International expansion, diversification and regulated firms' nonmarket strategy

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INTERNATIONAL EXPANSION, DIVERSIFICATION AND REGULATED FIRMS' NONMARKET STRATEGY*

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Abstract

Previous studies have shown that regulated firms tend to diversify for different reasons than unregulated ones. This is the case for product but also for geographical diversification, i.e. international expansion. The logic generally advanced is that regulated firms tend to diversify when they face costly and difficult relationships with the regulatory authority in charge of their sector. This approach, however, does not explain (1) what is really at the core of the problem in regulated firms' relationships with regulators, (2) why these firms cannot overcome part of the problem by developing nonmarket strategies –lobbying, campaign contributions, etc.– to influence regulatory decisions, and (3) why they sometimes opt for international expansion rather than product diversification. In this paper, we propose a theoretical model that provides potential answers to these questions. We start by considering the firm-regulator relationship as an incomplete information problem, in which the firms know things that the regulator does not, but can cannot convey hard information about these things. In this setting, we show that when firms face tough nonmarket competition domestically, going abroad can create a mechanism that makes information transmission credible and therefore strengthen their position in their home market. International expansion, in consequence, can be a way to solve some of the problems that regulated firms face at home in addition to a way for these firms to grow their business abroad.

JEL: F23, L25, L51

1. Introduction

The question of the international diversification, i.e. the expansion in foreign countries, of regulated firms is an understudied yet important question in the economics and management literature (Calzolari, 2004; Garcia-Canal and Guillen, 2008; Kashlak and Joshi, 1994). In many cases, international ventures implemented by regulated firms have left observers puzzled, the logic underlying these strategic moves being seemingly quite different from what was observed in unregulated sectors (Sarkar et al. 1999). In the 1990s, for instance, many telecommunication operators launched into ambitious international expansions which targeted neighbouring developed countries. The underlying logic for these foreign acquisitions left investors puzzled.[1] Clearly, the lack of growth in home markets and the need to find other sources of growth outside were factors that, at least partially, motivated these moves. Also, there could be different motives to become a multinational (*M*), including risk-diversification and increased profitability by exploiting specific industrial knowledge in fast-growing markets. However, why invest in developed and mature markets and not only in faster growing markets? Why not concentrate on product diversification at home, for which incumbent operators seem to have superior capabilities? What are the differential benefits from being an entrant or acquiring a former incumbent in the foreign countries where the expansion takes place? More generally, are there other expected benefits specific to regulated firms driving their international expansion, which have not been considered in the existing literature? The purpose of this paper is to provide new answers to this last question.

To date, there is a large literature on the diversification of regulated firms.[2] This literature tends to focus on specific reasons, related to their regulated environment, why these firms diversify, and on explanations for why these diversification moves often led to little apparent financial success (Gerpott & Jakopin,

[1] See for instance www.lexinter.net/ACTUALITE/france_telecom.

[2] This literature, however, focuses primarily on the regulatory implications of the topic (i.e., how these diversifications should be regulated) and less on the strategic reasons why regulated firms might want to do so (Calzolari, 2004; Palmer, 1991; Sappington, 2003).

2005; Thomson, 1999). Simply put, the argument in this literature goes like this:[3] when regulated firms are engaged in hostile and high-transaction cost relationships with their regulatory authority, and since they do not have the opportunity to solve this transaction cost problem through vertical integration, they tend to diversify out of their core business and in unregulated activities. Russo (1992) finds support for this argument for U.S. electric utilities. Kashlak and Joshi (1994) make a similar type of argument but point out that, instead of going into unregulated activities, regulated firms might also invest in international diversification if the firm's home market displays slow growth. They also find some empirical support for it by looking at U.S. telecommunications operators.

From a theoretical point of view, however, this literature presents at least three limitations related to (1) what makes firm-regulator relationships hostile, (2) the lobbying strategies that the firm could potentially use to alleviate these hostile relationships, and (3) the lack of distinction between international and product diversification. Below we discuss these three aspects.

Limitation 1: Firm-regulator hostile relationship.

Several studies have reported the often-hostile nature of the regulated firms-regulators relationships. In public utilities and network industries, in effect, there are plenty of sources of potential disagreements between regulated firms and regulators. Among these, one can find (1) the proper valuation of capital stock and asset values, essential for setting appropriate tariffs and/or rates of return, (2) the allocation of licences to operate and the changing of the rules regarding these licences, or (3) the extent to which new entrants should be protected to promote competition (Parker, 2003). However, in the literature on regulated firms' diversification strategies, the real nature of the potentially hostile firm-regulator relationships is never clearly expressed. In most empirical studies, the nature of the relationships (from

[3] Here, we leave aside 'non-strategic' types of explanations for regulated firms' diversification, such as for instance the free cash-flow hypothesis (Jensen, 1986). According to this hypothesis, managers of firms with weak internal and external governance environments and limited opportunities for profitable growth in their core businesses will divert resources into diversifying strategies, even where the latter involve investments with negative net present values. This type of argument might explain some of the variance in regulated firms' diversification performance, but we concentrate here on aspects related to firms' external environment rather than internal and governance aspects.

collaborative to hostile) is measured using variables about the 'Regulatory Climate' collected by analysts (see for instance Geiger and Hoffman, 1998, or Russo, 1992). These measures are instructive, but they are of little help to build a theory of why these relationships impact corporate diversification.

In what follows, we will propose that the core part of these sometimes hostile relationships is the imperfect information faced by the regulator (and the higher political institutions delegating the task) when the latter has to make regulatory decisions. As has been highlighted by much literature in Industrial Organization, the regulated firms have private information that would be relevant for the regulator and her political principals; at the same time, it is also obvious that the firm, the regulator and the delegating politicians often have misaligned interests (Laffont and Tirole, 1993). As a result, when the firms try to convey soft, i.e. non-verifiable, information to the policy-makers, they face a credibility problem.[4] This makes the firm-regulator and regulator-politicians relationships difficult, and might thus impact on the firm's decision to diversify out of its core market.

Limitation 2: Regulated firms' lobbying (or nonmarket strategies).

The second limitation of the existing literature on regulated firms' diversification has to do with their capacity to overcome the problems related to their relationships with regulators in other ways than by diversifying. Even if these relationships can be hostile, there are alternative strategies that firms can develop, such as lobbying or, more generally, nonmarket strategies. Following Baron (2001), we call nonmarket strategies all the activities developed by firms to influence policy-makers. Many activities belong to nonmarket strategies such as informational lobbying, interest group formation, campaign contributions, constituency building, media campaigns, etc. (Hillman, Keim and Schuler, 2004). Baron (1995) shows examples of how these nonmarket strategies can be effectively integrated with market

[4] There is a literature on how 'soft' information can be conveyed to policy-makers (see Grossman and Helpman (2001) for a survey). However, it is often difficult for firms to convey this information credibly to a regulator because the firm's payoffs mainly depend on the policy adopted, which is based on the information disclosed (Lyon and Maxwell, 2004). Dahm and Porteiro (2008) develop a model of informational lobbying addressing its credibility, and argue that it depends on the commitment to disclose all (beneficial and damaging) hard information to the regulator.

strategies (such as price strategies, differentiation, technology development, diversification, etc.), both in the context of domestic or international strategies (Baron, 1997).

Hence, there are good reasons to believe that regulated firms –at least the incumbents– will be efficient at developing these nonmarket strategies since (1) they are large entities and often have deep pockets (de Figueiredo and Edwards, 2007), (2) they can build on organized constituencies, especially employees, and (3) they generally have superior lobbying skills and capabilities developed through decades of interactions with policy-makers (Bonardi, 2004). In a study of U.S. electric utilities, Bonardi, Holburn and Vanden Bergh (2006) confirm that these regulated firms develop nonmarket strategies and are often successful when they do so.

So, what role do these nonmarket strategies play in the firm-regulator relationship, and how do they impact diversification strategies? When are they effective, and when are they not?

Limitation 3: Product versus international diversification

Last, while the existing literature on regulated firms' nonmarket strategies might explain diversification, it cannot disentangle product and geographic diversifications. Both can indeed be strategic options for firms wishing to free themselves from hostile regulatory supervision. Does it mean that they are perfect substitutes for regulated firms? Or is there something that is achieved only through geographic diversification?

The point that has not been taken into account so far in the literature is that diversification in unregulated sectors, regulated sectors or international markets, have very different implications regarding firm-regulator relationships. Whereas investing in product diversification does little to change these relationships, international expansion affects them by helping the regulator to get (or forcing her to take into account) comparable information about what the firms are doing in other (also regulated) markets. While product diversification allows to partially escape from regulatory intervention (or its incidence over

global profits), international diversification separates but does not reduce overall regulatory exposure. This will be a key aspect of our approach in this paper.

Objectives of the paper

In this paper, we provide a theoretical model that makes an explicit assumption regarding Limitation 1, and provides new answers to Limitations 2 and 3. As mentioned, the modelling assumption regarding firms-regulator relations revolves around the concept of imperfect governance of, and incomplete information faced by, the regulatory authority, a traditional set-up in regulatory economics: the regulated firm has information that the regulator doesn't have (for instance regarding its internal costs), which makes the task of regulating a sector a difficult one; at the same time, since the regulator can make decisions with a large discretion regarding the facts that underlie her judgements (and therefore can deviate from the mandate formally governing her actions), (delegating) political administrations and the regulated service more generally suffer from potentially inefficient and arbitrary decisions.

When one concentrates on the regulated firm's strategy, however, a key aspect is that the firm also lacks credibility: in many cases, it communicates soft –and virtually impossible to verify– information, which the regulatory authority will hardly believe nor will be forced to take into account; in the best of situations, it can affect the support of the distribution of possible states of the world (as perceived by the regulator) in its favour. As suggested by Lyon and Maxwell (2004), this creates a difficult situation for the firm as well, especially if this firm is competing with other firms or interest groups also providing information to the regulator. In this context, we argue that international diversification can be one (another, regarding commonly used strategies to transmit information –as presentation of third-party technical reports, audits, etc.) strategic way for regulated firms to solve this problem, limiting the discretion enjoyed by the regulator in its favour.[5] We also show that this has implications for the destinations where regulated firms invest: for the firm to use international expansion as a way to build a

benchmark to make information credible, there needs to be some institutional proximity between the home and target countries. Firms that try to build this mechanism will therefore invest in close countries more often. On the other hand, firms that do not need to build this benchmark (because they already have a strong nonmarket influence over their home regulator) will tend to invest in far (different) countries.

The rest of the paper is organized as follows. Section 2 provides empirical motivation for our theoretical model by looking at the international strategies of one type of regulated firms: European telecommunication operators. Some anomalies with the existing literature are identified. Section 3 puts the foundation of a model that could account for some of these anomalies. The formal model itself is analyzed in Section 4. Section 5 discusses the results and concludes.

2. Empirical motivation

In order to motivate our theoretical investigation, we first start with some empirical observations based on data about European telecommunication operators. Since our focus here is on regulated firms' strategies, we concentrate our analysis on former national monopolies, i.e. the firms that have been traditionally heavily regulated. Arguably, most of these firms have kept strong relationships with national regulatory authorities, allowing them to develop nonmarket strategies (Bonardi, 2004). However, new entrants and deregulation movements have also generated some variations in the success of these nonmarket behaviours.

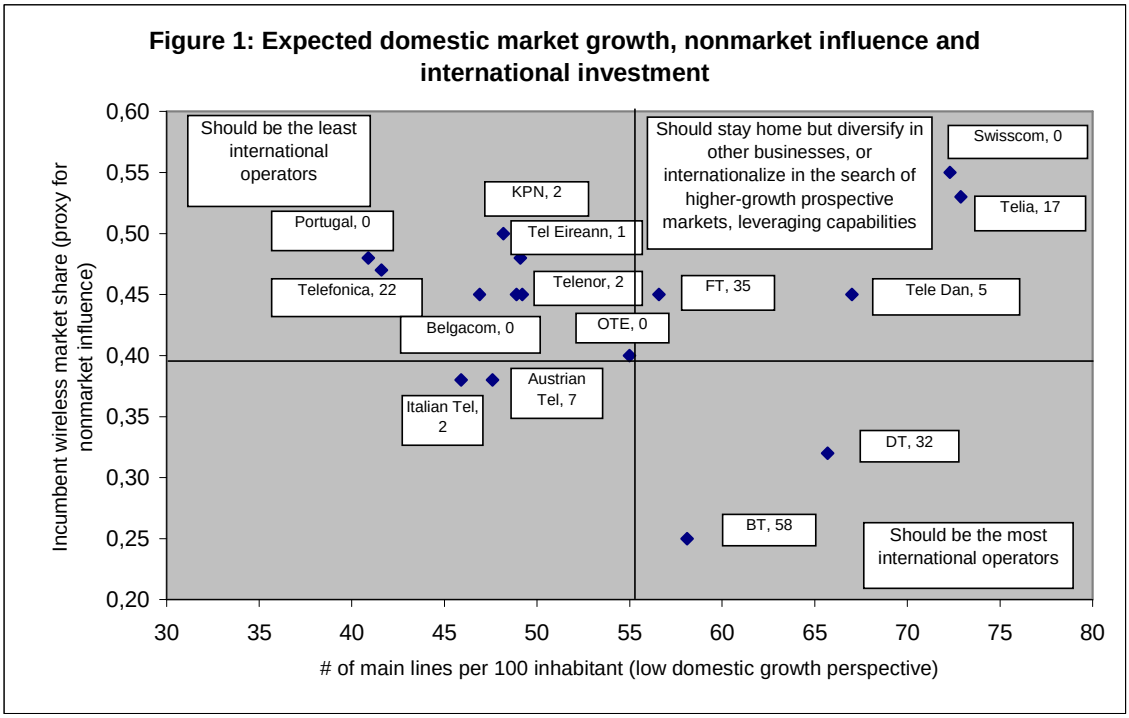
Consider first Figure 1 that plots the strategies of former telecom monopolies in Europe. The X-axis displays the number of main lines per inhabitant as a proxy for the country's remaining market potential (a high value indicating low market growth potential), and the Y-axis displays the firms' market shares in the wireless market as a proxy for their nonmarket influence over regulatory decisions.[6] As one can

[5] See de Figueiredo, Spiller and Urbiztondo (1999) for an analysis of competition among interest groups, in which groups send biased reports to the regulator limiting the discretion and informational advantages of regulators vis-à-vis political officials.

[6] Former monopolies' market shares in the wireless market can be considered proxies for the firm's nonmarket influence in the sense that this market is generally the telephony market that new entrants have attacked first but which has also remained heavily dependent on decisions from regulatory authorities. High market shares from the

expect from existing theories of regulated firms' strategic behaviours coupled with insights from the nonmarket strategy literature, operators in the top left quadrant of Figure 1 should also be the least international ones (as measured by the number of foreign countries they have invested in), as they are politically strong at home and have sufficient growth potential to exploit there. For the opposite reasons, operators in the bottom right should be among the most international ones.

Figure 1: Expected domestic market growth, nonmarket influence and international investment



Note: Number of foreign countries entered by each incumbent indicated after each operator's name.

But, is this so? Figure 1 also indicates the internationalization strategy followed by various former monopolies, reflected by the number of foreign countries entered by each one of them since 1995.[7] We can then see that various cases adjust to this prediction (such is the case of Portugal, KPN, Belgacom,

incumbent therefore suggest, at least to some extent, that this firm has been able to protect its rents from new entrants' aggressive attempts (Bonardi et al., *Forthcoming*).

[7] Clearly, counting the number of countries is a crude measure of international expansion. We acknowledge this. Getting good data on the amount invested by each operator would allow us to contrast our results; however, these data were not easily available for most operators, and the prediction of our model has to do in fact with presence more than amount invested in close countries abroad. **JP: given this, shouldn't we withdraw this footnote? NOT SURE. I THINK THE QUESTION WILL COME UP, SO IT MIGHT BE BETTER TO ADDRESS IT RIGHT AWAY. DON'T YOU THINK?**

British Telecom and Deutsche Telekom). However, different from this theory, there are also operators in the top left quadrant that are quite international (especially Spain's Telefonica). Similarly, there are some operators that are both strong at home but operate domestically in mature markets (top right quadrant in Figure 1), leaving no clear prediction regarding internationalization according to the existing literature. France Telecom and Telia, for instance, internationalize much more than their strong nonmarket influence would predict for defensive reasons at home, suggesting their strive for higher growth potential abroad.

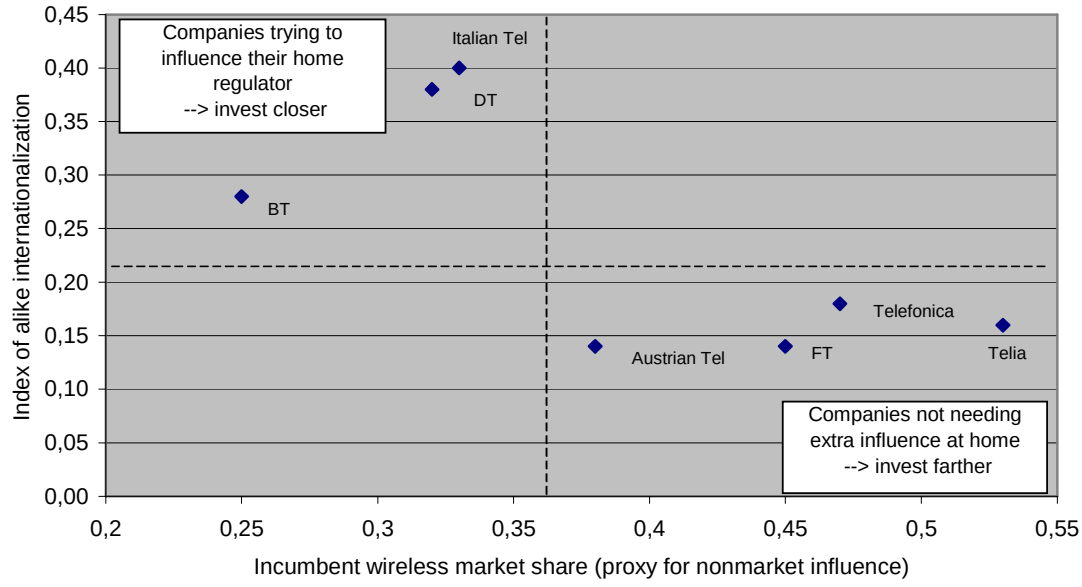
Another question is in which type of countries regulated firms invest. Notice that the existing nonmarket strategy literature can also provide partial help in this regard. For instance, Henisz (2003) or Holburn (2001) argue that, overtime, regulated firms develop nonmarket capabilities which are specific to certain institutional idiosyncrasies, but are also partially transferable from one country to another. Holburn (2001) therefore found that operators coming from risky political countries tended to invest more in countries that were risky as well. Coming back to our example, one would expect that companies that have developed strong nonmarket capabilities to deal with their domestic regulator will expand in neighbouring countries **(JP: or in former colonies? You mentioned this point…) (SANTIAGO: THE PROBLEM IS THAT I DIDN'T CODE THINGS THIS WAY. MOST FORMER COLONIES ARE CONSIDERED AS BEING 'FAR COUNTRIES' IN THE CURRENT GRAPH. I WOULD LEAVE THIS COMMENT OUT)**, in which they can leverage these capabilities. Or, to put it in our empirical setting, the prediction would be that European companies that have kept high market shares in their domestic wireless market would tend to invest more in close (i.e., mature) countries.

To explore this (again, as an example to motivate our theoretical development), we calculate an "index of alike internationalization" as the ratio of the number of neighbour countries divided by the total number of countries in which the operator has invested.[8] In Figure 2 we plot this index (on the Y axis) with the

[8] In Figure 2, we consider only the operators that were present in more than 2 foreign countries. Neighbour countries are European countries. **JP: I think that, if possible, we should revise the definition of neighbour countries (not only European ones, but also those in the same quadrant in Figure 1) and see what happens with Figure 2. The geographical proximity used in Figure 2 is less appealing than a definition combining geographical, institutional and structural similarities (mixing location, nonmarket power of incumbents and growth**

operator's remaining market shares in the wireless segment (again, as a proxy of the firm's nonmarket influence at home). The outcome is quite sharp: all the operators are positioned either in the top left or the bottom right segments of the graph. On the top left quadrant are operators that have a relatively low nonmarket influence/capabilities and which have decided to concentrate their international investment on neighbouring countries. Operators on the bottom right segment, who have strong nonmarket influence/capabilities in their home market, tend to invest in countries that are (relatively) farther from them institutionally. This picture seems to be at odds with the literature cited above. It doesn't support the 'nonmarket capabilities' perspective, under which companies would tend to leverage their nonmarket capabilities in countries with similar institutional/market settings/parameters. On the other hand, it seems to predict that companies that face a nonmarket disadvantage domestically will tend to invest nearby, whether companies that hold a nonmarket advantage domestically invest farther from home.

Figure 2: Location of European operators international investment



potential), which is closer to what we discuss in the model…. I'M GONNA TRY TO WORK ON THIS. NOT SURE HOW EASY IT WILL BE TO COMBINE THESE THINGS WITHOUT MAKING THINGS HARD TO READ, BUT I'LL TRY…

How can this be explained? In what follows, we suggest that, aside from the nonmarket capabilities presented above, there might be another potential set of nonmarket factors that influences regulated firms' international expansion: the exploitation of information and visibility collected abroad used as a way to improve the firm's nonmarket position at home. If firms face a credibility deficit when they deal with domestic regulators and cannot easily compensate for this through alternative nonmarket tactics (like campaign contributions, for instance, as in de Figueiredo and Edwards, 2007), they might increase the impact of their informational lobbying by providing comparative benchmarks coming from their foreign investments. This might be a key driver of these (but not all) operators' international expansion. On the other hand, regulated firms that are not too challenged domestically might invest abroad for totally different reasons. For these firms, like France Telecom in our sample, investing in close countries might not be a critical factor. We demonstrate this formally in the model below.

JP: Result of consulting with top management of BT, DT and/or FT should be reported here… AGREED.

3. Model assumptions

We consider one sector that has been traditionally regulated and builds on an infrastructure network (i.e., for instance, telecommunications or electricity), in one country. The policy issue has to do with the determination of an access-price (for fixed, wire-line services) that an entrant firm has to pay to the incumbent and owner of the involved infrastructure. The game includes one regulator (R) and two firms/interests, denoted by $j=I,E$: one firm is the incumbent (I) and the other one is the entrant (E).[9] We consider first a case where each firm is purely domestic, and then analyze changes when one firm expands in a foreign country. Final users (and governments in general) benefit when the policies implemented adjust well to the true underlying conditions (state of nature), which is more likely when the regulator enjoys less discretion and is required to base her decisions on publicly available elements.

In order to capture the basic intuition, various simplifying assumptions are adopted. First, we make some *ad-hoc* assumptions which, although we consider reasonable, minimize the theoretical options regarding possible signalling games oriented to transmit private information. Second, we assume that first-best regulation (i.e., marginal cost pricing) is feasible under complete information.[10]

3.1. The firms and the regulator

As in Bernheim and Whinston (1986) or Grossman and Helpman (1994), the two interests behave as principals that seek to contract with the regulatory authority for the policy; the regulatory authority is thus a (de facto) common agent of the two interests.[11] The regulator, in turn, is the formal agent of higher political government institutions (who we assume truly represent final users of the regulated service). Objective functions for the regulator and the firms are built upon quadratic loss-functions regarding the most preferred policies by each agent (Baron, 2001); firms lobby for their most desired policy through transfers/support transmitted to the regulator; the regulator balances efficiency (consumers representation or industry performance based on available information) and its private interest (support received from interest groups –regulated firms–, minus expected penalties to be incurred in case she is proved to be adopting biased or inefficient decisions).

A key assumption in our model, then, is that regulators tend to adopt policies that 'cover their back'. By this we mean that an important aspect for regulators is to avoid being penalized by governing politicians that supervise them. Hence, when a piece of information that might have some credibility is signalled to politicians, it will be costly for regulators to ignore it (Bonardi, Holburn and Vanden Bergh, 2006). Thus,

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[9] The disputes between incumbents and entrants are of course extended beyond the access price for the use of the existing fixed, wire-line infrastructure, but we use this dimension as an illustration of the general conflict between firms with opposed interests at home.

[10] In particular, fixed network costs or economies of scale are disregarded. Access pricing in the context of Ramsey pricing (optimal deviations from marginal cost due to budget constraints and linear pricing) is primarily discussed in Armstrong, Doyle and Vickers (1996).

[11] The common agency model here is not one of formal delegation, but instead one where principals exert "economic influence" on a common agent, who cannot refuse to act as such. The incentives or support can be offered through various means discussed in the literature, such as campaign contributions, voice opposition or acceptance of their general policy initiatives, future employment, or just economic bribes.

as long as regulators can relatively credibly justify their policy choices using this piece of information, their 'back is covered'. This assumption fits with regulatory practices as explicated by Hyman (2000).

One needs to note, also, that the modelling implication of this assumption is that regulators generally do not set up truth revealing incentive mechanisms in order to obtain the best information they can. Less is so the case for government officials dealing with multiple issues and delegating regulation to specialized bodies. So, even if this mechanism would seem to be more elegant and in line with now standard information economics models (Laffont and Tirole, 1993), we prefer here to concentrate on keeping our model closer to real practice as we perceive it.

In order to maximize efficiency –for a given set of transfers or supports received from regulated firms–, the regulator must base her decision on her information regarding the cost of providing access to the existing network operated by the incumbent firm: an access price set too high would allow the incumbent to retain excessive monopoly rents, whereas an access price set too low would eventually lead to a deterioration of the network coverage and/or quality, ultimately hurting final users (i.e. overall performance) of the regulated services in both cases. Thus, since the regulator is imperfectly informed about the true cost of access, her decision could be biased away from efficiency; to minimize this bias, higher political government officials (and final users) would welcome credible information that forces the regulator to minimize the potential error of her cost estimate.

3.2. Network costs, information and reports

The marginal cost of the existing network is given by $C(\delta)$, where δ is a vector of both idiosyncratic and common parameters (such as country-size, income, density, cost of capital, available technology adjusting to those conditions, etc.); $C(\delta)$ can be positively correlated across different countries depending on their structural similarities regarding their key parameters δ.

The informational assumption is that (all) firms know δ in the countries where they participate, but neither the regulator nor higher political government officials (G) do (more precisely, the regulator receives an

unbiased signal from nature –which is in fact her honest deconstruction of all the evidence consulted in order to determine those parameters–, but higher political government officials are fully uninformed).[12] Firms supply reports with information about the state of the world regarding δ, which contains both "hard" (verifiable) and "soft" (unverifiable) information. Verifiable information truncates the support of the cost function within which *R* receives the unbiased signal from nature: the hard (but selective) information supplied by the firms convinces *R* that $\delta^{max} \geq \delta \geq \delta^{min}$; unverifiable information is used by *R* to construct its prior belief about the cost C. Thus, both *R* and *G* understand that firms could safely report $C(\delta^r)$, where $\delta^r_j \in [\delta^{min}, \delta^{max}]$.[13]

The regulator has only one instrument at hand: setting an access price (*a*), which in turn determines both the benefits obtained by the incumbent and the entrant, and the overall performance of the sector.[14]

When one of the firms is a multinational (*M*), the report it sends can have different advantages regarding its credibility. First, it could become more compelling or credible for both *R* and *G* because some of the determinants of the network costs are common across countries (i.e., *M* is in a better position to convey information about the other country's situation in a more coherent and credible way), and/or because *M*'s various reports have to be relatively consistent across countries and thus it would provide less biased reports (i.e., some relatively damaging hard information –for instance, if *M* is the incumbent, it might provide information allowing a reduction in δ^{max}). Second, even if *R* is not further convinced by this new piece of information (because she had already consulted it on her own, or because there is no increased

[12] Thus, contrary to the most usual agency settings where the agent is better informed than the principal(s), in our model the two principals (firms) perfectly observe the action taken by the agent (her policy decision *a*) and they are both better informed than the agent regarding the state of nature (δ).

[13] Since foreign regulation might be biased and each vector δ partly reflects intrinsic characteristics of each country, pure imitation (of foreign regulation) is generally undesirable. More generally also, multinational firms cannot be penalized for reporting different δ in different countries.

[14] This happens once the final price of services P^f is no fully adjusted to reflect different access prices. So, we implicitly assume that P^f and *a* are partly (but not fully) correlated: i) if P^f and the *a* change in the same amount, the entrant's margin "*m*" ($=P^f-a$) would not vary with *a*, and this would contradict our assumption about the entrant's utility function (preferring a lower access price); ii) if P^f remained constant when *a* changes, no effect on final performance would emerge from various different levels of access price (its effects would be purely on the division of rents between firms, which is not important for final consumers). See Armstrong, Doyle and Vickers (1996).

consistency implication), *G* would now know that such information was indeed exposed to *R* during the regulatory proceedings, and could adopt it as its own prior or benchmark to examine *R*'s choices implying deviations from it. Third, *G* might be less aware than *R* about the idiosyncratic differences of costs across (otherwise similar) countries, and thus adopt this (visible) report as its own prior on which to base its posterior monitoring activity.

In this paper, and only for modelling reasons, we adopt the following assumption: a report by *M* does not modify *C*'s support (i.e., $[C(\delta^{min}), C(\delta^{max})]$ remains unchanged), but it becomes the expected policy by *G*, forcing *R* to justify more carefully –and costly– policies deviating from it. Thus, higher level political government officials monitor *R*'s use of the information supplied by *M*, inducing her to give more weight to *M*'s reports as the correlation of network costs across countries is expected to be higher.

3.3. Games sequence

The sequence of the game is the following:

- first, nature chooses the vector δ of idiosyncratic and common technology parameters;
- second, government officials state their monitoring strategy regarding the policy chosen by the regulator, including the penalties they with apply on her if she is found to be following her own agenda (making biased decisions by neglecting some verifiable information submitted by the regulated firms);
- third, firms observe the true δ in the countries where they participate and send signals (reports $C(\delta^{r}_{j})$) which inform *R* that *C*'s support is $[C(\delta^{min}), C(\delta^{max})]$;
- fourth, firms exert pressure on the regulator in order to affect the price of access she will set;
- fifth, the regulator implements policy (sets the access price a^*) based on the incentives faced (the information collected, the pressure of firms in the political regulatory process, and the expected penalty for disregarding verifiable information supplied by regulated firms);

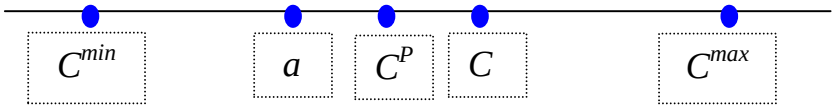
- last, payoffs develop.

The Nash equilibrium of this incomplete information game is solved backwards: given the informational lobbying directed to convince the regulator about favourable costs of access, both firms –anticipating the regulators' reaction function– simultaneously choose their supports, and then given these decisions, policy is implemented by the regulatory authority.

4. Model analysis

As pointed out, the key issue for the regulator is the determination of the access price, *a*, within an interval depending of possible values of $C(\delta)$ as shown in Figure 3 below: $a \in [C^{min}, C^{max}]$. $a^{*}=C$ would be the first-best policy. The unbiased signal (within *C*'s support resulting from the reports and information collected) received by *R* determines her prior belief about *C*, called C^{P}.

Figure 3: policy space



The utility function for firm $j=I,E$ is:

$$u_j(a) = -\alpha_j \times (a - C^j)^2,$$

where C^j denotes firm *j*'s preferred report (incumbents prefer C^{max} –i.e., $C^I=C^{max}$– and entrants prefer C^{min} –i.e., $C^E=C^{min}$), α_j denotes the importance of the policy for firm *j*, and it turns out to also represent the nonmarket strength or influence of this firm in the regulatory game.[15] (Of course, these utilities are negative unless we add a positive constant, but the important fact is that the maximum level is reached at $a^*=C^j$ and that the marginal disutility increases with further departures from this point.)

Firms offer supports $s_j(a)$, and policy preferences for each firm are the following: $U_j = u_j(a) - s_j(a)$. For simplicity, the support functions are assumed linear, in the following way: $s_I(a) = \omega \times (a - C^E)$ and

[15] The strength surely depends on several other things, including the political importance of the firm in its country, its role as a major employer, the support of trade unions, etc., but we only represent its own economic stake as a determinant of the resources dedicated and useful to shape public policy.

$s_E(a) = \lambda \times (C^I - a)$. That is, the incumbent transfers to the regulator ω per unit of deviation from its less desired policy (C^E) and the entrant pays her λ per unit of deviation from his own less desired policy (C^I). Thus, $s_I(a) \geq 0$ and $s_E(a) \geq 0$.

While in a "truthful equilibrium" (Bernheim and Whinston, 1986) the marginal supports offered by each principal reflect their marginal utilities for each feasible policy chosen by the agent (and these are decreasing as they approach each principals' preferred point), we restrict attention to linear incentive schemes for three main reasons. First, because at the equilibrium (correctly anticipated by each principal) the linear incentive schemes do coincide with each principals' marginal utility. Second, because we find unrealistic that the regulated firms formally expose a support function announcing each marginal reward attached to all possible actions taken by the regulator, and thus the agent would at most perceive rewards as linear schemes (and react accordingly to them). Third, working with linear incentive functions simplifies the mathematical solution of the model.

More generally, even though our restriction implies that the support functions are not truthful everywhere, they are truthful at the equilibrium (i.e., they reflect the marginal utility derived from the equilibrium policy chosen by the agent), and they are "relatively truthful" off-the equilibrium, leading to a unique Nash equilibrium. In other words, this would be an example of what Bernheim and Whinston (1986) describe as "an irrelevant way" in which equilibrium (linear) strategies depart from (fully) truthful ones.

The outcome for consumers –allocative efficiency *P*– symmetrically depends on the difference between the access price and the true marginal cost of access, i.e., $P(a) = -\theta \times (a - C)^2$. (*Ex-ante*, though, expected performance is maximized when $a^* = C^P$.) That is, setting an access price above the marginal cost of access to the network triggers a higher final price P^f that hurts consumers, whereas an access price below that cost leads to a deterioration of investment to maintain and expand the network, also hurting final users.

4.1. Regulator and firms' nonmarket strategies

In the model, we concentrate in two types of nonmarket strategies: (1) support (of any kind) provided by firms to the regulator (as in Baron, 2001), and (2) informational lobbying to convey soft information. Since both firms (the incumbent and the entrant) provide nonmarket support in favour of certain regulatory decisions, the regulator is assumed to balance the support received from the interest groups (regulated firms *I* and *E*) with its intrinsic willingness for good performance (as representing consumers' surplus or allocative efficiency out of first-best policy or marginal cost pricing), so that:

$$U_R = P(a) + s_I(a) + s_E(a).$$

Since *R* does not observe δ (within $[\delta^{min}, \delta^{max}]$), her decisions are based on her beliefs on it. At the same time, without any other constraint by their political superiors, *R* can justify any policy she chooses based on $\delta \in [\delta^{min}, \delta^{max}]$ as the optimal performance attainable given the information she has about δ. Indeed, even though the higher political officials are fully uninformed regarding the support of the cost function, the two firms do know what is the support within which *R* has to make a decision and could claim a review if she steps outside such range. Without loss of generality, we assume that *R*'s expected cost (C^P) is equally distant from $C(\delta^{min})$ and $C(\delta^{max})$ (i.e., $(C^P) = [C(\delta^{min})+C(\delta^{max})]/2$), and that both firms know this.

Can a multinational firm become more credible and send a report to which the regulator gives a higher weight? Based on the discussion at the end of Section 3.2, it can. In particular, the regulator could be penalized if she is found to have overlooked or minimized information from another comparable country submitted during the regulatory process, and since multinationals have much better access to such information than other parties, firms obtain a strategic advantage through internationalization. The magnitude of this advantage depends on the expected penalties faced the regulator, which in turn depend on the importance given to the foreign country as an information benchmark by the higher political officials themselves (something known before the firms play out their strategies in front of the regulator – see the time sequence spelled out before). In general, then, if a regulator faces a multinational, her

discretion is reduced, as she needs to implement a policy that gives more (or even full) weight to the information supplied by *M*.

As regards the utility function of the regulator once such penalties are feasible, the linear translation of the assumption spelled out in Section 3.2 results in the following:

$$U_R = -\theta \times (a - C^P)^2 + S_I(a) + S_E(a) - F \times (a - C^M)^2,$$

where the last term is added reflecting the increased cost for *R* if she deviates from the report C^M (either due to the risk of being penalized by *G*, or because of the more careful justification for increasing departures of the policy implied by such report).

Yet, for the sake of simplicity in the exposition (and posterior computations), the first and third terms of the function above could be (imperfectly) combined, and re-express *R*'s utility function in the following way:

$$U_R = -\hat{\theta} \times (a - C^{PM})^2 + S_I(a) + S_E(a),$$

where $\hat{\theta} > \theta$ represents the higher disutility (including the expected penalty and/or the effort to justify a policy based on own information) that *R* faces when the policy chosen deviates from the one she is supposed to implement, which now instead of being her prior C^P becomes a prior which gives more weight to the report C^M (or $\delta^r{}_M$) sent in by the multinational firm.[16] In other words, the use that *G* gives to the report C^M ends up reflecting changes in the decisions adopted by *R* as if she cared more about the performance of the sector ($\hat{\theta} > \theta$) and had a prior belief C^{PM} closer to the preferred policy by the multinational firm (i.e., $C^I > C^M > C^{PM} > C^P$). Naturally, as the penalty *F* tends to disappear (reaching in the

[16] Notice that if *R* did adopt *M*'s report as her new expected cost of access, the simplification made here would be fully correct: C^P and C^M would now coincide, and thus $U_R = -\theta \times (a - C^P)^2 + S_I(a) + S_E(a) - F \times (a - C^M)^2$ would reduce to $U_R = -(\theta + F) \times (a - C^M)^2 + S_I(a) + S_E(a)$, so that, in the last equation, $\hat{\theta} = \theta + F$ and $C^{PM} = C^M$.

end the case when there is no multinational), *R*'s parameters of its utility function tend to those defined in the absence of multinational firms. Notice that if both the incumbent and the entrant in a given country are multinational firms, then the regulator would have to combine the (conflicting) information provided by both of them, using each report as relative proof to empirically base her decision according to the different weights she believes (or as announced) *G* would give to the different sources (i.e., trying to adjust its policy to the optimal one that would be taken by the politicians themselves based on the importance they give to the information supplied by the two firms, which depends on which foreign countries they use for their reports). In that regard, the discretion enjoyed by the regulator is further reduced, and thus the productivity of each transfer offered by the two firms is also lower, reducing the rents retained by the regulator.

4.2. Complete information

Under complete information, a simple (first-best) solution is reached: $a^* = C(\delta)$. This is derived from the regulator's utility function when $s_I(a)=s_E(a)=0$, as has to be the case since with complete information the regulator would be caught to be responding to interest groups –and would presumably be heavily penalized by political superiors or courts– if $a^* \neq C(\delta)$. The outcome in this case displays marginal cost pricing, and no space for the development of a credibility problem. In fact, no nonmarket strategies could take place once the regulator could not justify departing from first-best policies herself.

The general case of regulated sectors, however, is one of incomplete information. As explained before, this is what creates the sometimes hostile relationships between the regulated firms and the regulator. So, what happens under incomplete information in our setting when firms are purely domestic actors? Below we explore the nature and implications of incomplete information about the "true state of the world".

4.3. Incomplete information but no multinational firm

Under our previous assumptions, and leaving aside the verifiable components of the reports that define the range of possible costs (i.e. $[C(\delta^{min}),C(\delta^{max})]$), the soft reports sent in by each firm cannot be verified

in a court of law, and thus it is completely up to the regulator to announce what is her conclusion regarding the true state of nature within this range. So, whatever decision is made by *R* within this range, no penalty can be imposed on her. Thus, once the support of the cost function $[C(\delta^{min}),C(\delta^{max})]$ is determined (and known by the regulator and the two firms), the common agency equilibrium $(s_I^*(a), s_E^*(a), a^*)$ is defined as:

$$a^* \in \arg_a \max P(a) + s_I^*(a) + s_E^*(a)$$

$$\text{with } s_I^*(a) \in \arg_{s_I(.)} \max -\alpha_I \times [a^*(s_I(.), s_E^*(.)) - C^I]^2 - s_I(a^*(s_I(.), s_E^*(.)))$$

$$\text{and } s_E^*(a) \in \arg_{s_E(.)} \max -\alpha_E \times [a^*(s_I^*(.), s_E(.)) - C^E]^2 - s_E(a^*(s_I^*(.), s_E(.))).$$

We assume that the two principals (firms) decide on their support schedules first and then the agent (regulator) reacts to them. Nevertheless, when the firms make their choice, each of them incorporates the regulator's reaction function, as determined by the first-order condition of her optimization problem. As each principal makes a punctual prediction of the support schedule offered by the other principal, but both recognize that the agent will optimally react to their aggregated support schedules, an equilibrium requires that those predictions are correct.

From the convexity of the utility functions of all players, an interior solution for the two support schedules falls short from a coordinated solution between the two principals, whereby they would agree on the overall incentive to be provided to the agent. Furthermore, assuming that the support schedules are differentiable, the interior solution is obtained in the following way. First, from *R*'s problem, the first-order condition yields $a^* = \frac{(\omega - \lambda)}{2\theta} + C^P$. Then, if the two principals cannot offer supports ($\omega=\lambda=0$) or simply their supports balance out as they provide equal absolute incentives to the regulator ($\omega^*=\lambda^*$), the equilibrium access-price a^* is set at the expected (prior) best-policy level $C^P = E(C)$. (The chosen policy, though, could turn out to be *ex-post* inefficient if the signal received by *R* was biased.)

Second, taking into account *R*'s reaction function into their own problems (i.e., replacing the previous expression for a^* into their optimization problems), both competing firms decide on their support schedules (i.e., on the values of ω^* and λ^*), according to the following two first-order conditions:

$$\omega: -(\alpha_I/\theta)\left[(\omega-\lambda)/2\theta + C^P - C^I\right] - \left[(\omega-\lambda)/2\theta + C^P - C^E\right] - \omega/2\theta = 0,$$

$$\lambda: +(\alpha_E/\theta)\left[(\omega-\lambda)/2\theta + C^P - C^E\right] + \left[(\omega-\lambda)/2\theta + C^P - C^I\right] - \lambda/2\theta = 0.$$

Solving this system of equations for an interior solution, we have:[17]

$$\omega^* = -2\left[\alpha_I\theta(C^P - C^I) + \theta^2(C^P + C^I - 2C^E) + \alpha_E\alpha_I(C^E - C^I)\right]/(\alpha_E + \alpha_I + 3\theta),$$

$$\lambda^* = 2\left[\alpha_E\theta(C^P - C^E) + \theta^2(C^P + C^E - 2C^I) + \alpha_E\alpha_I(C^I - C^E)\right]/(\alpha_E + \alpha_I + 3\theta).$$

From these two equations we obtain:

$$\omega^* - \lambda^* = 2\theta\left[\alpha_E(C^E - C^P) + \alpha_I(C^I - C^P) + \theta(C^I + C^E - 2C^P)\right]/(\alpha_E + \alpha_I + 3\theta),$$

and replacing this expression into the regulator's choice function $a^* = \frac{(\omega-\lambda)}{2\theta} + C^P$, we have:

$$a^* = \left[\alpha_E(C^E - C^P) + \alpha_I(C^I - C^P) + \theta(C^I + C^E - 2C^P)\right]/(\alpha_E + \alpha_I + 3\theta) + C^P.$$

From the first one of the last two equations, it is easy to characterize the symmetric case: if the two firms have the same intensity of preferences or capacity to influence the regulatory policy (i.e., if $\alpha_E=\alpha_I$), and *R*'s expected value C^P is half-way between the two extreme policies supported by the interest groups (i.e., if $C^P=(C^I+C^E)/2$), then $\lambda^*=\omega^*$, leading to $a^*= C^P$. So, under this scenario, if the true state of nature *C* coincides with C^P, the policy implemented matches the first-best that maximizes performance *P(a)*: in the symmetric case where the two interests have equally intensive preferences and are also equally distant from the expected state of nature C^P regarding their preferred policies, the (marginal) supports offered by

[17] The interior solution requires that the preferences of the firms regarding the policy to be implemented (α_I and α_E) are larger than the marginal impact of policy on performance (or, in other words, the intrinsic policy preference of the regulator, θ): if this is not the case, then there is no room for profitable exchanges of supports and policies.

each regulated firm are the same, and the policy chosen by *R* turns out to be the one that maximizes expected allocative performance *P(a)*.

We can also verify that when $C^P=(C^I+C^E)/2$, then $\omega^*>\lambda^*$ if $\alpha_I>\alpha_E$, which means that the most interested principal offers the highest support. In that sense, policies adopted will generally be *ex-ante* biased with respect to *R*'s belief (as long as the strength of principals through nonmarket strategies are unequal), but the biases cannot be proved *ex-post* by any one of the participants. Thus, it is natural that higher political government officials (*G*) regret *R*'s discretion and would prefer to find ways to audit her decisions or force her to reduce such discretion. They would welcome, of course, information that minimizes the risk of implementing an *ex–post* biased policy regarding the true state of nature *C*.

More generally, from the last equation, and recalling that $C^I>C^P>C^E$, we can check that a^* increases with C^P, it decreases with α_E and it increases with α_I. Also, a^* moves closer to C^P when θ increases, i.e., when the performance is more affected by the policy chosen.[18]

The numerical example developed in Table 1 below illustrates these various results:

Table 1: Policy and rents in the incomplete information equilibrium without multinational firms

	1	2	3	4	5	6
	Fully honest regulator	**Benchmark**	Coordination	α_I goes up	θ goes up	C^P goes up
Values of parameters						
α_I	2	**2**	2	3	2	2
α_E	2	**2**	2	2	2	2
θ	2	**1**	1	1	1,5	1
C^P	3	**3**	3	3	3	4
C^I	5	**5**	5	5	5	5
C^E	1	**1**	1	1	1	1

[18] When $C^P=\frac{(C^I+C^E)}{2}$, then $\frac{\partial a^*}{\partial\theta}=3\times\left[(C^P-C^E)\times(\alpha_E-\alpha_I)\right]/(\alpha_E+\alpha_I+3\theta)^2$, and thus the signs of $\frac{\partial a^*}{\partial\theta}$ and $\alpha_E-\alpha_I$ coincide, meaning that, when θ increases, a^* tends to move to the centre of C's distribution from the biased choice induced by the stronger interest group (i.e., if $\alpha_E>\alpha_I$, then a^* would initially be downward biased –towards the entrant's preference–, but would then increase –reduce its bias– as the impact of policy on efficiency –θ– increases).

Equilibrium values of supports, policy and utilities						
ω^*	0,00	**4,00**	0,00	6,00	2,00	3,14
λ^*	0,00	**4,00**	0,00	5,50	2,00	4,86
$\omega^* + \lambda^*$	0,00	**8,00**	0,00	11,50	4,00	8,00
$\omega^* - \lambda^*$	0,00	**0,00**	0,00	0,50	0,00	-1,71
a^*	3,00	**3,00**	3,00	3,25	3,00	3,14
U^I	-8,00	**-16,00**	-8,00	-22,69	-12,00	-13,63
U^E	-8,00	**-16,00**	-8,00	-19,75	-12,00	-18,20
U^R	0,00	**8,00**	0,00	11,44	4,00	7,27

So, reading the results progressively from columns 1 to 6 of Table 1, we find:

1. If θ is equal or higher than α_I and α_E, then –as would be the case with a fully honest regulator– supports ω and λ are zero (they cannot be negative), and the access price a^* equals *R*'s belief about *C* (i.e., C^P);

2. If θ is lower than α_I and α_E, an interior solution develops; in the symmetric case (which we use as the benchmark to derive other results), both firms offer positive transfers, the regulator receives a positive rent, but policy is unbiased as marginal transfers are equal to each other;

3. If both firms *I* and *E* could coordinate their transfers, and offer no support (ω=0 and λ=0), then the policy a^* remains the same, but *R*'s rents disappear ($U^R=0$);

4. When α_I increases, both firms increase their marginal supports, and policy a^* is biased towards *I*'s preferred one; yet, only *R* benefits from this situation (both *I* and *E* end up being worse-off);

5. When θ increases, transfers are reduced, policy remains unbiased, *I* and *E*'s utilities go up, and *R*'s utility goes down;

6. When C^P goes up, *I*'s marginal support ω decreases and *E*'s marginal support λ increases, biasing policy towards *E*'s preference relative to the new C^P; *I* is better off, but *E* and *R* are worse off.

We can thus state the following proposition:

Proposition 1: *Without multinationals, the regulatory game departs from the expected first-best policy depending on the relative nonmarket strength of each firm (incumbent and entrant); ex-post, the deviation might also result from a biased signal received by the regulator. The magnitude of the expected departure decreases when the regulatory decision is more significant in affecting the performance of the sector. In general, the access price increases (decreases) as the incumbent (entrant) has more nonmarket influence. Under symmetric conditions, even though the regulated access price coincides with the expected first-best price, both regulated firms spend resources to balance each other's influence, leaving rents to the regulators.*

Presumably, (incumbent) regulated firms will have less incentive to invest in geographical diversification if they can offer significant support to (i.e., exert high pressure on) the regulator and therefore dominate entrants in the political game. In most cases (particularly when the country's regulatory policy embraces competition and entry), however, the situation will be more symmetrical in the nonmarket arena and the regulated firm will have to face entrants that will match their political investment, force them to push their own lobbying investment higher, and will therefore lead to a poor outcome in terms of regulated access price and allowed profits. This approach therefore provides an explanation for why regulated firms, in many cases, cannot effectively rely on nonmarket strategies to overcome the problem they face regarding the regulator (as highlighted with *Limitation 2* in the introduction). This is why (*ceteris paribus*) geographical diversification becomes one of the best options for some regulated firms.

4.4. Internationally diversified regulated firms

Assume first that only one of the two regulated firms (say the incumbent, *I*) is a multinational with business in a country where the cost of access is known to be positively correlated with the one to be determined by the home regulator. Thus, by providing this additional information in an enhanced report, which we have assumed is firmly believed by higher government political officials (*G*), the regulator is faced with a possible penalty imposed by their political superiors if she disregards (or fails to properly justify its demerits) the information supplied by multinationals. To eliminate the expected penalty, the

regulator could simply give full attention to *M*'s report; yet, if she was anticipated to behave in this way, both firms would not offer any supports, bringing to zero the regulator's rents. In general, *R* could depart from *M*'s report by carefully providing arguments that justify differences between the cost of access in the two involved countries, and thus will balance out the higher expected cost suffered by deviating form the policy fully based on *M*'s report with the benefits derived from the supports she is offered, still leading to an interior solution now –*ceteris paribus*– biased vis-à-vis the expected first-best policy. Indeed, both firms anticipate the higher cost suffered by *R* if she deviates from the policy justifiable under *M*'s report, and will thus compute their transfers (supports) appropriately *ex–ante*.

Notice that the expected penalty is presumably higher and increases more rapidly when the two countries involved are "closer" to each other (the costs of the two incumbents are more correlated, and the expectation that *R* should rely on the other country's revealed information is higher), providing in this case higher benefits for being *M*. Indeed, part of the higher credibility attached to *M*'s report is natural due to the fact that a biased report could be exposed by a proper comparison with its report presented in the foreign country, causing eventually an embarrassment or damage to the public image of the multinational firm (notice that such credibility, thus, should be higher when *M* is an incumbent in one country and an entrant in another one since the inconsistency of reports would otherwise be maximum, but the idea is more general than this as there always is some sacrifice in the amount of possible misrepresentation across countries if the involved firm is a multinational acting in both of them).

As before, firms offer supports $s_j(a)$ and supply biased information to the regulator. Given our previous simplifying modelling assumptions (spelled out in Section 3.2), the transfers offered by the firms adjust to the new parameters of *R*'s utility function, i.e., with higher θ ($\hat{\theta} > \theta$, as *R*'s intrinsic disutility regarding poor performance is composed with the higher cost needed to justify her decisions when these move away from the expected policy by G), and increased prior belief C^P (now replaced by $C^{PM}>C^P$). That is, relative to the absence of a multinational firm, the equilibrium corresponds to a situation where both C^P and θ

simultaneously increase. From the previous results in Table 1, and assuming that the multinational is the incumbent (see columns 5 and 6), we can see that:

i) When θ increases, marginal transfers λ^* and ω^* are reduced, policy a^* remains unbiased, *I* and *E*'s utilities go up, and *R*'s utility goes down;

ii) When C^P goes up, *I*'s support ω^* decreases and *E*'s support λ^* increases, biasing policy towards *E*'s preference relative to the new C^P; yet, compared with the benchmark case where $C^P = \frac{(C^I + C^E)}{2}$, *I* is better off, but *E* and *R* are both worse off.

So, combining the two effects, Table 2 below contains some numerical illustrations showing that when *I* is a multinational, so that both C^P and θ increase, then:

a) ω^* goes down, and even though λ^* could go up, still we have that $\omega^*+\lambda^*$ (i.e., the aggregate level of marginal transfers received by *R* in equilibrium) goes always down;

b) a^* goes up (although not as much as C^P),

c) U^I goes always up and U^R goes always down, but U^E can go up or down (it is hurt by the intention to implement $C^M > E(C)$, but it is benefited by the fact that both firms reduce their marginal transfers once the regulator is less responsive to them).

Table 2: Policy and rents with a multinational (I=M; θ and C^P both go up)

	1	2	3	4	5	6
	Benchmark	Example 1	Example 2	Example 3	Example 4	Example 5
Values of parameters						
α_I	**2**	2	2	2	2	2
α_E	**2**	2	2	2	2	2
θ	**1**	1,5	1,2	1,8	1,5	1,5
C^P	**3**	4	4	4	3,5	4,5
C^I	**5**	5	5	5	5	5
C^E	**1**	1	1	1	1	1
Equilibrium values of supports, policy and utilities						
ω^*	**4,00**	0,76	2,19	-0,66	1,38	0,15
λ^*	**4,00**	3,24	4,21	2,26	2,62	3,85
$\omega^* + \lambda^*$	**8,00**	4,00	6,40	1,60	4,00	4,00
$\omega^* - \lambda^*$	**0,00**	-2,47	-2,02	-2,91	-1,24	-3,71
a^*	**3,00**	3,18	3,16	3,19	3,09	3,26
U^I	**-16,00**	-8,31	-11,51	-5,11	-10,20	-6,36
U^E	**-16,00**	-15,37	-17,07	-13,68	-13,73	-16,94
U^R	**8,00**	2,98	5,55	0,42	3,75	1,71

This can be summarized in the following proposition:

> ***Proposition 2:*** *When one of the regulated firms is a multinational, the policy implemented moves towards its report, introducing an ex-ante bias regarding the symmetric case, but reducing the scope of discretion enjoyed by the regulator; also, marginal supports offered by each firm would normally go down, but even if they individually don't, their sum will do so in equilibrium, reducing the utility obtained by the regulator; finally, while the utility of the firm becoming a multinational increases due to the higher credibility and incidence of its report, the utility reached by the opposing firm could either increase or decrease.*

Notice that if the benchmark (without *M*) situation was instead one of asymmetric nonmarket power, the participation of a multinational could reduce or increase the implemented policy bias vis-à-vis the expected first-best depending on who had relatively higher political strength prior to the higher credibility

gained by the diversification. Yet, while this possibility would make the *ex-post* effect on the higher political officials (and final users) undefined, the reduced range of the possible bias benefits *G ex-ante*.

We can assume that the expected penalties imposed on regulators if they disregard (choose to discard without justification) reports by *M* are positively related to the similarities between the two countries with respect to their regulatory environments: if there are closer cultural, geographical and/or institutional links between those countries, the importance given by *G* to such international information becomes very high, whereas such importance (and thus the expected cost faced by *R* for deviating from such report) is relatively minor when the two countries are "distant from each other" (in those same dimensions). Thus, it is straightforward to conclude that the benefits from internationalization (additional to other benefits and costs not examined here) are higher when the two countries where the multinational acts are "close to each other" –i.e., sufficiently similar and connected regarding their regulatory systems. In other words, the credibility gained by being in two countries that are highly communicated and transparent (to each other) is higher than if the multinational acts in markets whose information flows are poor or where the idiosyncratic information in one country is not very relevant to strengthen the credibility of the report about the idiosyncratic parameter in the other country.

Finally, notice that the enhanced credibility coming from *M*'s report is not related to the size of the investment abroad: therefore, while returns for investments abroad that are decided for the traditional reasons presumably depend on the amount invested, the diversifications in close countries directed to gain credibility might be of limited amounts, just enough to become a relevant player capable of collecting the information to be supplied to the home regulator (and indirectly then to higher political officials).

Our database does not allow us to check this point in general, but we find initial support by comparing the cases of British Telecom (BT) and France Telecom (FT). Recall that, according to Figure 2, BT is characterized as a company whose investments abroad might be particularly motivated by the strategic consideration we develop in the paper (i.e., it is weak regarding nonmarket strategies in the UK and thus seeks to improve its home position by investing in neighbouring countries), while FT has the opposite

situation (its home strength seems to be quite high, and it tends to invest more in far countries). Now, considering the evidence in Table 3 below, this characterization gains additional support: considering only investments in close countries, BT's moves are much smaller (as shown by its stake in its close countries ventures and the size of such firms) than those of FT.

Table 3: How much firms really invest in neighbouring countries?

	Average stake in ventures in close countries	Average number of clients in close countries
France Telecom	78%	6,25 million
British Telecom	42%	2.68 million

Source and year?Source: Corporate reports - 2006

JP: Also, profitability in close countries for BT should be less than for FT, right? (we are saying that our model could explain BT's moves, particularly that the benefits reached through internationalization are not to be found only in the profits obtained abroad, and that some hidden benefits occur at home –which means that investments in close countries abroad are not primarily or only guided by its direct profitability, which should then be lower than for those cases –as presumably happens with FT– where diversification and expansion is done for traditional reasons). Can we reflect this in an additional column (showing profit per client obtained by each firm in close countries)? Also, could we add DT's numbers (I bet you don't have it, but DT should be one of our two best applications, jointly with BT, as it appears internationalize to close countries because it is not so powerful at home in Figure 2).

THOSE ARE GOOD SUGGESTIONS. I'LL LOOK INTO THEM, BUT I DON'T HAVE THE DATA AT THE MOMENT.

This leads, then, to the following proposition.

> ***Proposition 3:*** *Leaving other business features aside, the convenience to internationalize increases with the higher credibility gained by becoming a multinational, which depends positively on the institutional closeness of the countries informed by M and on the correlation of the idiosyncratic cost parameters of the two countries. Internationalization for this reason, though, need not entail significant investments.*

Notice that, as a corollary of this proposition, firms that decide on the internationalization path entering markets abroad instead of limiting their activities to their home countries where they are incumbents, find a positive externality at home when the new markets they enter would serve as a benchmark and point of

comparison; as this positive externality is higher in more mature and correlated markets, this would explain business strategies whereby long-time dominant players at home markets in developed countries choose to enter neighbouring and institutionally similar markets despite obtaining a lower rate of return on the accounted investments abroad (than that obtained for instance in less developed and more distant countries, with higher growth potential, where their strategies will not so seriously enhance their credibility at home). In other words, the differential profitability of expansions overseas might be missing the different positive externalities obtained at home from various different destinies abroad, higher from investments in "close countries" that accounting figures would judge as mediocre or simply unprofitable (implicitly assuming that benefits at home in the absence of that particular diversification would have been the same as those obtained after the international expansion).

Finally, we can think of *I* and *E* as two multinational firms, both of them reporting verifiable information that is still biased but less so than when they don't need to care about consistency of reports sent across countries. In this case, *G* could announce an auditing of the decision adopted by *R* regarding how she treated these two reports, weighting them according to the relevance attached to the country about which each *M* is submitting cost information. This situation can be summarized –vis-à-vis the case where no multinational was involved– as one where the parameter θ increases and the support of the cost function shrinks in the two end points (i.e., C^{min} increases and C^{max} decreases). While the increased credibility of a multinational depends on the significance given to its report vis-à-vis the other multinational's report, the two firms can now "commit" to a lower support offered to the regulator due to the fact that the latter becomes less prone to exchange biases in policies for supports that could lead her to a high penalty if *G* finds her to have been captured by one of the two interests offering transfers/supports.

Notice, further, that since the reports sent in by the two firms are closer to each other, and they still contain the true state of nature *C* as an intermediate value, higher government officials can be sure that the expected bias in policy is now lower than without multinational firms. Indeed, *G*'s ability to monitor

R's behaviour is significantly improved by inducing the regulator to justify departures from policy based on reports that are less extreme and that reduce her discretion.

This leads, then, to our last proposition.

> ***Proposition 4:*** *When two competing multinationals are active in one country, the discretion enjoyed by the regulator is reduced, reducing the variability / indeterminacy to which higher political officials (and final users) are exposed. The highest benefit goes to the multinational firm submitting information about a country considered to be more relevant by government officials.*

5. Summary - Discussion

This paper has attempted a step toward a better understanding of why and how regulated firms diversify and, more precisely, why international diversification creates a specific advantage, which has not been identified by previous literature, compared to product diversification. The model developed here formally demonstrates that international diversification might make sense for some regulated firms even if they do not expect direct benefits from the international venture itself, and also allows us to identify the cases in which this occurs. We do not argue that building credibility is the only motive driving international acquisitions of regulated firms, nor that informational lobbying is restricted to such strategy, but instead that this logic might play an important role among other factors and in certain situations.

The following discussion considers some empirical implications, with testable hypothesis, coming out from our model (particularly from Proposition 3).

Types of diversification. Considering variations in the importance given to foreign countries as benchmark or informational source in the home country (previously summarized by the expected penalty faced by each regulator for disregarding *M*'s report), various types of diversification can be expected. If this importance is low, then firms will be less inclined to use international expansion as a way to overcome the credibility problem they face towards their domestic regulator. On the other hand, this becomes an option as soon as the importance given to such benchmark reports becomes high. From this

analysis, the following conceptual framework (Table 4 below) emerges to account for the diversification strategies of regulated firms.

Even if the key contribution of our paper can be seen as being in cell (4) in Table 4, the other cells also stem from our formal framework and can be used to guide future empirical research. Clear predictions follow: *ceteris paribus*, international expansion will be the highest for firms in cell (4), diversification in regulated products will happen mainly for firms in cell (1), and diversification in unrelated products for firms in cell (3).

Table 4. Regulated firms' nonmarket strategies and diversification

	Dominant in domestic nonmarket arena	**Non-dominant in domestic nonmarket arena**
Low importance given to information from foreign country	(1) Least degree of international expansion. Diversification in regulated products	(2) Poor options. International expansion will not help solve domestic problems. The firm rather diversifies in unregulated activities
High importance given to information from foreign country	(3) Indeterminate – Mix of geographical diversification and diversification in regulated products	(4) Mainly international expansion as a way to solve the credibility problem

Variation in target countries. Linked to the importance given to foreign countries as benchmark or informational source in the home country, interesting predictions come up when we consider the type of countries that regulated firms are likely to target. In effect, in our framework, a foreign country can be a good target for a regulated firm for two different reasons: (1) because there is market growth or possibilities to get a monopoly position (traditional reasons), and (2) because it helps to solve the credibility problem (a new reason provided in this paper).

For regulated firms in developed countries, investing in geographically close countries is rarely going to be very attractive for traditional reasons, both because competition is tough and growth perspectives are low there. However, a close developed country can be attractive because it helps solve the credibility

problem. On the other hand, diversification in far countries (especially developing countries) is more attractive for traditional reasons (stronger market growth and therefore higher expected pay-offs). Yet, operating in developing countries will probably not help much to enhance the firm's credibility toward the regulator in its domestic country.

Thus, an important implication follows: commercial benefits of investing in developing countries need to be much higher –even correcting by higher cost of capital or risk– than investments expanding operations to neighbour or developed countries. The theory behind this proposition is that investing in developed countries buys credibility at home, and therefore its true pay-off should include better results at home than the (correct but unobservable) counter-factual, where incumbents would suffer higher entry or more demanding access regulation.

Contributions

This paper makes contributions to three literatures. First, it contributes to the International Business literature by looking at specific benefits of internationalization. Irrespective of whether a firm has a competitive advantage or some non-tradable or hard-to-imitate assets, i.e. the factors that are seen as major ones explaining the success of international strategies (Buckley and Casson, 1976; Dunning, 1979), its internationalization moves might be successful. In the case of regulated firms, we show that this might come from the credibility enhancement that the firm gets in its home market vis-à-vis the regulator. Our argument complements but is also different from the 'liability of foreignness' argument (Zaheer, 1995) or studies which argue that firms invest in neighbouring countries because their knowledge and capabilities are sufficiently close to make the investment attractive (Markusen, 2004). The common point is that, for both reasons, firms will often end up investing in countries that are close to them institutionally. However, our explanation does not build on any assumptions regarding resources and capabilities associated to the target country. On the other hand, we argue that regulated firms with limited control of the regulatory process at home have an additional reason to invest in neighbouring countries (and thus

would tend to do so more often, perhaps in small amounts) to enhance their own credibility vis-à-vis the regulator in their home country.

It also provides a rationale for the puzzle underlined by Holburn (2001), i.e. that regulated firms tend to invest in countries whose regulated sectors have market structures (from monopsony to competition) similar to the market structure of the firm's home country. In our framework, comparisons related to prices and costs are indeed going to be much easier for the regulator when market structures are comparable.

Second, this paper contributes to the literature on nonmarket strategies, and more precisely on how firms can integrate market and nonmarket strategies (Baron, 1995, 2001). The general idea in the existing literature is that nonmarket strategies complement market strategies, by making market entry possible, by overcoming regulatory hurdles in the case of a new technology launch, increasing competitors' costs, etc. (Yoffie and Bergenstein, 1985). In the situation presented here, however, we go one step further in this idea about the integration of market and nonmarket activities. In effect, we present a situation here in which the regulated firm attempts in its home market to support its market position through political support but, because this support is not so effective, the firm develops a market strategy (internationalization) that will strengthen its nonmarket activities (by gaining credibility or incidence at home). In the end, a market strategy is developed to support a nonmarket one, a situation that has not been highlighted in the literature yet.

Regarding nonmarket strategies, our paper also contributes to the literature on the combination of various nonmarket activities (Schuler, Rehbein and Cramer, 2002), by showing how traditional political support (votes, campaign contributions) and informational lobbying can be combined.

Third, this paper can also provide insights regarding public policy. The economic theory of regulation generally considers a theoretical set-up with one regulator and one (or several) regulated firms in one country-market. The result is that the information asymmetry makes it difficult for the regulator to efficiently regulate this type of situation. What happens then when regulated firms are multinationals and

operate in several markets? Our model suggests that, in this case, the regulator has less discretion and thus her political superiors (who represent final users) might find a way better control the regulatory authority delegated, avoiding it to be too biased and dependent of the relative nonmarket efforts regarding lobbying and supports offered to those regulators.

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