

# Political Contestability, Scrutiny, and Public Contracting

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## Abstract

In politically contestable markets, part of the lack of flexibility in the design and implementation of the public procurement process reflects public agents' risk adaptations to limit the political hazards from opportunistic third parties—political opponents, competitors, interest groups—while externalizing the associated adaptation costs to the public at large. Reduced flexibility limits the likelihood of opportunistic challenges, lowers third parties' expected gains, and increases their litigation costs. We study this matter and provide a comprehensive theoretical framework with empirically testable predictions.

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In contrast to private contracts, public contracts are open to challenge by third parties. A whiff of corruption and a concern for the misuse of other people’s monies are all that is required to make a challenge to a public contract feasible.<sup>1</sup> Although the awarding and performance of a public contract may be honest and legal, public agents fear politically motivated challenges and therefore will *ex ante* adjust the nature of contracts to limit those features whose probity may be questioned. These adjustments will imply more contract specificity in design and more rule-based and bureaucratic rigidity in implementation. Such contractual adaptations, however, come at a cost. Contractors’ perceptions of contracts’ specificity and rigidity will translate into higher prices and stronger compensation clauses. The contractual complexity and adaptation required to limit the potential for third-party challenges, whether opportunistic or not, make public contracting look “inefficient.”

A higher level of contract specificity and rigidity in public contracts can therefore be understood as a signaling device and political risk adaptation by public agents.<sup>2</sup> However, it is not only civic-oriented legislation that limits public agents’ discretionary actions with “red tape,” but also that public agents hedge their exposure to the risk of third parties’ challenges through contract formalities and rigidities: Although they could rightly impose flexible terms in their favor, they opt not to, and thus signal probity and avoid potentially steep litigation costs.

We provide an operationalization of the interaction between political contestability, scrutiny, and contracting to understand the organizational foundations of pricing, specificity, and rigidity—the outer features (Spiller and Tommasi 2007)—of public contracts. Our framework is rooted in a transaction cost-*cum*-positive political theory and introduces third-party opportunism (Spiller 2008) as a key hazard of public transactions. According to the literature, public contract rigidities respond to a series of constraints, particularly the risks of corruption and renegotiation, the procurer/contractors’ asymmetric information, and the presence of dif-

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<sup>1</sup> A challenge to a public contract is an objection, either informally through the media or formally in a court, as to the probity posed by transactions conducted in the public sector and typically carries an implicit demand for proof of the validity of the contracting process (Williamson 1999).

<sup>2</sup> As Goldsmith and Eggers (2004, 122) indicate, “when something goes wrong in a public sector network, it tends to end up on the front page of the newspaper, instantly transforming a management issue into a political problem.” In Capitol Hill jargon, political risk adaptation is typically referred to as the “Washington Post test,” a commonly used phrase by politicians when working on a project—“How would it look on the front page on the Washington Post?”

ferent (and possibly conflicting) government objectives. In these theories, political risks are (tacitly) assumed away or considered insignificant. We present an explanation—which complements extant theories—of greater rigidities in public contracts relative to private contracts in politically contestable markets.

## 1 Prior Literature

Political contestability and third-party opportunism (TPO) relates to three strands of literature on public contracting: industrial organization, public administration, and political economy.

In the industrial organization literature, public contract pricing is fundamentally determined by informational costs that arise from informational asymmetries, the extent of the verifiability of information, and the presence of repeated interactions (Bajari and Tadelis 2001; Laffont and Tirole 1993; Loeb and Surysekar 1994; Macaulay 1963). When terms can be contested by excluded sellers, agreements are carefully delimited such that they are governed by more formal features (Marshall, Meurer, and Richard 1994a).

According to the public administration perspective, public contracting inefficiencies are associated with the large number of formal processes that appear to be essential to ensure the public sector’s functions—in addition to “red tape,” i.e., costly and compulsory rules, regulations and procedures with no efficacy for their functional object (Bozeman 1993). Bureaucrats are employed only for “hard” agency problems where consumers cannot be trusted (Prendergast 2003). Extensive rules and regulations arise from dividing authority among the separate branches of government (executive, legislative, and judicial) to prevent abuses of power, protect people’s rights (Baldwin 1990), and reflect values rooted in equity (Forrer, Kee, Newcomer, and Boyer 2010). Red tape regulations are intended to decrease public employees’ uncertainty about how they should behave (Kurland and Egan 1999). Both formalities and red tape are the instruments by which bureaucracies restrict public agents’ discretion (Boyne 2002; Lan and Rainey 1992) and “overcome the temptation to capitulate to consumers simply to avoid complaints” (Prendergast 2003, 932).

Positive political scholars have also studied the engagement of interested parties (McCubbins and Schwartz 1984; de Figueiredo, Spiller, and Urbiztondo 1999) and consumers

(Prendergast 2003) as instruments of oversight, where third-party scrutiny is always desirable, if it is free of charge.

However, the prevailing theories of public contracting ignore the costs of political contestability and fall short of incorporating the opportunistic motives of third parties and their anticipation by public agents. In stressing government-specific characteristics by adding *ad hoc* assumptions, such as insufficient commitment that leads to renegotiation (Guasch, Laffont, and Straub 2008), these theories consider that the failures that arise in public contracting are not specific to these contracts. Thus, the theoretical frameworks applied to study public contracts equate them with restrained private contracts.

Laffont and Tirole (1993, 9) emphasize that the link “between procurement and regulation and the associated administrative and political constraints is still unknown to us or is still in a state of conjecture. [...] Institutions are endogenous and should as much as possible be explained by primitive considerations.” This paper is an attempt to rationalize the basic features of public contracting from its primitive considerations, i.e., from its political hazards. We provide a reasoned theoretical framework and advance a novel set of empirically testable predictions.

## 2 A Model of Procurement under Political Contestability

### 2.1 Signaling Process: Hazards into Rigidity

We focus our analysis on the public agent’s perspective. Furthermore, we ignore sunk costs to abstract them from governmental opportunism<sup>3</sup> and to make the argument regarding political contestability and third-party opportunism straightforward.

There are two agents explicitly involved and two agents implicitly involved in public contracting:

1. The incumbent public agent,
2. Private contractors,
3. Third-party challengers, i.e., political opponents to the incumbent public agent, competitors of the contractor, and interest groups, and
4. The public at large, i.e., voters and courts.

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<sup>3</sup> See Spiller (2008) and the references therein.

Whereas third parties and the public at large are involved in purely private contracts only to the extent that these contracts educe externalities, they are concerned about public contracts because of the public interest and the public monies involved.

The signaling process begins in the preparatory stage before the contract is signed. The public agent receives the project features and budget to contract for goods and services. The public agent perceives the threat of potential third-party challenges and tries to minimize the political risks and maintain political support through the specificity and rigidity (i.e., the outer features) in the proposed procurement contract. Potential private contractors may not be directly aware of the hazards faced by the public agent, but they observe the contract's specificity and rigidity. Specificity and rigidity represent less adaptability, higher contracting and implementation costs, and thus higher final prices charged to the public agent. Third parties privately perceive the benefits of a challenge. The features of the contract affect third parties' strategies, thereby affecting whether there is a challenge. We model the reaction of voters and courts to a challenge in a stochastic fashion, such that the probability of a successful challenge also depends on the specificity and rigidity of the public contract. A successful challenge may imply weakened chances of re-election or re-appointment for incumbent public agents, a judicial challenge, or loss of reputation and current position. Figure 1 presents the timing of the signaling process (and the associated information set) from third-party hazards into contract rigidity.

[Insert Figure 1 about here.]

## 2.2 Conceptualizing Contract Specificity and Rigidity

Contract specificity refers to the *ex ante* complexity of the subject and the completeness of the clauses, technical provisions, and processing costs (Laffont and Tirole 1993). Contract rigidity refers to rule-based and bureaucratic implementation, i.e., *ex post* enforcement, penalties, hardness, and intolerance to adaptation in a contract<sup>4</sup> and normally correlates with contract specificity: the more specific a contract is, the more rigid its implementation and enforcement are expected to be.

Complex contracts have more contractual rigidities than simpler contracts, and the cost

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<sup>4</sup> In this regard, contract rigidity is the opposite of a "best efforts" clause.



**Figure 1:** Signaling Process: Hazards into Rigidity—Timing

of enforcing contracts *ex post* increases with complexity. Because the public sector has more ambiguous objectives than private organizations (Boyne 2002)—and it is sometimes difficult to assess to what extent these objectives are achieved (Lan and Rainey 1992)—, public contracts' high rigidity mitigates ambiguity and problematic evaluation. For example, U.S. Department of Defense's directives specify source selection policies in great detail, including the development of objective technical, cost, schedule, manufacturing, performance, and risk criteria; the auction techniques; the organization of a selection committee; and the pertinence of contacts with contractors.<sup>5</sup> Public agents must also follow imposed standards of evidence, or they may be constrained to formulate their own standards and follow their own rules to avoid discriminating among distinct situations on the basis of non-verifiable information (Laffont and Tirole 1993).

### 2.3 Modeling Hazards, Rigidity, and Pricing

To illustrate and operationalize political contestability and third-party scrutiny in public contracting, we introduce a reduced form model and some simple notations.<sup>6</sup> The incumbent

<sup>5</sup> See the U.S. Department of Defense's (2011) memorandum on "Source Selection Procedures," issued on March 4, 2011 and available at: <http://www.acq.osd.mil/dpap/policy/policyvault/USA007183-10-DPAP.pdf> (accessed May 19, 2011).

<sup>6</sup> See Appendix A for a glossary.

public agent faces political challenges of cost  $T_0$  with (endogeneous) likelihood  $\rho$ , and the likelihood that these political challenges will be successful (in court and/or vis-à-vis the public at large) is represented by likelihood  $\tau$ .<sup>7</sup> Third-party challenges arise from honest attempts to control costs and from opportunistic attempts to replace the public agent; however, the types of challenges are not distinguishable *ex ante*. Public agents' contracting costs have two components: expected political costs  $\mathbb{E}(T)$  that are concomitant with loss of office, reputation, and support that arise from discretionary contract terms (flexible contracting); and the costs of adaptation to contract specifications  $K$ . If a challenge is successful, there are also costs associated with the financial and social costs of a new bid, i.e., time and documentation and settlement payments (Marshall, Meurer, and Richard 1994b).<sup>8</sup> We highlight political costs as a crucial burden for public agents concerning third-party challenges. The more discretionary the contract terms are, the more room there is for third parties to challenge the contract. Therefore, we assume that expected third-party (both honest and opportunistic) costs  $\mathbb{E}(T)$  can be mitigated by contract rigidity  $R$ .<sup>9</sup>

The likelihood of success of a challenge  $\tau$  is common knowledge to all of the players. Rigidity turns into a signaling device of the public agent's probity: It is more difficult to prove wrongdoing when there is less room for discretionary actions and, therefore, the likelihood of success of a TPO challenge  $\tau$  decreases with rigidity  $R$ . In other words, courts are more likely to dismiss and the public is more likely to ignore challenges to contracts with strictly followed rigid specifications.<sup>10</sup>

Likewise, rigidity signals costly challenges to *reinforced* contracts. An opportunistic challenger will be forced to incur higher monetary, political, and reputational costs of challenge and litigation  $c$  to screen for eventual contractual weaknesses that fit to more rigid clauses. Therefore, the cost of challenge and litigation  $c$  for the challenger increases with rigidity  $R$ .  $\tau$  and  $c$  capture two critical institutional features to the TPO game. We formalize these institutional features in Observations 1 and 2:

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<sup>7</sup> We model the likelihood of success of a TPO challenge  $\tau$  as purely stochastic, although decreasing in the extent of rigidity, without modeling the decision process of the court and the public at large.

<sup>8</sup> Marshall, Meurer, and Richard (1994a) argue that allowing excluded bidders to challenge the outcome of a procurement process inefficiently reduces sole-sourcing.

<sup>9</sup>  $R = 0$  denotes the minimum specificity and rigidity inherent to relational contracts.

<sup>10</sup> This observation is more evident under civil law regimes, as is the case in continental Europe.

**Observation 1** *The likelihood of success of an opportunistic challenge  $\tau$  is convex and monotonically decreasing in  $R$ , such that  $\frac{\partial \tau}{\partial R} < 0$  and  $\frac{\partial^2 \tau}{\partial R^2} \geq 0$ .*

**Observation 2** *The cost of challenge and litigation  $c$  is concave and monotonically increasing in rigidity  $R$ , such that  $\frac{\partial c}{\partial R} > 0$  and  $\frac{\partial^2 c}{\partial R^2} \leq 0$ .*

Expected political costs  $\mathbb{E}(T)$  depend on the actual costs of a successful challenge to the incumbent public agent—including the costs of a new bid (documentation and analyses), externalities,<sup>11</sup> and the harm to the public agent’s reputation—and on the likelihood of a challenge being successful, i.e.:

**Definition 1**  $\mathbb{E}(T) = \mathbb{E}[T(R)] = T_0 \rho(R)\tau(R)$

where  $T_0$  is the public agent’s actual cost if a TPO challenge is successful. Larger projects are associated with potentially larger TPO costs to the public agent and are therefore linked to a higher  $T_0$ . Third parties calculate the benefits from opportunistic challenges, but the public agent does not know *ex ante* the particular value of these benefits for third parties. Third parties’ overall benefits from an opportunistic challenge correspond to a random variable  $\widetilde{T}_0$ , which is distributed normally with mean  $\mu$  and variance  $\sigma^2$ .

From the third parties’ perspective, the realization of TPO benefits is subject to winning the challenge with likelihood  $\tau$  and also subject to the competitive environment. TPO benefits may not be internalized entirely by the challenger but are distributed to all third parties involved. We model third parties’ competitive environment with concentration parameter  $\zeta \in (0, 1]$ . If  $\zeta = 1$ , the TPO challenger’s benefits are symmetrical to the incumbent public agent’s TPO costs (e.g., a bipartisan political market); if  $\zeta < 1$ , the political market is fragmented, and the challenger does not internalize all the benefits from a successfully protested contract.

Thus, from the public agent’s perspective, the distribution of expected benefits for an opportunistic challenger,  $\widetilde{T}$ , is given by the random benefits of an opportunistic challenge,

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<sup>11</sup> The value of lost time for users would be such an externality. For example, highway repairs generate significant negative externalities for commuters through increased gridlock and commuting times. Lewis and Bajari (2011) use the example of Interstate 35W, a main commuting route in Minneapolis that carries over 175,000 commuters per day. If a highway construction project results in a 30-minute delay each way for commuters on this route, the daily social cost imposed by the construction is 175,000 hours. If we value time at \$10 an hour, the social cost is \$1.75 million per day. Most public contracts carry externalities for the public at large.

the likelihood of the challenge being successful, and the internalization of benefits by the challenger, i.e.,  $\tilde{T} = \tilde{T}_0\tau\zeta$ .

The public agent endogenizes the likelihood of challenge  $\rho$  by adjusting rigidity  $R$ . The likelihood of a TPO challenge  $\rho$  is given by the probability of a positive expected benefit for third parties, i.e., it is the probability that third parties' expected benefits from an opportunistic challenge will be higher than the cost of challenge  $c$ :  $\rho = \Pr(\tilde{T} > c)$ .

An increase in rigidity  $R$  thus has two effects:

1. It lowers the likelihood of success of a TPO challenge  $\tau$ ; thus, for any given continuous distribution function of third parties' expected political benefits from a contract challenge, it yields a scalar transformation distribution function that is first-order stochastically dominated by the distribution function at lower rigidity (downward probabilistic shift of the cumulative distribution curve of expected third-party opportunism benefits  $\tilde{T}$ )
2. It increases the cost of challenge  $c$  and thus it decreases the probability at which an opportunistic challenge pays off (rightward move of the cost of litigation)

Figure 2 shows a graphical representation of the combination of these two effects that result in a decrease in the likelihood of challenge  $\rho$  due to an increase in contract rigidity  $R$ .

[Insert Figure 2 about here.]

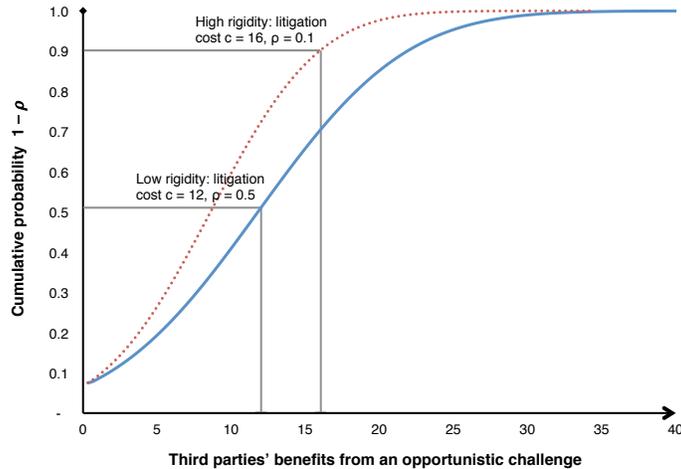
Therefore, the likelihood of opportunistic challenge  $\rho$  is given by the probability of a positive expected value of a challenge  $\Pr(\tilde{T} - c > 0)$ . The public agent adjusts  $R$  *ex ante* according to her beliefs regarding the likelihood of incidence  $\rho$  and the likelihood of success  $\tau$  of third-party challenges. The public agent's rational expectation of  $\rho$  is consistent with third parties' costs and their strategic decisions, i.e.,  $\mathbb{E}(q | R) \equiv \Pr[\tilde{T}_0\zeta\tau(R) > c(R)] \equiv \rho$ .

**Proposition 1** *The likelihood of challenge  $\rho$  is decreasing in rigidity  $R$ .*<sup>12</sup>

**Proposition 2** *Expected political costs  $\mathbb{E}(T)$  are decreasing and globally convex in rigidity  $R$ .*

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<sup>12</sup> Proofs are presented in Appendix B.



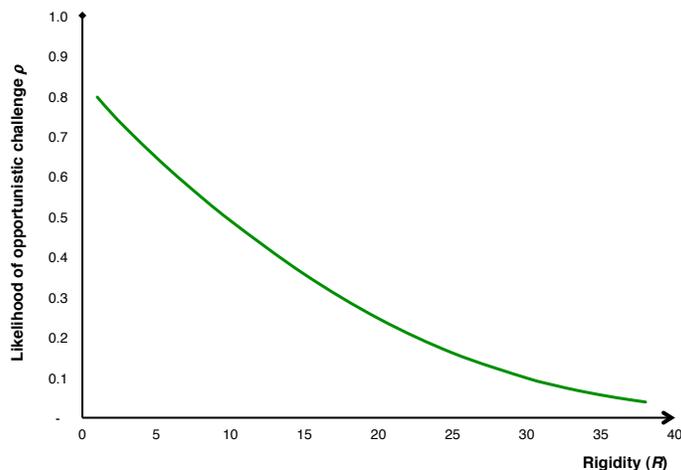
**Figure 2:** This graph plots the cumulative probability ( $y$  axis) of a public agent’s beliefs about third parties’ expected benefits from an opportunistic challenge ( $x$  axis): the blue solid line shows the results for low rigidity contracts, and the red dotted line shows the results for high rigidity contracts. In the numerical simulation, we show low rigidity  $R^L = 10$ , high rigidity  $R^H = 30$ , a normal distribution of benefits from an opportunistic challenge for third parties  $\tilde{T}_0$  that ranges from 0 to 100 with  $\mu = 30$  and  $\sigma = 20$ ,  $\tau = \ln[\exp(1) + R]^{-1}$ ,  $\zeta = 1$ , and cost of litigation  $c = \gamma R + 10$ , where  $\gamma = 0.2$  and 10 are calibration parameters for an increase of  $c$  in  $R$ . The likelihood of a TPO challenge  $\rho$  is the complementary cumulative probability of the third parties’ expected benefits from an opportunistic challenge being lower than the cost of challenge, i.e.,  $\rho = \Pr(\tilde{T} - c > 0)$ . The cumulative distribution function at high rigidity is first-order stochastically dominated by the cumulative distribution function at low rigidity. An increase in rigidity  $R$  from 10 to 30 induces a decrease in the likelihood of a TPO challenge from 0.5 to 0.1.

Figure 3 plots the equilibrium likelihood of opportunistic challenge  $\rho$  for different levels of rigidity  $R$ . The intuition that  $\mathbb{E}(T)$  falls in  $R$  is that the likelihood of a successful TPO challenge can be reduced to negligible by extreme contract rigidity.<sup>13</sup>

[Insert Figure 3 about here.]

Contract design (*ex ante*), and implementation and enforcement (*ex post*) costs are subject to preparation time, professionals (lawyers, engineers, and consultants), documentation,

<sup>13</sup> The presence of asymmetric information between the public agent and the third parties implies that the public agent has some discretion in defining the specifications. Most public procurements are bid by several bidders, thus generally specifications do not preclude a competitive bidding market. In the event that over-detailed specifications are designative (i.e., they indicate a particular bidder), such specifications can be a source of favoritism, i.e., biasing the specifications (or scoring rule) in favor of one bidder (Lambert-Mogiliansky and Kosenok 2009). Except for times of emergency (e.g., there may be need to expedite the procurement in case of natural disasters or national security), these are signal of corruption. The type of specifications described in this paper are non-designative, i.e., they do not point to any particular bidder and do not preclude a competitive bidding market.



**Figure 3:** This graph plots the equilibrium likelihood of an opportunistic challenge  $\rho$  for different levels of rigidity  $R$  for identical distribution functions of third parties’ expected benefits from an opportunistic challenge and identical costs of challenge following the numerical simulation presented in Figure 2.

and the degree of control required, in addition to discounted penalties related to deviations from rigid norms and clauses  $R$ . Penalties and portions of the adaptation costs are borne directly by the contractor ( $K_{pr}$ ) and reflected in the contract price; the remainder is borne only by the public agent ( $K_{pu}$ ). Thus, adaptation costs  $K$ —both public and private, and thus contract price  $P$ —increase in  $R$ . The slope of the  $K$  curve is a function of the marginal positive and increasing cost (effort) of adaptation—what Laffont and Tirole (1993) call “processing costs”—and penalties at  $R$ .

**Observation 3** *Adaptation costs  $K$  are strictly convex and monotonically rising in rigidity  $R$ , such that  $\frac{\partial K}{\partial R} > 0$  and  $\frac{\partial^2 K}{\partial R^2} > 0$ .*

The price bid by a contractor is the sum of operating (technology-specific) and adaptation costs (contract-specific and subject to rigidity  $R$ ). A contractor’s maximum bid price is the reservation price  $P^{bud}$ . To simplify our argument, we assume a uniform technology across firms and a competitive (or Bertrand competition) bidding market, such that the resulting price  $P$  is the lowest possible cost subject to zero profit and follows private adaptation costs  $K_{pr}$ . We also assume away governmental opportunism, i.e., direct or incremental expropriation by the public agent.

## 2.4 Existence of an Internal Equilibrium

We define the following objective functions for the agents:

$$\left\{ \begin{array}{l} \text{Incumbent public agent:} \\ \text{Private contractor:} \\ \text{Third-party challengers:} \end{array} \right. \begin{array}{l} \underset{R}{\text{minimize}} \quad \mathbb{E}[T(R) | \tau] + K(P, R) \\ \text{subject to} \quad K = K_{pr}(R) + K_{pu}(P, R), P^{bud} \geq K_{pr} \\ \underset{P}{\text{maximize}} \quad (P - K_{pr}) | R \\ \text{subject to} \quad P^{bud} \geq P \geq K_{pr} \\ \underset{q \in \{0,1\}}{\text{maximize}} \quad q(\overline{T}_0 \zeta \tau - c) | R \end{array} \quad (1)$$

Bid price  $P$  equals  $K_{pr} | R$ , which also minimizes  $K_{pu} | R$ . The expected third party benefits from an opportunistic challenge are given by  $\overline{T}_0$ ,  $\zeta$ ,  $\tau$ , and  $c$ , given  $R$ .  $\overline{T}_0$  is the particular realization of  $\widetilde{T}_0$ , which is known to third parties but is unobserved by the public agent. If the challenge is realized ( $q = 1$ ), the expected third parties' benefits equal  $\overline{T}_0 \zeta \tau - c$ .<sup>14</sup>

The public agent internalizes expenses related to the contract, i.e., at the end, she is accountable, directly or indirectly, for all the costs that are borne. She must pay the contractors' costs and her own costs, while aiming at minimizing the political costs. Therefore, the optimal level of rigidity  $R^*$  is driven by the expected political costs, the actual adaptation costs, knowledge about  $\tau$ , and the public agent's beliefs about  $\rho$ .

Given  $T_0$ ,  $\widetilde{T}_0$ ,  $\tau$ ,  $c$ ,  $\zeta$ , and  $K$ , the equilibrium  $\{q^*, \rho^*, R^*, P^*\}$  is such that:

- (a)  $R^* = \arg \min_R [T_0 \rho(R) \tau(R) + K(P, R)]$
- (b)  $\rho^* \equiv \mathbb{E}(q^* | R^*) \equiv \Pr[\widetilde{T}_0 \zeta \tau(R^*) > c(R^*)]$
- (c)  $P^* \in [P^{min}, P^{bud}] = K_{pr} | R^*$

Intuitively, this solution can be derived backwards. Starting from  $R^*$ , any deviation from equilibrium makes the public agent worse off:

- (a) If  $R < R^*$ , then  $\tau(R) > \tau(R^*)$  and  $c(R) < c(R^*)$ ; therefore  $\rho > \rho^*$  and  $\mathbb{E}[T(R)] - \mathbb{E}[T(R^*)] > K(P, R^*) - K(P, R)$ , i.e., the increase in political costs  $\mathbb{E}(T)$  offsets the gains from the decrease in contracting costs  $K$ .
- (b) If  $R > R^*$ , then  $\mathbb{E}[T(R^*)] - \mathbb{E}[T(R)] < K(P, R) - K(P, R^*)$ , i.e., the increase in contracting costs  $K$  outmatches the gains from the decrease in political costs  $\mathbb{E}(T)$ .

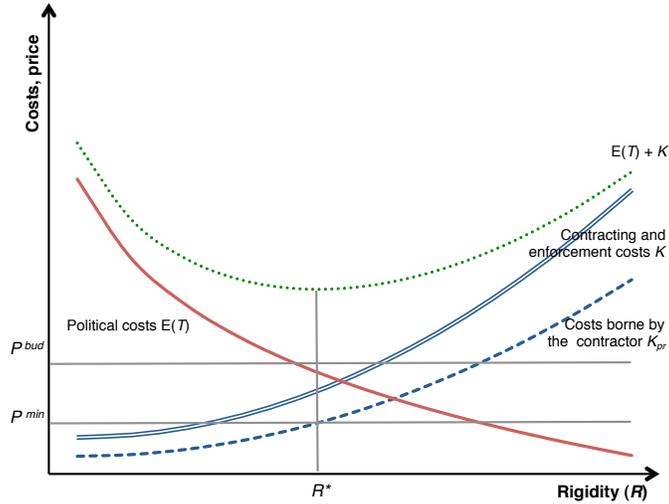
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<sup>14</sup> From the perspective of opportunistic third parties, the uncertainty is not in the benefits but in the likelihood of success of the challenge.

**Lemma 1** *Given Observation 3, if Proposition 2 holds and the expected political costs  $\mathbb{E}(T)$  fall faster than adaptation costs  $K$  increase in rigidity  $R$  for low  $R$  states, then the sum of the expected political costs  $\mathbb{E}(T)$  plus the adaptation costs  $K$  is U-shaped and has an interior global minimum at  $R^*$ .*

If  $\mathbb{E}(T)$  does not fall faster in  $R$  than  $K$  increases in  $R$  for low  $R$  states, political contestability is irrelevant for the outcome of the contract (i.e., it is a relational contract). If political contestability is a relevant hazard for the public agent, Lemma 1 implies that the optimal contract is partly flexible and of finite rigidity. A contract that is too flexible would be too risky politically, whereas a contract that is too rigid would be too expensive. Figure 4 plots an example of expected third-party opportunism costs  $\mathbb{E}(T)$  falling in rigidity and specificity  $R$ , costs borne by the contractor  $K_{pr}$  and adaptation costs  $K$  rising in  $R$ , and the U-shaped sum of  $\mathbb{E}(T) + K$  as the objective function that the public agent minimizes.

[Insert Figure 4 about here.]



**Figure 4:** This graph plots expected political costs  $\mathbb{E}(T)$  (red solid line) that are falling in rigidity and specificity  $R$ , costs borne by the contractor  $K_{pr}$  (blue dashed line) and adaptation costs  $K$  (blue double-solid line) rising in  $R$ , and the U-shaped sum of  $\mathbb{E}(T) + K$  (green dotted line) as the objective function that the public agent minimizes. The contracting sets of price and rigidity are given by the area above the costs borne by the contractor  $K_{pr}$  and below the public agent's reservation price  $P^{bud}$ .  $P^{min}$  is the equilibrium price for public contracts in a competitive bidding market.

**Corollary 1** *With political contestability and third-party scrutiny, the sequential equilibrium*

*public contract that minimizes political and contracting costs is rigid and thus more expensive in its design, implementation, and control than the theoretical first-best public contract in the absence of TPO.*

A direct outcome of Corollary 1 is that the higher  $\mathbb{E}(T)$  is, *ceteris paribus*, the higher  $R^*$  and  $P$  will be.

## 2.5 Endogeneity of Opportunistic Challenge

The endogeneity of an opportunistic challenge provides contractual properties that are consistent with observations in public contracting practice:

- (a) Larger contracts are associated with higher expected political benefits for opportunistic third parties (higher mean  $\mu$ ) and, therefore, are associated with a higher likelihood of challenge  $\rho$ . Similarly,  $\rho$  increases in the proximity to elections, because potential political gains are discounted at a higher discount factor.
- (b) Inherent public–private information asymmetries increase with transactional complexity. The dispersion of third parties’ beliefs about the expected political benefits from an opportunistic challenge  $\sigma$  is higher with high informational asymmetry (low scrutiny) states than in low informational asymmetry states, i.e., in North, Wallis, and Weingast’s (2009) “open-access” orders.
- (c) When third parties’ beliefs about the expected political benefits from an opportunistic challenge are more dispersed, a low cost of litigation  $c$  leads to a lower  $\rho$  and a high  $c$  leads to a higher  $\rho$ .
- (d)  $\rho$  is sensitive to the institutional environment that determines  $\tau$  and  $c$ : the higher  $\tau$  is, the higher  $\rho$  is; the higher  $c$  is, the lower  $\rho$  is; and the more  $\tau$  decreases in  $R$ , the more  $\rho$  falls in  $R$ .
- (e) The rule of law implies, *ceteris paribus*, a higher  $\rho$ .
- (f) The lower bound of  $\rho$  depends on the third parties’ priors, i.e., the propensity to litigation that is proper for the institutional framework.

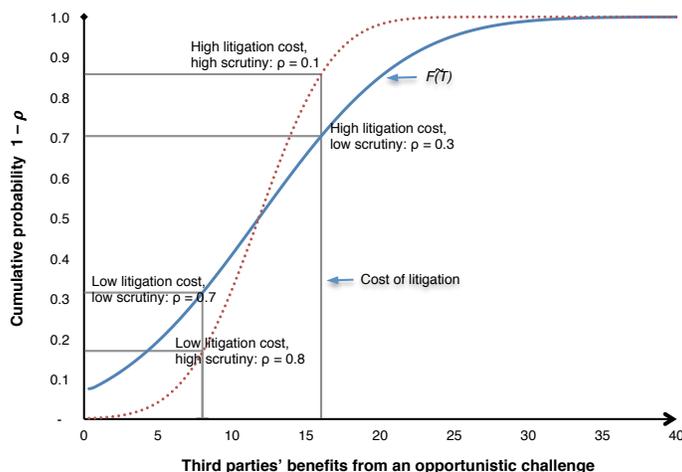
- (g) Exogenous institutional changes (e.g., new environmental norms or amendments to the legal system) alter  $\tau$  and  $c$  and produce a new cumulative probability of challenge distribution that will first-order stochastically dominate the former distribution when the legal system becomes more restrictive (i.e., an increase in clauses subject to challenge) or will be first-order stochastically dominated by the former distribution following deregulation.

## 2.6 Scrutiny: A Two-Sided Sword

An increase in scrutiny, i.e., critical public observation and accountability through transparency and public participation, lowers the information asymmetry between the actual political costs for an incumbent public agent and third parties' beliefs about the political benefits of an opportunistic challenge. Increased scrutiny induces a calibration of beliefs about the expected benefits from an opportunistic challenge (lower standard deviation), which yields a second-order stochastically dominant distribution (see Figure 5) with the inflection point at the mean expected benefits (Mas-Colell, Whinston, and Green 1995). Thus, with all else kept constant (particularly with the mean expected benefits at low scrutiny kept equal to the mean expected benefits at high scrutiny), an increase in scrutiny leads to an increase in the likelihood of challenge  $\rho$  at low litigation costs  $c$  and to a reduction in  $\rho$  at high  $c$ .

[Insert Figure 5 about here.]

Increased transparency brings the information of a public agent and third parties into symmetry. Consequently, a public agent can better forecast third parties' reaction to her project and choice of  $R$ . This knowledge prompts a counter-intuitive implication: increased scrutiny increases third parties' knowledge about the public agent; therefore, the public agent knows better what third parties know. This more precise forecast, in turn, leads to a reassessment of the distribution of the public agent's beliefs about the benefits of opportunism for third parties  $\tilde{T}$ : depending on litigation costs, better informed third parties may increase or decrease the likelihood of opportunistic challenges. As a result, it is equivocal whether



**Figure 5:** This graph plots the cumulative probability ( $y$  axis) of a public agent’s beliefs about third parties’ expected benefits from an opportunistic challenge ( $x$  axis): the blue solid line represents low-scrutiny states, and red dotted line represents high-scrutiny states. The numerical simulation presents rigidity  $R = 10$ , a normal distribution of benefits from an opportunistic challenge for third parties  $\widehat{T}_0$  with  $\mu = 30$ ,  $\sigma = 20$  for low-scrutiny states and  $\sigma = 10$  for high-scrutiny states,  $\tau = \ln[\exp(1) + R]^{-1}$ ,  $\zeta = 1$ , and  $c = \gamma R + 10$ , where  $\gamma = 0.2$  and 10 are calibration parameters for an increase of  $c$  in  $R$ . The likelihood of an opportunistic challenge  $\rho$  is the complementary cumulative probability of the third parties’ expected benefits from the challenge being lower than the cost of the challenge, i.e.,  $\rho = 1 - \Pr(\widehat{T}_0 \ln[\exp(1) + R]^{-1} < \gamma R + 10) = \Pr(\widehat{T}_0 \ln[\exp(1) + R]^{-1} - \gamma R + 10 \geq 0)$ . The distribution function at high scrutiny (red dotted line) second-order stochastically dominates the distribution function at low scrutiny (blue solid line). With all else kept constant, an increase in scrutiny leads to an increase in the likelihood of challenge  $\rho$  at low litigation costs  $c$  and to a reduction in  $\rho$  at high  $c$ .

open information policies (such as those in the State of California<sup>15</sup> or the State of Berlin<sup>16</sup>)

<sup>15</sup> California’s open information policy is rooted in the following legal acts:

- (a) The California State Legislatures Brown Act of 1953 guarantees the public’s right to attend and participate in meetings of local legislative bodies. The Brown Act solely applies to California city and county government agencies, boards, and councils.
- (b) The Bagley-Keene Open Meeting Act of 1967 implements a provision of the California Constitution that declares that the meetings of public bodies and the writings of public officials and agencies shall be open to public scrutiny, and the Act explicitly mandates open meetings for California state agencies, boards, and commissions. The Act facilitates accountability and transparency of government activities and protects the rights of citizens to participate in state government deliberations.
- (c) The California Public Records Act of 1968 mandates the disclosure of governmental records to the public upon request, unless there is a specific reason not to do so. According to Article 1 of the California Constitution and due to California Proposition 59 (the Sunshine Amendment), “the people have the right of access to information concerning the conduct of the peoples business.”

For California State Legislature Acts, see <http://www.legislature.ca.gov/>.

<sup>16</sup> According to the amendment to the Freedom of Information Act of the State of Berlin of July 2010, all contracts must be made available to the public (see <http://www.berlin.de/sen/finanzen/> and Alexander Dix, 2011, “Proactive Transparency for Public Services: the Berlin Model,” <http://www.freedominfo.org/2011/10/proactive-transparency-for-public-services-the-berlin-model/>; accessed

lead to more efficient public contracts.

**Proposition 3** *An increase in scrutiny leads to an increase in the likelihood of challenge when litigation costs are low and to a reduction in the likelihood of challenge when litigation costs are high.*

On the one hand, the literature has considered transparency as a means through which the risk of corruption can be kept at bay by outsourcing the costly monitoring of the procurement process (audit) to third parties. On the other hand, facing greater transparency and low litigation costs a public agent will *ex ante* readjust rigidity to a higher level to lower the likelihood of a challenge. In this case, more transparency will lead to higher contracting costs and lower government efficiency.

## 2.7 Political and Market Structure

Our framework accounts for political and market structure. If the political opposition is fragmented, any political competitor can get the benefits of a challenge, not necessarily the challenger who bears the litigation costs  $c$ ; as  $\zeta \approx 0$  (atomized political opposition), there will be no political challenges, which resembles a single party or autocratic system.<sup>17</sup>

Challenges to an awarding procedure frequently arrive from a firm that is classified as the second-best bidder and that would become the winner if it succeeded in disqualifying the winning contractor. Analogously to a political opponent, a losing bidder will challenge a contract output only if the expected benefits  $\tilde{T}$  are higher than the litigation costs  $c$ . In this case,  $\zeta$  describes the challenger's market structure:  $\zeta = 1$  for symmetrical Bertrand duopolies (one's contractor losses are another contractor's gains),  $\zeta < 1$  for oligopolies, and  $\zeta \approx 0$  for perfect competition, where an individual competitor has no incentives to challenge a public procurement outcome.

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December 5, 2011). The primary subject of this Act concerns access to contracts regarding the delivery of basic public services to which the State of Berlin and private investors are parties. Additionally, in February 2011, the State of Berlin was forced by referendum to unconditionally disclose all contracts, decisions, and side agreements associated with the partial privatization of the Berlin Water Utilities that were closed between the State of Berlin and the private shareholders: see "Act for the full disclosure of secret contracts for the partial privatization of the Berlin Water Utilities," as of March 4, 2011, (GVBl. p. 82).

<sup>17</sup> Argentina's President Cristina Kirchner, for instance, does not hold councils with the Board of Ministers or organize press meetings, and she closes the door to dialogue with the politically fragmented opposition. See: Carmen de Carlos, "El caudillaje de Cristina Kirchner (I)," *ABC*, Barcelona, February 19, 2012, pp. 36–37.

### 3 Contract Price Under Political Contestability

A public agent budgets—explicitly through bidding information, announcements, and budget notes and implicitly through internal regulations—a maximum price  $P^{bud}$  that she can pay a contractor. The acceptable contracting price-rigidity sets for a public agent are below  $P^{bud}$ , i.e., contracts “in the budget,” and are subject to bearable political costs adjusted by  $R$ . A contractor sees rigidity  $R$  and bids accordingly. On the contractor’s side, the acceptable price-rigidity sets are those above her private adaptation costs  $K_{pr}$ . Therefore, the contracting area, i.e., the set of prices acceptable to both the public agent and the contractor, is given by price-rigidity combinations above  $K_{pr}$  and below  $P^{bud}$ . At a given  $R^*$ , the minimum price required by a contractor is  $P^{min}$ . Figure 4 plots the  $\mathbb{E}(T)$  and  $K$  curves, optimal rigidity, and budgeted and minimum prices.

Before a bid, particularly in complex contracts, a public agent only has an estimation of a contractor’s adaptation costs  $K_{pr}$ , but she does not know these costs with certainty. If  $P^{bud}$  budgeted by a public agent is below the minimum acceptable price  $P^{min} = K_{pr}$  for a contractor at a given  $R^*$ , then there will be no bidders, or—if  $P^{bud}$  is not known by the bidders—the bidders will bid  $P > P^{bud}$  and the bid will be annulled.<sup>18</sup> Therefore, “no contract” is a possible outcome if the political risks are significant and the budgeted expenses are too low at a given rigidity. In such a case, the bid will have to be redesigned at a lower rigidity level at the risk of higher political costs for the public agent; the budget will have to be reconsidered, which will create room for third-party challenges that attempt to control budget expenses; or the terms must be negotiated after bidding, which increases the political hazards for suspicion of collusion.

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<sup>18</sup> In October 2011, the regional government of Lower Silesia (Poland) assigned PLN 12 million for road renovation and maintenance. Meanwhile, it received bids that ranged from PLN 46 million to PLN 115 million. Similarly, the city of Łódź (Poland), which planned to spend PLN 201 million for a stadium, received bids that ranged from PLN 218 million to PLN 322 million (see: <http://www.umwd.dolnyslask.pl/transport/aktualnosci/artukul/o-planach-zwiazanych-z-partnerstwem-publiczno-prywatnym-1/>; accessed January 26, 2011). Both bids were annulled.

## 4 Applications and Supportive Evidence

Prevailing contract theories explain contractual rigidity as an optimal choice to (a) foster price competition among firms for simple contracts; (b) account for higher investments at the project design stage for complex contracts (Bajari and Tadelis 2001);<sup>19</sup> and/or (c) lower the risk of *ex post* renegotiation and alleviate a public agent’s hold-up problem by imposing *ex ante* rigid limits on her ability to renegotiate contract terms (Boyne 2002; Prendergast 2003).

Our focus is on public procurement in politically contestable markets. We now apply the TPO framework to settings in which a public agent faces a trade-off between contract efficiency and political hazards. We analyze various comparative statics to derive the empirical implications.

### 4.1 Bureaucracies

Civil servants are subject to more rigid contracts (e.g., regulated hiring and lists of duties and responsibilities) than their peers in the private sector.<sup>20</sup> A private company can hire whoever it wants and a typical employment contract may simply say “follow the instructions of your principal,” whereas in most jurisdictions, the process of employment of civil servants in public institutions is highly formalized and procedural, and a job’s responsibilities are detailed in civil service laws and the internal regulations of the agency involved and subject to independent ordinary and extraordinary controls (Horn 1995).<sup>21</sup> Both specific employment procedures and rigid contracts in the civil service are aimed at avoiding challenges related to favoritism (Horn 1995; U.S. General Accounting Office 2003), but nonetheless result in civil servants with less discretion, less initiative to create solutions, and lower productivity<sup>22</sup>

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<sup>19</sup> The use of more rigid awarding procedures in continental Europe compared with the UK is often associated with differences in their investments at the project design stage. See, e.g., Hermes and Michel (2006), Sforzi and Michel (2005), and Winch and Campagnac (1995). See also comparative reports of Bianchi and Guidi (2010), the OECD (2007), and Rangone (2008).

<sup>20</sup> In this instance, bureaucrats as individuals are the private party contracting with the public agent.

<sup>21</sup> For example, controls may be overseen by the Government Accountability Office in the USA, the Australian National Audit Office in Australia, the Tribunal de Contas da União in Brazil, or the Bundesrechnungshof in Germany, to name a few.

<sup>22</sup> According to the British Office for National Statistics (ONS), public sector productivity fell by 3.4 percent from 1997 to 2006, compared with an increase of 28 percent in the private sector over the same 10-year period (see Robert Watts, “Public sector pay races ahead in recession,” *The Sunday Times*, January 3, 2010).

(which is analogous to higher prices in public procurement).

Bambaci, Spiller, and Tommasi (2007) describe the Argentine bureaucracy as a combination of constitutional protections of civil servants, relatively low wages,<sup>23</sup> and low accountability to “short-lived” public political agents,<sup>24</sup> which is a system that produces unresponsive bureaucrats. Precisely because public political agents do not last long, political contestability is not a prevalent hazard for them (i.e., the expected political costs  $\mathbb{E}(T)$  are high but flat regarding rigidity  $R$ ). The institutional adaptation that emerges is the extensive use of a “parallel bureaucracy,”<sup>25</sup> i.e., temporarily contracted professionals who are better paid and more responsive to their principals, who work under a more flexible regime than permanent bureaucrats, and whose appointments are left to the discretion of the principal public agent in office (Iacoviello, Tommasi, and Zuvanic 2002; Bambaci, Spiller, and Tommasi 2007). Therefore, public political agents in Argentina blend permanent bureaucracy with temporary bureaucrats who respond more flexibly and efficiently (both lower  $R$  and higher productivity). TPO thus provides a consistent explanation of civil service inefficiencies in politically contestable markets that is complementary to the public administration perspective on red tape (Bozeman 1993).<sup>26</sup>

## 4.2 Efficient Small Communities

There is academic and journalistic evidence that small local governments (towns, counties, and small states) seem to be more prone to corruption than larger governments.<sup>27</sup>

On the one hand, in small communities projects are relatively small (low  $T_0$ ), which

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<sup>23</sup> In 1999, federal government wages divided by GDP per capita equaled 1.65 in Argentina, compared with 3.70 in Brazil, 3.25 in Colombia, 3.05 in Chile, and 1.99 in Mexico. See Carlson and Payne (2003).

<sup>24</sup> The low accountability of the Argentine administration is to a large extent due to the high turnover of public political principals: ministers, secretaries, and undersecretaries of state. For instance, the average tenure of Ministers of Finance from 1950 to 1989 was one year, compared with 2.4 years in developed countries and 2.0 in developing countries (Bambaci, Spiller, and Tommasi 2007).

<sup>25</sup> In 1998-1999, parallel bureaucrats accounted for 17 percent in the office of the Presidency but 63–88 percent in ministries (see “Estudio exploratorio sobre la transparencia en la Administración Pública Argentina: 1998-1999,” Oficina Anticorrupción, Ministerio de Justicia, 2000, cited in Bambaci, Spiller, and Tommasi 2007, 172).

<sup>26</sup> See also Laffont and Tirole (1991), Pfiffner (1987), and Spiller and Urbiztondo (1994).

<sup>27</sup> See, for example, Ferraz and Finan (2008) and Coviello and Gagliarducci (2014); see also, Katherine Q. Seelyeway, “Rhode Island, a State Sized Just Right to Contain Its Pride,” *New York Times*, May 10, 2014 and K. Thor Jensen, “The 10 Most Epic Small Town Corruption Scandals,” <http://www.mandatory.com/2013/12/03/the-10-most-epic-small-town-corruption-scandals/>, December 3, 2013.

limits the potential third-party gains from opportunistic challenges to the incumbent public agent, but litigation costs  $c$  are not proportionally lower than in larger communities. On the other hand, scrutiny is high (low information asymmetry, i.e., low  $\sigma$ ), hence third parties have a clearer appraisal of expected gains from a challenge.

Under these conditions, small local governments face a lower likelihood of opportunistic challenge  $\rho$  than larger government units and, subsequently, lower potential TPO costs (the  $\mathbb{E}(T)$  curve for small local governments lays below the  $\mathbb{E}(T)$  curve for larger governments). A public agent in a local community can therefore engage in more discretionary contracts and incur lower transaction costs at lower  $R$ . This discretion, however, necessarily implies higher corruption. Thus, our approach suggests that government contracts in smaller communities are both more flexible and more prone to corruption.

### 4.3 External Consultants and Certification of Contractors

The engagement of independent consultants (including multilateral agencies and international advisers, particularly in countries with weak legal systems) strengthens the objectivity of procurement processes and prevents third-party challenges that cooperation between public agents and private contractors has become collusive.

For example, the city of Warsaw employed external consultants in the pre-procurement planning phase when it wanted to introduce novel public-private partnerships: first, to overcome a lack of expertise in complex contracting (to reduce  $K$ ) and second, and more importantly, to safeguard the city authorities against complaints by subsequent administrations.<sup>28</sup> Although city authorities could have designed the bidding process in-house, they outsourced it to reduce future political hazards. The use of external consultants, however, came at a cost of PLN 10 million (\$3.2 million), i.e., 1.2 percent of the estimated budget for those projects.

Similarly, many public bids require the certification of contractors and sub-contractors, which increases contract specificity and the price of the bid. In May 2010, a public procurement for the “Canal Safety and Drainage Improvements Project” in Antioch, Pittsburg, Bay Point, Clyde, and Walnut Creek (California), procured by the Contra Costa Water Dis-

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<sup>28</sup> Cfr. the procurement of advisory services for the city of Warsaw, published in the Official Public Bulletin (<http://ogloszeniabzp.um.warszawa.pl/zamowienie.php?zamowienie=18348>).

trict Construction Department, was objected to by JMB Construction.<sup>29</sup> JMB Construction argued that the apparent low bidder Con-Quest Contractors included a non-certified subcontractor. According to the Contra Costa Water District Construction Department, the relevance of the works that the alleged subcontractor would provide was minimal for the overall project; however, the challenger argued that the inclusion of a non-certified subcontractor allowed Con-Quest Contractors to bid a lower price (\$756,000 compared with JMB Construction’s \$852,000, i.e., 11 percent cheaper) than if it had included only certified subcontractors.<sup>30</sup> Furthermore, if required “red-tape” certificates exclude qualified bidders and prevent competitive bidding, the market structure will become more concentrated and additional dead-weight inefficiencies will add to the final equilibrium price.

With both external consultants and the certification of contractors, the implicit aim is to decrease the likelihood of opportunistic challenges  $\rho$  by lowering their likelihood of success  $\tau$  and increasing the cost of protesting  $c$ . There is a trade-off for the public agent between lower political hazards (downward shift of  $\mathbb{E}(T)$ ) and the additional contracting costs of external consultants and certification (upward shift of  $K$ ). Therefore, the public agent will employ external consultants and require certification only when the additional contracting costs  $K$  are lower than the gains due to lower expected political costs  $\mathbb{E}(T)$ .

#### 4.4 Fixed-Price versus Cost-Plus Contracts

In theory, fixed-price contracts are preferable when the adverse selection problem decreases relative to the moral hazard problem (e.g., in the procurement of standardized goods and services or in projects involving a low level of informational asymmetry between the contracting parties), whereas cost-plus procurement is preferable in complex projects when the adverse selection problem increases relative to the moral hazard problem (i.e., when uncertainties related to technological requirements are unknown and bigger than the inefficiencies arising from incomplete monitoring and insulation of the contractor from cost overruns).<sup>31</sup>

In practice, cost-plus contracts have been criticized for frequent and substantial cost overruns in government contracting. A U.S. General Accounting Office (2008) study of 95

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<sup>29</sup> See [http://www.ccwater.com/buscenter/109067\\\_results.pdf](http://www.ccwater.com/buscenter/109067\_results.pdf) (accessed May 28, 2010).

<sup>30</sup> Based on an interview held in May 2010 with a Contra Costa Water District engineer.

<sup>31</sup> See Loeb and Surysekar (1994).

major defense acquisition projects found cost overruns of 26 percent, which totaled \$295 billion over the life of the projects. Cost-plus contracts are more adaptable but also more abusable<sup>32</sup> and subject to shading (Fehr, Hart, and Zehnder 2011). Moreover, the Presidential Memorandum for the Heads of Executive Departments and Agencies on Government Contracting explicitly stated that “there shall be a preference for fixed-price type contracts. Cost-reimbursement contracts shall be used only when circumstances do not allow the agency to define its requirements sufficiently to allow for a fixed-price type contract.”<sup>33</sup>

Procurement laws normally allow public agents to design of public procurement projects based on a menu of price, technical, and quality criteria. Public agents are given discretion regarding the choice of criteria and the weights of those criteria in the final decision scoring. However, there is a strong affinity for the price criterion when accountability, scrutiny, and their attached political hazards are high. In France, only 1.9 percent of all public bids include soft clauses.<sup>34</sup> In pre-EU Poland, most public contracts were procured based on a menu of objective and discretionary criteria: 39 percent of public bids were based on the lowest price bidder single criterion in 2001 and 2002, 51 percent in 2003, and only 29 percent in 2004. The lowest price bidder as the single criterion increased to 53 percent in 2005, 64 percent in 2006, 87 percent in 2007, 84 percent in 2008, 90 percent in 2009, and 91 percent in 2010 (Jarzyński 2011). According to analysts, this shift in preference for fixed-price bidding was the result of the increased frequency, complexity, and profundity of controls after Poland joined the European Union.<sup>35</sup> Public agents preferred to include technical and quality parameters in specifications and rely on the more “objective, clear, and accountable”—i.e., less contestable—price criterion for bid selection to avoid political risk.<sup>36</sup>

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<sup>32</sup> Cost-plus contracts are understood as a “blank check” for contractors and the root cause of procurement inefficiencies. A notable exception is the case of London’s Heathrow Airport Terminal 5, which was delivered on schedule and under budget under a cost-plus regime (see <http://www.airport-technology.com/projects/heathrow5/> (accessed July 10, 2011)).

<sup>33</sup> See Presidential Memorandum of March 4, 2009, for the Heads of Executive Departments and Agencies on Government Contracting, retrieved from [http://www.whitehouse.gov/the\\_press\\_office/Memorandum-for-the-Heads-of-Executive-Departments-and-Agencies-Subject-Government/](http://www.whitehouse.gov/the_press_office/Memorandum-for-the-Heads-of-Executive-Departments-and-Agencies-Subject-Government/) (accessed July 11, 2011).

<sup>34</sup> See Ministère de l’Économie des Finances et de l’Industrie (2010).

<sup>35</sup> Poland entered the European Union on May 1, 2004; thus 2004 can be considered a transition year.

<sup>36</sup> Cai, Henderson, and Zhang (2009) discuss how Chinese local officials respond to a new party secretary appointment and inquiries into local corruption on land transactions conducted by the city government, the Party, or the National Audit Office. Investigations can lead to removal, indictment, and/or criminal charges against local officials. When faced with increased political risks, local officials respond by temporarily increasing the use of English auctions, the most rigid mechanism they can apply.

Fixed-price contracts do not provide adaptable risk-sharing mechanisms (high  $R$ ) and may lead to an unintended increase in government payments  $P$ .<sup>37</sup> With closer third-party oversight and a fear of political challenges (i.e., high  $\mathbb{E}(T)$ ),<sup>38</sup> public agents will prefer fixed-price contracts in settings in which cost-plus contracts could prove to be more efficient. Our result that larger (and thus more complex) projects lead to more restrictive terms of contracting runs counter to the extant literature that cost-plus contracts are preferable for complex projects.

#### 4.5 Public–Private Partnerships

Public–Private Partnerships (PPPs) are public service businesses operated under long-term agreements with private providers. In addition to fiscal motives, they are used to increase efficiency through the private sector’s technical and managerial advantage in innovation and flexibility. However, this flexibility makes PPPs vulnerable to politically motivated challenges (higher  $\rho$ ). To limit the scope of *ex post* challenges from third parties, public agents control outputs through Key Performance Indicators (KPIs), i.e., measures under which the contractors are evaluated. Simultaneously, KPIs signal to the public at large that the service, although privately provided, remains publicly accountable. KPIs are thus crucial to curb third parties’ ability to challenge PPPs. Nevertheless, the failure of many (potential) PPPs is frequently rooted in the high adaptation costs  $K$  imposed on private contractors.

A number of Australian studies of investments in infrastructure reached the conclusion that, in most cases, the PPPs were inferior—either more expensive overall or of lower quality—than the standard model of public procurement based on competitively bidding for the construction of publicly owned assets. One response by public agents to these negative findings was the development of formal procedures for the *ex ante* assessment of PPPs using

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<sup>37</sup> See also Tony Purton, “The case for a return to ‘cost plus’,” *Defense Viewpoints*, March 24, 2007, <http://www.defenceviewpoints.co.uk/articles-and-analysis/the-case-for-a-return-to-cost-plus> (accessed July 10, 2011). Flyvbjerg, Holm, and Buhl (2002) report cost underestimations in 9 out of 10 transport infrastructure projects: actual costs were 45 percent higher than planned in rail projects, 34 percent in tunnels and bridges projects, and 20 percent in road projects.

<sup>38</sup> As stated in the Presidential Memorandum of March 4, 2009 (op. cit.), “reports by agency Inspectors General, the Government Accountability Office (GAO), and other independent reviewing bodies have shown that non-competitive and cost-reimbursement contracts have been *misused*, resulting in wasted taxpayer resources, poor contractor performance, and inadequate accountability for results,” and “improved *contract oversight* could reduce such sums significantly” (emphasis added).

the Public Sector Comparator (PSC) and Value-for-Money (VfM) methodologies, i.e., by introducing more contractual *ex ante* contractual specificity and contractual costs.<sup>39</sup>

In 2009, the Treasury of New Zealand, in response to inquiries by the new National Party government, released a report on PPPs that concluded that “there is little reliable empirical evidence about the costs and benefits of PPPs” and that “the advantages of PPPs must be weighed against the *contractual complexities and rigidities* they entail.”<sup>40</sup>

PPPs were introduced to bring private management practices to the public sphere, but over time, they have moved closer to regulation. In the presence of political hazards, public agents will pursue the private provision of public goods only in projects in which the expected gains from contract flexibility and better private management (downward shift of  $K$ ) offset the increase in the costs of compliance with the *ex ante* cost-benefit assessment and the *ex post* KPIs (upward shift of  $K$ ) that is required to keep political hazards at bay.

#### 4.6 Privatizations of Government-Owned Companies

Privatizations of government-owned companies<sup>41</sup> are typically subject to clauses of commitment by the private acquirer concerning labor retention, modernization processes, future investments, and other politically sensitive issues that impose higher contracting and adaptation costs. On the one hand, rigid privatization contracts (high  $R$ ) are used because of the fear of opportunistic challenges to the incumbent public agent by labor unions, the local community, and the political opposition. To minimize opportunistic challenges to privatizations, public agents embed clauses and golden shares in privatization contracts to limit the discretion and “cream skimming” (Kolderie 1986) of the private investor. On the other hand, such privatization clauses curb the company’s governance and consequently lower its selling price (i.e., analogously to a high price for a public procurement). If the privatization proceeds are low, the public agent will be accused of collusion with the private agent and of “selling off the family silver” (Kolderie 1986), which implies a high expected political cost for

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<sup>39</sup> See, for example, the Department of Treasury and Finance of Victoria’s (2001) technical note on PSC.

<sup>40</sup> Brian Rudman, “Promised electric trains derailed by misguided enthusiasm.” *The New Zealand Herald*. June 1, 2009. Emphasis added.

<sup>41</sup> PPP and privatization differ in that the former is a transfer to the private sector of a right (that may or may not come with a physical asset) to perform a public function, whereas the latter refers to the sale of an asset that is not idiosyncratic to the neo-classical public sector (e.g., post-Soviet refineries).

the public agent (high  $\mathbb{E}(T)$ ).

The corollary is that in politically contestable markets, privatizations appear as too costly politically from the public agent’s standpoint and as too expensive and over-rigid from a private managerial perspective. Thus, privatizations are less likely to be approved in politically contested markets in which the expected political costs  $\mathbb{E}(T)$  are prohibitive for the public agent and when the parties cannot achieve consensus regarding privatization clauses  $R$  and selling price  $P$ .

## 5 Concluding Remarks

Our approach combines political hazards and transaction costs to explain the apparent inefficiencies in public contracts. High *ex ante* payment volatility or *ex post* flexibility in implementation triggers drawbacks that lead to contract failures or costly adaptations by public officials in terms of time or political career. A paramount conclusion of our analysis is that public contracts cannot be directly compared with private contracts. Instead, public contracts should be compared with analogous public contracts in similar political environments and should be able to pass Williamson’s “remediableness criterion,” which holds that “an extant mode of organization for which no superior *feasible* alternative can be described and *implemented* with expected net gains is *presumed* to be efficient” (Williamson 1999, 316; the emphasis is in the original).

The fact that public contracting is more expensive and rigid than private contracting, however, does not indicate that transferring those activities to the private sector would reduce the political risks and therefore make the activities more efficient. Public procurement is used for “hard” agency problems where consumers cannot be trusted and “when bureaucracies work poorly, [but] consumer choice works worse” (Prendergast 2003, 930–933). As Williamson (1999) indicates, certain transactions have special needs for probity and require the security of the State, and transferring public functions to the private sector (i.e., minimizing the scope of the state) itself involves political hazards, making such transfers hardly preferable for public agents over public contracting itself.

In this paper, we have analyzed public procurement in a variety of environments to show that many of its outer features can be understood as adaptations to the hazards of political

contestability and third-party scrutiny that are prevalent in public contracting. Empirical tests of the TPO hypothesis could include (a) a comparison of contractual complexity in contracts subject to public scrutiny versus purely private contracts, as such complexity is proxied by, e.g., contract length and frequency of arbitration, certification, evaluation, litigation, penalties, and termination clauses; (b) a textual analysis of contractual clauses in markets subject to time-varying and cross-section-varying political contestability; and (c) event studies of changes in public contracting practices caused by exogenous changes in public scrutiny.

## Appendix A Notation

Variable	Formula	Meaning
$c$		Cost of challenge and litigation for third parties
$\mathbb{E}(T)$	$T_0\rho\tau$	Expected political costs from third-party challenges
$F(\cdot), f(\cdot)$		Cumulative distribution function (CDF) and probability density function (PDF)
$K$	$K_{pr} + K_{pu}$	Adaptation costs, compound of costs borne by the contractor $K_{pr}$ and costs borne by the public agent $K_{pu}$
$P$		Price bid by the contractor
$P^{bud}$		Price budgeted by the public agent (reservation price)
$P^{min}$	$\geq K_{pr}$	Minimum acceptable price by the contractor
$q$		Third parties binary decision variable: $q = 1$ when a contract protest is placed; $q = 0$ otherwise
$R^*$		Optimal contract rigidity
$T_0$		Political costs for the public agent if the challenge succeeds
$\widetilde{T}_0$	$\widetilde{T}_0 \sim \mathcal{N}(\mu, \sigma^2)$	Random variable of third parties' benefits from an opportunistic challenge, distributed normally with mean $\mu$ and variance $\sigma^2$
$\widetilde{T}$	$\widetilde{T}_0\zeta\tau$	Distribution of expected benefits for an opportunistic challenger
$\overline{T}_0$		Particular value of $\widetilde{T}_0$ , known to third parties but unobserved by the public agent
$\rho$	$\Pr(\widetilde{T} > c)$	Likelihood of third-party opportunistic challenges
$\tau$		Likelihood of success of third-party opportunistic challenges
$\zeta$		Political (market) concentration

## Appendix B Proofs

### Appendix B.1 Proof of Proposition 1

Third parties' choice of opportunistic challenge  $q$  is such that  $q = 1$  if the expected returns of TPO are positive, i.e.,  $\widetilde{T}_0 \zeta \tau(R) > c(R)$ . From the public agent's perspective,  $\rho$  is the expected value of the random realization of  $q$ :

$$\mathbb{E}(q \mid R) \equiv \Pr \left[ \widetilde{T}_0 \zeta \tau(R) - c(R) > 0 \right] \equiv \rho \quad (2)$$

Given that  $\frac{\partial \tau}{\partial R} < 0$  and  $\frac{\partial c}{\partial R} > 0$ ,

$$\frac{\partial \rho}{\partial R} = f \left[ \underbrace{\widetilde{T}_0 \zeta \tau(R) - c(R)}_{\geq 0} \right] \underbrace{\left( \underbrace{\widetilde{T}_0 \zeta \frac{\partial \tau}{\partial R}}_{< 0} - \underbrace{\frac{\partial c}{\partial R}}_{> 0} \right)}_{< 0} \leq 0 \quad \blacksquare \quad (3)$$

### Appendix B.2 Proof of Proposition 2

Let  $F(\widetilde{T}_0) \sim \mathcal{N}(\mu, \sigma^2)$  be the twice-differentiable normal distribution of  $\widetilde{T}_0$  with mean  $\mu$  and standard deviation  $\sigma$ . From the linear transformation property of normal distributions, let  $f[\widetilde{T}_0 \zeta \tau - c; \zeta \tau \mu - c, (\zeta \tau)^2 \sigma^2]$ .

$\mathbb{E}(T)$  decreases in  $R$ —from Proposition 1:

$$\frac{\partial \mathbb{E}(T)}{\partial R} = T_0 \left( \tau \frac{\partial \rho}{\partial R} + \rho \frac{\partial \tau}{\partial R} \right) < 0 \quad (4)$$

$\mathbb{E}(T)$  is locally convex in  $R$ :

$$\frac{\partial^2 \mathbb{E}(T)}{\partial R^2} = T_0 \left( \underbrace{\tau \frac{\partial^2 \rho}{\partial R^2}}_{\text{See Eq 6}} + 2 \underbrace{\frac{\partial \rho}{\partial R} \frac{\partial \tau}{\partial R}}_{> 0} + \rho \frac{\partial^2 \tau}{\partial R^2} \right) \quad (5)$$

Differentiating Equation 3 with respect to  $R$ :

$$\frac{\partial^2 \rho}{\partial R^2} = \frac{\partial f(\cdot)}{\partial R} \underbrace{\left( \widetilde{T}_0 \zeta \frac{\partial \tau}{\partial R} - \frac{\partial c}{\partial R} \right)^2}_{> 0} + f(\cdot) \underbrace{\left( \widetilde{T}_0 \zeta \frac{\partial^2 \tau}{\partial R^2} - \frac{\partial^2 c}{\partial R^2} \right)}_{> 0} \quad (6)$$

Replacing Equation 6 in Equation 5:

$$\frac{\partial^2 \mathbb{E}(T)}{\partial R^2} \begin{cases} \geq 0 & \text{for } \frac{-\partial f(\cdot)}{\partial R} \leq \frac{\tau f(\cdot) \left( \widetilde{T}_0 \zeta \frac{\partial^2 \tau}{\partial R^2} - \frac{\partial^2 c}{\partial R^2} \right) + 2 \frac{\partial \rho}{\partial R} \frac{\partial \tau}{\partial R} + \rho \frac{\partial^2 \tau}{\partial R^2}}{\tau \left( \widetilde{T}_0 \zeta \frac{\partial \tau}{\partial R} - \frac{\partial c}{\partial R} \right)^2} \\ < 0 & \text{otherwise (locally concave)} \end{cases} \quad (7)$$

$\mathbb{E}(T)$  is globally convex in  $R$ —from Observation 1 and Proposition 1:

$$\lim_{R \rightarrow 0^+} \frac{\partial \mathbb{E}(T)}{\partial R} < \lim_{R \rightarrow \infty} \frac{\partial \mathbb{E}(T)}{\partial R} = 0 \text{ and } \lim_{R \rightarrow 0^+} \frac{\partial^2 \mathbb{E}(T)}{\partial R^2} > \lim_{R \rightarrow \infty} \frac{\partial^2 \mathbb{E}(T)}{\partial R^2} = 0 \quad \blacksquare \quad (8)$$

### Appendix B.3 Proof of Lemma 1

For  $\lim_{R \rightarrow 0^+} \frac{\partial[\mathbb{E}(T)+K]}{\partial R} \geq 0$ ,  $R^* = 0$  (e.g., relational contracting). Otherwise, because  $|\lim_{R \rightarrow 0} \frac{\partial \mathbb{E}(T)}{\partial R}| > \lim_{R \rightarrow 0} \frac{\partial K}{\partial R}$  and  $|\lim_{R \rightarrow \infty} \frac{\partial \mathbb{E}(T)}{\partial R}| < \lim_{R \rightarrow \infty} \frac{\partial K}{\partial R} \exists R^* \in (0, \infty) : R^* = \arg \min_R [\mathbb{E}(T(R)) + K(P, R)]$  and  $\frac{\partial[\mathbb{E}(T(R^*)) + K(R^*)]}{\partial R} = 0$ . ■

### Appendix B.4 Proof of Corollary 1

This proof follows from Lemma 1 and the discussion provided in the text. ■

### Appendix B.5 Proof of Proposition 3

Let  $\sigma^L > \sigma^H$  be the standard deviation and let  $\rho^L, \rho^H$  be the likelihood of a challenge at low and high scrutiny respectively.

Recalling Equation 2,

$$\rho^{L,H} = \Pr \left[ \widetilde{T}_0 \zeta \tau(R) - c(R) > 0 \right] \quad (9)$$

for  $F(\widetilde{T}_0) \sim \mathcal{N}(\mu, (\sigma^{L,H})^2)$ . Thus  $F(\widetilde{T})^{L,H} \sim \mathcal{N}(\zeta \tau \mu, (\zeta \tau \sigma^{L,H})^2)$  are the CDF of third parties' expected benefits from an opportunistic challenge at low and high scrutiny respectively.

From the mean-preserving spread property  $F(\widetilde{T})^{L,H}$  at low and high scrutiny:

- (a) If  $c = \zeta \tau \mu$ , then  $\rho^L = \rho^H$
- (b) If  $c < \zeta \tau \mu$ , then  $\rho^L < \rho^H$
- (c) If  $c > \zeta \tau \mu$ , then  $\rho^L > \rho^H$  ■

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