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The political economy of incentive regulation: Theory and evidence from US states

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ABSTRACT

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The determinants of incentive regulation are an important issue in economics. More powerful rules relax allocative distortions at the cost of lower rent extraction. Hence, they should be found where the reformer is more concerned with stimulating investments by granting higher expected profits, and where rent extraction is less necessary since the extent of information asymmetries is more limited. This prediction is consistent with US power market data. During the 1990s, performance based contracts were signed by firms operating in states where generation costs were historically higher than those characterizing neighboring markets and the regulator had stronger incentives to exert information-gathering effort because elected instead of being appointed. *Journal of Comparative Economics* **xxx** (xx) (2013) xxx–xxx. ACLE, University of Amsterdam, Roetersstraat 11, 1018 WB Amsterdam, The Netherlands.

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1. Introduction

Economists have long maintained that, when deriving incentive rules, governments are benevolent and optimally trade off informational rent extraction and cost-saving inducement. Yet, in reality, regulatory contracts are designed by partisan politicians and the extent of information asymmetry is shaped by the activity of office or career-motivated regulators. The US power market is a case in point. The recent move toward incentive regulation was initiated by the state governments and finalized within public hearings presided by regulators who are either elected or appointed. How, therefore, do politicians' partisan concerns and regulators' implicit incentives shape the rent extraction versus allocative efficiency trade-off?

This paper lays out a theoretical framework for thinking about this issue, and explores its empirical implications using US power market data. In the model, I keep the complete contracting approach typical of the new theory of regulation (Laffont and Tirole, 1993), but I recognize the different incentives moving elected and appointed officials and the opposite concerns shaping the decisions of pro-consumer and pro-shareholder parties when designing regulatory institutions. The contract on the firm's unobservable cost is designed by an eventually partisan planner, who cannot commit to reimburse the cost-reducing expenses eventually borne by the firm before learning its type, but can condition the contract upon a signal on the firm's cost. The precision of the signal increases with the effort exerted by a regulator who can be either elected or appointed. As in Alesina and Tabellini (2007), while elected officials strive for re-election, appointed ones are career-concerned. In

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equilibrium, election induces a higher information-gathering effort provided that effort sways enough votes. Hence, election decreases the expected probability that the planner remains uninformed, making rent extraction less urgent and the power of the incentive rule—i.e., the high cost firm's effort—higher. At the same time, more powerful schemes soar expected rents and so reinforce the firm's incentives to invest. Thus, societies more concerned with stimulating cost-reducing investments prefer higher-powered rules. If, instead, investments boost mainly the firm's profits, a tension between consumers and shareholders arises and the incentive rule power is higher the stronger is the political power of shareholders.

To test these predictions, I study the introduction of incentive regulation in the US power market by looking at data on 106 investor owned utilities—IOUs hereafter—between 1981 and 1999. Traditionally state Public Utility Commissions—PUCs hereafter—have set prices in order to assure a specific return on investment after recouping all operating costs recognized as reimbursable during rate reviews—i.e., cost of service regulation. Under such mechanism, firms may have relatively little incentive to minimize production inefficiencies since cost reductions reflect directly into falling prices and, in turn, lower profits. Starting from 1982, different forms of performance-based regulation—PBR hereafter—were introduced in many states. The aim of these reforms was to communicate higher-powered cost-reducing incentives to IOUs by weakening the link between rates and costs. Consistent with the model, PBR contracts were signed by firms operating where the regulator was elected and in states more concerned with cost reducement since their generation costs were historically higher than those characterizing neighboring markets. This, together with the fact that the PUCs fiercely opposed the pass-through of cost shocks into prices during the Oil-crisis period (Guerriero, 2011) and the evidence on the positive relation linking PBR to investments (Margolis and Kammen, 1999; Cambini and Rondi, 2010), supports the idea that incentive regulation was mainly introduced to accommodate dynamic efficiency concerns.

Even if several works have used electricity (Knittel, 2002; Shumilkina, 2009; Kwoka and Ter-Martirosyan, 2010), telecommunications (Ai and Sappington, 2002; Ai et al., 2004; Eckenrod, 2006), water (Brocas et al., 2006; Guasch et al., 2008), and motorways (Benfratello et al., 2009) data to show that PBR delivers lower rates and higher profits, no previous article has formally identified its determinants. Hence, the main contribution of the present paper is to develop and test a theory of complementarities between both the regulator's implicit incentives and society's investment concerns and the firms' explicit incentives.[1] The rest of the paper is organized as follows. Section 2 describes the institutions of the US power market to motivate the model which is illustrated in Section 3. Next, Section 4 states the model's predictions which are tested in Section 5. Section 6 concludes. The Appendix gathers proofs, tables, and a description of the data sources and the construction of the variables used in Section 5.

2. Institutions

Reforming the US electricity market.—The details of incentive schemes—e.g., the sensitiveness of the price to the costs of service and the duration of the contract—are decided within rate reviews (Shumilkina, 2009). These quasi-judicial hearings are open to all interested parties—e.g., firms, consumer advocates, and the media—and, when aimed at implementing regulatory reforms, usually triggered by the state government. For instance, the 1995 Maine Alternative Rate Plan was introduced under the thrust of several laws—e.g., 1988 Least-Cost planning—approved by the Republican legislature (Lee and Hill, 1995).

During the hearings, the commissioners, who are the heads of the PUC, first examine experts and receive the evidence, and then specify "findings of fact" determining the costs to be reimbursed via the incentive rule. Such evidentiary requirement is established by case law and the US Administrative Procedure Act, which explicitly states that "a rule or order [may not be] issued [if not] supported by and in accordance with reliable, probative, and substantial evidence" (Title 5, Pt. 1, Chapter 5.II, 556(d)). This strict need of hard evidence, the extensive media coverage of the hearings, and the fact that the mission historically given to the PUC has been "to keep nominal prices from increasing"(Joskow, 1974) imply that the main task over which commissioners are rewarded is to prove that the firm has low cost (Guerriero, 2011). Accordingly, Fremeth and Holburn (2012) show that better informed PUCs are more likely to enact rate decreases and less likely to implement rate increases.

From institutions to theory.—Inspired by this discussion, I assume that: 1. the incentive rule is designed by an eventually partisan planner, who maximizes a weighted average of the firm's utility and the net consumer surplus and 2. if investments are (are not) in the consumers' interest, the weight on the firm's utility increases with society's cost-reducing investment concerns (the political power of shareholders). These hypotheses incorporate into the model the fact that, even if the widest consensus among parties is needed, politicians would try to pander to their constituency when designing regulatory institutions. In accordance with the role of regulators, I also maintain that the incentive rule is contingent on a signal whose observable precision increases with the regulator's effort and determines her reward.

3. Theory

The model builds on Laffont and Tirole (1993) and Laffont (1996). First, I identify the role of the regulator's implicit incentives; then, I establish the relation between the power of the incentive rule and the firm's investment decision. This exercise clarifies how the planner's choice is affected by society's investment concerns and partisan interests.

[1] Several recent contributions (White, 1996; Donald and Sappington, 1997; Duso and Röller, 2003; Steiner, 2004; Teske, 2004; Duso, 2005; Knittel, 2006; Ando and Polasub, 2009) present empirical evidence of the relevance for regulatory reforms of the mechanisms formally identified by the model presented below.

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