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# **Financial Reporting and Corporate Political Connections: An Analytical Model of Interactions**

## **ABSTRACT**

We analyze the interactions between accounting institutions and corporate political connections (CPCs). We present a model where a costly policy depends on the perceived economic condition of a firm. This policy and the valuation of the firm by capital market participants create incentives for the firm to manipulate its financial reports. A politician has some discretion over the policy and can use it to favor a connected firm. Our analysis reveals that the firm's financial reporting is determined by the interplay of an accounting standard, enforcement strictness, and the salience of the policy for the firm. The possibility to manipulate the financial reports imposes an upper boundary on the value of political connectedness which does not exist if only truthful reporting is possible. The reason is that a low credibility of reported figures leads only to a weak revision of the policy. In general, the value of CPCs is highest when the financial reporting regime evenly splits between firms in good and bad economic condition. Our analysis further suggests that while connected firms generally report being in good condition more often than non-connected firms do, the effect of CPCs on absolute reporting manipulation depends on policy salience. If policy salience is low, connected firms exhibit a higher absolute degree of manipulation than non-connected firms do; the opposite holds if policy salience is high.

## **ARTICLE INFO**

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## 1. Introduction

Corporate political connections (CPCs) are a global phenomenon (Faccio, 2006). They have been empirically investigated in national settings, for instance, in the US (Kostovetsky, 2015) and China (Piotroski et al., 2015); in settings which focus on certain areas like Europe (Cingano and Pinotti, 2013), Latin America (Claessens et al., 2008), and South-East Asia (Fisman, 2001); as well as in worldwide settings (Faccio et al., 2006). These studies reveal that CPCs are valuable for firms both in countries with poor or well-functioning rule of law. Further, a number of studies empirically investigate the effects of CPCs on financial reporting decisions (Correia, 2014; Heese et al., 2017; Chaney et al., 2011, Gross et al., 2016). However, the results of these studies are ambiguous. We add to the accounting and finance literature on the effects of political connectedness by proposing a model of the interactions between financial reporting institutions (i.e., institutions governing capital market-directed financial reports) and CPCs. Further, by showing that there exists an endogenous boundary on the value of CPCs and that the extent of the boundary depends on capital market regulation, our results inform the public policy debate on campaign finance regulation.

Firms can become politically connected in a number of ways. For instance, they can donate to politicians' election campaigns, engage in lobbying efforts, hire former politicians and their staff, or simply become connected by the hazards of political geography (Preuss and Königsgruber, 2021). While the model in this study is agnostic about the type of connectedness, its emphasis lies on the value of CPCs for the connected firms. We hence address the question why and under what conditions firms would be willing to incur costs to establish CPCs. These costs can be monetary like, for example, financial contributions to political action committees (Ramanna and Roychowdhury, 2010) or they can come in the form of expected quid pro quos such as electoral support via investment and employment decisions in electorally important regions and time periods (Carvalho, 2014; Faccio and Hsu, 2017; Bertrand et al., 2018).

Further, governments may favor connected firms in a number of different ways. For instance, via the allocation of government procurement contracts (Goldman et al., 2013), by granting improved access to credit from state-owned banks (Claessens et al., 2008; Infante and Piazza, 2014; Coleman and Feler, 2015), or by holding connected firms less accountable for violating laws and regulations (Imai, 2009; Fisman and Wang, 2015; Kim and Zhang, 2016). However, our focus on the interactions between financial reporting regimes and CPCs leads us to concentrate on favors that depend on the connected firm's economic condition (Duchin and

Sosyura, 2012; Tahoun and Van Lent, 2019). Positive Accounting Theory predicts that firms attempt to appear financially vulnerable when they are under government scrutiny (Watts and Zimmerman, 1978, 1986). This prediction has been confirmed in a number of settings, including anti-trust regulation (Cahan, 1992), protection from foreign competition (Jones, 1991), and environmental regulation (Johnston and Rock, 2005).

In line with these empirical findings, we analytically model a setting in which a government decides a more (less) favorable policy on firms in economically bad (good) conditions. One possible interpretation of this model structure is a government pursuing partly conflicting objectives (e.g., environmental protection and high employment). In such a situation, the government may refrain from imposing an overly strict policy on firms in bad economic conditions for fear of further weakening them.<sup>1</sup> Such conflicting incentives for policy-making are quite common. For instance, a number of recent press articles and think tanks caution that environmental laws and policies may be weakened in reaction to the economic problems caused by the Covid-19 sanitary crisis.<sup>2</sup> An alternative interpretation of the model is the allocation of a subsidy to firms in distress. For example, governments around the world are distributing large sums of money in order to counter the economic consequences of the Covid-19 sanitary crisis. However, there is concern that political considerations weigh in on the allocation of those public resources.<sup>3</sup>

In our model, a politician is limited in the favors she can provide to a connected firm, for instance, because of constitutional boundaries or investigative media monitoring special interests (Dyck et al., 2013). Specifically, while the politician cannot arbitrarily decide on the policy itself, she can make subordinate bureaucracy update a previously established policy proposal taking into account the firm's current economic condition. However, the politician

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<sup>1</sup> We model a single firm to abstract from coordination problems. However, the interactions with government may also take place on industry level if firms succeed to coordinate their actions.

<sup>2</sup>The Institute for Policy Integrity (2021) finds that in reaction to the sanitary crisis, several US governmental agencies have issued waivers or announced plans to stop enforcing key environmental laws and regulations. A National Geographic article states that in China, provincial officials are authorizing numerous new coal-fired power plants in order to trigger an economic boost by construction work (Gardiner, 2020). A group of academics in environmental management predict that governments will prioritize economic recovery over environmental regulation (Bond et al., 2020) while the Organization for Economic Cooperation and Development (OECD) is concerned that efforts to support recovery undermine actions taken against climate change and environmental degradation (OECD 2020).

<sup>3</sup> Rajgopal (2020) notes that the rescue package passed by the US Congress to address the economic consequences of the Covid-19 sanitary crisis might potentially invite political favors as it does not ban political contributions from recipients of a bailout. Schwartz (2020) reports that a number of investment firms spent millions on lobbying in relation to this stimulus package. Further, a group of influential Stanford economists caution that allocating public funds to wealthy corporations may reinforce public mistrust (Andrews, 2020).

will inhibit an update of the policy only when this is in the interest of the connected firm. As the firm's economic condition is judged based on its financial reports, the firm has an incentive to bias them. Following Dye (2002) and Laux and Stocken (2018), the firm in our model privately receives a signal of its economic condition and is required to issue a binary report on it to capital market participants. An accounting standard determines the mapping of the signal to the binary report: If the signal of the economic condition is below (above) a threshold determined by the accounting standard, the firm is required to report being in bad (good) economic condition. Again following Dye (2002), we refer to the issuance of a report in violation of the accounting standard as classification manipulation, or manipulation for short. In Dye (2002) and Laux and Stocken (2018), there are only incentives for upward classification manipulation (i.e., reporting being in a good economic condition in violation of the standard) as the firm's sole reporting objective is to influence capital market investors. In our model, on the contrary, the conflicting objectives of influencing capital market participants and the policy-setting process lead to either upward or downward manipulation depending on the salience of the policy for the firm.

Our analysis of the interactions between financial reporting and political connectedness yields two sets of results. First, we find that in a benchmark setting without the possibility to issue financial reports in violation of the accounting standard, the value of connectedness is unbounded and increases monotonically with the salience of the policy. However, when the firm has the possibility to manipulate its financial reports, the bureaucracy rationally incorporates the possibility that the report might be manipulated in its revision of the policy. The more manipulation there might be, the less informative the report is and the weaker the policy revision will be. Thus, financial reports only have a noteworthy effect on policy when they are sufficiently credible. Highly salient policies constitute an incentive for manipulation, thereby undermining the credibility of the report. This, in turn, constitutes an upper boundary for the value of connectedness. We further find that in the benchmark setting without the possibility to manipulate financial reports, the value of CPCs is the higher, the more evenly the accounting standard separates between firms in good and bad economic conditions.<sup>4</sup> With the possibility to manipulate, the effect of CPCs on the revision of the policy is also highest when the financial reports separate firms in good and bad economic conditions evenly. However, the

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<sup>4</sup> More technically, when the "shadow standard" (Dye, 2002) is close to the middle of the reporting space.

financial reports now not only depend on the standard but also on the firm's reporting incentives stemming from the salience of the policy and the strictness of accounting enforcement.

Our second set of results concerns the determinants of accounting bias. We find that connected firms report more aggressively, that is, they report being in a good economic condition more often than non-connected firms do. We further find that CPCs have a non-trivial effect on the relation between policy salience and absolute classification manipulation. If policy salience is low, connected firms exhibit a higher absolute degree of manipulation than non-connected firms do. However, the opposite is true for high policy salience.

Both our results on the value of political connectedness and on the effect of policy salience on the classification manipulation contribute to the political economy literature on informational lobbying (Austen-Smith, 1995, 1998; Bennedsen and Feldman, 2006; Cotton, 2009, 2012). In this literature, the optimal policy typically depends on interested parties' private information; policy-makers are aware of incentives stemming from this fact and rationally interpret information provided to them (as in our model). Cotton (2009) assumes that such information is verifiable. In such a case, political contributions that buy access to provide information strictly increase with the salience of a policy for the donor. Our analysis additionally indicates that this finding is mitigated when manipulation of the information is possible. When the salience of the policy becomes very high, incentives to manipulate the information in order to influence the policy undermine the credibility of the information. This, in turn, limits the value of the connection to the politician. Our model hence suggests a boundary on the amount firms are willing to spend to establish connections with political actors. This boundary is not exogenous, that is, it is not a result of campaign finance regulation, but is rather endogenous and stems from interactions between political incentives and capital market incentives.

In the accounting literature, a number of recent studies model and analyze the development and evolution of accounting regulation. Bertomeu and Cheynel (2013) explain the emergence of a disclosure standard as a result of electoral competition. In their model, politicians cater to owner-managers who issue securities in a capital market. Bertomeu and Magee (2015) use a similar approach to investigate why accounting regulation tends to be biased in a sense that accounting standards demand more disclosure in the case of adverse events than in case of positive events. Friedman and Heinle (2016) identify uniform disclosure regulation as a possible solution to the threat of distortions resulting from self-interested lobbying by corporate

insiders. Our approach adds an additional perspective to this literature. In contrast to the articles cited above, we do not seek to explain accounting regulation as result of political processes. We rather investigate how two major components of the accounting regime, namely whether accounting standards are conservative or liberal and the strictness of the enforcement of accounting standards, affect the value of political connections for a firm.

The remainder of this study is structured as follows. Section 2 presents the related literature on the value of CPCs and the Positive Accounting Theory literature. In Section 3, we present the model setup and in Section 4, we analyze a benchmark setting without the possibility to manipulate the financial reports. In Section 5, we consider a case where the firm can manipulate its financial reports and derive our main results. In Section 6, we discuss a potential extension of our model. Section 7 concludes.

## **2. Related Literature**

### *2.1. The value of government favors to politically connected firms*

A number of empirical studies estimate the overall value of CPCs by measuring the impact of political events on a supposedly connected firm's market value. Fisman (2001) first applied this method to estimate the value of Indonesian firms' connections to President Suharto, using rumors about Suharto's deteriorating health as the events. Fisman (2001) finds that connected firms lost more in market value because of such rumors than less connected firms did. Faccio and Parsley (2009) use unexpected deaths of politicians in a global sample and find a market-adjusted 1.7% decline in value of connected firms on average. Goldman et al. (2009) investigate the effects of the outcome of the contested 2000 US presidential elections. They find that the value of firms connected with the winning Republican Party increased after the election whereas the value of those firms with ties to the Democratic Party decreased.

Further, there is a literature on the channels through which CPCs can affect firm value. One important channel is the offer of assistance to the connected firm in case of financial difficulties. Against the background of the 2008 financial crisis, Tahoun and Van Lent (2019) find that US politicians linked to financial institutions were more likely to vote in favor of the Economic Emergency Stabilization Act than those politicians without such ties were. Similarly, Duchin and Sosyura (2012) find that connected firms were more likely to see their application under the Capital Purchase Program approved compared to non-connected firms. Kostovetsky (2015)

shows that this improved access to bailouts was anticipated by connected firms and led them to take higher risks in the run-up of the crisis. Faccio et al. (2006) study a global sample and likewise find that politically connected firms are significantly more likely to receive a bailout in case of financial difficulties than firms without strong CPCs. Further channels through which politicians may favor connected firms include improved access to credit from state-owned banks (Claessens et al., 2008; Infante and Piazza, 2014; Coleman and Feler, 2015), lower effective tax rates (Adhikari et al., 2006), privileged treatment in privatization processes (Tu et al., 2013), or the allocation of government procurement contracts (Goldman et al., 2013; Tahoun, 2014; Schoenherr, 2018).

Our analysis incorporates insights from this literature by modeling a situation where a politically connected firm obtains a favor from a politician. To be more precise, the politician implements a socially optimal policy on unconnected firms. For a connected firm, however, the politician is willing to refrain from implementing the socially optimal policy if this helps the firm.

## *2.2. Politically motivated accounting choices*

The literature on political motives for accounting choices starts with Watts and Zimmerman (1978). Watts and Zimmerman (1978, 1986, 1990), consider the political process as a competition for wealth transfers where corporate financial reports serve as a source of information for the actors involved; they argue that managers anticipate this use of financial reports and apply accounting procedures which optimize the wealth transfers for their respective firms. In particular, Watts and Zimmerman (1978) use size as a proxy for political visibility and hypothesize that larger firms are more likely to use income-decreasing accounting procedures compared to smaller firms.

Starting with Jones (1991), a stream of the literature developed which does not use size as an indicator of political visibility but investigates particular circumstances under which firms have incentives for downward earnings management. This literature shows that firms manage earnings downwards both in order to maximize their chances of obtaining or upholding governmental favors (e.g., subsidies or protection from competition) or in order to avoid negative consequences of costly regulation. For example, there are studies showing that firms take income-decreasing discretionary accruals when there are import relief support



investigations (Jones 1991) or potential violations of competition rules (Cahan, 1992; Makar and Alam, 1998; Königsgruber and Windisch, 2014). While these studies employ statistical techniques to investigate a large sample of firms, Wilson and Shailer (2007) focus on one company (i.e., Tooth & Co Ltd.). Wilson and Shailer (2007) find that periods of high political costs and regulatory pressure are associated with the understatement of reported earnings.

Another stream of the literature investigates the impact of a threat of costly environmental regulation on firms' financial reporting decisions. Cahan et al. (1997) consider the discussions leading to the Comprehensive Environmental Response, Compensation, and Recovery Act of 1980. Cahan et al. (1997) find that chemical firms, which would be most affected by the new law, took income-decreasing accounting decisions at the height of the debate. They interpret these accounting choices as driven by political costs. Johnston and Rock (2005) investigate subsequent reporting behavior by firms that were identified as potentially responsible parties (PRPs) under that Act. They argue that the Environmental Protection Agency has historically pursued a policy of suing the "deepest pocket" and show that firms make income-decreasing accounting choices in PRP identification years. Johnston and Rock (2005) conclude that their findings are driven by the firms' attempts to minimize clean-up costs. Patten and Trompeter (2003) examine chemical firms' reporting reactions following a chemical leak in India. They find that firms with a higher level of pre-leak environmental disclosures, which presumably were less vulnerable to attacks on their reputation, exhibited less income-decreasing earnings management compared to firms with a low disclosure level. Patten and Trompeter (2003) conclude that financial reporting decisions are tied to a larger set of strategies in dealing with political pressures.

Further studies show that firms' financial reporting decisions can be affected by a desire to influence national tax policy or price regulation. Monem (2003) studies the situation when the gold mining industry's tax exempt status in Australia came under pressure in a period of high profitability in the early 1980s. He demonstrates that Australian mining firms, but not comparable Canadian firms, took significant income-decreasing accruals. Monem (2003) argues that this was an attempt to mitigate the costs stemming from a loss of the tax-exempt status. Adhikari et al. (2005) find that large and politically visible firms in Malaysia made accounting decisions that increased their reported effective tax rate in a period when a major change in the tax rate was being discussed. Navissi (1999) and Bowman and Navissi (2003) examine financial reporting decisions of manufacturing firms subject to price controls in New

Zealand in the early 1970s. They show that these firms exhibited income-decreasing discretionary accruals during periods in which they could apply for price increases, but not in other years. Control firms not eligible for price increases also did not exhibit such discretionary accruals. Gill-de-Albornoz and Illueca (2005) find similar results for the Spanish electricity sector.

A number of studies also addresses corporate attempts to deflect general negative publicity and potential subsequent governmental action. In general, firms tend to use accounting discretion to lower reported earnings in periods of heightened scrutiny. Han and Wang (1998) show that large and politically visible petroleum refining firms, but not the smaller crude petroleum and natural gas firms, exhibited negative discretionary accruals during a period of rapidly increasing gas prices as a consequence of the 1990 Persian Gulf War. Byard et al. (2007) find similar results following the hurricanes Katrina and Rita. Key (1997) shows that cable TV firms used downward earnings management when the industry came under Congressional scrutiny after alleged excessive rates and poor service. Hall et al. (2005) find evidence that firms make deliberate income-decreasing accounting choices in years in which they announce massive layoffs.

Interestingly, there appears to be a lower boundary for firms' deliberate income-decreasing accounting choices for political purposes. When the financial performance is already weak, firms do not appear to attempt to make it look even weaker. Makar and Alam (1998) extend Cahan's (1992) study on antitrust investigations. Makar and Alam (1998) find that firms exhibit income-decreasing discretionary accruals during periods of economic expansion, but not during recessions. Liberty and Zimmerman (1986) do not find evidence of income-decreasing accounting choices during periods of labor union contract negotiations. Liberty and Zimmerman (1986) argue that in the sample period, firms had low incentives to use discretion to lower reported earnings as they were already performing poorly.

Against the background of this extensive literature, we extend the model of Dye (2002) and Laux and Stocken (2018) where firms have incentives for upward classification manipulation in order to influence capital market participants. In our model, they have a conflicting objective of influencing the policy-setting process, too. This leads to either upward or downward classification manipulation depending on the salience of the policy for the firm.

### 3. Model setting

#### 3.1. Overview

In our model setup, a firm observes the value of a random variable,  $T$ . Its differentiable probability distribution function,  $F(T)$ , with density  $f(T)$ , is supported on the interval  $[0,1]$  with  $F(0) = 0$  and  $F(1) = 1$ . The other actors in the model (i.e., a politician and capital market participants) are only aware of the distribution. For modeling convenience, we let  $T$  represent the firm's intrinsic value and call  $T$  the firm's "type" which reflects its economic condition. The firm issues a binary financial report  $R \in \{B, G\}$  corresponding to a split between firms in bad and good economic conditions. The financial reporting regime defines an accounting standard  $\tau \in [0,1]$  and mandates the firm to release a financial report  $R = B$  if  $T \leq \tau$  and  $R = G$  otherwise. Due to enforcement of the accounting standard, classification manipulation (or manipulation for short) is costly for the firm. More precisely, releasing a report in violation of the accounting standard imposes costs of  $\kappa \cdot |T - \tau|$  on the firm while reporting in compliance with the standard is costless.  $\kappa > 0$  can be interpreted as a measure of the strictness of the enforcement of the accounting standards. Further, a politician enacts a policy which can be beneficial or detrimental to the firm; the policy is observable by all actors. When enacting the policy, the politician takes into account the firm's assessed economic condition based upon the financial report as well as whether the firm is connected to her or not. We let  $-\pi$  represent the economic effect of the policy on the firm. Risk neutral capital market participants assess the market value of the firm  $MV$  as its expected conditional intrinsic value less the costs of the enacted policy:<sup>5</sup>

$$MV(R) = E[(T|R)] - \pi(R) \quad (1)$$

The timing of events is as follows: (a) An initial policy proposal  $\pi^{exante}$  is established and nature decides upon the firm's type. (b) The firm releases a financial report. (c) The politician decides on a potential revision of the policy proposal,  $\pi^{revised}$ . This decision depends on the report and the connectedness status of the firm. (d) Capital market participants value the firm.

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<sup>5</sup> Our results would be unaffected by adding a constant greater than the costs of the policy to ensure a positive market value. In our analysis, it only matters that the firm's economic condition is negatively affected by the policy imposed on the firm. For expositional convenience, we abstract from the possibility of bankruptcy which would result if a policy was enacted that is costlier than the firm's net assets.

### 3.2. Actors, decisions, and payoffs

The risk neutral firm maximizes its expected payoff  $Y$  which consists of the difference between its capital market value  $MV$  and the reporting costs  $\mu \in \{0; \kappa \cdot |T - \tau|\}$  which are positive if the report violates the accounting standard (i.e., reporting costs are positive for a report  $R = G$  if  $T \leq \tau$  or  $R = B$  if  $T > \tau$ ). The firm cannot credibly reveal its true type by other means than the financial report.

The politician can choose whether to enact an initial policy proposal  $\pi^{exante}$  or a revised policy proposal  $\pi^{revised}(R)$  based upon new information from the financial report; a bureaucracy establishes the policy proposals upon her request. We abstract from agency conflicts between the politician and the bureaucracy and treat the bureaucracy as a technology calculating a policy proposal based upon the following considerations: The social welfare resulting from the policy is given by  $-(\pi - (\alpha \cdot T - \beta))^2$ ; the optimal (first best) policy is hence  $\pi^{firstbest} = \alpha \cdot T - \beta$ .<sup>6</sup>  $\alpha \geq 0$  reflects a component of the policy that is negatively related to a firm's economic condition whereas  $\beta$  reflects a component of the policy that is independent of the economic condition of the firm. Consequently,  $\alpha > 0$ ,  $\beta \geq \alpha$  represents a subsidy that is decreasing in a firm's economic condition; a costly regulation that is implemented independently of the economic condition can be modeled as  $\alpha = 0$ ,  $\beta < 0$ .  $\alpha$  hence represents the strength of the political costs incentive for reporting manipulation; in the following, we refer to  $\alpha$  as policy salience. Given the information structure in our model, the politician can choose between enacting the initial policy proposal  $\pi^{exante}$  (based upon the ex ante expectation of the firm's economic condition) or having the bureaucracy incorporate new information and establish a revised policy proposal  $\pi^{revised}(R) \in \{\pi^B, \pi^G\}$  which depends on the firm's financial report. The assumption that the politician cannot develop a new policy proposal on her own can be interpreted as a constraint stemming from rule of law which prevents her from enacting policies arbitrarily.

We assume that the politician always implements a revised policy proposal for a non-connected firm in order to make the best use of available information; for a connected firm, she will implement the policy which is less costly for the firm.<sup>7</sup> Intuitively, a report of a bad

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<sup>6</sup> Quadratic utility functions have been used extensively to study governmental policy-making (e.g., Brainard, 1967; Callander, 2011).

<sup>7</sup> This simple behavioral rule follows, for example, if the politician optimizes a weighted utility function where social welfare outweighs the firm's private welfare for a non-connected firm and vice versa.

economic situation leads to a downward revision of the policy  $\pi^B \leq \pi^{exante}$  while a report of a good economic situation leads to an upward revision of the policy  $\pi^G \geq \pi^{exante}$ . We will show this more formally below.

Rational and risk-neutral capital market participants value the firm at its expected intrinsic value less costs of the enacted policy. They take into account all available information.

### 3.3. Equilibrium concept

We apply the concept of Perfect Bayesian Nash Equilibrium where expectations are revised following Bayes' rule and conjectures are fulfilled in equilibrium. Following Dye (2002), we search for a threshold standard  $\tau^*$  which separates the type space such that the firm reports  $R = B$  if  $T \leq \tau^*$  and  $R = G$  otherwise. Also following Dye (2002), we refer to  $\tau^*$  as the shadow standard.

### 3.4. Preliminary calculations

The optimal policy  $\pi^*$  results from the maximization of the social welfare function  $g(\pi) = -(\pi - (\alpha \cdot T - \beta))^2$ . We first derive a general expression of  $\pi^*$  for all potential intervals  $[\underline{\tau}, \bar{\tau}] \subset [0,1]$ . It follows that the optimal policy proposal which maximizes social welfare is:

$$\pi^* = \operatorname{argmax}_{\pi} \int_{\underline{\tau}}^{\bar{\tau}} -(\pi - (\alpha \cdot T - \beta))^2 f(T) dT$$

Given Leibniz's rule, the first order condition yields:

$$\int_{\underline{\tau}}^{\bar{\tau}} -2(\pi - (\alpha \cdot T - \beta))f(T)dT = 0$$

which is equivalent to:

$$-2\pi \int_{\underline{\tau}}^{\bar{\tau}} f(T)dT + 2 \int_{\underline{\tau}}^{\bar{\tau}} (\alpha \cdot T - \beta)f(T)dT = 0$$

Consequently, the optimal policy proposal  $\pi^*$  is given by:

$$\pi^* = \frac{1}{F(\bar{\tau}) - F(\underline{\tau})} \int_{\underline{\tau}}^{\bar{\tau}} (\alpha \cdot T - \beta)f(T)dT$$

The second order condition guaranties that  $\pi^*$  is a maximum. Given the definition of  $\pi^*$ , we can successively derive the expression of  $\pi^{exante}$ ,  $\pi^B$  and  $\pi^G$  depending on the endpoints of the interval  $\underline{\tau}$  and  $\bar{\tau}$ .

The initial policy proposal does not take into account the financial report and thus  $\underline{\tau} = 0$  and  $\bar{\tau} = 1$  holds. Consequently:

$$\pi^{exante} = \int_0^1 (\alpha \cdot T - \beta) f(T) dT. \quad (2)$$

In our analysis, we only examine equilibrium situations where conjectures of all variables are fulfilled. Hence, the bureaucracy's conjecture about the shadow standard  $\tau^*$  corresponds to the one resulting from the firm's optimization decisions. Then, when the financial report  $R = B$  is observed,  $\underline{\tau} = 0$  and  $\bar{\tau} = \tau^*$  and the revised policy proposals  $\pi^B$  is given by:

$$\pi^B = \frac{1}{F(\tau^*)} \int_0^{\tau^*} (\alpha \cdot T - \beta) f(T) dT. \quad (3)$$

Similarly, when the financial report  $R = G$  is observed,  $\underline{\tau} = \tau^*$  and  $\bar{\tau} = 1$  and the revised policy proposals  $\pi^G$  is given by:

$$\pi^G = \frac{1}{1-F(\tau^*)} \int_{\tau^*}^1 (\alpha \cdot T - \beta) f(T) dT. \quad (4)$$

Proposition 1 establishes a general result concerning a comparison between the revised policy proposals  $\pi^B$  and  $\pi^G$  and the initial policy proposal  $\pi^{exante}$ .

**Proposition 1.** For all  $\tau^* \in [0,1]$ ,  $\pi^B \leq \pi^{exante} \leq \pi^G$ .

### 3.5. Defining the value of corporate political connections

The overall value of CPCs in our model stems from the difference in ex ante expected payoffs  $Y$  between connected and non-connected firms. We accordingly define:<sup>8</sup>

$$\begin{aligned} VoC(\alpha, \kappa, \tau) &\equiv E[Y]^C - E[Y]^{NC} \\ &= E[MV - \mu]^C - E[MV - \mu]^{NC} \\ &= [E[T] - E[\pi]^C - E[\mu]^C] - [E[T] - E[\pi]^{NC} - E[\mu]^{NC}] \\ &= -(E[\pi]^C - E[\pi]^{NC}) - (E[\mu]^C - E[\mu]^{NC}) \end{aligned} \quad (5)$$

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<sup>8</sup> Note that the market value in (1) is a function of the report  $R$  as the conditional intrinsic value depends on it. However, the ex ante expected intrinsic value is independent of  $R$  as  $R$  only partitions the reporting space.

where the superscripts  $C$  and  $NC$  denote connected and non-connected firms respectively. The expected payoff for both types of firms consists of three components: The expected intrinsic firm value, the expected costs of the policy, and the expected costs of classification manipulation. The intrinsic firm value is only dependent on the firm's type  $T$  but independent of the firm's and the politician's choices. In expectation, it is hence identical for connected and non-connected firms. It thus follows that the value of connectedness reflects the sum of the differences of expected policy costs and expected costs of manipulation between a connected and a non-connected firm. We call the first difference the policy costs effect  $PCE \equiv -(E[\pi]^C - E[\pi]^{NC})$  and the second difference the manipulation costs effect  $MCE \equiv -(E[\mu]^C - E[\mu]^{NC})$  and write:

$$VoC(\alpha, \kappa, \tau) = -(E[\pi]^C - E[\pi]^{NC}) - (E[\mu]^C - E[\mu]^{NC}) = PCE + MCE. \quad (6)$$

#### 4. Benchmark: No manipulation

In this section, we establish a benchmark equilibrium without manipulation of the financial report. Without the possibility to manipulate the financial report, the shadow standard equals the official accounting standard, that is,  $\tau_{BM}^* = \tau$ , where the subscript  $BM$  denotes the benchmark solution. Solving (3) and (4) for the case without the possibility to manipulate the financial report leads to:

$$\pi_{BM}^B = \frac{1}{F(\tau)} \int_0^\tau (\alpha \cdot T - \beta) f(T) dT \quad (7)$$

and

$$\pi_{BM}^G = \frac{1}{1-F(\tau)} \int_\tau^1 (\alpha \cdot T - \beta) f(T) dT. \quad (8)$$

By Proposition 1, the following relations hold for the revised policies in the benchmark case:

$$\pi_{BM}^B \leq \pi^{exante} \leq \pi_{BM}^G. \quad (9)$$

Hence, the politician will choose to update the policy if and only if a connected firm reports  $R = B$ . For a non-connected firm, she will always update the policy. For a non-connected firm, the expected policy costs following from the analysis above are:

$$E[\pi]_{BM}^{NC} = \tau \cdot \frac{1}{F(\tau)} \int_0^\tau (\alpha \cdot T - \beta) f(T) dT + (1 - \tau) \cdot \frac{1}{1-F(\tau)} \int_\tau^1 (\alpha \cdot T - \beta) f(T) dT. \quad (10)$$

For a connected firm, the costs of the policy are given by:

$$E[\pi]_{BM}^C = \tau \cdot \frac{1}{F(\tau)} \int_0^\tau (\alpha \cdot T - \beta) f(T) dT + (1 - \tau) \cdot \int_0^1 (\alpha \cdot T - \beta) f(T) dT. \quad (11)$$

Costs of manipulation are zero in the benchmark case. Hence, the value of connectedness reduces to the policy costs effect  $PCE$  by (6). It follows that the value of connectedness in the benchmark case is given by:

$$VoC_{BM} = PCE_{BM} = -(E[\pi]_{BM}^C - E[\pi]_{BM}^{NC}) = (1 - \tau)[\pi_{BM}^G - \pi^{exante}] \geq 0. \quad (12)$$

**Observation 1.** *The following results follow directly from (12): In the benchmark setting without the possibility to manipulate the financial report holds:*

- a)  $\frac{\partial VoC_{BM}}{\partial \alpha} > 0$ ;  $\lim_{\alpha \rightarrow +\infty} VoC_{BM} = \infty$ ;
- b)  $VoC_{BM}(\alpha, \tau) = 0$  for  $\tau \in \{0, 1\}$ ;

When the firm does not have a possibility to manipulate the financial report, the value of connectedness  $VoC$  strictly increases in policy salience  $\alpha$ ; it is unbounded from above. The logic behind this result is straightforward: The larger the effect of political costs on the firm, the more can the firm benefit from being connected to a politician who has influence on the policy. The relation between the value of connectedness and the accounting standard  $\tau$ , on the other hand, is inversely U-shaped. The political connections in our model lose all value for the extreme cases of a fully conservative accounting standard (i.e.,  $\tau = 1$ ) and a fully liberal standard (i.e.,  $\tau = 0$ ). A fully conservative standard implies that firms always report being in a bad economic condition; nothing can be learned from such a report. By the behavioral rule outlined above, the politician will request a revision of the policy for both connected and unconnected firms. However, there will be no change to the policy proposal as the report contains no information. A fully liberal standard implies that firms always report being in a good economic condition. The politician will request a revision of the policy only for an unconnected firm while she implements the ex ante policy proposal for a connected firm. But again, nothing can be learned from the reports. Thus, the revised policy will be exactly the same as the ex ante policy proposal. In both cases, connectedness does not confer an advantage on the firm. For less extreme standards, however, political connectedness has a positive value for the firm.



## 5. Equilibrium with the possibility to manipulate the financial report

### 5.1. Reporting equilibrium

In this section, we incorporate the possibility that the firm manipulates its financial report. To keep the analysis tractable, and in line with Dye (2002) and Laux and Stocken (2018), we henceforth assume that the firm's true type is uniformly distributed on the unit interval,  $T \sim U(0,1)$ . The firm maximizes its conjectured payoff when it decides on the financial report. In doing so, it accounts for potential costs of manipulation, the effect of its reporting decision on the policy, and the effect of the financial report on the capital market's assessment of its intrinsic value. In equilibrium, the uniform distribution of the firm's type  $T \sim U(0,1)$  and (1), (3), and (4) imply that the equilibrium market value of a firm without connections to the politician is:

$$MV^{NC}(R = B) = E[(T|B)]^{NC} - \pi^B = \frac{\tau^{*NC}}{2} - \pi^B \text{ and} \quad (13)$$

$$MV^{NC}(R = G) = E[(T|G)]^{NC} - \pi^G = \frac{1+\tau^{*NC}}{2} - \pi^G \quad (14)$$

for a bad or good financial report respectively. The first terms in the expressions reflect the expected intrinsic value of a firm dependent on the financial report; it follows directly from the distribution of the firm's type  $T \sim U(0,1)$  and the equilibrium shadow standard  $\tau^*$ . The second terms in the expressions reflect the revised policies. The firm is willing to incur some costs of manipulation if the market values given a good or a bad financial report in (13) and (14) are not equal. If the market value for a good report is higher, the firm reports  $R = G$  for at least some  $T < \tau$ . We refer to this as upward manipulation. Similarly, if the market value for a bad report is higher, the firm reports  $R = B$  for at least some  $T > \tau$ . We refer to this as downward manipulation.

The equilibrium market value of a firm with connections to the politician can be derived by analogous considerations. The politician chooses to update the policy if and only if a connected firm reports  $R = B$ . Otherwise, she will enact the initial policy proposal  $\pi^{exante}$ . From (1), (2), and (3) follows that the equilibrium market values given a bad or good financial report are given by:

$$MV^C(R = B) = E[(T|B)]^C - \pi^B = \frac{\tau^{*C}}{2} - \pi^B \text{ and} \quad (15)$$

$$MV^C(R = G) = E[(T|G)]^C - \pi^{exante} = \frac{1+\tau^{*C}}{2} - \pi^{exante}. \quad (16)$$

Costs of manipulation  $\mu = \kappa \cdot |T - \tau|$  imply that there is a shadow standard  $\tau^*$  such that the firm reports  $R = B$  if  $T \leq \tau^*$  and  $R = G$  otherwise. By finding the indifference point for the firm, we obtain the shadow standard  $\tau^* \in [0,1]$ . The resulting shadow standards are different for firms with or without connections to the politician.

**Lemma 1.** *There exists a unique shadow standard  $\tau^*$  for non-connected and connected firms respectively:*

- a)  $\tau^{*NC} = \tau^{*C} = 0 \quad \forall \alpha \leq \underline{\alpha}$ ;
- b)  $\tau^{*C} = \frac{\alpha-1+2\kappa\tau}{\alpha+2\kappa} \quad \forall \alpha > \underline{\alpha}$  and  $\tau^{*NC} = 1 \quad \forall \alpha \geq \bar{\alpha}$ ;
- c)  $\tau^{*NC} = \frac{\alpha-1+2\kappa\tau}{2\kappa} \quad \forall \alpha \in (\underline{\alpha}; \bar{\alpha})$

with  $\underline{\alpha} = 1 - 2\kappa\tau$  and  $\bar{\alpha} = 1 + 2\kappa(1 - \tau)$ . For non-connected firms, the shadow standard  $\tau^*$  approaches unity asymptotically as policy salience strives towards infinity:  $\lim_{\alpha \rightarrow +\infty} \tau^{*C} = 1$ .

**Corollary 1.** *The shadow standards  $\tau^{*NC}$  and  $\tau^{*C}$  have the following properties with respect to the policy salience  $\alpha$ :*

i) *Monotonicity of an interior solution:*

- a)  $\frac{\partial \tau^{*NC}}{\partial \alpha} > 0$  and  $\frac{\partial \tau^{*C}}{\partial \alpha} > 0$ .

ii) *Comparison of equilibrium reporting outcomes of non-connected and connected firms:*

- a)  $\tau^{*NC} > \tau^{*C}$  for all  $\alpha > 0$ ,  $\kappa > 0$ , and  $0 \leq \tau \leq 1$ ;
- b) For a firm without political connections,  $\alpha < 1$  ( $\alpha > 1$ ) implies  $\tau > \tau^{*NC}$  ( $\tau < \tau^{*NC}$ );
- c) For a firm with political connections,  $\alpha < \frac{1}{1-\tau}$  ( $\alpha > \frac{1}{1-\tau}$ ) implies  $\tau > \tau^{*C}$  ( $\tau < \tau^{*C}$ ).

We refer to  $\tau > \tau^*$  ( $\tau < \tau^*$ ) as upward (downward) manipulation.

Lemma 1 and Corollary 1 show the effects that connectedness has on the firms' financial reporting decisions. A combination of low policy salience (i.e., a low  $\alpha$ ), a liberal accounting standard (i.e., a low  $\tau$ ), and lax enforcement (i.e., a low  $\kappa$ ) result in a corner solution where both connected and non-connected firms always report being in a good economic condition (i.e.,  $R = G$ ). On the other extreme, a very salient policy (i.e., a high  $\alpha$ ) leads to a corner solution in which non-connected firms always report being in a bad economic condition (i.e.,  $R = B$ ) in order to avoid an upward revision of the policy. Connected firms will not see the policy being

revised upward but wish to obtain a downward revision by reporting to be in a bad condition. For connected firms, the corner solution of always reporting  $R = B$  is only approached asymptotically as policy salience strives towards infinity.

For less extreme parameter combinations, which lead to interior solutions, connected firms have a lower shadow standard  $\tau^*$  than non-connected firms have. That is, connected firms report more aggressively than non-connected firms do. This stems from the fact that political connections partly protect firms from the costs of the policy. They hence experience less need to manipulate their financial reports downwards. The shadow standard for both connected and non-connected firms results from a trade-off between incentives to report  $R = B$  in order to obtain a downward revision of the policy and to report  $R = G$  in order to send a positive signal about the firm's intrinsic value to the capital market. Therefore, there exists a threshold policy salience where the two incentives to manipulate the financial reports exactly offset one another. This results in a shadow standard that corresponds to the official accounting standard what leads to neither upward nor downward manipulation. This threshold is lower for non-connected firms, reflecting again their higher policy-influencing incentives.

**Corollary 2.** *The shadow standards  $\tau^*$  have the following properties with respect to enforcement strictness  $\kappa$ :*

$$\lim_{\kappa \rightarrow +\infty} \tau^{*NC} = \lim_{\kappa \rightarrow +\infty} \tau^{*C} = \tau.$$

Corollary 2 shows asymptotic properties of the shadow standards with respect to enforcement strictness  $\kappa$ . When enforcement becomes very strict, both connected firms' and non-connected firms' reporting asymptotically approaches the benchmark solution without manipulation.

## 5.2. Effects of CPCs on the costs of the policy

Having established the shadow standards for a connected and an unconnected firm, we proceed to calculate the policy costs effect *PCE* with the possibility to manipulate the financial report. For a non-connected firm, expected costs of the policy are given by the following expression:

$$\tau^{*NC} \cdot \pi^B + (1 - \tau^{*NC}) \cdot \pi^G = \frac{\alpha}{2} - \beta = \pi^{exante}. \quad (17)$$

That is, for a non-connected firm, the financial reporting regime (i.e., the accounting standard  $\tau$  and the strictness of the enforcement of the accounting standard  $\kappa$ ) does not influence its ex ante expected costs of the policy. On the other hand, for a connected firm, the expected costs of the policy are given by:

$$\tau^{*C} \cdot \pi^B + (1 - \tau^{*C}) \cdot \pi^{exante} = \begin{cases} \frac{\alpha(1-\tau^{*C}(1-\tau^{*C}))}{2} - \beta & \forall \alpha > \underline{\alpha} \\ \frac{\alpha}{2} - \beta & \forall \alpha \leq \underline{\alpha}. \end{cases} \quad (18)$$

The difference between (17) and (18) represents the policy costs effect  $PCE$ . Using the results from Lemma 1 and Corollary 1, we obtain:

$$PCE = \begin{cases} \frac{\alpha\tau^{*C}(1-\tau^{*C})}{2} > 0 & \forall \alpha > \underline{\alpha} \\ 0 & \forall \alpha \leq \underline{\alpha}. \end{cases} \quad (19)$$

Equation (19) shows that CPCs lower the expected costs of the policy for the firm unless all of the following conditions hold: Policy salience is low (i.e.,  $\alpha$  is low); the official accounting standard is liberal (i.e.,  $\tau$  is small); and the enforcement of the accounting standard is lax (i.e.,  $\kappa$  is small). In such a case, a connected firm always reports being in a good economic condition and will not take advantage of getting the policy revised as shown in Corollary 1. Abstracting away from this extreme case, the following holds:

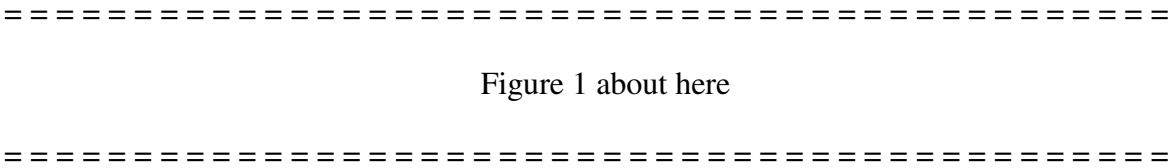
**Proposition 2.** *The policy cost effect  $PCE$  has the following properties:*

- a)  $\lim_{\kappa \rightarrow +\infty} PCE = \frac{\alpha(\tau - \tau^2)}{2} = VOC_{BM}$ ;
- b)  $\lim_{\alpha \rightarrow +\infty} PCE \equiv PCE_{max} = \frac{1}{2} + \kappa(1 - \tau)$ .
- c)  $arg \max_{\tau^{*C}} PCE(\alpha, \tau, \kappa) = \frac{1}{2}$

As in the benchmark case without the possibility to manipulate the financial report, the first order effect of an increase in policy salience  $\alpha$  leads to an increase in the policy cost effect  $PCE$ . However, there is now also a second order effect stemming from the impact of the policy salience on the shadow standard  $\tau^*$ . Recall from Observation 1 that the policy costs effect has an inversely U-shaped relation with the accounting standard  $\tau$  in the benchmark solution and becomes nil for the extreme values of zero and unity. Allowing for manipulation of the report, the shadow standard is endogenously determined by the interaction of reporting incentives stemming from the policy salience, the accounting standard and enforcement strictness  $\kappa$ . The

upper panel of Figure 1 shows that when policy salience (and hence incentives for downward manipulation) becomes large, the shadow standard approaches unity. This, in turn, diminishes the policy costs effect. The lower panel of Figure 1 illustrates the overall effect. *PCE* still monotonically increases in policy salience but with the possibility to manipulate it asymptotically approaches an upper bound. Since stricter enforcement counters the effect of high policy salience on the shadow standard, this upper bound increases in enforcement strictness. In the limit, as enforcement strictness approaches infinity, the shadow standard approaches the official standard and we obtain the same results as in the benchmark setting without manipulation.

Equation (19) further shows that the shadow standard which leads to the highest policy cost effect *PCE* is the one that evenly splits between firms in good and bad economic condition. We caution however that the highest policy cost effect is not equivalent to a social optimum in our model. In our analysis, we focus on corporate decision making and take regulatory and governmental decision making (i.e., the accounting standard, enforcement strictness, and policy salience) as given. We note that if these parameters could be influenced by a single political actor who wishes to maximize the value of access to herself. Such a political actor will rationally use her powers to influence the accounting standard and enforcement strictness in such a manner as to push the resulting equilibrium shadow standard towards the middle of the type space. As the shadow standard depends on the interactions between the accounting standard, enforcement strictness, and policy salience in a non-trivial manner, any attempt on influencing accounting regulation would hence take into account all three elements, too.



5.3. *Effects of CPCs on expected costs of manipulation*

By Lemma 1, the shadow standard  $\tau^*$  is different for non-connected and connected firms. It follows that expected costs of manipulation are also different. Depending on the policy salience  $\alpha$ , the shadow standard will be smaller than or greater than the official standard  $\tau$ , implying upward or downward manipulation. Given the uniform ex ante distribution of the firm type between zero and unity, expected costs of manipulation are given by the following expressions:

$$E[\mu]_{upward}^{NC} = \int_{\tau^{*NC}}^{\tau} \kappa(\tau - T) dT = \frac{\kappa(\tau^{*NC} - \tau)^2}{2}; \quad (20)$$

$$E[\mu]_{downward}^{NC} = \int_{\tau}^{\tau^{*NC}} \kappa(T - \tau) dT = \frac{\kappa(\tau^{*NC} - \tau)^2}{2}; \quad (21)$$

$$E[\mu]_{upward}^C = \int_{\tau^{*C}}^{\tau} \kappa(\tau - T) dT = \frac{\kappa(\tau^{*C} - \tau)^2}{2}; \text{ and} \quad (22)$$

$$E[\mu]_{downward}^C = \int_{\tau}^{\tau^{*C}} \kappa(T - \tau) dT = \frac{\kappa(\tau^{*C} - \tau)^2}{2}. \quad (23)$$

It hence follows from the symmetry of upward and downward manipulation costs that the manipulation costs effect  $MCE$  is given by:

$$\begin{aligned} MCE &= -(E[\mu]_{upward}^C - E[\mu]_{upward}^{NC}) = -(E[\mu]_{downward}^C - E[\mu]_{downward}^{NC}) \\ &= \frac{\kappa[(\tau^{*NC} - \tau)^2 - (\tau^{*C} - \tau)^2]}{2}. \end{aligned} \quad (24)$$

**Proposition 3.** *There exists a policy salience threshold  $\hat{\alpha} = \frac{1+2\kappa\tau-4\kappa+\sqrt{(1+2\kappa\tau-4\kappa)^2+16\kappa}}{2} \in$*

*$\left[1; \frac{1}{1-\tau}\right]$  such that:*

- a)  $MCE < 0 \quad \forall \alpha < \hat{\alpha};$
- b)  $MCE \geq 0 \quad \forall \alpha \geq \hat{\alpha}.$

Proposition 3 states that for low policy salience (i.e., a low  $\alpha$ ), connected firms have higher expected manipulation costs than non-connected firms and vice versa for high policy salience (i.e., a high  $\alpha$ ). Lemma 1 implies that connected (respectively non-connected) firms manipulate upward if  $\alpha < 1$  (respectively  $\alpha < \frac{1}{1-\tau}$ ) and manipulate downward if  $\alpha > 1$  (respectively  $\alpha > \frac{1}{1-\tau}$ ). For  $\alpha = 1$  ( $\alpha = \frac{1}{1-\tau}$ ), the shadow standard of connected (non-connected) firms equals the official standard, i.e., firms fully comply with the standard. The value of policy salience where the manipulation costs effect flips from negative to positive, i.e., where the absolute amount of manipulation switches from being larger for connected firms to being larger for non-connected firms lies between the thresholds of connected and non-connected firms.

Figure 2 shows the manipulation costs effect  $MCE$  for two different levels of enforcement strictness  $\kappa$ . For illustrative purposes, we assume that both are low enough to ensure that at low levels of policy salience there is full upward manipulation for both a connected and a non-connected firm,  $\tau^{*NC} = \tau^{*C} = 0$ . As there is no difference between the manipulation of a

connected and an unconnected firm in this case, the manipulation costs effect is nil. When there is manipulation, it is greater for a connected firm at low levels of policy salience and greater for a non-connected firms at high levels of policy salience. Hence, the manipulation costs effect is negative for low levels of policy salience and positive for high policy salience levels. As manipulation is limited from above at  $\tau^* = 1$ , a unconnected firm's manipulation costs are flat for a higher policy salience once it reaches the threshold value of  $\bar{\alpha} = 1 + 2\kappa(1 - \tau)$  identified in Corollary 1. However, an unconnected firm's shadow standard and, hence, its manipulation costs continue to increase in the policy salience. The manipulation cost effect thus declines for policy salience values greater than that threshold.

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Figure 2 about here

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**Proposition 4.** *The manipulation costs effect MCE has the following properties:*

- a)  $\lim_{\kappa \rightarrow +\infty} MCE = 0;$
- b)  $\lim_{\alpha \rightarrow +\infty} MCE = 0.$

Proposition 4 follows directly from Corollary 1 and Corollary 2. Strict enforcement (i.e., a high  $\kappa$ ) diminishes reporting manipulation for both connected and non-connected firms. In the limit, this leads to the benchmark case of fully truthful reporting. In that case, expected costs of manipulation are nil for both connected and non-connected firms. At the same time, high policy salience (i.e., a high  $\alpha$ ) implies downward manipulation. In the limit, this leads to a fully uninformative report  $R = B$  for both connected and non-connected firms; this report is independent of the true economic state  $T$  of the firm. In that case, expected costs of manipulation are identical for connected and non-connected firms.

*5.4. Overall value of connectedness with the possibility of manipulation*

By equation (6), the overall value of connectedness  $VoC$  for the firm is the sum of the policy costs effect  $PCE$  and the manipulation costs effect  $MCE$ . Building on the analysis above, we can establish that the value of connectedness is positive for the case with the possibility of manipulation. This is obvious for a high level of policy salience (i.e., a high  $\alpha$ ), where both the

policy cost effect and the manipulation cost effect are positive. For a low level of policy salience (i.e., a low  $\alpha$ ), connected firms engage in more manipulation than non-connected firms and the manipulation cost effect is negative. However, this effect is always outweighed by the policy cost effect, leading to an overall positive value of connectedness.

**Proposition 5.** *The value of political connectedness  $VoC$  is positive for all levels of policy salience  $\alpha$ , all levels of enforcement strictness  $\kappa$ , and all accounting standards  $\tau$ .*

Note that Proposition 4 shows that for extreme values of enforcement strictness  $\kappa$  and policy salience  $\alpha$ , the manipulation costs effect  $MCE$  becomes nil. The value of connectedness  $VoC$  hence approaches the sole policy costs effect in the limit (as in the benchmark case without the possibility to manipulate the financial report):

$$\lim_{\kappa \rightarrow +\infty} VoC = \lim_{\kappa \rightarrow +\infty} PCE = \frac{\alpha(\tau - \tau^2)}{2} = VoC_{BM}; \quad (25)$$

$$\lim_{\alpha \rightarrow +\infty} VoC = \lim_{\alpha \rightarrow +\infty} PCE = \frac{1}{2} + \kappa(1 - \tau). \quad (26)$$

Interestingly, with the possibility to manipulate the financial report, very strict enforcement (i.e., a very high  $\kappa$ ) leads to a value of connectedness  $VoC$  that approaches the value of connectedness in the benchmark case. However, this is not the case for very high policy salience (i.e., very high  $\alpha$ ). While in the benchmark case the value of political connections is unbounded from above, the possibility to manipulate the financial report limits the value of connectedness by limiting the expected reduction of policy costs.

## 6. An Extension of the Model to Multiple Signals

The analysis presented above is based on a single standard  $\tau$  (and a single corresponding shadow standard  $\tau^*$ ) that maps the continuous firm type into a binary report  $R \in \{B, G\}$ . In this section, we sketch an extension of our model to multiple possible reports and show that our main results carry over to such a setting. We generalize our notation of the standards to  $\tau_n$  with  $n \in \{0, 1, \dots, N\}$  and  $\tau_i > \tau_{i-1} \forall i \in \{1, \dots, N\}$ .  $\tau_0 = 0$  and  $\tau_N = 1$  denote the boundaries of the type space,  $\tau_{n \in \{1, \dots, N-1\}}$  denote interior accounting standards. We accordingly denote reports  $R \in \{R_1, \dots, R_N\}$  where  $R_n$  is the report mandated for types  $T \in [\tau_{n-1}, \tau_n)$  for  $n \in \{1, \dots, N-1\}$  and  $R_N$  is mandated for  $T \in [\tau_{N-1}, \tau_N = 1]$ .  $\pi_n$  ( $\pi_N$ ) denotes the respective policies that follow from a report  $R_n$  ( $R_N$ ). To facilitate exposition, we assume that costs of



manipulation  $\kappa$  are high enough to ensure that each shadow standard  $\tau_n^*$  is greater than the next-lowest standard and smaller than the next-highest standard,  $\tau_{n-1} < \tau_n^* < \tau_{n+1}$ .<sup>9</sup>

Our analysis and main results extend naturally to a setting with multiple signals. Revised policy proposals for each report are calculated by analogy to (3) and (4):

$$\begin{aligned}\pi_n &= \operatorname{argmax}_{\pi} \int_{\tau_{n-1}^*}^{\tau_n^*} -(\pi - [\alpha \cdot T - \beta])^2 \cdot \frac{1}{\tau_n^* - \tau_{n-1}^*} \cdot dT \\ &= \alpha \cdot E[T|R = R_n] - \beta = \frac{\alpha(\tau_{n-1}^* + \tau_n^*)}{2} - \beta.\end{aligned}\quad (27)$$

Whether a report  $R_N$  implies an upward or a downward revision of the ex ante policy proposal (i.e.,  $\pi^{exante} = \frac{\alpha}{2} - \beta$ ) hence depends on whether  $\tau_{n-1}^* + \tau_n^*$  is greater or smaller than unity, that is, whether the expected type inferred from such a report in equilibrium is greater or smaller than the ex ante expected type. Let  $\tau_{\bar{n}}^*$  denote the highest standard for which  $\tau_{n-1}^* + \tau_n^* < 1$  holds. Extending (11) and (17) to multiple standards and again using the superscript  $C$  to denote a connected firm, we obtain expected costs of the policy for a connected firm by the following calculation:

$$\begin{aligned}E[\pi]^C &= \tau_1^{*C} \cdot \left[ \frac{\alpha(\tau_1^{*C})}{2} - \beta \right] + (\tau_2^{*C} - \tau_1^{*C}) \cdot \left[ \frac{\alpha(\tau_1^{*C} + \tau_2^{*C})}{2} - \beta \right] + \dots \\ &+ (\tau_{\bar{n}}^{*C} - \tau_{\bar{n}-1}^{*C}) \cdot \left[ \frac{\alpha(\tau_{\bar{n}-1}^{*C} + \tau_{\bar{n}}^{*C})}{2} - \beta \right] + (1 - \tau_{\bar{n}}^{*C}) \cdot \left[ \frac{\alpha}{2} - \beta \right] \\ &= \frac{\alpha\tau_{\bar{n}}^{*C^2}}{2} + \frac{\alpha}{2} - \frac{\alpha\tau_{\bar{n}}^{*C}}{2} - \beta.\end{aligned}\quad (28)$$

Subtracting this expression from  $\pi^{exante}$ , we obtain a policy cost effect  $PCE = \frac{\alpha\tau_{\bar{n}}^{*C}(1-\tau_{\bar{n}}^{*C})}{2}$ . This expression closely resembles (12) and (19). In particular, for the benchmark solution without the possibility to manipulate the financial report, the value of political connections strictly increases in policy salience  $\alpha$ , is unbounded from above, and is highest for  $\tau_{\bar{n}} = 1/2$ . That is, all applicable elements of Observation 1 hold.

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<sup>9</sup> This simplifying assumption allows us to conduct a general analysis. Without this assumption, a multitude of (partly non-unique) equilibrium outcomes is possible; these outcomes are highly dependent on the parameter constellation and on out-of-equilibrium assumptions. For example, without this assumption and dependent on the manipulation costs, pooling equilibria where only  $R = G$  is reported or equilibria where only the highest or the lowest economic conditions are reported (but never intermediate conditions) are possible.

Using the assumption that costs of manipulation are high enough to ensure  $\tau_{n-1} < \tau_n^* < \tau_{n+1}$ , we can derive shadow standards by applying indifference conditions in analogy to the ones used to prove Lemma 1. As in the two-reports case, shadow standards differ between connected and non-connected firms and we have to derive them separately. When taking the reporting decision, a non-connected firm takes into account (i) the effect of its report on the market's assessment of its type; (ii) the effect of its report on the revised policy; and (iii) the costs of manipulation if the report does not correspond to the one mandated by the standard. We find that  $\tau_n^{*NC} = \tau_n - \frac{(1-\alpha)(\tau_{n+1}^{*NC} - \tau_{n-1}^{*NC})}{2\kappa}$ . For  $N = 2$ , with the boundaries of the type space  $\tau_0 = \tau_0^{*NC} = 0$  and  $\tau_2 = \tau_2^{*NC} = 1$ , this expression simplifies to the solution presented in Lemma 1,  $\tau_1^{*NC} = \tau_1 - \frac{(1-\alpha)(1-0)}{2\kappa} = \frac{\alpha-1+2\kappa\tau_1}{2\kappa}$ . That is, the two-reports case can be considered as a special case. The main results of Corollary 1 and Corollary 2 also hold: The shadow standard  $\tau_n^{*NC}$  (i) monotonically increases in policy salience  $\alpha$ ; (ii) is higher (lower) than the official standard  $\tau_n$  for  $\alpha > 1$  ( $\alpha < 1$ ); and (iii) asymptotically approaches the official standard for manipulation costs  $\kappa \rightarrow \infty$ .

For connected firms, we need to distinguish three cases. First, a high report  $R_{n>\bar{n}}$  does not lead to a revision of the policy as such a revision would be harmful for the firm. Hence, the politician does not trigger it. In equilibrium, the connected firm anticipates this and does not take a policy revision into account in its reporting decision. Solving an indifference condition similar to the one used in Lemma 1, we obtain  $\tau_n^{*C} = \tau_n - \frac{\tau_{n+1}^{*C} - \tau_{n-1}^{*C}}{2\kappa} < \tau_n$  for  $n > \bar{n}$ . That is, high types will only manipulate upwards but never downwards, independently of policy salience  $\alpha$ . Second, a low report  $R_{n<\bar{n}}$  leads to a downward revision of the policy. In this case, the connected firm takes into account the same three elements that a non-connected firm does (i.e., (i) the effect of its report on the market's assessment of its type; (ii) the effect of its report on the revised policy; and (iii) the costs of manipulation) when making the reporting decision. Solving the indifference condition yields  $\tau_n^{*C} = \tau_n - \frac{(1-\alpha)(\tau_{n+1}^{*C} - \tau_{n-1}^{*C})}{2\kappa}$ . As for non-connected firms, the shadow standard  $\tau_n^{*C}$  for  $n < \bar{n}$  (i) monotonically increases in policy salience  $\alpha$  and (ii) is higher (lower) than the official standard  $\tau_n$  for  $\alpha > 1$  ( $\alpha < 1$ ). Third, a report  $R_{n=\bar{n}}$  is the highest report that leads to a downward revision of the policy. When deciding between reporting  $R_{n=\bar{n}}$  or  $R_{n=\bar{n}+1}$ , the connected firm hence faces a trade-off similar to the two-report case where it obtains a policy revision for the lower report but not for the higher report. Solving the

indifference condition yields  $\tau_n^{*C} = \frac{2\kappa\tau_n + \alpha(1 - \tau_{n-1}^{*C}) - \tau_{n+1}^{*C} + \tau_{n-1}^{*C}}{\alpha + 2\kappa}$  for  $n = \bar{n}$ . Again, the two-reports case can be considered as a special case: Putting  $\tau_0 = \tau_0^* = 0$  and  $\tau_2 = \tau_2^* = 1$  into this expression yields  $\tau_n^{*C} = \frac{\alpha - 1 + 2\kappa\tau_n}{\alpha + 2\kappa}$ , the solution shown in Lemma 1. Further, in all three cases, the shadow standard  $\tau_n^{*C}$  asymptotically approaches the official standard  $\tau_n$  for manipulation costs  $\kappa \rightarrow \infty$ .

As discussed above, the policy cost effect  $PCE = \frac{\alpha\tau_{\bar{n}}^{*C}(1 - \tau_{\bar{n}}^{*C})}{2}$  only depends on the marginal report  $R_{n=\bar{n}}$ . Since the reporting trade-off for  $n = \bar{n}$  reflects the same trade-off as in the two-reports case, our main results reported in Proposition 1 carry over to a multiple-reports setting.

## 7. Discussion and Conclusion

In this study, we present a model on the interactions between financial reporting regimes and the value of corporate political connections (CPCs). We assume that a politician is limited in the favors she can provide to a connected firm; however, she can decide whether to incorporate new information from the firm's financial reports in a policy or not. This affects the firm's reporting incentives. We analyze how the accounting regime, consisting of an accounting standard and enforcement of this standard, influences the value of political connections. We find that the possibility to manipulate financial reports introduces a cap on the value of political connections that does not exist if firms can only publish truthful financial reports. This cap increases in the strictness of enforcement. We further find that political connectedness has an ambiguous effect on the overall amount of reporting manipulation. For low policy salience, we find that a connected firm is more likely to manipulate its financial reports than a non-connected firm is; for high policy salience, this result inverts.

The existing accounting literature on the interactions between government policy and financial reporting focuses on two channels which are investigated separately. On the one hand, the political costs literature argues that firms under government scrutiny have incentives to deflate their reported figures in order to positively affect the outcome of some regulatory or policy-setting process. On the other hand, the accounting literature on corporate political connections examines the effects of CPCs on accounting variables such as earnings quality, auditor choice, or enforcement strictness. While one literature treats accounting as a tool used to influence a corporate political (or policy) objective, the other one takes the opposite approach

of investigating the effect of political influence on accounting outcomes. Our model suggests that the value of political connections and a firm's accounting choices are jointly determined.

Our model has a number of immediate empirical implications. With respect to accounting metrics, our analysis suggests a direct positive effect of CPCs and a direct negative effect of policy salience on signed accruals. It further suggests an interaction effect between CPCs and policy saliency on absolute accruals: Politically connected firms exhibit more manipulation when policy salience is low while the opposite holds for high policy salience. With respect to value of political connection metrics, our results suggest that the value of CPCs is highest when the report splits most evenly between economically successful and unsuccessful firms. An empirically observable proxy for the evenness of the split is the capital market reaction to the report. The setup of our model implies that the policy-influencing effect of a financial report is strongest when capital market participants also learn most from the report.

Our analysis should be of interest to researchers in various fields. Accounting researchers investigating the effects of CPCs on earnings management and earnings quality have found ambiguous results. While some studies find more earnings management for connected firms (Ramanna and Roychowdhury, 2010; Chaney et al., 2011), other studies find less earnings management (Batta et al., 2014) or a higher tendency to engage a Big-4 auditor, which is often interpreted as a sign of high reporting quality (Guedhami et al., 2014). Our results suggest that depending on the relative importance of market-influencing and policy-influencing reporting objectives, connected firms may indeed have higher or lower reporting quality.

We furthermore contribute to the literature on the value of CPCs. Finance and economics researchers typically attempt to gauge the value of political connections from events affecting politicians or firms' relations with them. We relate the value of CPCs to capital market institutions. Finally, political economy researchers may find our results relevant. The model in this study differs from the standard pay-to-play models of information provision in the policy-making process typically used in the political economy literature. Our assumption about the verifiability of the information adds to the previous literature by investigating the source of the value of access. While the previous studies typically take the extreme position of modeling the information as either hard information (fully verifiable) or as cheap talk (not verifiable), our model incorporates the assumption that information can be manipulated but that this manipulation requires effort and can cause indirect costs. Corporate financial reports for capital market participants are an important component of the information available about firms and

they clearly corroborate this assumption, being subject to a number of verification mechanisms which enhances their credibility. We show that the possibility to manipulate the information qualitatively alters the results by introducing a cap on the value of having the information been taken into account.

A limitation of our analysis consists in the restriction to exogenously given standards. Prior research has shown that accounting standards are influenced by political forces (Zeff, 2002; Bischof, Daske and SEXTROH, 2020) and our model suggests that politicians have incentives to exert such influence given that the value of corporations' connections to them are dependent on accounting regulation. Recent studies have investigated the determination of disclosure standards. Bertomeu, Magee and Schneider (2019) show that the stability of accounting standards depends on the distribution of the underlying information to be reported. A more general investigation of the effect of political connections on both accounting standards and firms' accounting choices constitutes a fruitful area for future research.

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## **Appendix**

**Proof of Proposition 1.** We first examine the difference  $\pi^B - \pi^{exante}$ :

$$\begin{aligned}\pi^B - \pi^{exante} &= \frac{1}{F(\tau^*)} \int_0^{\tau^*} (\alpha \cdot T - \beta) f(T) dT - \int_0^1 (\alpha \cdot T - \beta) f(T) dT \\ &= \left( \frac{1}{F(\tau^*)} - 1 \right) \int_0^{\tau^*} (\alpha \cdot T - \beta) f(T) dT - \int_{\tau^*}^1 (\alpha \cdot T - \beta) f(T) dT.\end{aligned}$$

Integrating by parts, we obtain:

$$\pi^B - \pi^{exante} = \alpha \left[ \tau^* - \frac{1}{F(\tau^*)} \int_0^{\tau^*} F(T) dT + \int_0^1 F(T) dT - 1 \right] = \phi(\tau^*).$$

As  $\phi(1) = 0$ , it suffices to prove that  $\phi(\tau^*)$  is strictly increasing to show that  $\pi^B - \pi^{exante} < 0$  for all  $\tau^* \in [0,1]$ :

$$\phi'(\tau^*) = \alpha \frac{f(\tau^*)}{F(\tau^*)^2} \int_0^{\tau^*} F(T) dT > 0.$$

We now examine the difference  $\pi^G - \pi^{exante}$ :

$$\begin{aligned}\pi^G - \pi^{exante} &= \frac{1}{1-F(\tau^*)} \int_{\tau^*}^1 (\alpha \cdot T - \beta) f(T) dT - \int_0^1 (\alpha \cdot T - \beta) f(T) dT \\ &= \left( \frac{1}{1-F(\tau^*)} - 1 \right) \int_{\tau^*}^1 (\alpha \cdot T - \beta) f(T) dT - \int_0^{\tau^*} (\alpha \cdot T - \beta) f(T) dT.\end{aligned}$$

Integrating by parts, we obtain:

$$\begin{aligned}\pi^G - \pi^{exante} &= \frac{1}{1-F(\tau^*)} \left( (\alpha - \beta) - (\alpha \cdot \tau^* - \beta) F(\tau^*) - \int_{\tau^*}^1 \alpha F(T) dT \right) \\ &+ \int_0^1 \alpha F(T) dT - (\alpha - \beta) = \psi(\tau^*).\end{aligned}$$

As  $\psi(0) = 0$ , it suffices to prove that  $\psi(\tau^*)$  is strictly increasing to show that  $\pi^G - \pi^{exante} > 0$  for all  $\tau^* \in [0,1]$ :

$$\psi'(\tau^*) = \alpha \left[ \frac{f(\tau^*)}{(1-F(\tau^*))^2} \frac{\left( 1 - \tau^* - \int_{\tau^*}^1 F(T) dT \right)}{\varphi(\tau^*)} \right].$$

The sign of  $\psi'(\tau^*)$  depends on the sign of  $\varphi(\tau^*)$ .  $\varphi(0) = 1 - \int_0^1 F(T) dT > 0$ ,  $\varphi(1) = 0$  and  $\varphi'(\tau^*) = F(\tau^*) - 1 < 0$ . Thus  $\varphi(\tau^*) > 0$  and  $\psi'(\tau^*) > 0$  for all  $\tau^* \in [0,1]$ . ■

**Proof of Lemma 1.** Consider a firm without political connections. If we assume that upward manipulation exists, there exists a threshold  $\tau^{*NC}$  solution of:

$$MV^{NC}(R = B) - MV^{NC}(R = G) + \kappa(\tau - \tau^*) = 0. \quad (\text{A.1})$$

Similarly, if we assume that downward manipulation exists, there exists a threshold  $\tau^{*NC}$  solution of:

$$MV^{NC}(R = B) - MV^{NC}(R = G) - \kappa(\tau^* - \tau) = 0. \quad (\text{A.2})$$

Since equations (A.1) and (A.2) are strictly equivalent, we can solve either solve (A.1) or (A.2) with respect to  $\tau^*$  in order to find  $\tau^{*NC}$ . By using the value of  $MV^{NC}(R = B)$  and  $MV^{NC}(R = G)$ , it follows that  $\tau^{*NC} = \frac{\alpha-1+2\kappa\tau}{2\kappa}$ . For the case of a firm with political connections, a similar reasoning leads to  $\tau^{*C} = \frac{\alpha-1+2\kappa\tau}{\alpha+2\kappa}$ . Corner solutions and asymptotic properties follow directly from the values of  $\tau^{*NC}$  and  $\tau^{*C}$ . ■

**Proof of Corollary 1.** *i)* The first derivatives of the shadow standards with respect to policy salience are given by  $\frac{\partial \tau^{*NC}}{\partial \alpha} = \frac{1}{2\kappa}$  and  $\frac{\partial \tau^{*C}}{\partial \alpha} = \frac{1+2\kappa(1-\tau)}{(\alpha+2\kappa)^2}$  which are strictly positive since  $\kappa > 0$  and  $0 \leq \tau \leq 1$ . *ii)* The results follow directly from the comparison of  $\tau^{*NC}$  and  $\tau^{*C}$ ,  $\tau^*$  and  $\tau^{*C}$ , as well as  $\tau^*$  and  $\tau^{*NC}$ . ■

**Proof of Corollary 2.** The shadow standard  $\tau^{*C}$  can be rewritten as  $\tau^{*C} = \frac{\alpha-1+2\kappa\tau}{\alpha+2\kappa} = \frac{\alpha-1}{\alpha+2\kappa} + \frac{2\kappa\tau}{\alpha+2\kappa}$ . It is straightforward to see that  $\lim_{\kappa \rightarrow +\infty} \frac{\alpha-1}{\alpha+2\kappa} = 0$ . From the properties of limits at infinity for polynomials, we can calculate that  $\lim_{\kappa \rightarrow +\infty} \frac{2\kappa\tau}{\alpha+2\kappa} = \lim_{\kappa \rightarrow +\infty} \frac{2\kappa\tau}{2\kappa} = \tau$ . The shadow standard  $\tau^{*NC}$  can be rewritten as  $\tau^{*NC} = \frac{\alpha-1+2\kappa\tau}{2\kappa} = \frac{\alpha-1}{2\kappa} + \tau$ . It is straightforward to see that  $\lim_{\kappa \rightarrow +\infty} \frac{\alpha-1}{2\kappa} = 0$ . Consequently,  $\lim_{\kappa \rightarrow +\infty} \tau^{*NC} = \lim_{\kappa \rightarrow +\infty} \tau^{*C} = \tau$ . ■

**Proof of Proposition 2.** Inserting the shadow standard  $\tau^{*C}$  from Lemma 1 into  $PCE$  from (19), we get:

$$PCE = \frac{\alpha}{2} \left[ \frac{2\alpha\kappa(1-\tau) + 4\kappa^2\tau(1-\tau) - 2\kappa(1-\tau) + \alpha + 2\kappa\tau - 1}{(\alpha+2\kappa)^2} \right].$$

From the properties of limits at infinity for polynomials follows that  $\lim_{\kappa \rightarrow \infty} PCE = \lim_{\kappa \rightarrow \infty} \frac{\alpha}{2} \left[ \frac{4\kappa^2\tau(1-\tau)}{4\kappa^2} \right] = \frac{\alpha\tau(1-\tau)}{2}$  and  $\lim_{\alpha \rightarrow \infty} PCE = \lim_{\alpha \rightarrow \infty} \frac{\alpha}{2} \left[ \frac{2\alpha\kappa(1-\tau) + \alpha}{\alpha^2} \right] = \frac{1}{2} + \kappa(1-\tau)$ . ■

**Proof of Proposition 3.** We can rewrite  $MCE$  from (24) as:

$$MCE = \frac{1}{2} \kappa (\tau^{*NC} - \tau^{*C}) (\tau^{*NC} + \tau^{*C} - 2\tau).$$

Since  $\tau^{*NC} > \tau^{*C}$ , the sign of  $MCE$  only depends on the sign of  $\tau^{*NC} + \tau^{*C} - 2\tau$ . By inserting the values of  $\tau^{*NC}$  and  $\tau^{*C}$  from (17) and (18) respectively, we have  $\tau^{*NC} + \tau^{*C} - 2\tau = -\frac{1}{2\kappa(\alpha+2\kappa)} \varphi(\alpha)$  with  $\varphi(\alpha) = -(\alpha-1)(\alpha+4\kappa) + 2\alpha\kappa\tau$ . Since  $\frac{\partial \varphi(\alpha)}{\partial \alpha} = 1 - 2\alpha -$

$4\kappa + 2\kappa\tau$  and  $\frac{\partial^2 \varphi(\alpha)}{\partial \alpha^2} = -2 < 0$ ,  $\varphi(\alpha)$  has a unique maximum at  $\alpha^* = \frac{1}{2} - \kappa(2 - \tau) < 1$ .

Moreover,  $\varphi(1) = 2\kappa\tau$  and  $\varphi\left(\frac{1}{1-\tau}\right) = -\frac{\tau}{(\tau-1)^2}(2\kappa(1-\tau) + 1) < 0$  hold. Thus, there exists a

unique value  $\hat{\alpha} \in \left[1; \frac{1}{1-\tau}\right]$  such that  $\varphi(\hat{\alpha}) = 0$ . By solving  $\varphi(\alpha) = 0$  for  $\alpha$ , we find that  $\hat{\alpha} =$

$\frac{1+2\kappa\tau-4\kappa+\sqrt{(1+2\kappa\tau-4\kappa)^2+16\kappa}}{2}$ . Consequently, for all  $\alpha < \hat{\alpha}$ ,  $\varphi(\alpha) > 0$ ,  $\tau^{*NC} + \tau^{*C} - 2\tau < 0$ , and

$MCE < 0$  hold, whereas for all  $\alpha \geq \hat{\alpha}$ ,  $\varphi(\alpha) \leq 0$ ,  $\tau^{*NC} + \tau^{*C} - 2\tau \geq 0$ , and  $MCE \geq 0$  is true.

■

**Proof of Proposition 4.** Inserting  $\tau^{*NC} \in (0,1)$  from Lemma 1 into  $MCE$  from (24) we have:

$$MCE = -\frac{1}{8} \frac{\alpha}{\kappa(\alpha+2\kappa)^2} (\alpha + 2\kappa\tau - 1)(-\alpha^2 + \alpha(1 + 2\kappa\tau - 4\kappa) + 4\kappa).$$

From the properties of limits at infinity for polynomials follows  $\lim_{\kappa \rightarrow +\infty} MCE =$

$$\lim_{\kappa \rightarrow +\infty} \frac{\kappa^2(4\alpha^2\tau^2 - 8\alpha^2\tau + 8\alpha\tau)}{4\kappa^3} = \lim_{\kappa \rightarrow +\infty} \frac{\alpha\tau(\alpha\tau + 2(1-\alpha))}{\kappa} = 0.$$

Furthermore, Corollary 1 establishes that for  $\alpha \rightarrow +\infty$ ,  $\tau^{*C} \rightarrow 1$  and  $\tau^{*NC} = 1$ .  $\lim_{\alpha \rightarrow +\infty} MCE = 0$  follows directly by substituting  $\tau^{*NC} =$

$\tau^{*C} = 1$  in the expression  $\frac{\kappa[(\tau^{*NC}-\tau)^2 - (\tau^{*C}-\tau)^2]}{2}$  from (24). ■

**Proof of Proposition 5.** Corollary 1 states that for all  $\alpha \leq 1 - 2\kappa\tau$ , a corner solution  $\tau^{*C} = \tau^{*NC} = 0$  results. Consequently,  $VoC = 0$ .

For all  $\alpha > 1 - 2\kappa\tau$ , an interior solution  $\tau^{*C} > 0$  results. We observe that  $VoC(\alpha, \kappa, \tau)|_{\alpha=0} = VoC(\alpha, \kappa, \tau)|_{\alpha=1-2\kappa\tau} = 0$ . Thus, it is sufficient to prove that  $\frac{\partial VoC(\cdot)}{\partial \alpha} \geq$

$0 \forall \alpha > \max\{0; 1 - 2\kappa\tau\}$  to establish the result. To simplify notations, we note  $\tau'^{*C} = \frac{\partial \tau^{*C}}{\partial \alpha}$  and

$\tau'^{*NC} = \frac{\partial \tau^{*NC}}{\partial \alpha}$ . The first derivative of  $VoC$  with respect to  $\alpha$  is given as follows:

$$\frac{\partial VoC(\cdot)}{\partial \alpha} = \frac{1}{2} [(\tau^{*C} + \alpha\tau'^{*C})(1 - \tau^{*C}) - \alpha\tau'^{*C}\tau^{*C}] + \kappa[\tau'^{*NC}(\tau^{*NC} - \tau) - \tau'^{*C}(\tau^{*C} - \tau)];$$

$$\frac{\partial VoC(\cdot)}{\partial \alpha} = f(\cdot) + g(\cdot)$$

with  $f(\cdot) = \frac{1}{2}(\tau^{*C} + \alpha\tau'^{*C})(1 - \tau^{*C})$  and  $g(\cdot) = \tau'^{*C} \left( \kappa\tau - \tau^{*C} \left( \frac{\alpha}{2} + \kappa \right) \right) + \kappa\tau'^{*NC}(\tau^{*NC} -$

$\tau)$ . By using the values of  $\tau^{*C}$ ,  $\tau'^{*C}$ ,  $\tau^{*NC}$ , and  $\tau'^{*NC}$ , we can rewrite:

$$f(\cdot) = \frac{1}{2(\alpha+2\kappa)^3} (2\kappa(1-\tau) + 1)(\alpha^2 + 4\alpha\kappa - 2\kappa(1-2\kappa\tau)) \text{ and}$$



$$g(.) = \frac{1}{4\kappa(\alpha+2\kappa)^2} (\alpha - 1)(\alpha^2 + 4\alpha\kappa - 2\kappa(1 - 2\kappa\tau)).$$

Consequently, the first derivative of  $VoC$  with respect to  $\alpha$  can be written as:

$$\frac{\partial VoC(.)}{\partial \alpha} = \frac{1}{4\kappa(\alpha+2\kappa)^3} (\alpha(\alpha + (2\kappa - 1)) + 4\kappa^2(1 - \tau))(\alpha^2 + 4\alpha\kappa - 2\kappa(1 - 2\kappa\tau)).$$

We show that  $\frac{\partial VoC(.)}{\partial \alpha} \geq 0$  by showing that all four terms of the expression above are positive for  $\alpha > \max\{0, 1 - 2\kappa\tau\}$ . It is straightforward to see that  $\frac{1}{4\kappa(\alpha+2\kappa)^3} \geq 0$  and that  $4\kappa^2(1 - \tau) \geq 0$ . Furthermore,  $\alpha(\alpha + (2\kappa - 1)) \geq 0$  holds for all  $\alpha \geq \max\{0; 1 - 2\kappa\}$ . We note that  $\alpha \geq 1 - 2\kappa$  is implied by  $\alpha > 1 - 2\kappa\tau$ . It remains to show that  $\alpha^2 + 4\alpha\kappa - 2\kappa(1 - 2\kappa\tau) \geq 0$ . Solving  $\alpha^2 + 4\alpha\kappa - 2\kappa(1 - 2\kappa\tau) = 0$ , we find the two candidate solutions  $\alpha_1 = -2\kappa - \sqrt{2\kappa(2\kappa(1 - \tau) + 1)}$  and  $\alpha_2 = -2\kappa + \sqrt{2\kappa(2\kappa(1 - \tau) + 1)}$ . It is straightforward to see that  $\alpha_1 < 0$ . Rearranging terms, we see that  $\alpha_2 \geq 0$  is equivalent to  $1 - 2\kappa\tau \geq 0$  and that  $\alpha_2 \leq 1 - 2\kappa\tau$  holds if  $1 - 2\kappa\tau \geq 0$ . Hence,  $\alpha_2 \leq \max\{0; 1 - 2\kappa\tau\}$  is true. Since the quadratic function  $\alpha^2 + 4\alpha\kappa - 2\kappa(1 - 2\kappa\tau)$  is U-shaped in  $\alpha$ , it follows that  $\alpha^2 + 4\alpha\kappa - 2\kappa(1 - 2\kappa\tau) > 0 \forall \alpha > \max\{0; 1 - 2\kappa\tau\}$ . ■

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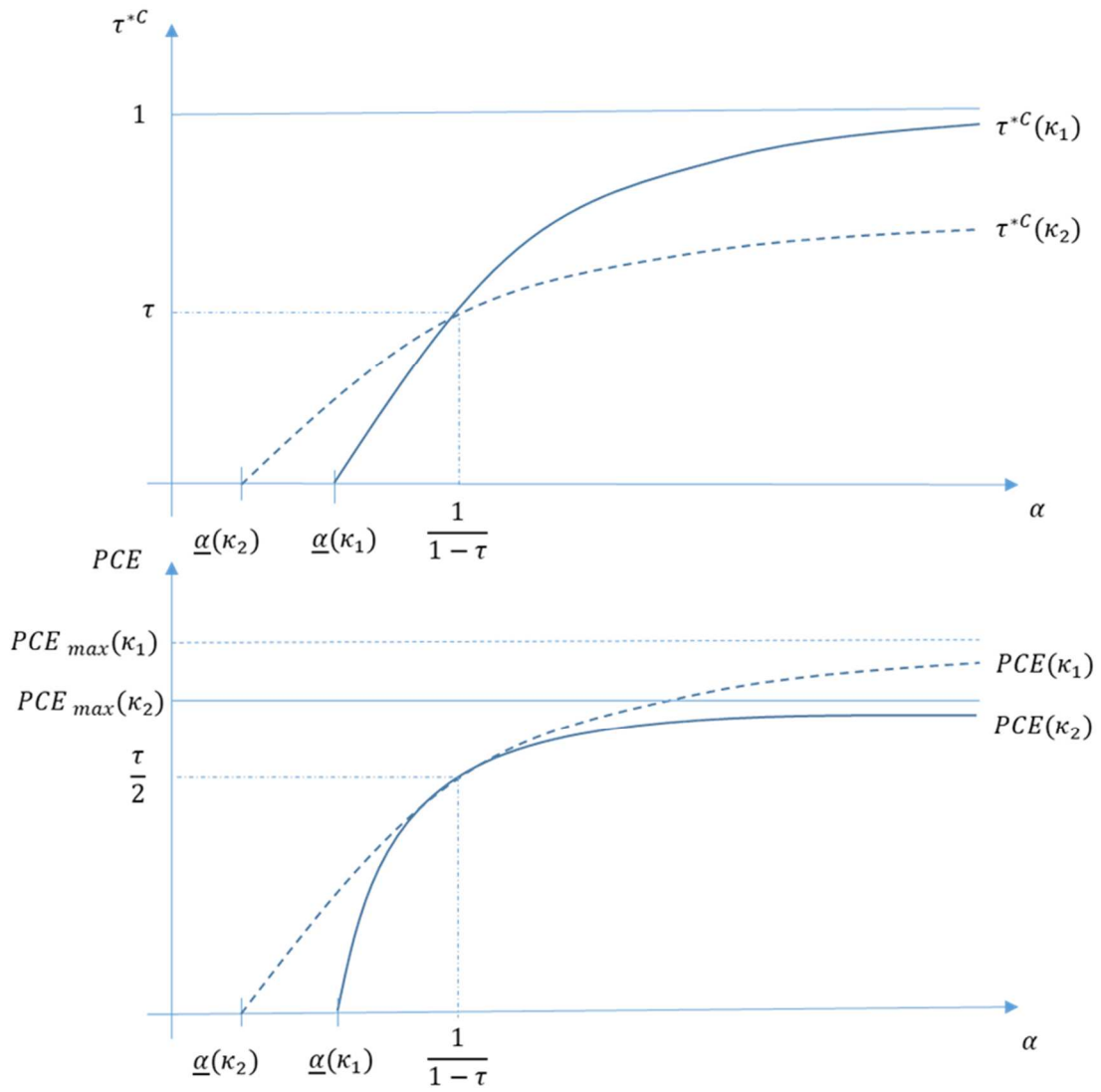
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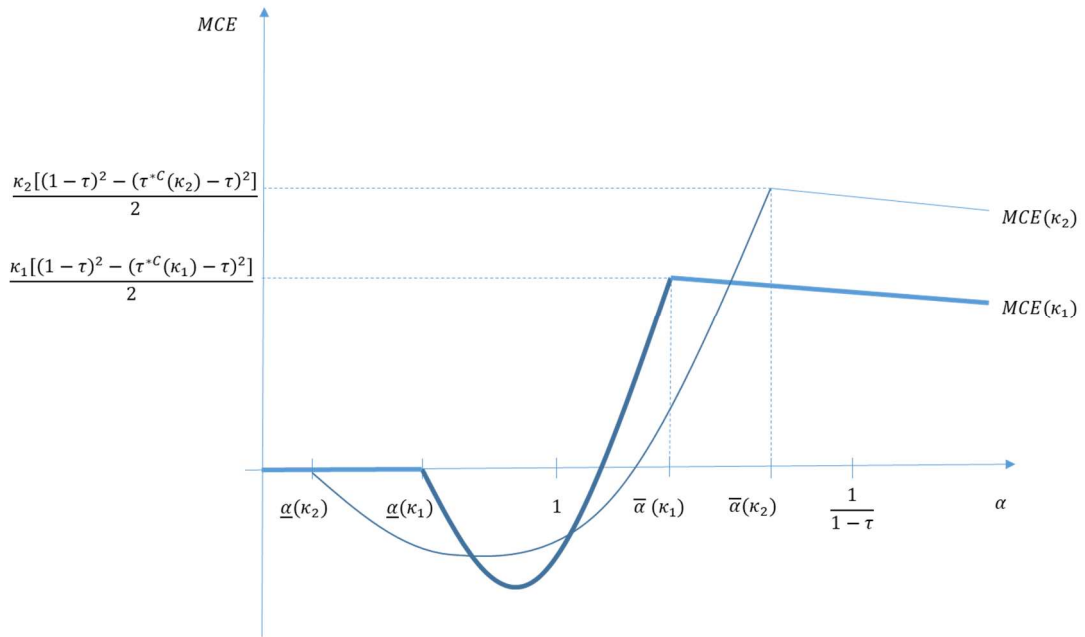
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## Figures



**Figure 1.** The effects of policy salience  $\alpha$  on the shadow standard  $\tau^{*C}$  and the policy costs effect  $PCE$  for enforcement strictness  $\kappa_1 < \kappa_2$





**Figure 2.** Effect of policy salience  $\alpha$  on the manipulation costs effect  $MCE$  for enforcement strictness  $\kappa_1 < \kappa_2$