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Moszoro, Marian and Spiller, Pablo

SGH Warsaw School of Economics

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Marian W. Moszoro and Pablo T. Spiller[1]

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Abstract

Early economic research on natural monopoly regulation focused on market failure—pricing tariffs and externalities. While Coase's multi-tariff marginal cost pricing became the standard, his approach to externality regulation as a contractual issue shifted the debate to transaction costs, but failed to recognize the associated political hazards. The renewed approach to regulation is more cognizant of the interplay of transaction costs and political hazards. In this paper, we show that regulatory rigidities arise as a response to political hazards of opportunistic expropriation and challenges from interested third parties to public agents.

JEL Classification: L14, L24, L33, L51

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[1] Moszoro: University of California, Berkeley, mmoszoro@haas. berkeley.edu. Spiller: University of California, Berkeley and NBER, spiller@haas.berkeley.edu. We are thankful to Elodie Bertrand, Claude Menard, John Wallis, and an anonymous referee for helpful comments.

I. Introduction

Network utilities—water and sewage, electricity, natural gas—are an essential element of modern societies. These utilities are characterized by large and non-redeployable (sunk) capital investment and limited area of service where they tend to be the single provider. Their natural monopoly features (i.e., multiple providers may render the service more expensive) and the socially sensitive nature of their services (i.e., politics comes into play) have led network utilities to face, starting around the second half of the XIX century—administratively, legislatively, or contractually—governmental regulation.

At first, economic research on utility regulation focused on market failure: the limitation of monopoly pricing and negative externalities, as well as the proper incentives to invest in long-term assets. Coase's multi-tariff marginal cost pricing prevailed in the academic debate (if not in practice) over average cost pricing or marginal cost pricing with governmental subsidy for investments. While his approach to externality regulation as a contractual issue unearthed the relevance of transaction costs, it failed to identify the interplay of transaction costs and political hazards faced by both public and private agents. Recent research points out how seemingly inefficient regulatory features (such a regulatory rigidities) reflect an efficient institutional adaptation to political hazards of opportunistic expropriation by the government and strategic challenges by interested third parties.

This paper presents the latest developments in the debate on transaction-cost regulation. In section II, we present—in a simplified manner—the evolution of the scholarship on market failure and monopoly regulation from pricing and externalities (where Coase's contributions were most significant) to regulatory capture. In section III, we present a transaction-cost perspective to regulation and highlight two fundamental political hazards: opportunistic challenges to the regulator by third parties—political opposition, watchdogs, and interest groups—and opportunistic expropriation of investors by the regulator/government. In section IV, we show a positive political analysis of the interplay between transaction costs and political hazards for regulatory policy. Section V concludes.

II. A (Highly Incomplete) History of the Economics of Regulation

At its origin, the intellectual focus of utility regulation was on limiting monopolization from the combination of economies of scale and lack of redeployability of the assets. In the first half of the 20th century, there was a vivid debate on the pricing of decreasing-average-cost industries (i.e., natural monopolies), whose two most prominent representatives where Harold Hotelling and Ronald H. Coase (Frischmann and Hogendorn 2015). Hotelling (1938) advocated for a government subsidy of the fixed cost component that would enable marginal cost pricing for industries with high fixed and low marginal cost; Coase (1946)—who arguably succeeded in this debate considering today's applied industry standards[2]—favored a two-part tariff system where the fixed cost is prorated by user and the variable part equals the marginal cost. While the profession consensus was that marginal cost pricing leads to efficient production, the debate focused then on the monopoly's externalities.

Coase (1960) presented a bilateral view of externalities and a skeptical perspective on government regulation (i.e., a critique of Pigou 1920, who proposed the taxation of the externality).[3] According to Coase, assuming away transaction costs,[4] the efficient level of demand for and supply of an externality does not depend on the allocation of the initial endowment and property rights of the agents. Hence, the regulator should assign the property rights where they would end if there weren't transaction costs. Thus, considering monopoly as an externality, granting the property rights to customers would only redistribute wealth between the monopolist and the customers, without affecting the outcome (under a two-part tariff with marginal cost pricing).

[2] Cf. Coase (1970).

[3] Coase's 1960 paper was a generalization of his 1959 paper on the regulation of radio frequencies when competing radio stations interfere which each other. In short, if property rights in radio frequencies were well defined, it would ultimately be irrelevant whether adjacent radio stations interfered with each other by broadcasting in the same frequency band. Nor did it matter to whom the property rights were granted, since the station able to reap the higher economic gain from broadcasting would have an incentive to pay the other station not to interfere. Consequently, in the absence of transaction costs, both stations would strike a mutually advantageous deal, and regulation of frequencies (other than assigning property rights) would be unnecessary.

[4] In particular, assuming: (a) perfectly defined and costlessly enforced property rights and contracts; (b) all parties being rational and present at the bargaining table with complete, symmetric information; and (c) perfect bargaining, with no free-riding or hold-up problems.

Demsetz (1968) questioned the rationale for regulation based on the common notion[5] that a natural monopoly always charges monopoly price. In Coase's (1960) spirit, Demsetz sustained that if "negotiating cost" (i.e., transaction costs in today's institutional terminology) equals zero, then the natural monopoly would be contestable (i.e., there could be competition *for* the market, as opposed to competition *within* the market). According to Demsetz long-term incomplete contracts suffice and administrative and legislative regulation is only desirable when ownership rights' coordination is costly and when "windfalls" (externalities) are at place.

Telser (1969) refocused the discussion on regulation to secure efficiency and to promote public welfare. Using a spatial model, he showed that the arrival of a new entrant to an economies-of-scale industry presents two network externalities: an increase in the average cost and a decrease in the transportation (servicing) cost. The demand conditions imply that the total output will not lead to an efficient allocation of output per plant and the number of plants unless firm entry is franchised and the price directly controlled by a regulator to satisfy a pre-established social benefit. The spatial model is particularly appropriate to public utilities, because it introduces "locality"—so closely related to the political dimension of regulation—but Telser was silent regarding plausible heterogeneous (political) preferences in the zones and the workings of the regulator, who—as was the norm—is assumed to be a benevolent social planner.[6]

Coase (1974), in his study on the history of British lighthouses, presented regulation as a cooperative arrangement between users and the operator, with the franchise—and enforcement—of the government.[7] In Coase's framework, customers (shipping companies) interested in a particular service (lighthouse services at a specific location) would sponsor a potential operator with a license application to the

[5] Cf. Samuelson (1964).

[6] "[S]ociety can set [the marginal cost of production] equal to whatever value it decides is the appropriate measure of the marginal social benefit" (Telser 1969, 943).

[7] This resembles, to a large extent, the way Great Britain granted licenses. Licenses were granted in many different forms. Until 1919, the most common way was for a prospective utility to apply to Parliament for a particular license. A Select Committee would hear the case and either recommend it or not. The Select Committee's recommendation would then be presented—as a simple formality—to Parliament for approval as a "Private Bill." A license could also be granted by an Order in Council, whereby the Privy Council upon recommendation of the relevant Minister and the Cabinet would grant the license. See Spiller (2005).

Government for the selected operator.[8] The Government would enforce the licensee's property rights to charge the agreed upon charges to all shipping companies.[9] Coase's lighthouse example resembles the way investment in natural gas pipelines takes place in the US, whereby a potential pipeline operator solicits interest from potential shippers through an "open season." Once sufficient interest is reported, the operator requests a license from the Government, which also stipulates pricing rules.[10] This process, however, is inapplicable for massively consumed utility services, as the number of customers makes such coordinated collective action extremely difficult, if not impossible.

Echoing Demsetz' coordination problem, Posner (1972) proposed a mechanism with an "open season," during which all franchise bidders would offer their products to consumers. This would not be just a non-bidding presentation; franchise bidders would try to secure real orders from potential consumers. At the end of this period, the orders collected by franchise bidders would be compared and the franchise would be given to the bidder who secured the highest revenue. In this way, consumer preferences would be inferred from their willingness to pay, and the winner would be the bidder who, in free competition, would be preferred by the majority of consumers. To secure fair competition, each candidate would commit to provide the price and quantity they offered. If they failed, the franchise would be withdrawn and a new "open season" announced.

As Williamson (1976) pointed out, although the introduction of pre-contract offering in Posner's conception was ingenious, it is not practicable. First, it assumes that consumers are able to make an abstract evaluation of price–quality packages and that they have the time and willingness to do so, which poses the problem of bounded

[8] In principle, the operator would have been selected based on an unspecified mechanism.
[9] The selected method in the lighthouse case is for the lighthouse operator to charge a fee to all ships docking at certain ports. See Coase (1974).
[10] See, for example, the Federal Energy Regulatory Commission's policy statements on: "Promoting Transmission Investment through Pricing Reform" (Docket No. RM11-26-000, issued November 15, 2012), "Allocation of Capacity on New Merchant Transmission Projects and New Cost-Based, Participant-Funded Transmission Projects" and "Priority Rights to New Participant-Funded Transmission" (Docket Nos. AD12-9-000 and AD11-11-000, issued January 17, 2013), and "Cost Recovery Mechanisms for Modernization of Natural Gas Facilities" (Docket No. PL15-1-000, issued November 20, 2014), available at: http://www.ferc.gov/legal/maj-ord-reg/policy-statements.asp.

rationality. Second, the pre-contract offering causes the aggregation of preferences in a rather arbitrary way.

Stigler (1971) upended regulation as instituted primarily for the benefit of the public at large to regulation as the result of a political process of interested groups. On the demand side of regulation, industries "acquire" regulations from politicians as a profit maximizing device—direct subsidies, price-fixing, and control over entry by new rivals, substitutes, and complements—which is limited by political competition and administrative costs. On the supply side of regulation, "the representative and his party are rewarded for the discovery and fulfillment of the political desires of their constituency by success in election and the perquisites of office. [...] If the representative denies ten large industries their special subsidies of money or governmental power, they will dedicate themselves to the election of a more complaisant successor" (p. 11). In his view, political competition leads to less regulation.[11] Stigler aligned the goals of third parties with particular regulations and envisioned (without formalization) the overturning of the incumbent politician by interest groups.

Peltzman (1976) elaborated and generalized Stigler's (1971) work by modeling political relationships analogously to tastes in consumer choice theory. Peltzman made several comparative statics predictions regarding the transfer of wealth—"cross-subsidizing" through price-entry regulation—between groups in competitive and monopolistic markets with elastic and inelastic demand.[12] Still, his treatment of the demand and supply of regulation (via the regulator's objective function) abstracts from political tastes' formation and change as well as from strategic partisan interplay.

Peltzman's political welfare approach won the day. From then on, most economic models of regulation tended to look at regulators as maximizing a welfare function influenced by both the profits of the regulated firm and the price paid by customers. The incentive theory of regulation—as developed following the pioneering work of,

[11] Unless regulation is characterized by a ratchet mechanism—once introduced, it is costly to remove it—which Stigler did not describe.

[12] Peltzman's (1976) comparative statics are wide ranging, deriving differential regulatory outcomes depending on the business cycle, size of the market, price or cost inflation, technological change, economies of scale, and so on and so forth.

among others, Loeb and Magat (1979), Baron and Myerson (1982), and Laffont and Tirole (1993)—follows Peltzman's "black box" approach to politics,[13] and in that sense assumes away the process by which regulation arises and instead focuses all the economic apparatus into discerning the impact on optimal pricing of alternative informational arrangements.

III. A Transaction-Cost Perspective on Regulation

For Williamson (1976), the concurrence of bounded rationality and opportunism corresponds with the reality in utilities regulation.[14] Williamson analyzed in detail the various propositions put forward to overcome these contractual difficulties, particularly by Demsetz (1968) and Posner (1972), who argued for different types of *ex-ante* competition for the market.

Following Coase (1964),[15] Williamson (1976, p. 73) emphasized the need to perform real institutional comparisons:

> "Merely to show that regulation is flawed, however, does not establish that regulation is an inferior mode of organizing economic activity. [...] Secondly, before regulation is supplanted, there is an obligation to assess the properties of the proposed alternative – not only in general, but also specifically with respect to the activity in question. If the proposed mode is flawed in similar or different respects, the purported advantages of shifting out of regulation may be illusory."

Using the incipient transaction-cost economics approach, Williamson (1976, p. 75) highlighted seven features relevant to evaluating alternative modes of organizing natural monopoly supply (with emphasis on comparing franchise bidding to other forms of regulation—including no regulation):

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[13] Observe that in most of the incentive theory of regulation literature, the regulatory process is described by a regulator's utility function. Interesting extensions into hierarchical or more dynamic models of regulation have brought some institutional flavors to this literature. See, for example, Demski and Sappington (1987), Baron and Besanko (1987), and Laffont and Tirole (1993).

[14] Although Williamson (1976) analyzed franchise agreements and focuses on CATV, the classification is appropriate for the discussion of utilities in general. See Spiller (2013).

[15] Coase treated with reserve—and even irony—what he called "blackboard economics." He preferred, instead, to "focus attention on the actual working of alternative arrangements" (Coase 1964).

> "(1) the costs of ascertaining and aggregating consumer preferences through direct solicitation; (2) the efficacy of scalar bidding; (3) the degree to which technology is well developed; (4) demand uncertainty; (5) the degree to which incumbent suppliers acquire idiosyncratic skills; (6) the extent to which specialized, long-lived equipment is involved; and (7) the susceptibility of the political process to opportunistic representations and the differential proclivity, among modes, to make them."

These seven considerations can be reclassified into transaction cost (items 3—technology, 4—demand uncertainty, 5 and 6—specific investments/skills) and political considerations (items 1—preference aggregation, 2—efficacy of scalar bidding, and 7—political opportunism). *Ex-ante* competition, whether of a "once-and-for-all" or "renewable" contracts nature, overcomes the transaction-cost hazards raised by the complexity of the transaction at hand, but does not address the political considerations, particularly political opportunism.

Incomplete long-term contracts, as Williamson (1976) points out, differ from regulations only in depth, not in essence.[16] Incomplete long-term contracts enable renegotiation and soothe claims from unforeseen events. Nonetheless, a number of difficulties arise: hold-up and opportunistic renegotiations, i.e., successful bidders may want to renegotiate terms for their own benefit and thus jeopardize the execution of the contracts. Moreover, a (costly) regulatory agent is required to determine the level of output, monitor the activities of the investor, and cap prices.

Coase, however, saw regulation in a different light. While Coase opposed the uncritical belief in the necessity of omnipresent regulation and purported to prove the sufficiency of market (contractual) mechanisms in the absence of transaction costs and with well-defined property rights, his thoughts on regulation were quite rudimentary and capsulated in his 1974 paper on lighthouses. Alike Demsetz and Posner (and to some extent similarly to Telser's theory of the core approach), Coase saw regulation as a coordination problem of bringing multiple contractual parties

[16] "At the risk of oversimplification, regulation may be described contractually as a highly incomplete form of long-term contracting in which (1) the regulatee is assured an overall fair rate of return, in exchange for which (2) adaptations to changing circumstances are successively introduced without the costly haggling that attends such changes when parties to the contract enjoy greater autonomy" (Williamson 1976, 91).

(e.g., shipping companies, lighthouse operators) to an agreement, with the government providing the enforcement. Collective action tacitly implies, however, an arbitrary and costly aggregation of preferences,[17] and assumes away the development of well-ordered social preferences (Arrow 1950).[18]

As Coase clarified when awarded the Nobel Prize in 1991 (Coase 1992), transaction costs cannot be neglected and, therefore, the initial allocation of property rights matters. The normative conclusion is that the government should: (a) assign liability to the agents for whom avoiding the costs associated with the externality are the lowest or (b) create institutions that minimize transaction costs of corrective misallocation of resources. In practice, however, the highest user value of a resource is unknown *ex ante* and the reallocation of resources by government is costly, both of which are issues that fall directly within Williamson's (1976) classification of regulatory contractual hazards.

Spiller (2008, 2013), building on Williamson's transaction-cost work, emphasized the implications of political hazards on the incentives of both the public agent and the utility investor and, thus, on the nature of regulation. Two are fundamental: third-party and governmental opportunism. "Third parties" are agents who, while not explicitly part of public contracts, nevertheless can impact on their implementation and performance: i.e., watchdogs, interest groups, and—foremost—political opponents. Public agents are subject to third-party scrutiny simply because they play with public monies and, inasmuch as their office is contested, the potential for a challenge exists (Moszoro and Spiller 2012, 2014).

The essence of public policy is its reliance on the state's monopoly to use peoples' monies without their expressed consent. Public utility regulation is not an exception, as it involves—directly or indirectly—the use of the state's monopoly over public

[17] Following Williamson's (1976) critique of Posner's (1972) pre-season bids, take for example, low price–low quality package *LL* preferred by 40% of consumers wins over similar high price–high quality packages HH_1, HH_2, HH_3, and HH_4 chosen by 15% of consumers each. Can we conclude that *LL* is socially preferred?

[18] Consider the simple case of three consumers (indexed 1, 2, and 3) with heterogeneous preferences over low (*L*), medium (*M*), and high (*H*) price–quality sets, denoted *LL*, *MM*, and *HH*:
C_1: *HH* > *MM* > *LL*; C_2: *MM* > *LL* > *HH*; and C_3: *LL* > *HH* > *MM*.
There will always be a majority in favor of changing the regime, whatever would be chosen. For example, given *MM* as the starting set, C_1 and C_3 would prefer *HH* over *MM*; then, C_2 and C_3 would prefer *LL* over *HH*; and, further, C_1 and C_3 would prefer *MM* over *LL*.

funds. Modern societies, then, will develop ways for public policy to be subject to public scrutiny so as to avoid corruption and graft. Thus, third-party supervision is fundamental in a democratic society.

A key feature of interest groups as monitors is their biased nature. All interest groups have their own interests and agenda, and hence behave opportunistically, e.g., will provide information only when it is to their advantage. As it relates to government–utility interactions, interested third parties may have incentives to challenge—when by such action they benefit—the "probity" of the interaction, thereby affecting directly the perceived probity of the public agent (regulator/politician) in charge. Such incentives exist when third parties compete with the public agent in the political market. Benefits, however, may arise also in the economic sphere. In both it may involve the displacement of the incumbent (and competing) public agent. In the political sphere, the challenge may be deemed successful if because of the challenge the public agent is replaced by an agent related, or more to the liking, of the interested third party. As it relates to the economic sphere, the challenge may be deemed successful if the private party is replaced or the terms of the contract or dimensions of the utility's conduct are changed in ways that benefit the third party. But it is precisely because of competition in the political market that such challenges are particularly dangerous to the private and public agent alike.

The exposure to third-party opportunism creates risks to both the public agent and the utility investor. In response, both will have incentives to formalize their relation (i.e., to move away from implicit agreements), and to make it highly specific. Furthermore, to mitigate the risk of third-party opportunism, these regulatory contracts will be designed so as to limit potential challenges, both at the signing and implementation stages. As a consequence, regulatory contracts will tend to demand relatively simple compensation schemes, limit high volatility in cash flows to the investor, and rigid procedural processes, including formal procedures for renegotiation. As in private contracting, though, these adjustments may not fully mitigate third-party opportunism, and government–utility investors' interactions are likely to experience a

higher degree of conflict than contracts among private parties.[19] Governments, then, will have difficulty adapting regulatory contracts without formal renegotiations, specific administrative processes and/or litigation. Furthermore, regulation will tend to be complex, involving multiple rules and procedures, and will be subject to substantial litigation. The added complexity required to limit the potential for third party opportunism will make regulation look as if marred by "red-tape," "conflict driven" and "inefficient" overall. This inefficiency, however, may fail Williamson's (1999) remediableness test. Thus, the perceived inefficiency of regulation is an equilibrium response to its hazards: third-party opportunism—a defining feature of public contracting in general and of regulation in particular.

Governmental opportunism consists of the ability of governments to change the rules of the game through the standard use of governmental powers to extract quasi-rents from utility investors (Spiller 1995). The existence of sunk investments makes governmental opportunism a fundamental hazard in government–utility investor interactions. Sunk investments provide politicians with the opportunity to behave opportunistically vis-à-vis the investing company, exposing it to the risk of (creeping) expropriation. Facing the threat of governmental opportunism, utility investors will require particular safeguards to invest—i.e., the development of institutional arrangements that will limit the government's ability to behave opportunistically once the utility undertook its investment program.[20]

Therefore, even if the aggregation of preferences is feasible, collective action will not solve the two fundamental hazards facing regulators and the regulated—third-party and governmental opportunism. On the one hand, third parties can strategically trigger opportunistic challenges to the incumbent politician/regulator, leading to a potential loss of power[21] and—on the other hand—anticipating disruptions, the regulator has

[19] In other words, the risk of third-party opportunism means that "relational" contracting is less likely to evolve in utility regulation.

[20] For example, safeguards will have to stipulate price setting and conflict resolution procedures (arbitration or judicial), investment policies, quality controls and so on and so forth, that are both credible, in the sense that the government will not be able to by-pass them easily, and at the same time substantially limit the government discretionary interpretation of the same. In other words, regulatory procedures, if credible, must restrain the government from opportunistically expropriating the utilities' sunk investments (Spiller 2013).

[21] Consider the case of three consumers as presented in footnote 18, with the twist that C_3 has slightly different preferences than previously: C_1: *HH* > *MM* > *LL*; C_2: *MM* > *LL* > *HH*; and C_3: *LL* > *MM* >

incentives to expropriate the utility's quasi-rents. Given these risks, the regulatory system that emerges to safeguard both the incumbent power and the regulated quasi-rents, is highly formal and procedural. Thus, regulatory rigidity is the response to keep at bay politically motivated hazards both from opportunistic third parties and the government.

IV. The Interplay of Political Contestability and Regulation

Without detriment of more accurate sectorial definitions, network utilities can be generally characterized by (1) large and sunk capital investment, (2) locality, and (3) social interest. The mixture of large sunk capital investments exhibiting economies of scale and being locally produced and consumed, naturally leads to social and thus political interest. Political interest, locality, and sunk investments lead to a dangerous cocktail of opportunistic incentives. On the one hand, sunk investments expose the utility to opportunistic behavior by the regulator, while, on the other hand, third-party opportunism may prevent regulators from fair behavior (Spiller 2013).

The significance of these hazards will depend on the institutional circumstances of a state. Using North, Wallis, and Weingast's (2009) nomenclature, in "open-access societies" public policies become impersonal and individuals have the ability to form organizations that provide enough political and economic competition. Thus, governments are constrained in their ability to subdue—whether by withdrawing funding, political harassment, or direct violence—the development and organization of interest groups, so the threat of third-party opportunism becomes more credible.

In "natural state societies," the ruling agents provide order by using the political system to limit economic entry to create rents, and then using the rents to stabilize the political system and limit violence. In these societies, the public agent has more

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HH. *MM* is a stable voting equilibrium, because there is no majority that prefers *LL* or *HH* over *MM*. Consider, further, the case where interested third parties (e.g., lobbyists of *HH*) strategically influence C_3 to switch preferences to: *LL* > *HH* > *MM*. This will result in the instability of *MM, as shown before*. Note that it suffices that the change in preferences is second-order and in a fraction of the polity to disrupt the regulatory scheme. Moreover, this could result from the opportunistic mobilization of a relatively small constituency that did not vote in the previous election.

instruments at her disposal to set policies discretionarily. While the potential for governmental opportunism requires an institutional environment with few institutional limitations to governmental discretion—the essence of "natural states"—the potential for third-party opportunism is limited in such environments by the same discretionary ability of governments. Third-party opportunism, then, would be more effective in "open-access" than in "natural state" societies, while the risk of governmental opportunism may be acute in the latter (Spiller 2013).

The potential for the opportunistic use of legislative powers depends on the control the executive may exercise over the legislature. A fragmented polity may provide more assurances to investors than a highly unified government under the executive power (Spiller 1995). Similarly, a judiciary with a tradition of independence may put some limits on opportunistic governmental behavior. Table 1 presents a taxonomy of types of state and their most salient regulatory hazards.

Table 1. A taxonomy of state types and regulatory hazards

	Unified government	**Divided government**
Open-access	Third-party opportunism limited by government discretion	High risk of third-party opportunism
Natural state	High risk of governmental opportunism	Governmental opportunism limited by independent judiciary[22]

In the case of natural state societies with unified governments (highly susceptible to governmental opportunism), rate-of-return regulation could prove insufficient as a credible commitment of the government to limit its discretionary powers and attract investors. Hotelling's (1938) proposal of state subsidy for the fixed cost of a network utility may deem more efficient—compared to Coase's (1946) two-part tariff—to

[22] Natural state societies will rarely have a completely independent judiciary, as it will most likely be part of the ruling interest groups. Some natural state societies have shown, however, a sufficiently independent judiciary that efficiently limits the discretion of the executive. For example, in 2012 an Argentinian judge stopped the expropriation of radio and TV licenses from Clarín, a multimedia holding unfriendly to the ruling party (see http://www.razon.com.mx/spip.php?article151253).

avoid governmental opportunism (as there are no private sunk investments subject to expropriation).[23]

As for open-access societies with divided governments, while the mitigation of governmental opportunism may be undertaken via contractual and/or procedural approaches (Levy and Spiller 1994), the mitigation of third-party opportunism is more difficult (Moszoro and Spiller 2012).

V. Conclusions

Coase's (1960, 1974) views on regulation are neither tautological[24] nor useless. He compared litigation to liability and equated government intervention with collective action, and proposed to assign the rights to where they would end up *if* there were no transaction and coordination costs. Coase's regulatory contribution consisted in setting a reference point that showed the scope of regulation driven by positive transaction costs. Nonetheless, Coase purported the government as a non-contested agent—albeit with her own preference function—as exhibited in his 1959 paper on radio spectrum and 1974 paper on lighthouses, thus immune to politics and, in particular, to third-party and governmental opportunism.[25]

Even if Coase and Demsetz's market contestability and collective action conditions are met, a transaction-cost analysis of the hazards of public utility contracting leads to the conclusions that administrative regulation is deemed necessary for other than market failure and monopolistic pricing, namely *opportunistic politics*—i.e., the side effects of political contestability. It is our contention that this is the common cause of different types of regulatory structures.

[23] In fact, the movement in the developing world towards private management or public ownership, rather than private ownership of waterworks (highly sunk investments exhibiting high economies of scale and locality features) reflects the difficulties developing nations have had to restrain themselves from opportunistic behavior vis-à-vis private water operators. See Spiller (2013).

[24] See, for example, Halpin (2007), Stigler (1977), and Usher (1998).

[25] The Trinity House, the authority responsible for chartering lighthouses, was incorporated in 1514 during Henry VIII's reign. Interestingly, the dawning of private lighthouses and the increase of public lighthouses run by the Trinity House corresponds in time to the uprising of the Parliament as the center of the British politics.

Instead of a theory-driven subject, Coase promoted the view that the economics profession should be empirical: "[Economists should] study the system as it is, understand why it works the way it does, and consider what changes could be made and what effects they would have."[26] Paying attention to the transaction costs inherent to regulation in a political environment opens up an ample perspective on regulatory features and performance for future research.

In this paper, we have sketched the central arguments on the endogenous rise of regulatory rigidity in politically contestable environments as a way to signal probity and commitment from public agents, and, consequently, to reduce the risks of third-party and governmental opportunism.

[26] See interview with Ronald H. Coase, produced by: Chicago Multimedia Initiative Group, University of Chicago, 2012. Available at: https://www.youtube.com/watch?v=04zFygmeCUA (accessed March 27, 2015). An example of Coase's methodology of evaluating alternative feasible solutions is his 1970 paper on public utility pricing.

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