0.318	0.299
Share of female members	0.199	0.189	0.129	0.253	0.148	0.159	0.280
Period 2 (2004–2008)							
Number of supervisors	4.971	5.882	5.753	5.870	5.115	5.200	5.431
Share of politically affiliated members	0.200	0.361	0.469	0.224	0.158	0.294	0.350
Share of female members	0.187	0.188	0.107	0.204	0.081	0.112	0.341
Period 3 (2009–2010)							
Number of supervisors	4.490	5.881	5.441	4.710	5.542	4.875	5.214
Share of politically affiliated members	0.214	0.476	0.325	0.222	0.118	0.313	0.233
Share of female members	0.179	0.189	0.130	0.192	0.143	0.059	0.288

Industry sector other represents real estate, medical services, and publishing

Dela Rama, M. (2012). Corporate governance and corruption: Ethical dilemmas of Asian business groups. *Journal of Business Ethics, 109*, 501–519.

Desai, R. M., & Olofsgård, A. (2011). The costs of political influence: Firm-level evidence from developing countries. *Quarterly Journal of Political Science, 6*(2), 137–178.

Domadenik, P., Prašnikar, J., & Svejnar, J. (2008). Restructuring of firms in transition: Ownership, institutions and openness to trade. *Journal of International Business Studies, 39*(4), 725–746.

Dombrovsky, V. (2008). *Do Political Connections Matter? Firm-level Evidence from Latvia*. SSE-Riga/BICEPS Working Paper.

Eiras, A. L. (2003). Make the rule of law a necessary condition for the millennium challenge account. In: The Heritage Foundation Backgrounder #1634. Washington, DC. Retrieved from http://www.heritage.org/research/reports/2003/03/make-the-rule-of-law-a-necessary-condition.

European Commission. (2014). *Macroeconomic Imbalances, Slovenia 2014*. Occasional Papers 187. Brussels: European Commission, Directorate-General of Economic and Financial Affairs

Faccio, M. (2006). Politically connected firms. *American Economic Review, 96*, 369–386.

Fazzari, S., Hubbard, G., & Peterson, B. (1996). *Investment and finance reconsidered* (pp. 141–195). Washington, DC: Brookings Papers on Economic Activity.

Filippini, M., Hrovatin, N., & Zorić, J. (2014). Efficiency and regulation of the Slovenian electricity distribution companies. *Energy Policy, 32*(3), 335–344.

Fisman, R. (2001). Estimating the value of political connections. *American Economic Review, 4*, 1095–1102.

Fox, J. T., & Smeets, V. (2011). *Does Input Quality Drive Measured Differences in Firm Productivity?* NBER Working Paper No. 16853.

Gill, I., & Kharas, H. (2007). *An East Asian renaissance: Ideas for economic growth*. Washington, DC: World Bank Group.

Griliches, Z., & Mairesse, J. (1998). Production functions: The search for identification. In S. Strom (Ed.), *Essays in Honour of Ragnar Frisch. Econometric Society Monograph Series*. Cambridge: Cambridge University Press.

Gupta, S., Davoodi, H. R., & Alonso-Terme, R. M. (2002). Does corruption affect income inequality and poverty? *Economics and Governance, 3*, 23–45.

Gupta, N., Ham, J. C., & Svejnar, J. (2008). Priorities and sequencing in privatization: Evidence from Czech firm panel data. *European Economic Review, 52*(2), 183–208.

Hausman, J. (1978). Specification tests in econometrics. *Econometrica, 46*, 1251–1271.

Hermalin, B. E., & Weisbach, M. S. (2003). Boards of directors and endogenously determined institution: A survey of the economic literature. *Economic Policy Review, 9*(1), 7–26.

Joecks, J., Pull, K., & Vetter, K. (2013). Gender diversity in the boardroom and firm performance: What exactly constitutes a "critical mass"? *Journal of Business Ethics, 118*(1), 61–72.

Johnson, S., & Mitton, T. (2003). Cronyism and capital controls: Evidence from Malaysia. *Journal of Financial Economics, 67*, 351–382.

Jones, C. I. (1998). *Introduction to economic growth*. New York: W.W. Norton & Co. Inc.

Kang, D. C. (2003). Transaction costs and crony capitalism in East Asia. *Comparative Politics, 35*, 439–458.

Kaufmann, D., & Vincente, P. C. (2011). Legal corruption. *Economics and Politics, 23*(2), 195–219.

Khwaja, A. I., & Mian, A. (2005). Do lenders prefer politically connected firms? Rent seeking in an emerging financial market. *Quarterly Journal of Economics, 120*, 1371–1411.

Knyazeva, A., Knyazeva, D., & Stiglitz, J. E. (2013). Ownership change, institutional development and performance. *Journal of Banking & Finance, 37*(7), 2605–2627.

Kochan, T., Bezrukova, K., Ely, R., Jackson, S., Joshi, A., Jehn, K., et al. (2003). The effects of diversity on business performance: report of the diversity network. *Human Resource Management, 42*(1), 3–21.

Kroszner, R. S., & Stratmann, T. (1998). Interest-group competition and the organization of congress: Theory and evidence from financial services' political action committees. *American Economic Review, 88*(5), 1163–1187.

Krueger, A. O. (1974). The political economy of the rent-seeking society. *American Economic Review, 64*(3), 291–304.

Lee, S. H., & Oh, K. K. (2007). Corruption in Asia: Pervasiveness and arbitrariness. *Asia Pacific Journal of Management, 24*, 97–114.

Levinsohn, J., & Petrin, A. (2003). Estimating production function using inputs to control for unobservables. *Review of Economic Studies, 70*, 317–341.

Nielsen, R. P. (2003). Corruption networks and implications for ethical corruption reform. *Journal of Business Ethics, 42*, 125–149.

Nwabuzor, A. (2005). Corruption and development: New initiatives in economic openness and strengthened rule of law. *Journal of Business Ethics, 59*(1–2), 121–138.

Olley, S., & Pakes, A. (1996). The dynamics of productivity in the telecommunications equipment industry. *Econometrica, 64*, 1263–1298.

Olson, M. (1982). *The rise and decline of nations*. New Haven: Yale University Press.

Prašnikar, J., & Gregorič, A. (2002). The influence of workers' participation on the power of management in transitional countries. The case of Slovenia. *Annals of Public and Cooperative Economics, 73*(2), 269–297.

Prašnikar, J., & Svejnar, J. (1993). Workers participation in management vs. social ownership and government policies: Yugoslav lessons for transforming socialist economies. In A. Atkinson (Ed.), *Alternatives to Capitalism* (pp. 106–126). New York: St. Martin's Press.

Prašnikar, J., Svejnar, J., Mihajlek, D., & Prašnikar, V. (1994). A test of enterprise behaviour under Yugoslav labor management. *Review of Economics and Statistics, 4*, 728–741.

Rose-Ackerman, S. (2008). Corruption and government. *International Peacekeeping, 5*(3), 328–343.

Sabirianova, K., Svejnar, J., & Terrell, K. (2012). Foreign investment, corporate ownership, and development: Are firms in emerging markets catching up to the world standard? *Review of Economics and Statistics, 94*(4), 981–999.

Shleifer, A., & Vishny, R. W. (1994). Politicians and firms. *Quarterly Journal of Economics, 109*(4), 995–1025.

Singh, V., & Vinnicombe, S. (2004). Why so few women directors in top UK boardrooms? *Evidence and Theoretical Explanations, Corporate Governance—An International. Review, 12*(4), 479–488.

Smith, N., Smith, V., & Verner, M. (2006). Do women in top management affect firm performance? A panel study of 2500 Danish Firms. *International Journal of Productivity and Performance Management, 55*(7), 569–593.

Stigler, G. J. (1971). The theory of economic regulation. *The Bell Journal of Economics and Management, 2*(1), 3–21.

Todaro, M. P., & Smith, S. C. (2014). *Economic development* (12th ed.). New York, NY: Addison Wesley.

Transparency International. (1997). *The corruption perception index*. Berlin: Transparency International.

Tullock, G. (1967). The welfare costs of tariffs, monopolies and theft. *Economic Inquiry, 5*(3), 224–232.

Vynoslavaska, O., McKinney, J. A., Moore, C. W., & Longenecker, J. G. (2005). Transition ethics: A comparison of Ukrainian and United States business professionals. *Journal of Business Ethics, 61*(3), 283–299.

Wooldridge, J. M. (2009). On estimating firm-level production functions using proxy variables to control for unobservables. *Economics Letters, 104*(3), 112–114.

Xin, X., & Rudel, T. K. (2004). The context of political corruption: A cross-national analysis. *Social Science Quarterly, 85*(2), 294–309.