

THE POLITICAL ECONOMY OF INTERNATIONAL REGULATORY CONVERGENCE IN PUBLIC UTILITIES

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August 2007

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ABSTRACT

Whether or not countries' laws, regulations and norms converge in the context of globalization, and whether this is a good thing or not, has been the purpose of a vast literature. However, little of it deals with the specific case of public utilities regulation. This paper proposes a simple model that captures public utilities' specific elements (independent authority; lobbying competition) and studies (1) whether regulatory convergence is likely to occur, and (2) the results that might be expected for countries that have imitated others (followers) and those which have not. There, we build on a core proposition of the New Institutional Economics according to which similar regulations will generate very different outcomes depending on their fit with the underlying domestic institutions. We illustrate our key results by looking at the diffusion of local loop unbundling regulation.

JEL: L5; K2; F42

Introduction

Over the last twenty five years, globalization has been accompanied –and probably fostered– by what many see as a strong convergence in regulatory policies, especially regarding the reform of public utility sectors¹ such as telecommunications, electricity or water (Eising, 2002; Henisz, Zelner and Guillen, 2005; Genoud and Finger, 2002).² A widespread view is that several factors such as competition, learning and capital mobility operate to produce convergence across countries regarding the way these sectors –as well as many others– are organized (Berger and Dore, 1996). Over time, and once specific historical legacies tend to disappear, common economic and public policy structures emerge generating regulatory convergence.

Critical in this view is the idea that some best practices regarding the way public utilities should be regulated tend to emerge through the experience of certain countries which are then imitated by others. Regulatory convergence occurs as a consequence of this virtuous process, not only regarding the regulations that are adopted but also regarding common results of these regulations: ‘imitators’ are assumed to catch up with ‘leaders’, i.e., the countries that have been the first to develop and implement the best practices.

In the context of telecommunications, policies that have been considered as best practices were, in the beginning, general guidelines such as privatization of state enterprises, creation of an independent regulatory body, and competitive entry into long distance, local and international call markets. More specific ideas have emerged more recently, especially in an attempt to fully benefit from the possibilities generated by advances in information technologies. Local loop unbundling (LLU) is an example of these policies, developed not only to fuel competition but also, in the longer run, to facilitate/accelerate the development of broadband Internet access to a large portion of countries’ population.

As illustrated by Figure 1 below, LLU can certainly be seen as an example of a regulatory policy that has diffused progressively through countries, in a similar process of an “S curve” that often characterizes the diffusion of successful technologies. Following

¹ Public utilities are a key part of the reform package that is now often referred as the “Washington consensus”.

² A very large literature has looked at many other sectors and policies, including the financial sector (Frieden, 1991), environmental policies (Frank, Hironaka and Schofer, 2000), corporate governance (Kester, 1996; Kannah, Kogan and Palepu, 2006), social security systems (Collier and Messick, 1975), the retail industry (Upham, 1996), antitrust policies (Dumez and Jeunemaitre, 1996), or national innovation systems (Holzinger and Knill, 2005; Lundvall and Tomlinson, 2000). These studies display a large variation in terms of how much convergence actually occurs across these sectors.

the United States' leadership (the US first adopted LLU in 1996), countries have step by step followed and the idea that LLU is a necessary condition for regulatory success is now well-established everywhere. Even in countries that have not implemented it yet (for instance in most countries of Asia or Latin America), LLU is being considered and discussed among politicians, regulators, incumbents and new entrants.

Insert Figure 1

However, the idea that LLU is an example of a best practice that has diffused through imitation and that has generated relatively uniform types of performance is not really supported by further investigation. First, in many countries, also, LLU has been discussed as a potential regulation but has been later dismissed. This is certainly the case in Latin America, where even in a country like Chile LLU has been rejected or at least postponed, but also in countries like Switzerland or New Zealand (Paltridge, 2001). Similarly, even in countries where LLU regulation has been adopted, it is being done in many different ways. Umino (2004) provides a detailed discussion of the different forms of LLU which appeared in the different countries including full LLU, line sharing, bitstream access or sub-loop unbundling, as well as the various collocation options which have also emerged (caged collocation, co-mingling, remote collocation, virtual collocation, etc.). The regulatory obligations imposed to incumbents in the context of LLU also vary significantly across countries: a country like the UK, for instance, has set clear service commitments that the incumbent has to fulfill vis-à-vis new entrants, as well as fines if these are not met; in Germany or Austria, on the other hand, unbundling decisions are being considered only when new entrants request LLU; on the other hand, in a country like Australia, a process of self-regulation by the industry itself is being put in place. These observations suggest that, if some convergence has appeared, it nevertheless remains quite far from pure imitation and certainly involves a significant amount of experimentation or exploration by most countries.

This heterogeneity in the adoption of LLU is true also for the result/output of this type of regulation. As illustrated by Figure 2 below, the level of broadband diffusion remains quite different, even among OECD countries; other measures of the results of LLU (for instance speed of access) reveal similar heterogeneity. Finally, empirical studies that have

tried to identify and isolate the impact of LLU on broadband development have been inconclusive at best (Hausman and Sidak, 2005; Wallsten, 2006).

Insert Figure 2

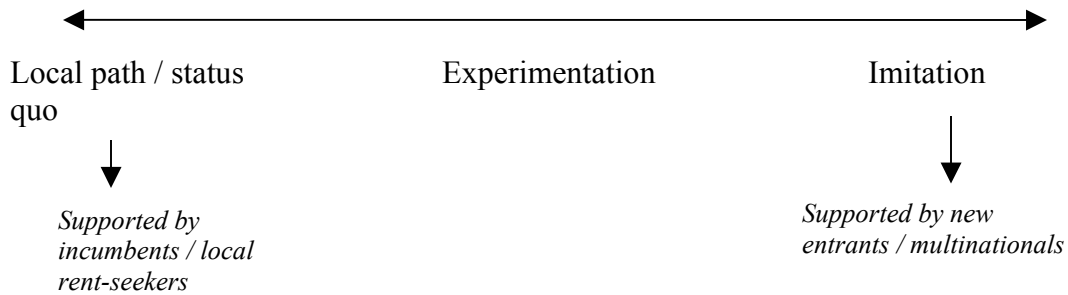
These observations are not specific to LLU but seem to apply to many other regulatory policies implemented to reform public utilities, in which heterogeneity in forms and results tend to persist.

This paper sets out to explain some aspect of this remaining heterogeneity and, more precisely, addresses the following two questions:

1. What explains this partial regulatory convergence, with some dose of imitation but also a fair amount of remaining heterogeneity among countries?
2. What explains that certain regulatory policies generate strong positive results in certain places, but fail to do so in others?

As explained earlier, the canonical model of regulatory convergence is based purely on the imitation and international diffusion of best practices. However, two important aspects related to the political economy of regulatory change are probably missing in this model. The first is interest group competition. Public utilities are characterized by heavy lobbying activities both by incumbents (including its employees, who benefit from rents if the regulatory status quo is maintained) and by new entrants (especially multinational groups trying to benefit from the assets and experience accumulated elsewhere, which tend to push regulation towards the imitation of practices that have been successful in other countries). When these (often) opposed influences on the policy-making are taken into account, regulations tend to display features that are neither full imitation of best practices nor full rejection of them, but which rather experiment by combining some elements of each. Experimentation of different forms of regulations can therefore emerge as a form of compromise between the preferred points of various interests that are parts of the policy-making process. Instead of considering discrete outcomes such as pure “local path” and pure “imitation”, we will consider the policies as a continuum as illustrated by Figure 3 below.

Figure 3: The policy continuum



The second political economy feature that we add to our study is the importance of “institutional fit”. As argued by North (1990) and proponents of the New Institutional Economics, certain policies developed successfully in certain countries might turn out to be failures in other countries because they don’t fit with these countries underlying institutional conditions. Institutional conditions and specific arrangements in countries determine key aspects of how individuals behave with respect to each other (degree of opportunism, self-interest, etc.), and therefore significantly impact transaction costs and the expected outcomes of regulatory policies (Levy and Spiller, 1994). As argued by Mukand and Rodrik (2005), if a country imitates a policy that has been successfully implemented in a very institutionally distant country, it is unlikely that this will improve the local situations. Regulatory imitation and convergence might not be welfare improving, something that has to be taken into account in the decision by the regulatory authority. In our model, the regulatory authority will thus be influenced both by the lobbying of incumbents and new entrants, but also by social welfare, i.e. through some reluctance to pick a policy that is too far from the country’s underlying institutional conditions.

In what follows, we develop a simple model to capture these dimensions, derive some empirical predictions from it, and then return to the case of local loop unbundling to illustrate and discuss these predictions.

Regulatory decisions, lobbying and institutional fit: a model

In our model, two interests (multinational interests or new entrants on one side, and local interests such as incumbent operators on the other side) attempt to influence a single

decision-maker, the regulatory authority in charge of regulating the utility sector. These two interests behave as principals that seek to contract with the regulatory authority for the policy; the regulatory authority is thus a common agent of the two interests, as in Bernheim and Whinston (1986) or Grossman and Helpman (1994).

Competing interest groups

The regulatory authority has to choose a policy $x \in \mathfrak{R}$. Two types of interest groups try to influence the regulatory authority's decision: multinational actors, m , and local actors, l . Multinational actors have a preference for pushing the policy decision towards the imitation of policies developed in other parts of the world where these firms have been successful, whereas local actors have a preference for keeping a regulatory status quo (the local path) from which they can obtain higher rents. For both types of actors, policy preferences are represented by a quadratic utility function $u_i(x) = -\alpha_i(x - z_i)^2$, with $\alpha_i > 0$ and $i = m, l$. These actors have respective ideal points $z_m > 0$ and $z_l < 0$, and seek to move the policy in their preferred direction.

The two groups therefore compete in the political marketplace to influence the policy decision. This may take several forms such as providing politically valuable resources to the authority, for instance in terms of credibility, information or financial resources. We voluntarily adopt a very loose/large definition of what constitutes supports to the regulatory authority here. For instance, multinationals pushing for a standardization of the regulatory procedures in public utility sectors can provide very valuable resources such as helping to get financial support from the World Bank or the IMF, something that has been a key factor of public utility changes in Latin American and many other countries in the 1980-1990s (Henisz, Zelner and Guilen, 2005). On the other hand, local interests can provide the opposite support (in favor of the status quo) by leveraging local public opinion against the imitation of regulatory procedures developed elsewhere. Similarly, prospective entrants tend to be favored with policies that tend to open formerly exclusive sectors granted to historic service providers, either public or private, shaping the position and rent-seeking activities of different player in various countries. Notice also that entrants could have a much more relevant role in those industries which technically are more fitted for the development of competitions, as it happens in particular with the telecom sector, and to a lesser degree with energy (generation of electricity, production of natural gas, etc.) and international transportation.

Formally, the support is given by the schedule $s_i(x)$, $i = m, l$, with policy x chosen by the regulatory authority.

The utility function of interest i is given by: $U_i = u_i(x) - s_i(x)$ with $i = m, l$.

The regulatory authority

Similar to Mukand and Rodrik (2005), we start with a sector with the underlying state of the world z , and in which a regulatory authority implements a policy x , therefore reaching a performance given by

$$p_j(x) = -\theta(x - z)^2$$

We assume that $z \in [z_m, z_l]$, i.e. that the country's underlying institutional conditions call for a policy that is somewhere between the preferred points of the competing interest groups.

With such a definition of the regulator's preferences, the closer or the more appropriate the policy to the underlying state of the world, the higher the performance of the sector. For the generality of the model, we do not specify here the nature of this performance, which could be several things such as the level of investment in the network, the network coverage over the country, the quality of the service provided to the customers or the overall cost of services provided.

This performance of the sector is assumed to be a component of the regulatory authority's objective function, alongside the two interests' support schedules. In other words, the regulatory authority will balance the support it can get from the interests (its own private interest) with some willingness for the public utility sector to achieve its best possible performance (the public interest). We believe that this combination of private and public objectives provides a fairly general and relatively accurate depiction of the tensions facing many regulatory agencies and bureaucracies (see Mueller, 2003 for a discussion).

The regulatory authority's preferred policy is thus assumed to be the one that maximizes the performance of the sector $p_j(x)$, i.e. the one that reduces the distance between the policy chosen x and the state of the world z . The regulatory authority is also assumed to have a differentiable, quasilinear utility function given by

$$U_R(x) = p_j(x) + s_m(x) + s_l(x)$$

Sequence of play

Since both interests seek to influence regulation neither can be expected to move before the other. The interests are assumed to choose their support schedules simultaneously. The game sequence is thus that the interests simultaneously offer support schedules and then the regulatory authority chooses the policy x .

General analysis of the game

The common agency equilibrium $(s_m^*(x), s_l^*(x), x^*)$ is defined as

$$x^* \in \arg_x \max p_j(x) + s_m^*(x) + s_l^*(x)$$

with

$$s_m^*(x) \in \arg_{s_m(\cdot)} \max -\alpha_m [x^*(s_m(\cdot), s_l^*(\cdot)) - z_m]^2 - s_m(x^*(s_m(\cdot), s_l^*(\cdot)))$$

and

$$s_l^*(x) \in \arg_{s_l(\cdot)} \max -\alpha_l [x^*(s_m^*(\cdot), s_l(\cdot)) - z_l]^2 - s_l(x^*(s_m^*(\cdot), s_l(\cdot)))$$

We assume that the two principals decide on their support schedules first and then the agent reacts to them. 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.

Providing some second order conditions hold, an interior solution for the two support schedules falls short from a coordinated solution between the two principals, whereby they agree on the overall incentive to be provided to the agent.

Thus, assuming that the support schedules are differentiable, the following three first-order conditions hold:

$$R's: s_m'(x^*) + s_l'(x^*) + p_j'(x^*) = 0, \text{ and}$$

$$u'_i(x^*) - s'_i(x^*) = 0, \text{ with } i = m, l.$$

So, replacing the last two equations in the first one, we have

$$u'_m(x^*) + u'_l(x^*) + p'_j(x^*) = 0$$

Notice that this implies that when choosing the policy x the regulatory authority is in fact maximizing aggregate preferences \hat{U}_R given by

$$\hat{U}_R = u_m(x) + u_l(x) + p_j(x).$$

As induced by the support provided by the interests, the regulatory authority chooses a policy that maximizes the sum of the performance of the sector and the utilities of the interests. The equilibrium policy is therefore responsive to the preferences of both multinationals and local players, as well as the regulatory authority's preference for maximizing the performance of the public utility sector.

However, since the two principals cannot coordinate the level of their support schedules (so that they could minimize $s_m(\cdot) + s_l(\cdot)$ for a given net support $s'_m(\cdot) + s'_l(\cdot)$), part of their utilities are captured as rents by the agent.

Now, replacing the specific utility and performance functions in $u'_m(x^*) + u'_l(x^*) + p'_j(x^*) = 0$, we can derive the following equilibrium.

Equilibrium

Regarding the policy adopted, the equilibrium solution is:

$$x^* = \frac{\alpha_m z_m + \alpha_l z_l + \theta z}{\alpha_m + \alpha_l + \theta},$$

We can also derive the positions adopted by the two types of interest. The multinational/new entrants, hoping to be the only interest considered in the regulatory process (i.e., $\alpha_l = 0$), expect

$$x_m = \frac{\alpha_m z_m + \theta z}{\alpha_m + \theta},$$

The incumbents, under the same ambition (i.e., hoping that $\alpha_m = 0$), expect

$$x_l = \frac{\alpha_l z_l + \theta z}{\alpha_l + \theta}.$$

Note that we could also calculate the support provided by each interest but, since it is not critical for our theoretical discussion, we do not calculate it here.

In order to make it easier to explore the properties of this equilibrium and what it means for our analysis of convergence, consider a more specific numerical example with parameters taking the following values: $\alpha_m = \alpha_l = \theta = 1, z = 0, z_m = \frac{1}{2}, z_l = -\frac{1}{4}$.

In that case, the equilibrium is:

$$x^* = \frac{1}{12}, x_m = \frac{1}{4} \text{ and } x_l = -\frac{1}{8}.$$

One can see from this solution that none of the interest gets exactly what it wants. But as they know that they would be worse off if they didn't lobby (in which case the solution would be either x_m or x_l), they each lobby to be a counterpoint to the other. This does not mean, however, that the regulatory policy adopted affects the two interests equally. In fact, the multinationals/new entrants find themselves advantaged by the regulatory outcome: they have more extreme preferences (when one considers their respective ideal points, $|z_m| > |z_l|$), are ready to spend more to pull the policy towards their preferred point (we do not calculate how much each interest spends here, but this can be easily done and would support this point), and therefore end up with an equilibrium for the game to their advantage, i.e. towards some forms of imitation and regulatory convergence that are closer to the policies they advocated for than to those claimed by the incumbents.

On the other hand, if the situation was reversed and $|z_m| < |z_l|$, then the equilibrium solution would tend to a more local solution as favored by the incumbents/local interests.

The general prediction that comes out of this analysis is that imitation and regulatory convergence tend to become stronger in cases where (1) multinationals/new entrants have a stronger preference and allocate more efforts towards trying to pull the policy in their favor, and in cases where (2) incumbents or local interests have relatively less extreme preferences (*Prediction 1*).

Also, when the underlying institutional environment allows the enforcement of policies favoring competition and entry (i.e., z is closer to z_m), then the expected policy choice is closer to imitation (*Prediction 2*).

A more general prediction for the study of regulatory convergence is that, as soon as the policy-making process portrays both incumbents and new entrants/multinationals, the policy outcome will be characterized by some form of experimentation (rather than a pure local solution or pure imitation). Regarding policy diffusion, one should observe direct imitation of regulations developed elsewhere (“off the shelf”) only in some very rare occasions. In most cases, even if multinational firms are influential, local aspects will be included and some local experimentation will follow (*Prediction 3*).

Another aspect of the equilibrium solution that we haven’t discussed so far relates to the weight of the different actors in the policy-making process (α_m and α_l). Irrespective of the interests’ preferred positions, these will have a key impact in the game.³ They can also change over time, as might be the case, for instance, if public opinion starts being widely against the imitation of best practices developed elsewhere. In that case, the convergence process might even be stopped or reversed.

Prediction 4: A breach in the convergence process has to be characterized by a situation where strong new entrants pushed towards imitation in an early period, while stronger local interests (potentially driven by a change in public opinion) regain influence and pull policy more towards a local solution.

Our equilibrium solution has also important implications in terms of the performance of the sector.

The question of the performance of regulatory reforms

The following graph summarizes the implications of our framework for the question of regulatory reforms. Remember that policy choices here are viewed as a continuum between the pure imitation of foreign policies (as favored by entrants and multinational actors) and a pure local solution close to the status quo (favored by incumbents and local rent-seekers). The other important dimension is the institutional distance between the country looked at and the countries that have developed the most successful regulatory

³ As an illustration, if α_m increases from 1 to 2 (and the rest of the variables remain with the same values as previously illustrated in the text), x^* increases from 1/12 to 1/4 (much closer to 1/2 - z_m -, the favorite policy for multinationals and new entrants).

policies (i.e., the best practices that multinational actors would like to see implemented everywhere).

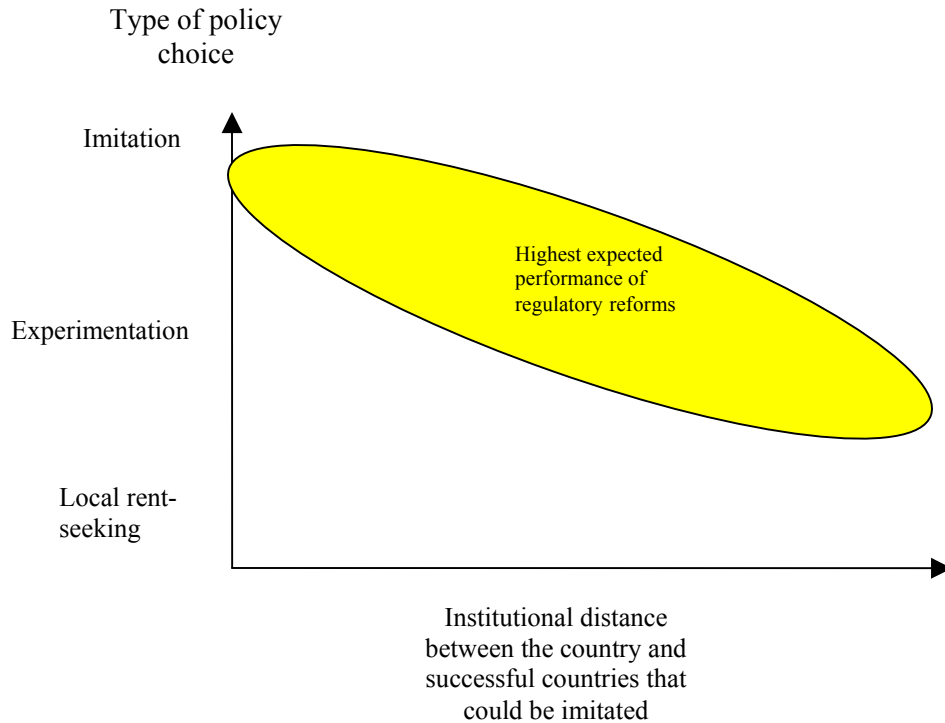
For when institutional distance is narrow, the best performance will come from countries that have imitated their leading peers, i.e. from countries in which entrants and multinational actors have been strong enough relative to incumbents and local actors to pull regulatory policies towards the imitation of “best practices”(as in Proposition 1) or for countries with an institutional environment naturally leading to entry and competition (as in *Proposition 2*).

When institutional distance increases, imitation becomes less and less efficient because the “off-the shelf” policies’ fit with the local institutional environment tends to worsen. Therefore, for countries that are far from leaders (institutionally), the most successful policies should be the ones that involve a higher level of experimentation and the discovery of specific institutional arrangements and regulatory policies with a better fit to the underlying local formal and informal institutions.

As per our model of the previous section, they take place in countries with more balance between multinational actors and local interests. Each type of interest tends to pull policy in its preferred direction and the regulatory authority ends up being better-off by picking the in-between option involving a significant amount of experimentation.

The previous paragraph might not be stressing enough that, in our model, experimentation also takes place when it should take place (indeed, if z is precisely half-way between z_m and z_l , and $\alpha_m = \alpha_l$, then $x^*=z$). Thus, we could have experimentation indicating very different things: middle-of the way reforms that are inconsistent and only respond to pressure of interested principals (performance in those will be poor), and reforms that strike a good balance between instrumental best-practice and domestic institutions (producing some kind of convergence at the “principles level”, i.e., regardless of instrumental second-order details).

As the policy choice moves towards local rent-seeking and status quo (and real experimentation tends to disappear), financial resources tend to be siphoned by incumbents and local interests leading to poor performance. This is the case when local interests tend to dominate the political game with little lobbying counter-actions by new entrants and international actors.



To summarize, this discussion provides the following predictions:

Prediction 5: For countries that are far from the leaders, those that will be the most successful with their reforms are among the ones with a good mix of competition between international interests and local interests (they end up experimenting policies that combine imitation and local aspects, with a better chance to make regulations fit with the underlying institutional environment).

Note that, among these countries, some will probably fail. However, we should expect the successful ones to be among those experimenting.

Prediction 6: For countries that are institutionally close to a leader, a small dose of local interest and powerful international interests will generate more favorable outcomes, as it will generate a high level of imitation of existing policies that have proven to be efficient.

Prediction 7: Countries that are expected to do poorly are countries with strong powerful international interests but institutionally far from the leader, AND countries with powerful local interests but who could derive high benefits from imitation.

Some supporting evidence: The case of local loop unbundling (LLU)

Local loop unbundling is interesting for studying our predictions empirically in the sense that it has been widely presented as the best practice that regulators around the world show follow to promote competition in telecommunication services. The underlying theory presented to support that view is that LLU makes the subscriber line available to competitors, and therefore enables the development of complementary network devices and services among a large number of competing firms (for instance, fast internet access and IP telephony). Increased competition should then lead to lower access prices, better networks and higher broadband penetration. On the other hand, the common view is that, without LLU, these desired effects will not materialize.

In spite of this, as argued earlier, there are clear variations about whether or not LLU has been adopted and how it has been implemented. Similarly, in terms of performance, LLU regulation is perceived as a success in some countries and a failure in many others, whereas some other countries (like Switzerland or New Zealand) are argued to be happy they haven't implemented it. The purpose of this section is to show that some of these observations can be explained by our model.

For clarity of exposition, LLU needs to be differentiated from interconnection. With LLU, the new entrant connects its equipment between the user and the local switch, which means that the entrant has direct access to the user. With interconnection, on the other hand, the entrant gets connected somewhere beyond the local switch and effectively buys access to the user from the incumbent. Interconnection thus gives a strong competitive advantage to the incumbent, who can use it to drive up the entrant's costs (especially in a system where the incumbent is really the only one to know what the real costs of the lines are, making it very difficult to regulate this cost externally). For this reason, LLU has been often considered as best-practice regulation, which should be implemented by most countries around the world, especially in order to promote the development of Internet usage.

Local loop unbundling and institutional fit: Why LLU might not work everywhere

In this section, we explain why there are reasons to expect that LLU will work well in certain places (with certain institutional conditions) and not as well as others (especially countries that are institutionally far from these leaders).

Since our underlying assumption regarding the role of institutions is based on insights from the New Institutional Economics (NIE), it is natural to build on NIE's core concepts, especially transaction costs related to situations where contracting is made difficult by attributes such as uncertainty, opportunism and asset specificity (Williamson, 1985). Under certain institutional conditions, LLU might in fact create infrastructure investment disincentives as well as potential inefficient safeguard against transaction hazards (see Spiller and Ulset (2003) for a discussion). Transaction cost problems, in the context of LLU, come from the fact that incumbents and new entrants face different sets of incentives, which can make trade and contracts between them difficult to achieve. In theory, LLU provides benefits both for incumbents and new entrants. Incumbents get increased local traffic, while new entrants can provide complementary facilities and services. Very often, however, incumbents are worried that unbundled prices (determined by a regulatory authority) will drive away profits from the increased local traffic.

A first problem there is related to the fact that the new entrants will then try to snatch subscribers away from incumbents, in an industry which in fact requires some cooperation to make sure that communications flow seamlessly through the network.

Another key problem is related to the potential costs for the new entrants, knowing that these costs will generally have to be set by the regulator. In cases where the incumbents are strong enough to efficiently lobby for higher costs, investment incentives for new entrants disappear. In certain countries, these transaction problems might be very high, whereas in others they might be much lower because institutional rules and mechanisms will constrain the ability of incumbent to strongly influence or even bypass the regulator's decisions. Imitation of LLU regulation might therefore succeed in certain countries and fail in others based on the underlying institutional environment.⁴

Exploring our predictions: how to measure countries' regulatory convergence in the context of LLU?

⁴ The previous discussion bypasses the fact that LLU implementation could fail not just due to institutional weaknesses, but also just because some other regulatory decision was inconsistent with the promotion of new entry in the first place (say, too demanding minimum investment requirements and coverage obligations). In that regard, besides institutional quality, the "consistency" of various instrumental elements of design is key for a good performance emerging from reforms (including LLU). Sure enough, under good institutional environments, one should expect a higher probability of consistency of instrumental policies, suggesting that such governance quality might be a better explanatory variable than instrumental choices such as LLU. The preliminary analysis presented later leaves this as an open question for further research.

To explore our predictions, we first need a measure of how much countries have converged regarding LLU. This is not an easy task since, as suggested earlier, countries have in fact implemented different kinds of unbundling, making cross-countries comparisons difficult. To overcome this, we consider a relatively simple but general data: the ratio of unbundled lines, i.e. the number of unbundled lines divided by total lines in the country.

Since we wish to capture convergence, we consider as our key measure the difference between the ratio of unbundled lines in each country and the ratio of unbundled lines for the leader, i.e. here the United States. The lower this figure, the stronger the country's move towards imitation and regulatory convergence. Conversely, the higher this figure, the more the country remains close to a local path. Countries in-between incorporate some aspects of both and are therefore in the experimentation/discovery mode.

Figure 4 summarizes these data for 2003.

Insert Figure 4 about here

We can now use this measure to explore our predictions.

Interest group competition and LLU adoption: some primary evidence

In order to see whether insights from our model match with LLU, we need to consider two things: (1) whether the preference/influence of incumbents matter (the assumption is that they are trying to promote a purely local path), and (2) whether the preference/influence of new entrants matter in the game. To capture these two dimensions, we consider the following measure: market shares of incumbents in the wireless phone market (an indicator of how strong incumbents have been at protecting their domestic market).⁵

⁵ True enough, this is just one of various possible indicators. Another one could be the market share of incumbents in the long distance market. Furthermore, once a major change in the identity of players occurs (through privatization, for instance), computing these indicators might be tricky, and the strength of local interests might also be better represented in other ways. We leave this issue for further research in the future.

To explore our first two predictions, we plot this measure together with our measure of convergence (distance with the leader regarding LLU). Figure 5 seems to support the influence of incumbents: the general trend is upward-sloping, meaning that the lowest level of LLU imitation is found in countries where incumbents have been able to keep the highest market shares.

Notice, furthermore, that another preliminary test of our prediction 2 would be to check if LLU adoption (as in Figure 4) is correlated with institutional quality (as reflected in the governance indicators developed by the World Bank (2006)).⁶ Figure 6 presents the plot, indicating that there is such type of relationship: countries with better governance indicators tend to adopt LLU.

Insert Figure 6

Another related and interesting question is why certain countries have decided to stay away from LLU. Below we briefly look at the case study of Colombia (which bears some similarities with other Latin American countries) to explore whether our model retains explanatory power to explain this type of situation.

Why not move towards convergence? The example of Colombia

As with most other countries in Latin America, Colombia has chosen not to unbundle the local loop. There has been in fact only a timid incentive to do so, provided since 2005 by article 5.2.5 in CRT Resolution 1250, by which those local operators who can prove to have sufficiently disaggregated their local loop or have received sufficient resale in their service areas, could ask the regulator to gain tariff flexibility vis-à-vis their final users,

⁶ The World Bank has constructed a set of six governance indicators, namely voice and accountability, political stability, government effectiveness, regulatory quality, rule of law, and control of corruption. Since regulatory quality might be representing instrumental choices (such as LLU), we construct an aggregate governance indicator which leaves this variable outside (the values for each country, however, don't change significantly anyway). Each of the six indicators constructed by the World Bank combines various primary sources (polls and surveys), providing some robustness to these figures that other primary studies lack. In any case, as usual, such "soft" and subjective indicators should be interpreted with caution (as should other apparently "harder" data as well).

but such flexibility is not guaranteed (nor has it been petitioned nor granted so far).⁷ Currently, though, and due to the adaptations in its regulatory policy according to the Free Trade Agreement (FTA, or TLC by its Spanish acronyms) that is being negotiated with the US, certain reforms are being discussed. LLU is one of them (besides liberalization of long distance services -to be licensed under a common permit with other services, whereas now only three operators are allowed to compete-, and mandatory wholesale broadband access imposed on dominant firms).

As predicted by our model, this “local-path” followed in Colombia is at least partly related to the strength of incumbents: historically, the largest operator has been Telecom, privatized to Telefónica of Spain only last year, but other public regional operators as the municipalities of Medellín and Bogotá have been also quite strong and influential in the domestic political process. The influence of these incumbents –who have absorbed other minor pre-existing players– has also been strengthened by workers’ unions shutting down telecom services in the early 1990s. On the other hand, the influence of international entrants, even major ones such as Telefónica and Telmex (replacing unsuccessful initial North American investors), has remained relatively small until recently in comparison. As suggested in our model, a reform involving a significant level of LLU had little chance to take place in this context.

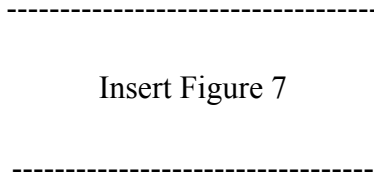
To be sure, and as argued by Proposition 2 in our model, the institutional environment was also not clearly conducive to entry and competition, making it less likely to push toward convergence regarding LLU. The institutional capabilities of administrating the conflicts naturally emerging between firms regarding LLU requirements have been quite limited so far: the regulatory agency (the Telecom Regulatory Commission, CRT) does not have control powers and has very minor sanctioning functions (reserved mostly for the Superintendence of Domestic Public Services, SSPD). Its decisions –as those of other

⁷ Before this mild attempt, Resolution 087 in 1997 also stated that “A dominant operator might be obliged to offer disaggregated network or service elements as chosen by the CRT, receiving a compensation from the requesting operator. The CRT will carry on a study about the services requiring network elements. If it finds it necessary, the CRT will ask the operators requesting LLU to present a study determining a) whether there is a potential market for the services to be offered, and b) whether the local incumbent operator is capable of providing those services at reasonable prices”. This, obviously, imposes a myriad of bureaucratic complications which have made this formal provision absolutely ineffective.

sector regulators in Colombia– are constantly challenged in the judicial system. The antitrust functions, resting within the SSPD, are also not enforced properly given the multiple functions under its responsibility. This has created so far a significant distance between regulatory convergence regarding LLU (z_m in our model) and the underlying institutional environment in the country (z).

Institutional distance and performance: some country studies

The first thing that can be done is to explore whether the “traditional” explanation for regulatory convergence –according to which regulatory convergence flows naturally from best practices being learnt and exported everywhere– is supported by the data. If this is the case, our model would be of little empirical relevance, at least in the case of LLU. To get a sense for this, we plot in Figure 7 our measure of convergence (distance with the leader) with broadband penetration.



In that regard, while the data show a positive correlation between “imitation” (small distance with the leader regarding LLU) and “performance” (broadband penetration), such correspondence is very weak (the correlation coefficient is -0,4, computing distance instead of proximity to the leader, as done in Figure 7). Thus, as suggested by our earlier theoretical discussion, Figure 7 bears little support for the idea that countries that have imitated LLU are the most successful ones. No obvious pattern seems to emerge there.

Indeed, controlling for the number of fixed lines telephone penetration and per capita GDP, the performance measured by broadband penetration turns out to be absolutely independent of LLU and only correlated with the aggregate governance indicator for each country, suggesting that the instrumental features or details of regulation are of less importance than the overall quality of basic regulatory designs emerging from better general governance standards. More specifically, the results obtained from a simple linear regression based on the 31 observations described in the annex at the end of the paper is the following.

$$\begin{array}{l}
 \text{BP} = -0,155 - 0,041 \text{ LLU} + 0,062 \text{ GOV} - 0,000 \text{ GDPpc} + 0,002 \text{ ML} \\
 \text{(error)} \quad (0,10) \quad (0,798) \quad (0,03) \quad (0,00) \quad (0,001) \\
 \text{(t-statistic)} \quad (1,53) \quad (0,05) \quad \mathbf{(2,04)} \quad (0,39) \quad (1,46) \\
 \text{(adjusted) } R^2: 0,57,
 \end{array}$$

where BP denotes Broadband penetration, LLU denotes the difference of LLU with respect of the US, GOV reflects the aggregate governance indicator (average 1996-2006, as described in the annex), GDPpc denotes per capita GDP (in USD), and ML is the number of main lines per 100 inhabitants.⁸

This primary analysis is thus consistent with the idea that institutional fit and distance play an important role in explaining the outcome associated with regulatory convergence.

To explore with more qualitative details this question of the regulatory outcomes associated with LLU convergence, we now look at a few case studies.

Austria: How an early imitator gets disappointing results because of a lack of institutional fit

Austria was one of the first countries to imitate the LLU experience coming from North America. It allowed LLU in August 1997, i.e. in the Telecommunication Act that really started the liberalization process for telecoms in this country.

However, this did not lead to quick advances in broadband development and in competition because of long discussions between the incumbent, Telekom Austria, and potential new entrants, and a lack of control of the regulatory authority over the process. The regulatory authority, newly created, was not ready or in a position to impose LLU to the incumbent, therefore making the LLU ruling relatively inefficient.

It is only in 1999 that the regulator clarified the rules under which firms had to operate regarding LLU. Many different agreements needed to be found between TA and the new entrants in telecom but also Internet Service Providers. This happened slowly in 2000, 2001 and 2002. As predicted by our model, this example suggests that imitating a regulation that seems to have been successful in another country which is institutionally distant might not lead to very positive results.

⁸ GDPpc and GOV are highly correlated (0,83), explaining why the former plays no role as an explanatory variable. If GDPpc is eliminated, the overall results hold (improving the significance of governance as the only relevant –significant at 5%– explanatory variable). Still, we report this crude estimation due to its purely motivational purpose.

Finland: a country that went more for experimentation than imitation of LLU, but with good results because of an accommodating institutional structure

Finland is a clear example of a country that has engaged in unbundling, but through a process and with results that are radically different than any other OECD country. In other words, Finland's experience is as much tainted by experimentation than it is by pure imitation of the LLU as implemented in the US or other European countries. Much of the reason for this difference comes from the fact that the historical structure of Finnish telecommunications made it more prone to competition as the sector was not a monopoly but already counted several operators. When deregulation occurred, competition flowed naturally among these operators. LLU was mandated in 1999 and, more interestingly, granted to anybody, not only to the "official" competitors who already had a license to operate.

Also, different from most other countries, telecom operators have negotiated agreements among themselves without extensive review or involvement by the regulator. In spite of some complaints from new entrants, the institutional system accommodated these differences and worked quite well. Finland is one of the countries with the highest relative number of unbundled lines, as well as a high broadband penetration. This example supports the idea that, in many cases, countries that experience and adapt a regulation to the local environment might be more successful than just pure imitation.

Conclusion

So, should we expect to see regulatory convergence for public utilities and, if there is some convergence, should we expect it to be effective? This paper suggests that, on the one hand, once important political economy factors are taken into account, one should expect some convergence, but far from total and still with a significant amount of local experimentation, and on the other hand, that this process will lead to dramatically different results regarding regulatory outcomes, depending on the institutional distance between leading countries and followers trying to mimic it.

The case of local loop unbundling seems to support these propositions. However, one needs to bear in mind some potential limitations of this case. First, LLU is still in its early stages of development (even in countries like the US or Western Europe, the percentage of unbundled lines remains relatively modest; the same can be said for broadband

penetration, one potential measure for regulatory success here). This makes it a little harder to evaluate the convergence trajectory and regulatory outcomes related to imitation. Second, even in the US (considered in our analysis as the leading country), LLU is still not judged as a total success. Again, the future will tell more about this. Third, as preliminary shown in the previous section, performance might be related with quite basic indicators of institutional quality / governance, as these are the elements necessary for coherent implementation of regulatory reforms that look for more rapid and inexpensive development of key telecom services and infrastructure.

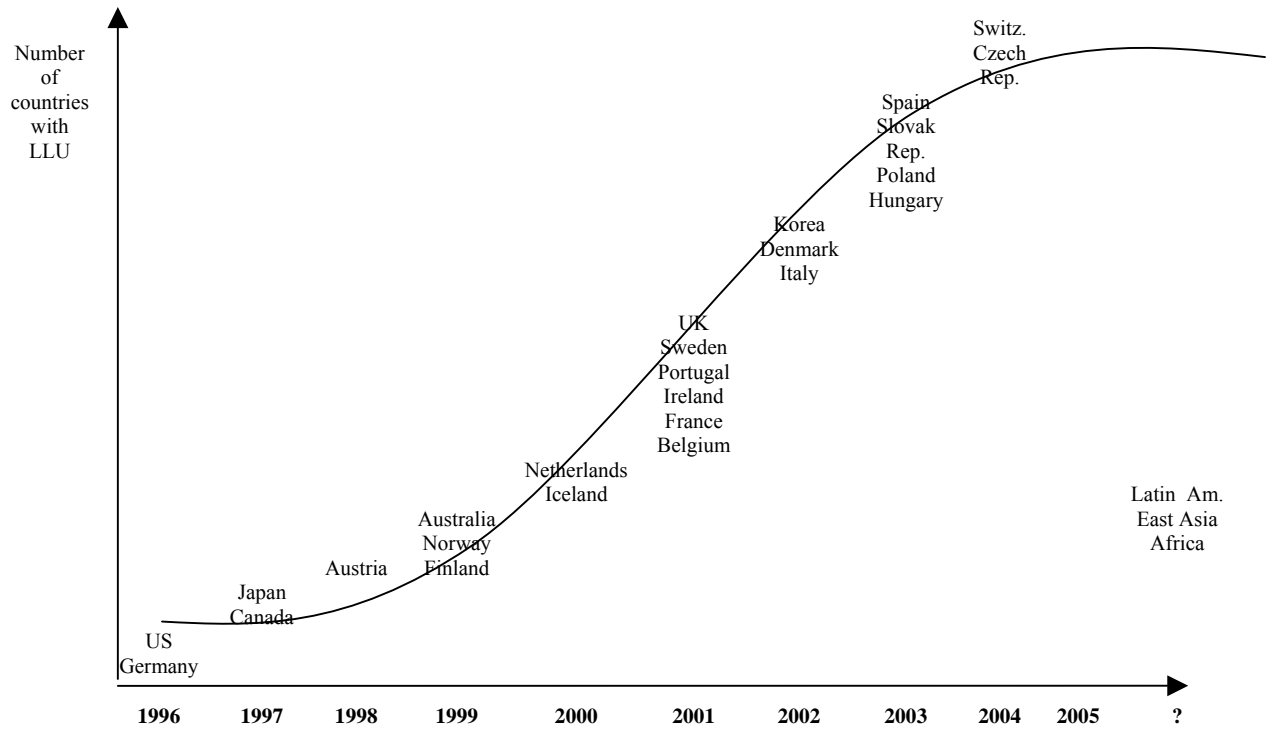
The direct implication of these last two comments is that more empirical studies about regulatory convergence in public utilities and its outcome are warranted. We leave this for future research.

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Figure 1: The international development of LLU regulation



Source: Computed by authors, based on data from OECD (especially, Umino (2004))

**Figure 2 – Broadband penetration in selected countries
(Broadband subscribers per 100 inhabitants)**

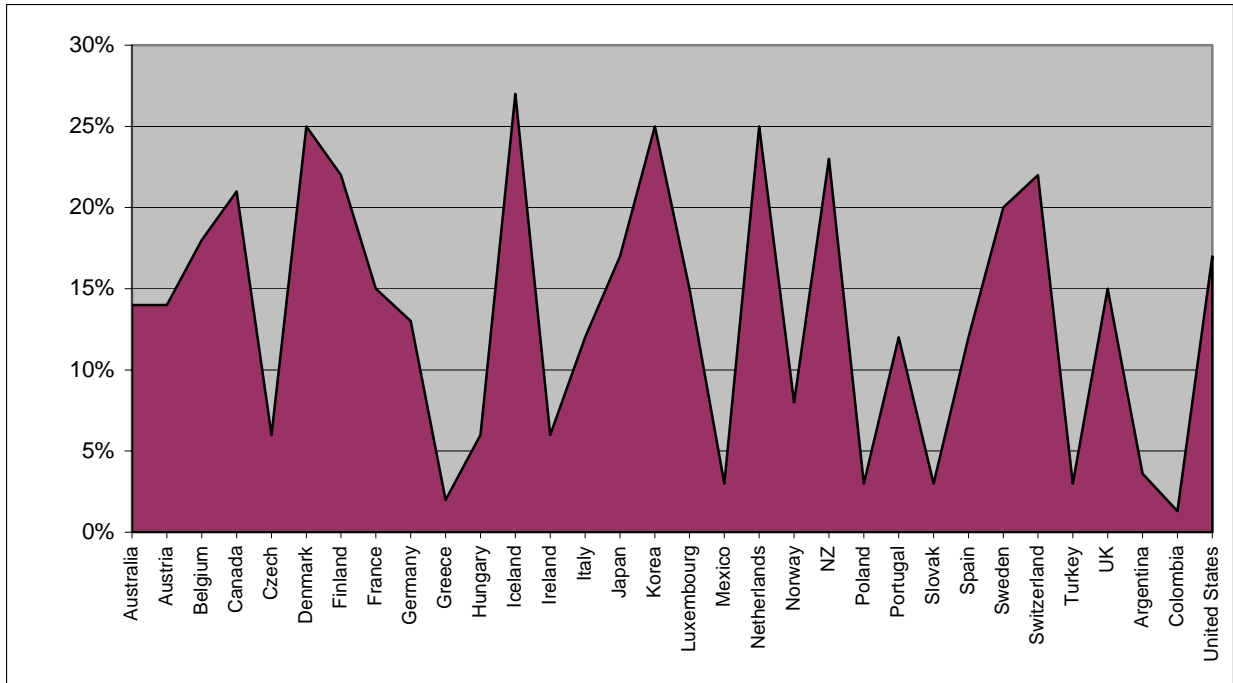


Figure 4: Regulatory convergence regarding LLU

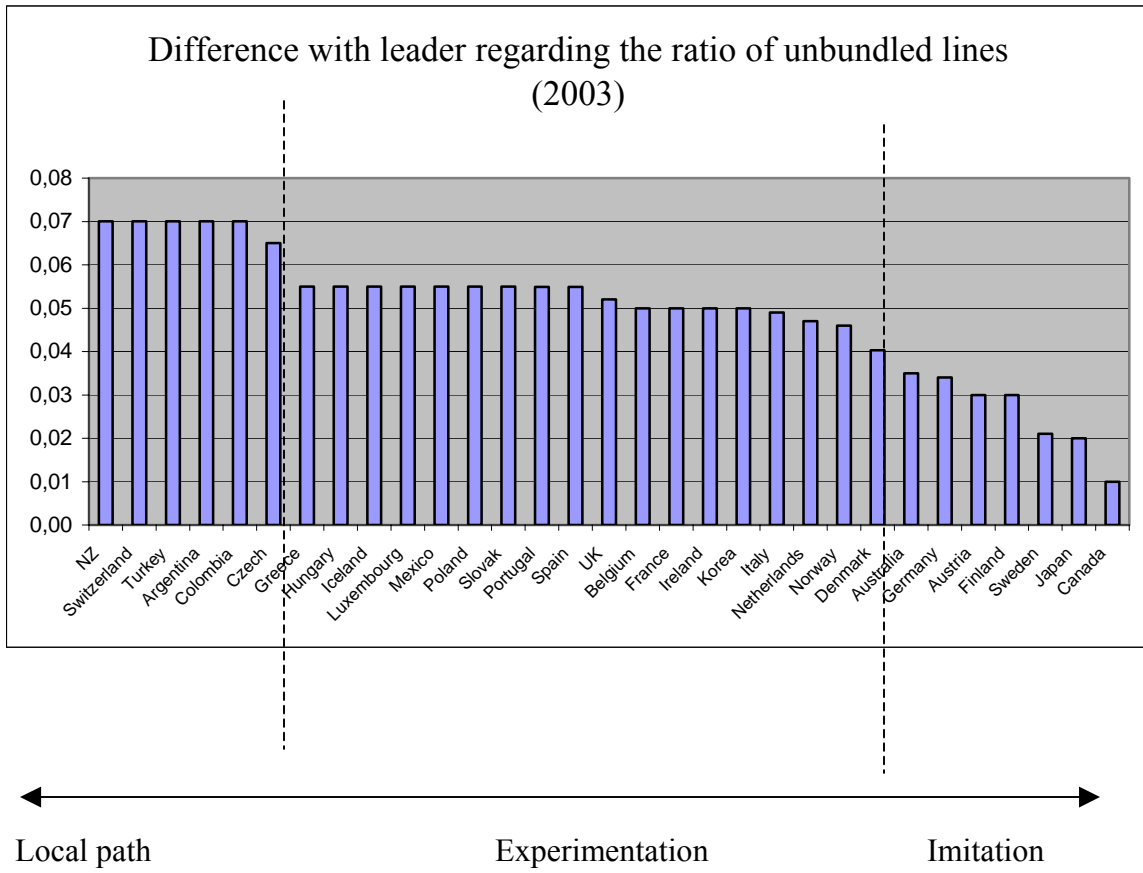


Figure 5: LLU regulations as driven by the incumbent's influence on the regulatory game

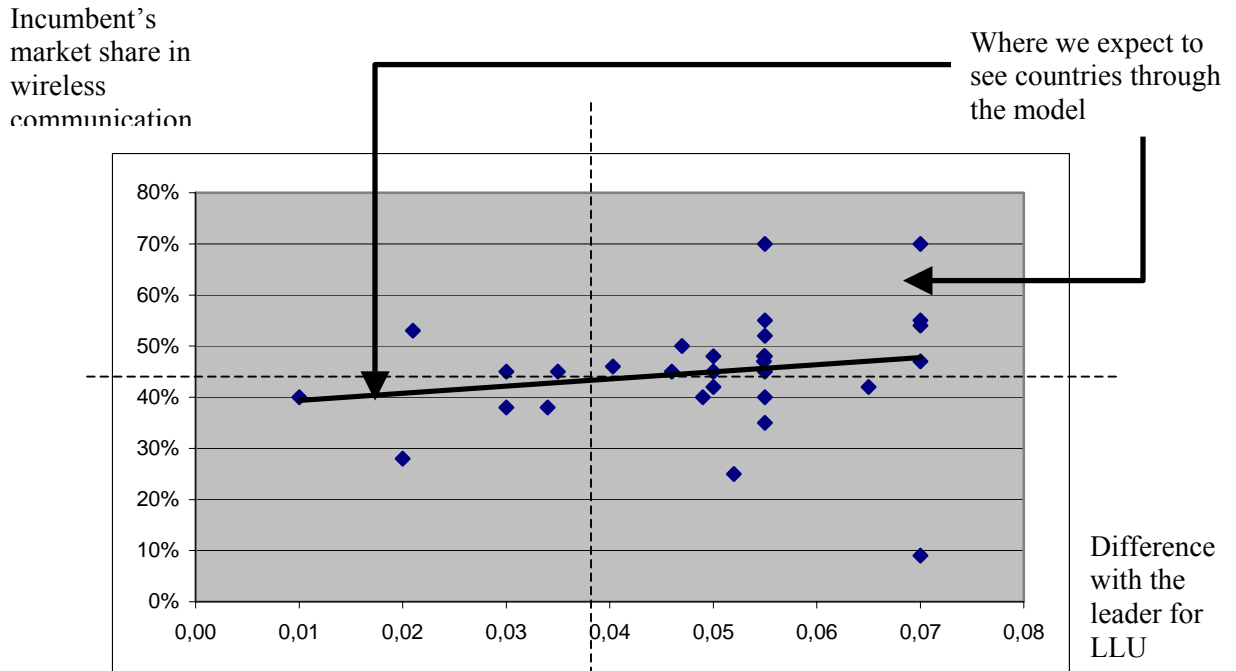


Figure 6: Local Loop Unbundling and Aggregate Governance

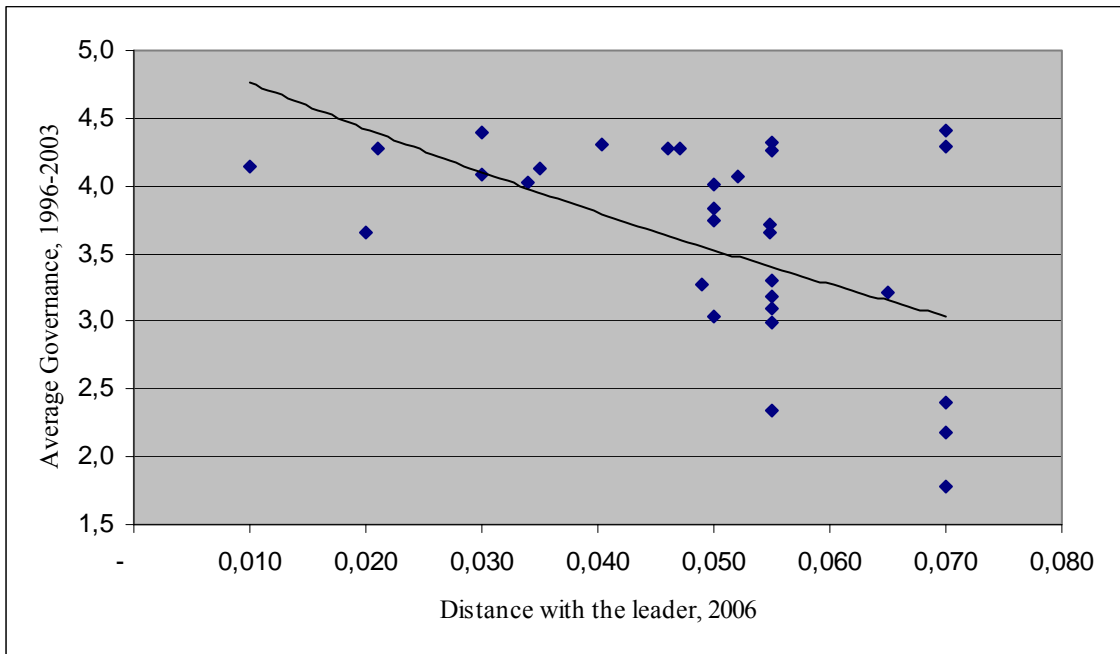
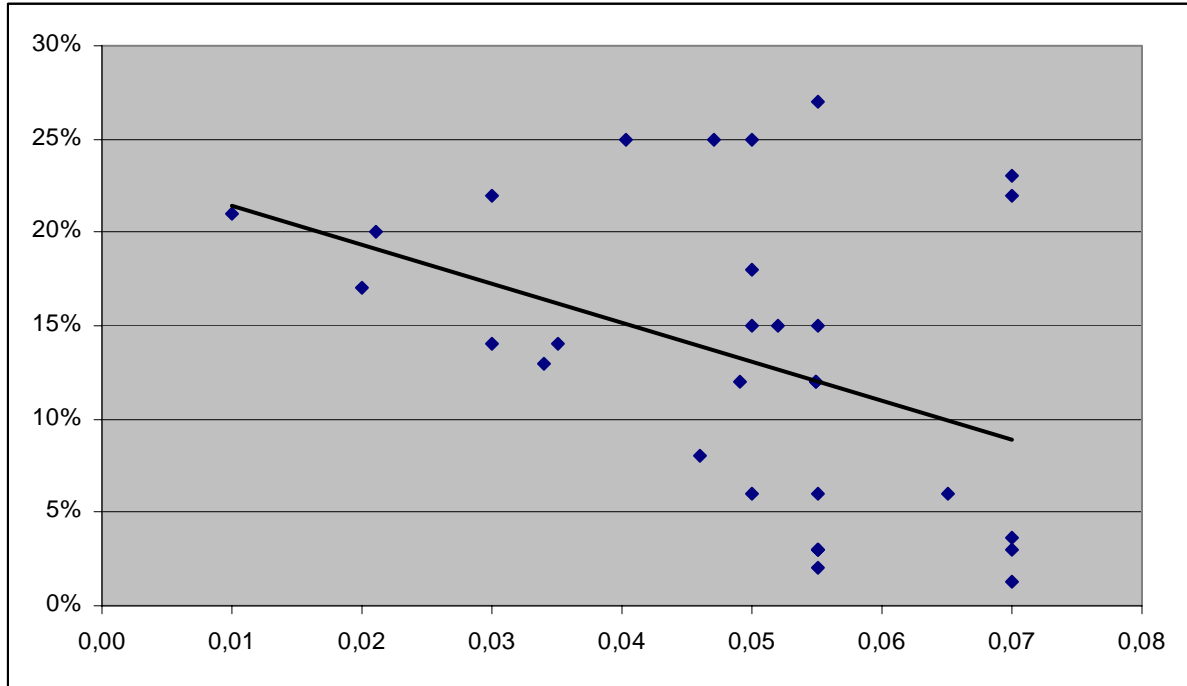


Figure 7: Difference with the leader and broadband penetration (measure of performance of LLU regulation)

Broadband
penetration



Distance with the leader

Annex: Basic data for preliminary analysis

	Broadband per inhabitant	Difference with leader regarding LLU	Market share incumbent in mobile	Aggregate Governance (0-5 range), 1996-2003*	GDP per capita (USD)	Main telephone lines (fixed lines) per 100 inhabitants
Australia	0,14	0,035	0,45	4,14	32.512	50,2
Austria	0,14	0,030	0,38	4,09	36.256	45,7
Belgium	0,18	0,050	0,45	3,83	34.303	45,4
Canada	0,21	0,010	0,40	4,15	34.848	64,1
Czech	0,06	0,065	0,42	3,21	12.131	31,5
Denmark	0,25	0,040	0,46	4,30	47.733	61,7
Finland	0,22	0,030	0,45	4,40	37.478	40,4
France	0,15	0,050	0,45	3,75	35.158	55,7
Germany	0,13	0,034	0,38	4,03	33.878	66,2
Greece	0,02	0,055	0,40	3,19	20.356	56,8
Hungary	0,06	0,055	0,48	3,30	10.818	33,2
Iceland	0,27	0,055	0,45	4,32	53.789	65,9
Ireland	0,06	0,050	0,48	4,01	38.250	49,5
Italy	0,12	0,049	0,40	3,27	30.496	43,1
Japan	0,17	0,020	0,28	3,66	35.593	45,3
Korea	0,25	0,050	0,42	3,04	16.309	49,5
Luxembourg	0,15	0,055	0,52	4,27	76.441	52,6
Mexico	0,03	0,055	0,55	2,34	7.180	18,2
Netherlands	0,25	0,047	0,50	4,27	38.779	46,6
Norway	0,08	0,046	0,45	4,27	63.955	46,1
NZ	0,23	0,070	0,47	4,30	27.225	42,9
Poland	0,03	0,055	0,35	3,09	7.856	30,7
Portugal	0,12	0,055	0,48	3,71	17.557	40,3
Slovak	0,03	0,055	0,70	2,99	8.787	22,2
Spain	0,12	0,055	0,47	3,65	26.511	42,2
Sweden	0,2	0,021	0,53	4,28	39.527	70,6
Switzerland	0,22	0,070	0,55	4,41	49.190	69,0
Turkey	0,03	0,070	0,54	2,18	4.954	25,9
UK	0,15	0,052	0,25	4,08	37.320	56,7
Argentina	0,036	0,070	0,70	2,40	4.746	24,5
Colombia	0,013	0,070	0,09	1,79	2.689	16,8

Source: ITU and OECD.

Note: LLU figures for Argentina and Colombia are the authors' estimates. Incumbents' mobile shares in these countries are for 2006. (accounting M&A in 2004 for Argentina). Broadband penetration figures for both countries correspond to 2006.

* It takes the linear average of five indicators (1) voice and accountability; 2) political stability; 3) government effectiveness; 4) rule of law; 5) control of corruption), which represent the linear average of 5 observations between years 1996 and 2003, as constructed by the World Bank.