

Herding towards a New Convention:
*On herds, shepherds, and lost sheep in the liberalization
of the telecommunications and electricity industries*

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Abstract

While there is growing recognition of the role of emulation in the policy process in general and in policy transfer in particular there are only limited efforts to model it in a systematic way. This paper takes this challenge through a temporal analysis of the role of contagion in the diffusion of liberalization across countries and sectors. In many political situations one's choice is determined not only by one's own preferences and information but largely by signals of others. This paper suggests that this is the situation where many public officials found themselves when they had to consider the option of liberalizing their country's infrastructure. It offers a formal model where one's preferences, strategies and payoffs are dependent on others and where political and policy outcomes are the result of imitation and contagious behavior. The model aggregates three models that operate on different levels of analysis and rarely if at all are brought together. It rests first on herd models that were developed in the discipline of economics and supply micro-level analysis of the incentives for herding. Second, it rests on Granovetter's threshold model of captures the number or proportion of others that must make a decision before a given actor does so. Third, on diffusion models that were developed mostly by sociologists to capture macro-aspects of the spread of new technologies, information, drugs, fashions and the like. The model applies to any country that proceeded towards liberalization after taking cues from all or some of the earliest cases of liberalization. In doing so the model complements top-down and bottom-up explanations of the spread of liberalization across the world.

Key words:

Herding, Diffusion, thresholds, Liberalization, Telecommunications, Electricity, Policy Transfer, Privatization, Regulatory Reforms..

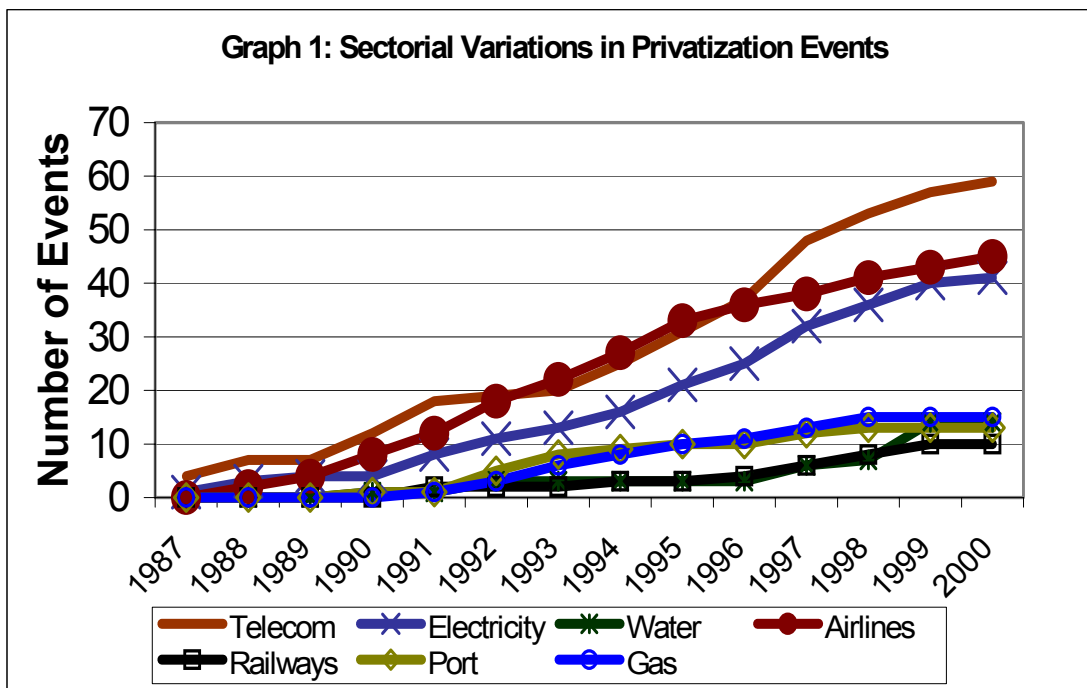
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*“Worldly Wisdom teaches
that it is better for reputation
to fail conventionally than
to succeed unconventionally”
(John Maynard Keynes, 1936, 158)*

One of the most recent countries that jumped on the liberalization bandwagon is the Republic of the Maldives. This is an archipelago with land area of about 300 sq. km made up of 1,190 islands spread across total area of 100 times the land area. In mid-August 2001 the government of the Maldives proclaimed its commitment to competition in telecommunications. In this the Maldives is hardly exceptional and as a matter of fact it is one of the last to board the crowded bandwagon of liberalizers. Still, the rationale of the new policy puzzled even the *Economist*, one of the most prominent and consistent supporters of liberalization.¹ Does liberalization promise to supply the best governance structure for a country with 278,000 people scattered across 200 inhabited islands? It was only two years ago that the public-private company that operates the country’s telecom system finished connecting the country’s inhabited islands to the fixed-line network. Now, with the active encouragement of the government, it aims to connect all the islands to the mobile network. Considering the fact that under-investment in telecom is a major problem and that universal telecommunications services across the scarcely populated islands can be supplied only through cross-subsidies and that competition threatens the systems of cross-subsides, the turn of the Maldives government to competition is indeed puzzling.²

One plausible way to examine the Maldives keenness for telecom competition is in the context of the creation of a new convention as to how national infrastructure should be governed. Graph 1 presents the radical change being experiencing in the governance structures of the world infrastructure since

1980. While there are variations across different sectors in the advance of privatization, and while many lament the slow advance of liberalization policies, the overall picture is impressive, especially in light of the change in the governance of the infrastructure industries of the world economy. Clearly, in the last two decades liberalization has become a hegemonic political practice. Decades of public ownership and direct ministerial scrutiny over the telecom and electricity industries are now coming to an end. Given what we know about the constraints on political change, this is a remarkable as well as a perplexing development. How come that imperfect governments, vote-maximizing politicians, and power-seeking bureaucrats took this step, or at least allow it to happen, and how come that they let it happen in varied degrees in different sectors?



Source: World Bank Privatization Transaction Database 1990-1999 as well as the author's liberalization database.

In order to offer plausible answers to these questions this paper points out that in many political situations one's choice is determined not only by one's own preferences and information but largely by signals of others (Bikhchandani, Hirshleifer and Welch (hereafter BHW), 1992; Banerjee, 1992; Kuran, 1989,

1998; Lohmann, 1994, 2000). These signals shape the behavior and beliefs of individuals, groups, and nations since they supply certainty in an uncertain world, help to distinguish right from wrong, and provide criteria for acceptable social behavior. In effect these signals carry information that may alter the receiver's preferences and persuade him to re-evaluate his utility. When these signals lead to a convergence of large groups of agents on common actions or beliefs it might be useful to apply the notion of 'herding' or 'herd behavior' to the phenomenon. The tendency of stock market players to follow their peers in selling and buying shares is one example for such behavior. Portfolio managers in these situations discount their own information and put extra value on signals from others. Despite the negative connotations of herding, it is often the most rational action one can take, not least because there is high uncertainty as to the value of one's own information.³ It is also sensible because conforming to group behavior serves as a kind of safeguard for brokers whose performances are often evaluated vis-a-vis their colleagues. If the herd prove wrong, a broker's costs are averaged since it is not only he or she who has failed, so his position relative to that of others is easily maintained. As implied by Keynes' citation in the beginning of this paper, rewards are not necessarily functions of being right: sometimes being right is the most costly option. A successful broker amidst a woeful majority might be the target of others' envy or at least acquire the reputation of an adventurer among his colleagues and in the eyes of his principal.⁴ In either case immediate gains might be prove a liability later. Only exceptional brokers in exceptional situations may be able to bear these costs.

Now consider the policy options open to policy makers under conditions of mass movement towards new practices and beliefs and away from old ones. Should one join the crowd by jumping on the bandwagon, or stick to old preferences and beliefs, expressing one's heterodoxy by avoiding the bandwagon? Or consider a policy maker who leans towards joining the bandwagon but is still hesitant. Wouldn't it make him more inclined to

liberalization when others leap aboard? This paper suggests that this is the situation in which many public officials found themselves when they had to consider the option of liberalizing their country's infrastructure. The study therefore looks for the rationality of imitation at the micro level and its effect on macro outcomes. It offers a formal model where one's preferences, strategies, and payoffs are dependent on others and where political and policy outcomes are the result of imitation and contagious behavior. The model aggregates three kinds of models that operate on different levels of analysis and that are rarely if ever united to supply comprehensive guidance in empirical studies.⁵ First are herd models developed in the discipline of economics that supply micro-level analysis of the incentives for herding (BHW, 1992; Banerjee, 1992; Kuran, 1989, 1998; Lohmann, 1994, 2000). Second is Granovetter's threshold model that captures the number or proportion of others who must make a decision before a given actor does so (Granovetter, 1978). Third are diffusion models developed mostly by sociologists to capture macro-aspects of the spread of new technologies, information, drugs, fashions, and the like (Coleman, Katz and Menzel, 1957; Rogers, 1983; Mahajan and Peterson, 1985; Katz, 1999). The model applies to the Maldives, and to any country that has proceeded towards liberalization after taking cues from all or some of the earliest cases of liberalization. In this the model complements top-down and bottom-up explanations of the spread of liberalization across the world.⁶

The interest of political scientists and sociologists in policy transfer and diffusion is extensive. Studies of interdependent social and political action have gained acceptance in regard to the analysis of riot behavior (Granovetter, 1978), revolutions (e.g., Braun, 1995), coups (e.g., Li and Thompson, 1975), strikes (e.g., Biggs, 2001), and innovations (e.g., Rogers, 1983), wars (e.g., Most and Starr, 1980), decolonization (e.g., Strang, 1991), nationalization (e.g., Kobrin, 1985), policy innovations among the American states (Walker, 1969), aircraft hijacking (e.g., Holden, 1986) and democratization (Starr, 1991).⁷ Unfortunately, those studies confined themselves largely to the macro

level. There is wide recognition in the discipline of political science that policy is diffused *in and by* networks, and that in a shrinking and an increasingly interdependent world policies are shaped and diffused by global and not only national networks (Bennet, 1991; Coleman and Perl, 1999). Yet no effort has been made to conceptualize and formalize this reality on the micro-level. Indeed, applications of herding theories to political analysis were mainly made by economists.⁸ The reluctance to apply herding models is especially puzzling since formal modeling and rational choice approaches are widely practiced by political analysts and are now argued to be hegemonic in American political science. Similarly, while there is rich literature on policy transfer, political analysts avoid individual-level analysis and mathematical formulation of conjectures in this particular field.

Another shortcoming in the literature on liberalization is its tendency to focus the attention on small-N analysis.⁹ Small-N analysis may well be the most important methodology for the study of liberalization of infrastructures, as is best reflected in the fact the standard works of economists are also not quantitative (Gilbert and Kahn, 1996; Newbery; 1999; Vickers and Yarrow, 1988). Yet the insights gained from the case-oriented approach might benefit from studies that perceived liberalization as an interdependent process. To illumine better the spread of liberalization, this paper studies the commonalties and variations in the advance of telecom and electricity liberalization across the world. In doing so it offers a model sensitive to the interaction between micro-motives and macro-behavior and sheds light on both.¹⁰

I. Identifying Herds

The possibility that convergence is an outcome of herding is more intuitively appealing in some cases than others. It might be relatively easy for political analysts to accept that herd behavior is a powerful force in mass behavior and

situations of riots and revolutions, but more problematic when these models are evoked in a rationally reasoned policy sphere. Since the rationality of liberalization is advocated on efficiency grounds by strong professional groups of specialists and economists alike, it should not be surprising that it is most often explained as a rationale decision independent agents. Is it really reasonable and constructive to suggest that it is a product of herding? The answer is positive, since herding is deemed a powerful mechanism for the production of *both* inefficient and efficient solutions. One may herd towards fads, fashions, customs, and cultures or alternatively towards perfect, Nash, or Bayesian equilibrium; in all cases the aggregation of individual behavior into collective action works through the production of conventions, that is, stable patterns of behavior that are customary, expected, and self-enforcing (cf. Young, 1996, 105). Consequently, the application of the herd model to the case of liberalization does not suggest any normative or professional judgement of liberalization as such. This is an important question yet it is not part of the agenda of this paper. The puzzle of herding is compelling whether liberalization is the best thing that happened to the world's utilities in the last century or whether one holds that liberalization is a grave mistake. In the first case one may want to learn how best practices of governance are diffused and how they overcome the hurdles of selective interests and bounded rationality; in the second case the process of how this blunder became so widely diffused has to be traced.

But how can we be sure that certain political, social, and economic phenomena are the outcomes of herding? Unfortunately, the literature on herding only partially helps us in this regard. Recently one of the pioneers of the study of herding argued, "it is remarkable that most theories of herding have relied primarily on readers' faith in the general phenomenon and on anecdotal evidence" (Welch, 2000, 369-370). Let us however start with some of the partial definitions offered in the literature. These often focused on similar or correlated behavioral patterns and explicit criteria of interdependent behavior.

Lohmann, for example, stated, “We speak of cascade or herding effects in collective action when people’s decisions to adopt a behavior are interdependent over time” (Lohmann, 2000, 657). Devenow and Welch (1996, 604) suggested that herding in its most general form “could be defined as behavior patterns that are correlated across individuals”. Yet as argued by Oehler and Chao, “this notion of similarity alone is insufficient. Correlated behavior might arise simply by chance or because individuals have access to the same source of information or interpret information similarly” (Oehler and Chao, 2000, 4).

Some of these definitions add sensibly a demand for proximity in the timing of the similar behavior. One may also require that certain mechanism of herding be observed. It is likewise suggested that it would be reasonable and practical to define herding *also* by demanding interpersonal sources of herding or contagion among the relevant populations. This condition can be formulated through the effects of herding on officials’ preferences or payoffs. Let us denote the expected utility from liberalization of official j by U_j^l and his preferences as to liberalization by P_j^l . We expect herding to be manifested in stronger preferences for liberalization or alternatively by an increase in his utility. This condition can be formalized through the following equations:

$$(1) \quad \frac{dU_j^l}{d\pi(t)} > 0 \quad \text{and/or} \quad \frac{dP_j^l}{d\pi(t)} > 0$$

where $\pi(t)$ represents the cumulative number of officials who already chose to liberalize.

In sum, herding implies: (a) Similar decisions are made by different actors. (b) These decisions are proximate in time. (c) Some incentives for imitative behavior are identifiable.¹¹ (d) A mechanism of contagion is identifiable. (e) Payoffs and/or preferences for policy change will increase with an increase in the number of officials who decide to opt for the policy change. Next an

attempt is made to conceptualize some of the mechanisms of herding that are raised by the literature.

II. Incentives for Herding

Herding may happen because one or more of four incentives are at work, affecting policy makers' preferences and payoffs. We now examine how *uncertainty* as to value of information, the *manipulation* of information, its *costs*, as well as the *public revelation* of information contribute to the process of herding by rational actors. The theory of informational cascade as formulated by Banerjee (1992) and BHW (1992) captures the process of herding under conditions of uncertainty as to the value of one's own information. Informational cascade occurs "when it is optimal for an individual, having observed the actions of those ahead of him, to follow the behavior of the preceding individuals without regard to his own information" (BHW, 1992, 994). In BHW's model there is a sequence of individuals, each deciding whether to adopt or reject some behavior. Each individual observes the decisions of all those ahead of him. The first individual adopts according to his private information but the second individual decide on the combination of his private information and the public information he gathers on the basis of the choice the first individual made. The more these individuals are uncertain about the accuracy of their information, and the higher the value they give to the revealed actions of others, the higher is the probability of herding.

Kuran's theory of reputational cascades points to a second type of incentives that produce and sustain conventional behavior. Reputational cascades are self-feeding adjustments that individuals make to protect their reputations (Kuran, 1998, 628). Unlike informational cascades, which are driven by uncertainty as to the value of one's information, reputational cascades are driven by the eagerness of the players to please others, to maximize their social acceptance, and to legitimate their power position. It follows that policy-makers act

rationally when they subscribe to public beliefs and conceal contradictory private beliefs (*preference falsification*). Thus, Kuran widens the applicability of cascades to the behavior of individuals in social and political contexts. The implications for political analysis are quite obvious since the relation among political actors in general, and between politicians and the public, are prone to preference falsification. This might best be elaborated in the context of principal-agent models (Palley, 1994; Dassiou, 1999). In these models managers compete in order to enhance their reputation in the eyes of their principals. Political actors may accordingly use their decisions to manipulate the perceptions of their principals (voters) regarding their capabilities and preferences. As illustrated through the example of the brokers in the introduction to this paper, this type of herding makes even greater sense when the performances of the manager are evaluated by his principal vis-a-vis the performances of the other managers.

A third incentive for herding is offered by Conlisk who adds to the picture the effects of the cost of information on herding behavior. Innovation and optimization strategies are costly (the costs of analyzing problems, searching for solutions, mobilizing support for these solutions, and implementing them). Herding through imitation or through observation allows actors to “drift along, doing what is conventional, making mistakes, but avoiding the costs of avoiding mistakes” (Conlisk, 1980, 275). To the extent that the world can be divided to two groups of actors, optimizers and the others, social, economic, and political change can be portrayed as a cycle of innovation and imitation. New types of behavior that are promoted after a costly search by optimizers, who are then imitated by their followers. This mechanism of herding might be titled a decision-cost cascade. If old regimes are no longer effective or acceptable, and the designs of new governance regimes are costly, drifting along the new trajectory and following the new conventions might be the most rational thing to do.

A fourth incentive for herding is suggested by Lohmann, who emphasizes the effects of new *public* knowledge on the actor's evaluation of his interests (Lohmann, 1994, 2000). In a study of the dynamics of mass protest that triggered the collapse of the German Democratic Republic and the unification of Germany Lohmann singled out the uncertainty of the public as to the extent of dissatisfaction with the regime, the costly action involved in revealing hidden information, and the constraints on the articulation of preferences and opinions as the major checks to protests. Lohmann's herding process is driven by the aggregation of scattered information, public revelation of the new knowledge, and consequently a re-evaluation of one's interests. To some extent the process reflects policy learning, but in a narrower sense than usually used. As in Andersen's tale of the emperor's new clothes, the case here does not concern knowledge that is private but the social revelation of the new information. The learning process is *social* in that it takes place publicly and derives at least part of its value for the subjects from the outcome of social deliberation. Thus, it assumes the actors' bounded rationality and the political process's adaptive nature. It therefore implies that while Lohmann's agents respond "by a process of Bayesian inference" (Lohmann, 2000, 677), our actors are merely adapting to new situations by learning from opinion leaders ("shepherds") and aggregate numbers.

All in all, our official responds to four different mechanisms of herding *and thus* his utility from liberalization at time t is therefore:

$$(2) \quad U_t^i = U^i(Y_t^i, R_t^i, K_t^i L_t^i, \pi(t))$$

where:

Y_t^i = effects of the official's uncertainty as to one's own information

R_t^i = effects of the official's concern with his reputation (*homo politicus*)

K_t^i = effects of the official's decision-costs cascade (*homo economicus*)

L_t^i = effects of the official's social learning (*homo sociologicus*)

$\pi(t)$ = the cumulative number of officials who liberalize.

The four incentives for herding identified explain why officials and laymen herd. Yet our understanding of the process of the diffusion of liberalization may benefit from theories that model the dynamics of the interaction of different individuals facing similar incentives to herd but operating under different sets of constraints.

III. The Dynamics Contagion – The Threshold Model

Granovetter's threshold model (1978) of collective behavior adds some dynamic aspects to the static theory of the incentives for herding. The threshold model demonstrates the contagious effect across a population of would-be liberalizers, or, in Granovetter's specific case, would-be rioters. Granovetter notion of 'threshold' aims to capture the number or proportion of others who must make a decision before a given actor does so. The threshold is the point where net benefits begin to exceed net costs for that particular actor. The cost to an individual of joining in a riot declines as riot size increases, since the probability of being apprehended is smaller the larger the number involved. Let us demonstrate the dynamics of herding as modeled by Granovetter (this illustration of is derived from Kuran (1991)). Imagine a situation where ten officials have the following threshold sequence:

$$S1 = \{0, 1, 2, 2, 6, 7, 7, 7, 8, 10\}$$

Official 1 with a threshold of 0 ($L^1 = 0$) will liberalize regardless of the costs involved, just as official 10 with a threshold of 10 ($L^{10} = 10$) will always oppose liberalization (i.e., will support the status quo). While the threshold points of the two officials at either extreme are not sensitive to the number of liberalizers, the thresholds of the other eight officials depend on the cumulative number of officials who have liberalized [$\pi(t)$]. For instance, official 6 ($L^6 = 7$) will not liberalize until at least seven others liberalize. His threshold is therefore bigger than that of official 5, whose threshold is 6. The chain reaction of herding starts when the first official ($L^1 = 0$) decides to liberalize. His action triggers the second official, who needs only one other official to decide to

liberalize (as $L^2=1$). The actions of the first two officials then trigger the third and fourth officials ($L^3=L^4=2$). Here the process of herding stagnates. The threshold point of official 5 ($L^5=6$) is bigger than the number of officials who liberalize(4). The process of herding will therefore produce divergent outcomes. While four countries chose to liberalize, the rest opted for the status quo. Yet sometimes the process of herding might produce convergence on a larger scale. Imagine a slightly different distribution of thresholds in a similar group of ten officials:

$$S2= \{0, 1, 1, 2, 4, 5, 6, 6, 7, 10\}$$

The mean and the average in the first group (S1) are similar to the mean and the average in the second group (S2) but the scope of herding is very different. Official 1 triggers the two next officials, who trigger the fourth official ($L^4=2$). Now official 5 is triggered and his action triggers at the same time the next two officials ($L^6=L^7=6$). The seventh official then triggers official 8 ($L^8=7$) and here the process stagnates, with nine out of ten officials opting for liberalization.

Until now and following Granovetter we assume that the distribution of threshold does not vary during the process of herding. Officials have a rather fixed threshold point that is exogenously determined. A more realistic and less vulnerable process of herding is produced when the distribution of thresholds in the population itself changes in the process of herding. Let us illustrate this through the gradual transformation of the example of group S1. In Granovetter's model the distribution equilibrium was 4 where the process became self-sustaining. Now consider the effect of herding by official 4 at time t on official 5 at time $t+1$. The threshold point of official 5 was 6, but now her cost calculations are affected by her colleagues' herding and it is reduced to 5 ($L_t^5=6 \rightarrow L_{t+1}^5=5$). Since similar effects are observable on the threshold points of some of the other officials, the following distribution is now relevant to the process of herding:

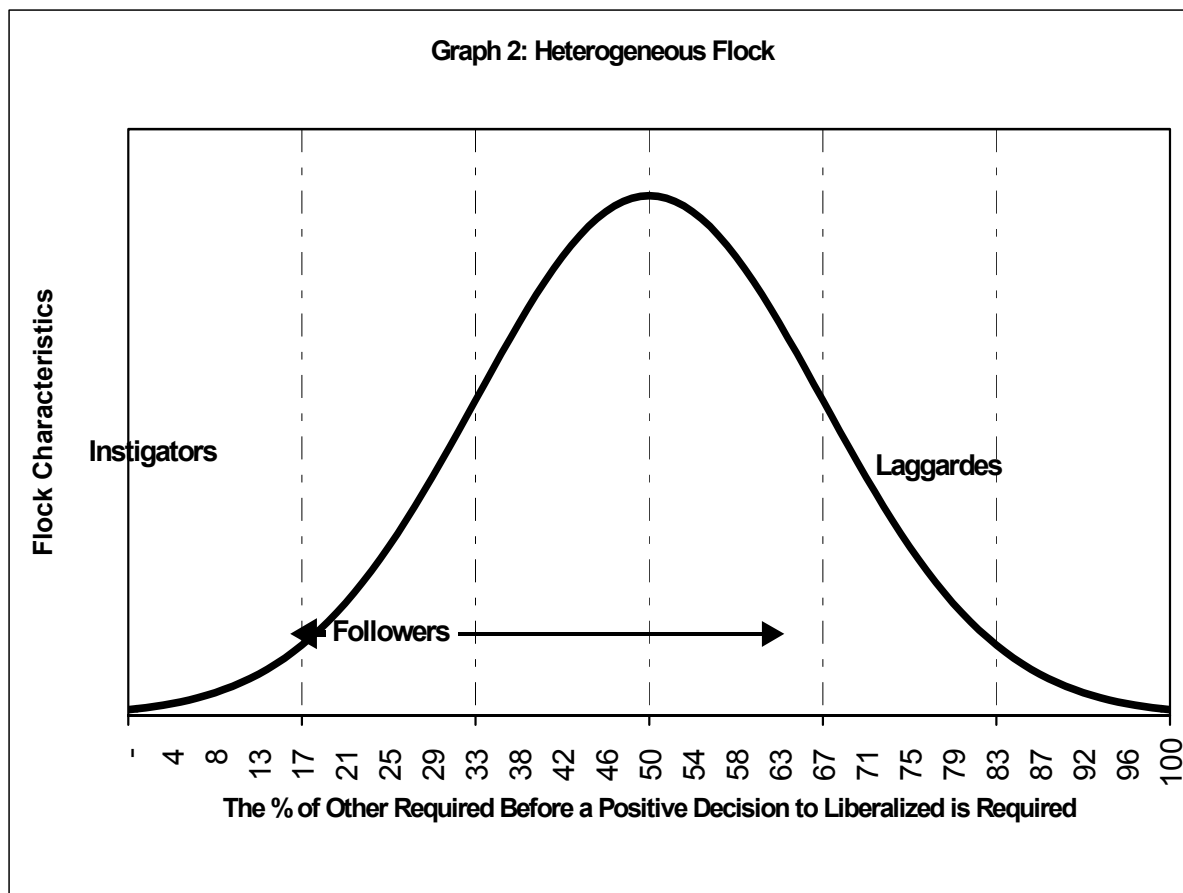
$$S_{1,t+1} = \{0, 1, 2, 2, 4, 5, 6, 7, 8, 10\}$$

This new distribution of thresholds differs from the original (S_1) by the relatively small reductions in the threshold points of three officials (L^5 , L^6 , L^7 with threshold points of 4,5,6 respectively). The equilibrium point however changes from 4 to 9, implying that the process of herding will result in liberalization by nine out of the ten officials. Thus, relatively minor changes in the threshold point result in considerable changes in the aggregate outcomes.

Granovetter's threshold model is especially appealing for two reasons. First, while many macro theories of political and social behavior derive the preferences of individuals from macro-outcomes, the connection between the micro and the macro is not necessarily that simple (Schelling, 1978, 13; Coleman, 1990, 197). Granovetter breaks the 'aggregate assumption' when he asserts and demonstrates that "knowing the norms, preferences, motives, and beliefs of participants in collective behavior can, in most cases, only provide a necessary but not a sufficient condition for the explanation of outcomes" (Granovetter, 1978, 1421). Modeling the interaction of individuals allows us to demonstrate that aggregate outcomes are not a simple reflection of the mean or the average of the preferences of individuals. Second, Granovetter's model lets us take into account the heterogeneity of the herd. In his model of rioters different individuals require different levels of safety before entering a riot and also vary in the benefits they derive from rioting (i.e., they have different thresholds). A 'radical' will have a low threshold: the benefits of rioting are high to him, the cost of arrest is low. Conservatives will have high thresholds: the benefits of rioting are small or negative to them and the consequences of arrest are high since they are likely to be 'respectable citizens'.¹² As demonstrated in the next section, the distinction between threshold profiles opens the way to a distinction among six different types of officials (or countries).

IV. Heterogeneous Flock: Instigators, Followers, and Laggards

This part of the paper distinguishes between three categories of officials: the instigators, the followers, and the laggards (see graph 2).¹³ Each of the three categories contains two types of official: shepherds and radicals, moderates and fence-sitters, and foot-draggers and snobs respectively.



Instigators: Shepherds and Radicals

Low threshold points characterize all the instigators of the process of herding. However, similar threshold points may be driven by different causes and this leads us to distinguish between shepherds and radicals.

The variations in the effects of British and Chilean electricity and telecom reform exemplify the distinction between shepherds and radicals. At the same time they also show that shepherds can be radicals but not all radicals are

shepherds. Chile started the process of telecom privatization in 1982 with the sale of some of the government's shares in two regional telephone companies. A more radical move was made in 1985, with decision to sell the two major telecom companies, CTC and ENTel. New regulatory structures had been in place since 1977, when a group in charge of regulating the telephone services was created inside the Ministry of Transportation and Telecommunication (Melo, 1998, 212). The 'first mover' nature of Chilean liberalization was even clearer in electricity. The 1982 Electricity Law opened the way for privatization seven years before the British move. Between 1986 and 1990 Chilean politicians had transferred the country's electricity industry almost completely to private hands. Vertical disintegration of the industry that had started in 1979 and a separate regulatory authority was set up in 1985 (Estache and Rodriguez-Pardina, 1998).

The British reforms began in telecom with the privatization of Cable & Wireless in 1981 but gained considerable momentum with the privatization of British Telecom in 1984. The 1984 Telecommunication Act left the company intact and allowed it to retain its monopoly in major areas of the network. While the act was rather timid in the promotion of competition, proponents of liberalization were extremely successful in using it to promote more liberalization in other sectors and other countries. The act also led to the creation of a 'watchdog', namely Oftel, which later became a model for a blooming industry of regulatory agencies across countries and sectors. The turning point towards electricity liberalization came with the 1989 Electricity Act, which created the regulatory structure that was to govern the industry and formed the independent regulatory authority Offer (since 2000 Ofgem) with similar powers and status to those of Oftel.¹⁴ Between 1991 and 1995 most of the British electricity industry was privatized (Newbery and Green, 1996, Newbery, 1999).

Britain and Chile alike were instigators of a liberalization process, but while both chose a radical road it was the British rather than the Chilean example that was closely observed all around the world. This led us to the distinction between Britain as a Shepard and Chilean as ‘simple’ radicals. That the British play the role of Shepards is hardly suprising. Even nowadys long after they lost their hegemonic position, British policies and politics are closely observed all over the world and they also serve as a major source for imitation and ‘sponged legitimacy’. Consider the self-consciousness of William Beveridge, one of the leading architects of the British Welfare State (and indeed the well beyond those isles). In a talk with the future Prime Minister, Harold Wilson, on his famous report he stated somewhat prophetically, “from now on, Beveridge is not the name of a man: it is the name of way of life, and not only for Britain, but for the whole civilized world”.¹⁵ The welfare state is only one example. Others are public broadcasting, nationalization, and indeed major democratic practices if not democracy itself. While Britain lost much of its economic and political appeal to the United States the latter is too exceptional as a model for the best practice and legitimacy for policy makers in other countries. Not only did Britain and Chile differ in their position in the world but at the time of the reforms Chile was under military dictatorship, and in economic crisis for at least a part of the period. These factors made the reforms in Britain much more visible and attractive to other policy officials. The full effect of the British reforms might well have been even stronger and faster had Margaret Thatcher’s government not embraced the radical ideology of neo-liberalism. The radical ideological justification for liberalization see to deter rather than attract many officials who were less radical and operated in countries where consensual rather than adversarial politics was the basis for legitimate political action.

Followers: Moderates and Fence Sitters

The biggest sub-group in our herd is the “followers” (see graph 2). The followers are typically risk-averse and conform to collective norms. Some followers are moderates and take a pragmatic rather than an ideological

approach towards change. Other followers are fence-sitters, that is, they follow the wind like a weathervane. While the fence-sitters' behavior may appear similar to the moderates' they often lack the internal preferences and policy capacities that allow the moderates to maximize their benefits and minimize their costs.

Germany and Greece illustrate well the two different types of followers. While the first exemplifies the moderates the second is a good example of a fence-sitter. While both Germany and Greece are part of the European Union, and while both are governed by the EU telecom and electricity directives, their attitude to liberalization was remarkably different. The Greeks moved hesitantly, taking one step forward and two steps back (see Pagoulatos, 2001). The Germans, while moving forward slowly, did so confidently, and as will be demonstrated below, made some political gains out of the process. Some may argue that these differences are the outcomes of differences in the domestic economy and politics in the two countries rather than their propensity for emulative behavior. For example, while Germany had considerable private-sector and decentralized provision of electricity, Greece had a centralized state monopoly similar to that of France. This made the Greek reforms more costly and may provide an alternative explanation for the variations in the behavior of the two countries. Similarly, while Germany's electricity operators are big (and becoming bigger through mergers) and while its telecom operator Deutsche Telekom is likely to expand its operation all over Europe, the small Greek operators are likely candidates for a foreign takeover. Again, while political power in Germany was held by conservative governments, social democrats controlled Greece for most of the 1980s and 1990s. These arguments ignore the move towards liberalization by countries under similar conditions to those of Greece. The major difference in the behavior of Germany and Greece appear in the Germans' ability to act as though they knew what they wanted and how to get it. The Greeks by contrast had difficulty deciding between the lesser of the evils that they faced (or to believed they faced) despite their recognition that

the liberalization process was moving on and despite the fact that they had a long time to make their choices.

An important aspect of the process of liberalization in both Germany and Greece was the matching of liberalization to the creation of an internal European market for electricity and telecom. The Germans, unlike the British, caught two birds at once. While Thatcher's government moved towards liberalization unilaterally without consideration of the European aspects of the moves, the Germans were able to tie the two issues together and thus to reap the gains from Europeanization as well as liberalization. Germans who were reluctant to liberalize but were enthusiastic supporters of the European project found themselves willing to pay the price of liberalization in the name of Europeanization. Those who were less enthusiastic about Europe were willing to pay the price of Europeanization for the promotion of liberalization. The Greek officials had in theory the opportunity to shift the blame for liberalization to Europe, but in practice they proved less capable than the Germans of taking the opportunity to overcome domestic opposition. Germany's achievements are particularly impressive compared with those of France. The French acquired the image of reluctant liberalizers; the Germans, who were not much nimbler than the French, managed to avoid criticism and loss of prestige.

Laggards: Foot-Draggers and Snobs

Laggards have high threshold points for liberalization and are characterized by threshold distribution. There are at least two types of laggards: the foot-draggers and the snobs. The snobs reject the option of liberalization on the grounds that they have better systems of governance. If the expected utility of non-snobs represents increasing returns for liberalization, in the case of snobs the returns are negative.¹⁶ This is however not the case for foot-draggers, who have a similar incentive structure to that of the moderates. What they lack compared with the moderate is the minimal policy capacities and the minimal political will to herd.

Paraguay may best exemplify the foot-draggers. This country, which was under military dictatorship from 1954 to 1989, is one of the poorest in Latin America. The density of telephone lines is five lines for 100 inhabitants, well below the Latin American average of 13.5 lines.¹⁷ Despite the availability of cheap electricity from hydroelectric generation only a minority of the 5.5 million Paraguayans have access to electricity. This circumstance is represented as consumption per capita of 756 Kwh, far below the average for Latin America.¹⁸ The lack of any meaningful move towards liberalization (the only advance was the establishment of a separate but not independent regulatory authority for telecom in 1996) is best explained by the depth of the political crisis in the country. Since the former dictator took refuge in Brazil in 1989 there have been two military coup attempts. One of the country's presidents fled in mid-term after his vice-president was assassinated. The current president has been accused of involvement in a bank fraud and was recently found driving a stolen car. Support for democracy in Paraguay is the lowest in Latin America and the regime's legitimacy has been questioned since the current president took office not through election but because he was the head of the Senate when his predecessor fled the country. The state machine is stuffed full of political appointees and seems incapable of improving the country's lot. The foreign debt almost doubled in three years and the national income per head has been on the decline for the last five years. A reform pact with the IMF that was signed in 2001 may bail the country out of the economic crisis but the politicians and bureaucrats are required to raise taxes, lower spending, and privatize. This they seem incapable of doing, so Paraguay's prospects seems gloomy (to put it mildly). For some countries the cost of learning is too high so they imitate. Unfortunately, for Paraguay even the cost of imitation seems to be too high.

The rejection of liberalization in Costa Rica is a good example of the snob effect in herding. First, under the old regime Costa Rica has enjoyed better

telecom and electricity services than most other Latin American countries. The level of telephone penetration in Costa Rica has risen to 25 main telephone lines for 100 inhabitants, well beyond the Latin American average of 13.5 and second only to that of another snob, Uruguay. A *Financial Times* report found the electricity industry in Costa Rica the most developed in Central America.¹⁹ Its performances are most probably among the highest in Latin America as well. A report by the *Economist* relates that Costa Ricans believe that public ownership is one of the reasons why their country has enjoyed peace and a more or less steady rise in living standards for half a century while chaos has raged all around it.²⁰

There were very good reasons to liberalize the telecom and electricity operators in Costa Rica. The foremost among them is the huge investment that is needed for upgrading and expanding the service. Considering the grand internal debate in the government, that investment was unlikely to come from the treasury coffers. To be sure, the president, Miguel Angel Rodriguez, made liberalization of these two industries a major issue on his agenda despite full awareness of the extent of public opposition and an earlier failure to privatize in 1988 (Bull, 2000). Even the management of the public corporations supported privatization. It even argued that without privatization tariffs would have to be raised considerably. For all that, the public continued to support the status quo of public ownership. When President Rodriguez continued to push his agenda of liberalization violent public protests erupted in the capital San Jose. When the pictures of policeman beating students were televised and when five demonstrators were shot by the police, public outrage boiled over. On 17 March 2000 about half a million out of the four million people in the country marched in protest all over Costa Rica. At that stage Rodriguez yielded and postponed his plans for privatization.

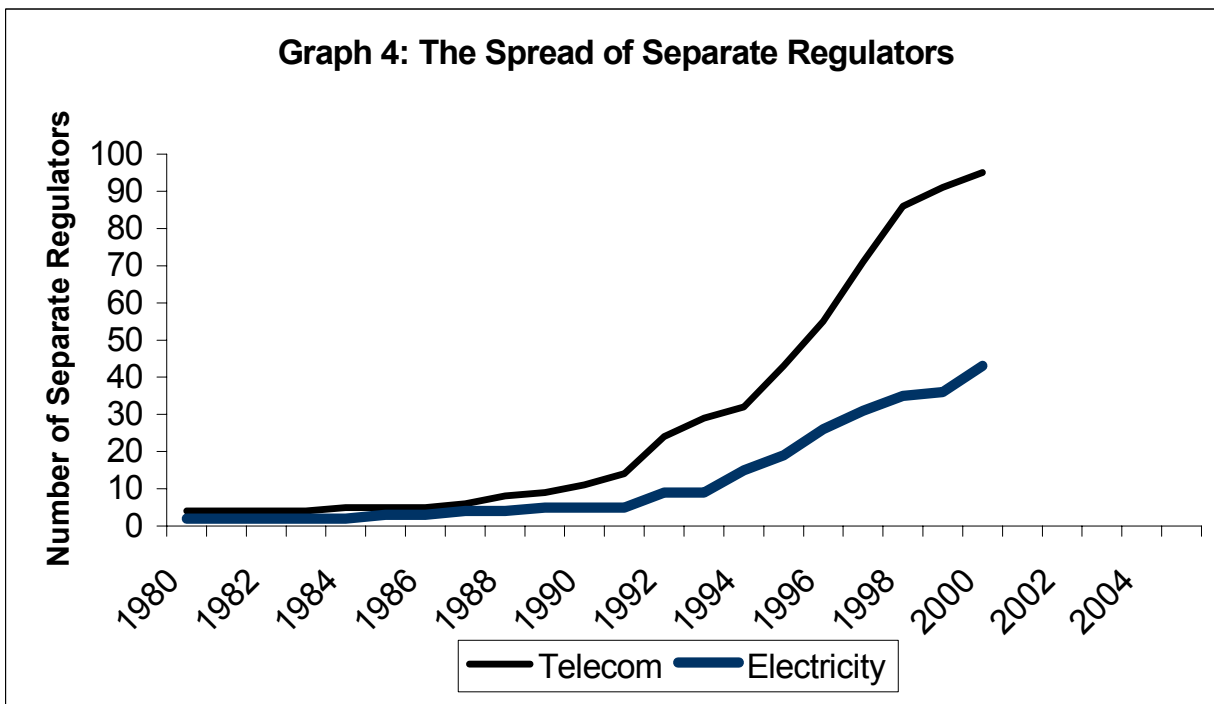
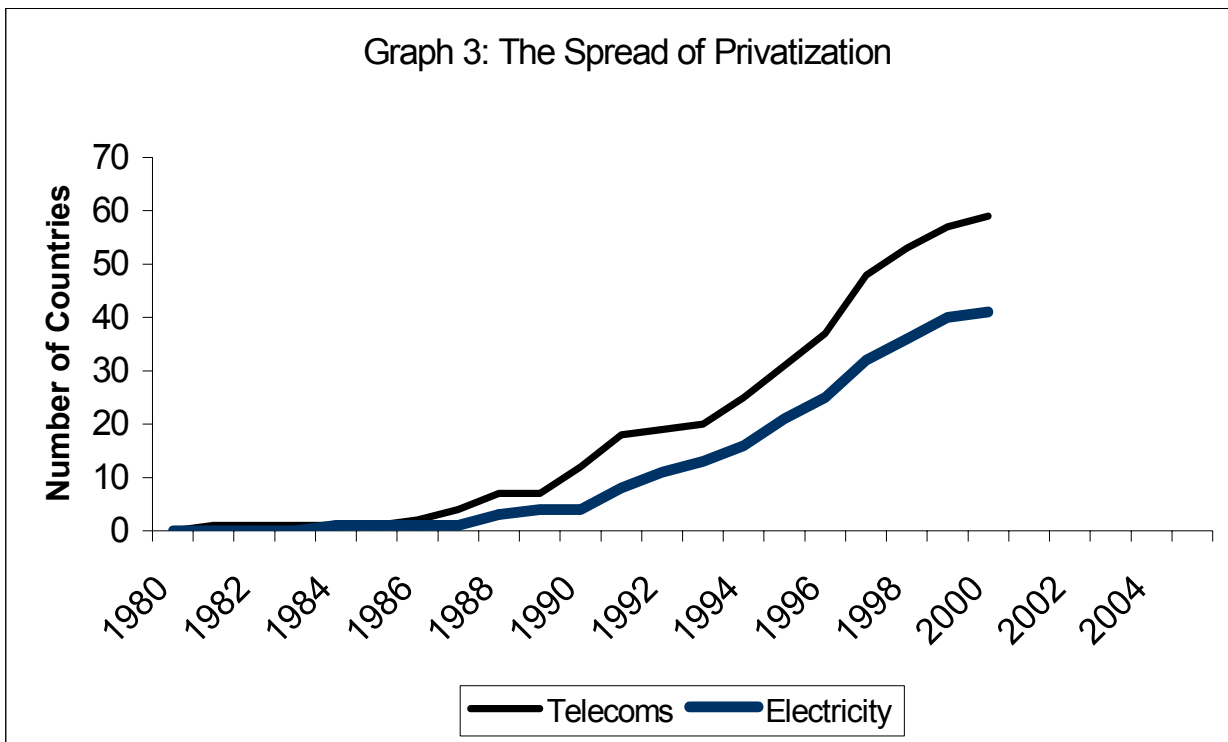
The interaction between six types of public officials creates a macro-level temporal diffusion pattern that is best described by a S-Shaped curve. The theoretical underpinnings of the diffusion curve are now discussed.

V. Macro Effects – the Patterns of Diffusion

The third and final component of our model consists of a deterministic diffusion model at the macro level.²¹ Diffusion processes are conventionally presented in two-dimensional graphs, where the horizontal axis represents time and the vertical represents the cumulative number of adopters. Repeated empirical observations reveal that the graphs usually take the shape of an S-curve. In our case the S-curve may be conceived as a reflection of a process where initially only a few officials adopt liberalization, new technology, medicine, fashion, etc. At the take-off state increasing numbers of adopters jump onto the bandwagon and there is an increase in the number of adoptions per time period. The end of the process is characterized by a moderation of the curve and stagnation in the number of adopters. This stagnation may be a result from the exhaustion of the pool of potential adopters or rejection of the innovation by a part of this group. Graphs 3 and 4 present the data collected on the diffusion of two indicators of liberalization, namely privatization and regulation for competition, in the two sectors. Although the process of the diffusion of liberalization has still not reached its end, we have no reason to believe that the S-curve will not eventually represent the process of diffusion in these areas, hence that a diffusion model may provide a close approximation of this process.

The following differential equation provides a basic model describing the rate of diffusion at any moment in time (Mahajan and Peterson, 1985):

$$(3) \quad \frac{d\pi(t)}{dt} = g(t)[N - \pi(t)]$$



Note for Graphs 3 and 4

A privatization event is documented when some shares in the incumbent public operator(s) were transferred to private ownership no matter how minimal was the

transfer. In many cases of privatization the process of selling the shares lasted many years. In those cases the earliest year of privatization was documented in the graphs. For regulatory authorities, the years refer to the start of operation, not to the date of legislation. Because the sources of the data vary (see below) the countries that are covered do not necessarily overlap.

where $\pi(t)$ represents the cumulative number of adopters at time t and N the total number of potential adopters. The left side of the equation represents the rate of diffusion at time t . Analytical distinction between external and internal sources of diffusion allows us to express the coefficient of diffusion $g(t)$ as a function the following two parameters:.

$$(4) \quad g(t) = \alpha + \beta\pi(t)$$

$$\left\{ \begin{array}{l} \text{Coefficient} \\ \text{of the Rate} \\ \text{of adoption} \\ \text{at time } t \end{array} \right\} = \left\{ \begin{array}{l} \text{Coefficient of the} \\ \text{influence from} \\ \text{outside the} \\ \text{population of} \\ \text{potential} \\ \text{adopters} \end{array} \right\} + \left\{ \begin{array}{l} \text{coefficient of the} \\ \text{effect of contagion} \\ \text{between adopters and} \\ \text{laggards times the} \\ \text{cumulative number} \\ \text{of adopters at time } t. \end{array} \right\}$$

The first component of equation (4) α is constant over time and does not depend on the number of adopters. It might therefore be conceived as the parameter that represents the effect of external influence on the rate of diffusion over time. External influence includes all the factors that affect the decision to adopt innovation (in our case to liberalize) that are external to the community of interacting agents. In our case this parameter may reflect the power of new knowledge about the costs of public ownership. Or it may reflect the introduction of new technologies that open new options (and constraints) for governance, pressures from international institutions such as the World Bank and the IMF, as well as the effect of new economic conditions on the propensity of officials to liberalize. A diffusion process that is purely driven by external factors (where $\beta=0$) is appropriate when officials are completely isolated from each other. These conditions are however rare, so the second component of equation (4) aims to capture the effect of interacting, socially embedded, agents. This component $\beta\pi(t)$ increases with the increase in the cumulative number of adopters, hence reflects the pressure of increasing numbers of liberalizers over those who have not yet jumped onto the

bandwagon. It is this component rather than the first (α) that points to contagion as a major force leading to herding and fulfilling one of the major criteria of our definition of herding.

We use a procedure for parameter estimation proposed by Mahajan and Peterson (1985) to estimate the effect of α and β for the diffusion of privatization and a separate regulatory authority in the telecom and electricity industries (i.e., the data represented in graphs 3 and 4). Nesting equation (4) in equation (3) results in the following diffusion model:

$$(5) \quad \frac{d\pi(t)}{dt} = (\alpha + \beta\pi(t))[N - \pi(t)]$$

Thus equation (5) allows us to account for the process of diffusion as the outcome of both external and internal influences. Equation (6) introduces the discrete analogue equivalent of equation (5) and rearranges the right side of equation (5).

$$(6) \quad \pi(t+1) - \pi(t) = \alpha N + (\beta N - \alpha)\pi(t) - \beta\pi^2(t)$$

This is a 3-parameter models (α , β , N) that can be solved by means of time-series data on the number of adoptions in each year through the following linear regression.

$$(7) \quad \pi(t+1) - \pi(t) = A_1 + A_2\pi(t) + A_3\pi^2(t) + e(t)$$

The data

The data were gathered from many sources including country reports, newspapers, journals, internet sites, databases of international organizations, and secondary literature. For the data on separate regulatory authorities in electricity and telecom see Levi-Faur (2001). For privatization see all the above but especially interviews and e-mail exchanges with regulatory authorities and ministries as well as reports on EU regulatory developments (<http://www.ispo.cec.be>), the ITU regulatory database ([27](http://www.itu.int/ITU-</p>
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D-TREG/), the OECD database (<http://www.oecd.org/subject/regreform/sectoral/telecommunications.htm>). Also the World Bank Database on privatization events for both electricity and telecom data (<http://wee.privatizationlink.org/praccorner.cfm>) and Bacon (1999). The data are organized in a database that covers 178 countries. This is the only database, as far as I know, that covers liberalization processes across different sectors, as most research is sector-specific (also in international organizations such as the World Bank). There are however two limitations to the data as analyzed here. First, the process of the diffusion of liberalization, especially in electricity, is still ongoing, so the estimation process gives only a limited view of the final outcomes. However, the relation between the telecom and electricity parameters is expected to change in a rather limited way with the advance of liberalization. Second, since the telecommunications sector is characterized by stronger and older international organizations, and since it has attracted a lot of attention, the data available on liberalization in this sector are relatively abundant, especially as compared with electricity. The scarcity of cross-national data on electricity results in some underestimation of the strength of liberalization diffusion in this sector. Yet the differences between telecom and electricity are wide enough to lend some confidence to the parameter estimations.

The results

The results of this regression are presented in table 1. They confirm what was already evident from graphs 3 and 4, namely the pace and extent of telecom liberalization are far more advanced than in electricity; and when they liberalize, public officials are more inclined to move towards the creation of separate regulatory authorities than to privatization. However, the diffusion model and the regression parameters also provide us with estimates of the external and internal effects of the process, things that are not visible directly from the graphs. They thereby afford us a comparable measure of the extent of contagious behavior (β) and distinguish the effects of external and internal influences (α and β) in the process of liberalization.

Indicators	Year of first-move (t=0)	No. of adopters (Year 2000)	Regression Constants (& standard error)			Diffusion Model Parameters		
			A1	A2	A3	α	β	N
Telecom Privatization	1982	58	0.15 (.636)	0.36 (.078)	-0.005 (.001)	0.0023	0.005	66
Electricity Privatization	1984	41	0.09 (.365)	0.42 (.070)	-0.009 (.002)	0.0019	0.009	46
Telecom – Regulatory Authority	1979	97	-2.28 (1.11)	0.57 (.088)	-0.005 (.001)	-0.022	0.005	104
Electricity – Regulatory Authority	1979	43	-0.788 (.683)	0.47 (.152)	-0.009 (.004)	-0.016	0.009	50

Table 1: Diffusion parameters for telecom and electricity liberalization

Levi-Faur provided some possible answers to the variations in the extent of liberalization in electricity on the EU level (Levi-Faur, 1999) and across Europe and Latin America (Levi-Faur, 2001). These answers focused on the variation in the risks and rewards of liberalization for public officials in these two sectors as an explanation for the different degrees of liberalization. Briefly, electricity liberalization is politically and economically more risky and less rewarding than telecom. Social support for telecom liberalization seem also to be much higher than for electricity liberalization. While it was possible that many politicians and governments used the notions of ‘information society’ in order to promote liberalization in telecom on one hand and electoral survival on the other, there was no equivalent in electricity, where in fact the opposite was the case. Liberalization in electricity encountered opposition from environmental organizations, with no similar equivalent in telecom. Considering the problems of environmental regulations as well as the lower rewards and higher risks in electricity liberalization, the relatively modest advance in electricity is still clearly impressive and the powerful effects of the ideological force beyond liberalization are confirmed.

VI. Herding towards New Convention: The Aggregate Model

It is now possible to suggest a comprehensive model of herding that is grounded in the micro incentives to herd, the contagious aspects of herding, and the diffusion at the macro level. While the model is formal and deductive it is suggested with a view to shedding light on much broader aspects of liberalization that one usually find in the rational-choice literature.

Imagine a decision node where a public official has the power to promote or reject liberalization programs in a specific sector. Our official is not omnipotent and does not even have most of the power or resources in the policy space. Instead, he is assumed to have the marginal power to either preserve the status quo or to overturn it. Suggestions for liberalization may come from domestic actors such as interest groups, policy entrepreneurs, advisors and the media, as well as from international actors such as the United States government and the International Monetary Fund. The policy preferences of our official as to the desirability of liberalization are endogenous to the policy process and are largely shaped through emulation. Our official will use her marginal power to promote liberalization only when her benefits from liberalization will be equal to or greater than its costs. In order to simplify the analysis the choice the official face is binary, that is, between liberalization and the status quo. When our official considers whether to adopt or reject liberalization he takes into account two types of costs. The first includes the political costs involved in liberalization (or the alternative of the status quo). The second is the costs the official is willing to tolerate in order to promote her preferences. While the first type of costs is identical for all officials, the second is 'personal' and reflects the autonomous choices that policy officials face when they take a decision. Let us denote the political costs of liberalization at time t by C'_t and the corresponding benefits by B'_t . The following equations represent the logistic decrease in the political costs of liberalization and the corresponding increase in the benefits of liberalization with the progress of the herding process.

$$(8) C_t^l = \frac{M}{ae^{p\pi(t)}}$$

$$(9) B_t^l = \frac{Q}{ae^{-q\pi(t)}}$$

where p , q , M and Q are positive constants and $\pi(t)$ is the cumulative number of officials that already liberalized.

Our official has autonomous preferences, and the benefits he gains from the satisfaction of these preferences equal at least to the costs he is willing to bear by satisfying these preferences. Let us denote the cost that he is ready to tolerate in order to realize his preferences for liberalization by K_t^{pl} and the costs he is willing to pay for the status quo by K_t^{ps} . Since his preferences vary in the herding process, these costs are a function of $\pi(t)$ as represented by the following S-shaped logistic-function:

$$(10) K_t^{pl} = \frac{Kpl}{1 + ae^{-m\pi(t)}} \times V$$

$$(11) K_t^{ps} = \frac{Kps}{1 + be^{n\pi(t)}} \times (1 - V)$$

where m and a as well as b and n are positive constants and V is binary variable that reflects the attitude of the official to liberalization. V takes the values of 1 if the official has positive attitudes to liberalization and 0 if he has negative attitudes. This means that if the official has negative attitude towards liberalization $K_t^{pl}=0$, namely he is not willing to pay any price for the realization of this option. Accordingly, the component $(1-V)$ gets the value of 1 if the official has positive attitudes to the status quo and value of 0 if he prefers liberalization. Equations (10) and (11) tell us what the official is willing to pay for his preferences and also that his preferences depend on the cumulative number of liberalizers $\pi(t)$. With the rise of $\pi(t)$ the price that the official who

favors liberalization is willing to pay for the realization of his preferences rises. At the same time the price that the official who favors the status quo is willing to pay for the realization of his preferences decreases with the rise of $\pi(t)$.

Since the price one is willing to pay for the realization of one's preferences is equal to one's benefits they can be added to the benefits of liberalization if one prefers liberalization. Accordingly, the price one is willing to pay for the fulfillment of the status quo can be subtracted from the costs of liberalization. Hence the expected costs (12) and expected benefits (13) are as follows:

$$(12) \quad E(C_t^l) = C_t^l - K_t^{ps}$$

$$(13) \quad E(B_t^l) = B_t^l + K_t^{pl}$$

An official will take a decision to liberalize if his expected costs of a decision to liberalize will be lower than or equal to his expected benefits, that is, only if

$$(15) \quad E(C_t^l) \leq E(B_t^l)$$

Equation (15) reflects the rationality of herding as conceptualized earlier by the theory of the micro-level incentives for herding. It is possible now to integrate the notion of benefits and costs, as specified by the herd model, with Granovetter's threshold model. Note that the intersection of $E(C_t^l)$ and $E(B_t^l)$ in equation (15) represents the official's personal threshold point. This is given in equation (16):

$$(16) \quad L_t^i = E(C_t^l) \cap E(B_t^l)$$

where the official i threshold point at time t is denoted by L_t^i and which tells us how many officials should liberalize before the utility functions of our official start to show the benefits of liberalization.

Now, after the integration of the herding and threshold models it is possible to move forward and to nest the contagious effects of the thresholds in a diffusion

model. The work of Norman Braun (1995) in this regard is especially instructive and it is followed here with some minor changes.²² The diffusion equation (3) suggests that the rate of liberalizers at time t is a function of the difference between the total number of officials and the number of officials who have already liberalized. The threshold model suggests that the rate of liberalizers at time t is represented by the difference between the actual number of officials whose threshold is below the threshold for liberalization and the cumulative number of liberalizers at time t . The rate of liberalization according to the threshold model is given in following equation:

$$(17) \quad \frac{d\pi(t)}{dt} = F(\pi(t)) - \pi(t)$$

where $\pi(t)$ represents the cumulative number of officials who have decided to liberalize. $F(\pi(t))$ represent the fraction of officials whose threshold for liberalization is less than $\pi(t)$. Nesting the threshold model in the diffusion model can be done by suggesting that equations (3) and (17) are equal. Hence

$$(18) \quad \begin{aligned} F(\pi(t)) - \pi(t) &= g(t) [N - \pi(t)] \\ F(\pi(t)) &= g(t) [N - \pi(t)] + \pi(t) \\ F(\pi(t)) &= (\alpha + \beta\pi(t)) [N - \pi(t)] + \pi(t) \\ F(\pi(t)) &= \alpha N - \alpha\pi(t) + N\beta\pi(t) - \beta\pi(t)^2 + \pi(t) \end{aligned}$$

The last result represents the cumulative distribution of liberalizers at time t given the number of officials whose threshold is below $\pi(t)$. It is possible to derive the density function $f(\pi(t))$ by differentiating $F(\pi(t))$. The result is given as follows:

$$(19) \quad f(\pi(t)) = 1 - \alpha + N\beta - 2\beta\pi(t)$$

All in all, the integrated model offers an account of the micro foundations of the mimetic behavior of public officials. It describes the rise of the benefits and the decline of the costs of liberalization with the rise in the number of countries that have liberalized with the help of S-shaped logistic equations (12) and (13).

At the same time it identifies the officials' threshold points (16), and finally offers an equation representing the rate of change in the number of liberalizers over time (19).

VII. Conclusions

The point of departure of this paper was the suggestion that political and social orders are maintained and consolidated through the creation, diffusion, and internalization of conventions in a process that might best be called herding. The rationality of herding at the micro-level increases with the number of political agents who adopt a certain course of action. The rationality of certain actions changes in time. In our case, as more countries liberalize the preferences and payoffs of public officials in countries that have not liberalized are no longer so certain and stable. Increasingly liberalization is perceived as inevitable, and the public officials' room for maneuver narrows down to questions of *when* and *under what terms* will they liberalize rather than *whether* to liberalize. As more countries liberalize, officials who are inclined to liberalization become increasingly daring and confident about their likelihood of success, while those who oppose liberalization are increasingly discouraged. More officials contemplate a change in their preferences and recalculate their payoffs. As the weakest links in the old regime fall apart the tide of liberalization becomes almost irresistible, and a new convention about the best way to govern these sectors is shaped. The dynamics of herding through mimetic behavior and 'borrowed cues' exerts powerful effects on the preferences, strategies, and payoffs of individuals. Indeed, so powerful are its effects that many have argued that it is better to join it than to fight it. An old Jewish saw tells us that "the voice of the crowd is as the voice of the Almighty"; and both the philosopher Immanuel Kant and the sociologist George Simmel share the opinion that it is far better to follow fashion than to avoid or totally neglect it (Gronow, 1993, 89-90).²³

Our model builds on three major theories, each shedding light on some aspects of the creation of conventions through herding. First, the model took off from herd models as developed mostly by economists and applied to describe utility maximization at the micro-level. These theories help us to distinguish four mechanisms of cascading behavior that may lead to herding. Second, Granovetter's threshold model of mass behavior in heterogeneous population allowed us to express the motives for herding through the notion of thresholds and thus to make the first link between two models and studies that had not communicated before. Third, models of diffusion that analyze macro-level spread of innovation across homogenous population let us express the idea that the spread of policies is a function of the gap between the potential adopters of the policy and those who have already adopted it. This link between threshold models and diffusion models allowed us to complete the integration of the three theories into one model of policy transfer. In doing so we hope to narrow a gap in the literature of the discipline of politics, which has confined itself to the macro and meso-levels of analysis in the study of policy transfers.

It might be beneficial at this stage to note some implications of the model and to suggest a few avenues for further research. First is the suggestion that policy outcomes at the macro level are not necessarily the outcome of simple aggregations of preferences at the micro level. Next and equally important is the suggestion that policy transfers are not simply a product of hegemonic power and international institutions. It takes more than just the power of international institutions and dominant and resourceful governments to explain the spread of liberalization and other governance regimes all over the world. Now, if the first two implications of our analysis of the policy process are accepted, a third may be suggested. . Interdependencies between cases should not be understood primarily as a methodological problem of control over intervening variables but as a major mechanism in the creation of stable political orders. Therefore one may want to engage in future research by

examining the formal model as proposed here against wide variety of political data on process of change.

Notes

¹ See, Telephones in the Maldives, *The Economists*, August 5, 2001, p. 59.

² A reasonable case can be made for allowing a temporary period of monopoly for basic services in under-developed economies.

³ Uncertainty as to the value of one's own information is one of four mechanisms of herding that will be discussed below.

⁴ I prefer gender-neutral pronouns but in order to be consistent I refer to political agents as "he" rather than "she".

⁵ A prominent scholar of diffusion, Elihu Katz, wrote recently: "It cannot be far wrong to assert that every one of the social sciences and humanities has, at least intermittently, given attention to the question of how things – ideas and practices – get from here to there. . . Yet, there has been very little generalizing of finding across disciplines and, more surprisingly, within disciplines, which is just another way of saying that there is a poverty of theory. There is an apparent paradox at work: the number of diffusion studies continues at a high rate while the growth of appropriate theory is at apparent standstill" (Katz, 1999, 145).

⁶ Top-down explanations discuss liberalization (or any policy transfer) as a result of exogenous pressure from central sources. Bottom-up explanations clarify the spread of liberalization as an outcome of domestic struggles in each of the relevant units of analysis. In both cases the effects of horizontal contagion are often disregarded.

⁷ Some fine examples of this literature can be found in special issues of the *Journal of Public Policy*, Vol. 11, No. 1 (1991), *Policy Science*, Vol. 21, No. 2/3 (1988), *Governance*, Vol. 13, No. 1 (2000). See also Ikenberry (1990), Dolowitz and Marsh (1996), and DiMaggio and Powell (1991).

⁸ Notable are the applications of herd reasoning by Kuran to the process of ethnification (1998) and, together with Sunstein, the regulation of risks (1999) as well as Lohmann's (1994) study of the demonstrations in Leipzig that triggered the collapse of the GDR.. The only political scientist who deals with micro-theories of herding is to the best of my knowledge Mizrahi: see Gavius and Mizrahi (2001).

⁹ This situation is especially remarkable in the study of privatization and regulatory reforms of infrastructure industries.

¹⁰ Compare: "Social theory has too often taken the easy path of creating, conceptually, exactly that kind of creature at the micro level that by simple aggregation will produce the observed systemic behavior – whether that systemic behavior is the orderly and mundane functioning of a bureaucracy or the spontaneous and emotional outburst of a crowd" (Coleman, 1990, 197).

¹¹ The emphasis is on similar choice rather than on general strategic responses (a situation which is best described as an assurance game with one clearly superior result that is achieved by non-cooperative strategic choices of the players).

¹² However, the threshold values are combinations of various characteristics of individuals' behavior. Therefore they do not have any special conceptual status.

¹³ While it might be argued that the temporal variation in the officials' threshold points during the process of herding might blur these distinctions, it is unlikely that they will vary so radically. Even if threshold points vary radically, they still supply us with some important insights into the process of herding.

¹⁴ The first move in the direction of liberalization had been made in 1983. The Energy Act of that year allowed private generators to sell electricity to final consumers using the national grid as a common carrier. The act however failed to change the de facto monopoly of the state-owned generation companies.

¹⁵ Cited in Fraser Derk, *The Welfare State*, Sutton Publishing, Gloucestershire, 2000, p. 2.

¹⁶ A snob in economic theory is defined in similar way. In the snob case, "the individuals consumer's demand is negatively correlated with the total market demand" (Leibenstein, 1950, 199).

¹⁷ The source of the telecom data is on ITU's basic indicators, 2001 (see, <http://www.itu.org>). Electricity data are taken from the *World Development Indicators, 2001*, from the World Bank (see <http://www.worldbank.org>).

¹⁸ The average for 16 LA countries is 1172 KWh . Data for 1998, From the *World Development Indicators*, The World Bank, 2001, pp. 302-304.

¹⁹ Financial Times Energy, (1998). *Electricity and Gas Regulation in Latin America*, London, p. 241.

²⁰ Sparks Fly, *The Economist*, 9-11-2000.

²¹ Diffusion is the process by which beliefs, innovations, behavior and norms are "communicated thorough certain channels over time among the members of a social system" (Rogers, 1983, 5).

²² While Braun's diffusion model follows Andreas Diekmann's formulation ours follows Mahajan and Peterson (1985). The technique of integration is however the same.

²³ While Kant makes a passing reference on the subject of fashion, George Simmel (arguably with Gabriel Tarde) is the founding father of the sociological theory of fashion.

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