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What Drives the Diffusion of Privatization Policy? Evidence from the Telecommunications Sector

CARINA SCHMITT *Political Science, University of Bremen*

ABSTRACT

This paper examines the extent to which diffusion mechanisms have been important for the privatization of telecommunications in the OECD world. It analyzes a panel dataset for 18 OECD countries between 1980 and 2007 using spatial econometric techniques. The sample includes 18 OECD countries between 1980 and 2007. The empirical findings strongly suggest that spatial interdependencies are significant for privatization policies. First, closely related countries from a geographical or economic perspective influence each other to a greater extent than non-related countries. Second, there is no evidence that governments adopt policies of countries with a similar cultural background or the policies of those countries where privatization has been shown to lead to the intended economic results at the company level. Third, the importance of diffusion is highly influenced by national characteristics such the openness of the economy.

Key words: *diffusion, privatization, public entrepreneurship, telecommunications*

Liberal economic policies in general and privatization in particular have spread around the globe in recent decades (Bortolotti et al. 2003). While in the beginning it was mainly the industrial sector that was affected by the sale of public enterprises, governments have also applied divesture programs to traditional public services such as telecommunications, the post and water services (Clifton et al. 2003). These network-based utility sectors[1] are typically considered natural monopolies and therefore affected by market failure (Majone 1997: p. 144). With the emergence of neoliberal ideas, public enterprises were no longer seen as an effective instrument for responding to market failure and privatized in order to meet macroeconomic objectives such as economic growth or the reduction of public debt (Bortolotti and Siniscalco 2004). Privatization in network-based utility sectors often began with a restructuring process, transforming administrative bodies or public corporations into joint stock companies (i.e. formal privatization). Formal privatization has typically led to the divestment of public shares (i.e. material privatization).[2]

Privatization is now considered "an established policy" in the OECD world (Meseguer 2009: p. 111). When explaining the timing and the extent of privatization, the existing research literature has primarily focused on domestic and external factors. Right-wing parties, a high level of public debt and an institutional arrangement with a low number of veto points are assumed to accelerate the privatization process. Furthermore, international factors such as globalization and Europeanization as well as technological progress are seen as fostering the retreat of the state (Boix 1997; Bortolotti and Siniscalco 2004; Schneider and Häge 2008). However, the majority of the studies neglect possible *spatial interdependencies* among countries and assume that governments choose policy strategies independently of each other. However, it is plausible that governments emulate the strategies adopted by neighboring countries, succumb to the peer pressure of their reference group or learn from best practice. In a nutshell, privatization has "diffused rather than [being] reproduced independently as a discrete event in each country and sector" (Levi-Faur 2005: p. 28). This paper examines to what extent and under what circumstances the privatization of network based utilities results from policy diffusion across the OECD world.

Privatization in the telecommunications sector is significant for several reasons. First, diffusion processes seem most likely to occur in sectors that operate across borders and are not restricted by national boundaries. Second, the telecommunications sector is important in economic terms as it contributes up to 4 percent of GDP and providers are among the largest national employers. Third, the privatization process of telecommunications services has advanced and provides enough variance for a meaningful analysis of diffusion processes. The sample includes 18 OECD countries between 1980 and 2007, because comprehensive privatization programs started in the 1980s.

The paper proposes a new indicator which integrates the two relevant dimensions of privatization in the network based utility sectors: formal and material privatization. Secondly, a completely new panel data set on privatization in the telecommunications sector offers a unique opportunity for a broad-based international comparison. Thirdly, spatial interdependencies are explicitly analyzed and attention is paid to disentangling spatial dependence from other sources of spatial patterns such as common trends and shocks or the spatial clustering of explanatory variables. Finally, by analyzing several distinct diffusion mechanisms and the role of mediating factors, a more comprehensive picture of spatial interdependencies can be drawn than it has hitherto been the case.

Explaining Privatization: A Brief Review of the Literature

The first international comparative studies emphasized domestic and external factors as relevant for the timing and the extent of privatization processes.

For example, Boix (1997) found for a sample of OECD countries that right-wing parties are more inclined to privatize than left-wing parties. However, Zohlnhöfer and Obinger (2006) provide evidence that while the influence of party differences was especially relevant in the 1980s it has decreased over time. Furthermore, using a sample of 14 European and 21 OECD countries they find that institutional pluralism negatively affects privatization. Moreover, budget deficits are seen to put pressure on governments to divest shares (Belke et al. 2007). For two large samples of 34 and 49 countries, Bortolotti et al. (2003) state that slow economic growth encourages the state's retreat from telecommunications services and that the liquidity of stock markets and government credibility are associated with high privatization proceeds. Brune et al. (2004) examine the relevance of the IMF for material privatization activities for a sample of 96 countries receiving IMF support. Their results support the proposition that international institutions and economic problems trigger privatization.

Some studies examine the influence of Europeanization on privatization policies. Europeanization commonly denotes "the impact of European policies on national policies, practices, and politics" (Knill and Lehmkuhl 2002: 255; Börzel and Risse 2003; Olsen 2002; Schmidt 2002). In a sample of 20 OECD countries between 1970 and 2000, Schneider and Häge (2008) find that European integration accelerated the reduction of public involvement in the infrastructure sectors in the member states of the European Union. However, Schneider (2001) argues that the influence of policymaking at the European level varies between countries and that in many countries reform policies in the telecommunications sector were "the effects of a global chain reaction" and less the result of Europeanization (Schneider 2001: p. 73). By analyzing the changes in national regulation of the telecommunications sector in Britain, Germany, France and Italy, Thatcher (2004) states that the main causes for the shift towards privatization were non-EU influences. Governments have used European policy to justify and legitimate change rather than change itself being fuelled by EU policymaking (Thatcher 2004: p. 304). In terms of the liberalization processes in the telecommunications and electricity sectors, Levi-Faur (2004: 18) finds that most of the major features of liberalization "would have diffused to most if not all member states [of the EU][3] even in the absence of distinct structures of governance at the European level.

Scholars have now begun to consider cross-national interdependencies empirically when analyzing privatization processes. Though different mechanisms of policy diffusion such as policy-oriented learning, social learning (Sabatier 1987; May 1992; Hall 1993), lesson-drawing (Rose 1991, 1993) and emulation (Dobbin et al. 2007) have been discussed from a conceptual and theoretical perspective since the 1990s but until recently

comparative empirical research has largely neglected the role of cross-national interdependencies. An empirical test of hypotheses about policy diffusion and the different underlying mechanisms is quite difficult to apply in practice. Indeed, the "state of the art (…) is clearly biased towards a conceptual discussion not yet matched by empirical analysis" (Meseguer and Escribà-Folch 2010: p. 5).

Having conducted one of the few empirical studies analyzing spatial interdependences regarding privatization, Meseguer (2004, 2009) shows that privatization efforts in Latin American countries are a result of rational learning from regional experiences rather than from the experiences of OECD countries. In contrast, European countries such as Spain and Portugal tend to learn from Latin American experience when it comes to privatization. Using a sample of 92 countries, Kogut and MacPherson (2008) show that the spread of American-trained economists in think tanks fosters the diffusion of privatization. Levi-Faur (2003) analyzes privatization as one part of the liberalization of the telecommunications and electricity sectors in 32 European and Latin American countries. By using descriptive statistics to detect evidence of policy transfer, Levi-Faur finds that in Latin American countries policy transfer is "emulative, coercive and simple" (Levi-Faur 2003: p. 730), while European countries tend to learn from each other.

This brief review reveals several limitations in the literature. First, the vast majority of studies emphasize domestic and external factors as driving and structuring privatization and assume that governments implement privatization policies independently from each other. The empirical analysis of interrelationships between countries or groups of countries is still in its infancy. Spatial patterns, if considered at all, are often seen as a nuisance and relegated to the error term. Second, the very few empirical studies focusing on the diffusion of privatization generate ambivalent empirical findings. Typically they focus on only one channel of diffusion (Kogut and MacPherson 2008; Levi-Faur 2003; Meseguer 2009). Third, studies analyzing diffusion mechanisms implicitly assume that all countries are equally sensitive to diffusion processes and that the importance of spatial interdependencies does not depend on national characteristics. The relevance of conditioning factors for the diffusion of privatization policy has not been considered. Forth, the quantitative literature on privatization focuses on privatization proceeds (Belke et al. 2007; Boix 1997; Bortolotti and Siniscalco 2004; Zohlnhöfer et al. 2008), on the percentage of shares held by the state (Schneider and Häge 2008) or on privatization activities in the form of divestments of public shares (Kogut and MacPherson 2008; Meseguer 2004, 2009). These indicators only map the material dimension of the phenomenon but do not take formal privatization into account. However, this dimension is of particular relevance with regard to public utilities.

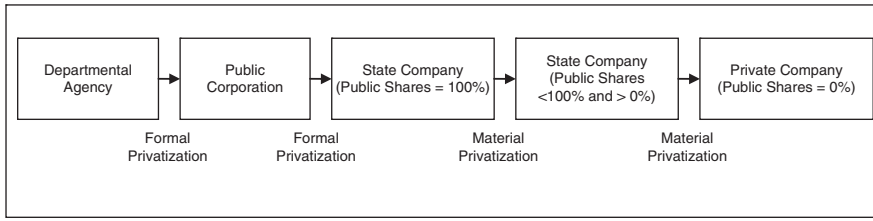

FIGURE 1 *Conceptualization of Privatization*

Concepts and Hypotheses

Concept of privatization

Despite national differences, two types of formal privatization can be distinguished. The first type refers to the transformation of a departmental agency as a part of a ministry (e.g. the Direction Générale des Télécommunication in France) into a public corporation (e.g. France Télécom) that is subject to special or public law. While a departmental agency does not have its own legal personality and is subordinated to a ministry, a public corporation is an autonomous public body with its own legal status and a partially commercial structure. Although a law or statute often defines the objectives of a public corporation, it has more autonomy in day-to-day operations than a departmental agency (Boes 1986). The second type of formal privatization is the change of a public corporation into a state company subject to private law such as a joint stock company (e.g. British Telecom plc). A state company is subject to the same rules as private companies. In contrast to public corporations or departmental agencies, state companies are only responsible for the well-being of the enterprise itself. The state remains the unique stakeholder (Boes 1986).[4] Before the public enterprises are formally privatized it is not possible to sell shares and therefore to start material privatization. Figure 1 illustrates the conceptualization of formal and material privatization.

Hypotheses

The basic assumption of spatial interdependencies is that the policy choice of policy actors is influenced by the choices that others make (Dolowitz and Marsh 2000; Franzese and Hays 2007). Interdependencies among countries may lead to the diffusion of policy strategies. Diffusion is a process by which the adoption of a certain policy in one or more countries leads to policy changes in other countries (Dobbin, Simmons, and Garrett 2007; Freeman 2008; Strang 1991: p. 4).

What drives the diffusion of privatization policy? The processes of policy diffusion encompass a wide range of different but closely related concepts such as lesson-drawing, (Rose 1993), policy-oriented learning (Sabatier 1987),

social learning (Hall 1993), Bayesian learning (Meseguer 2005, 2009) and emulation (Dobbin et al. 2007; Levi-Faur 2002) "While the terminology and focus often vary, all of these studies are concerned with the process by which knowledge about policies, administrative arrangements, institutions and ideas in one political system (past or present) is used in the development of policies, administrative arrangements, institutions and ideas in another political system."[5] (Dolowitz and Marsh 2000: p. 5; 1996; Freeman 2008). Governments scan the available information and evidence on the failure and success of certain policy strategies and draw lessons from other experiences (Rose 1993). They follow those countries in which policy decisions produce the intended results (Lee and Strang 2006). A "foreign model may (…) offer a ready-made answer to ill-defined domestic pressure for 'change' and 'innovation' " (Simmons and Elkins 2004: p. 174) and may provide information about the costs and the benefits of a particular policy strategy. Privatization policy might also be diffused because governments imitate the dominant policy fashion within a group of similar and closely related countries (Elkins and Simmons 2005; Simmons and Elkins 2004). Linked together through intense communication networks, governments follow the policy mainstream in order protect their reputation or to "avoid the stigma of backwardness" (Meseguer 2009: p. 27; Simmons and Elkins 2004). The application of a policy by many others serves "as information that this might be the best thing to do" (Holzinger and Knill 2005: p. 784).

The probability of learning from each other or emulating the policy of related countries should, in principle, vary with the intensity of communication between two countries and therefore with the availability of information. Indeed, governments can only pay attention to information at hand. The availability of information and the intensity of communication depends first of all on geographical proximity, which may increase the connectivity of countries (Simmons and Elkins 2004). Countries located in close geographical proximity are directly accessible to each other and typically demonstrate a large exchange of information. Policy change enacted next door has particular immediacy and therefore availability. Hence, neighbors are assumed to influence each other more strongly than countries located on different sides of the globe (Weyland 2006).

Second, cultural propinquity in terms of a common language or heritage facilitates communication and enhances the possibilities for sharing information. It is likely that political actors mimic the policy trend within their "Family of Nations" (Castles 1993) or cultural reference group encompassing countries with the same cultural roots. Cultural proximity should, in principle, give salience to new models and policymakers will tend to study them closely. The diffusion of privatization policy should therefore occur to a greater extent among countries with a similar cultural background (Simmons and Elkins 2004: p. 175; Lee and Strang 2006: p. 889; Lenschow et al. 2005).

Third, intense communication can also be defined by private and business economic actors who establish dense communication networks. "Business people may transmit ideas about the appropriate economic policy by looking to the experiences of the countries with which they have especially intense trading contacts" (Simmons and Elkins 2004: p. 175). A government will especially take the policies of trading partners into account "because of the close communication (learning through communication) and dependency (control through resource dependence) between those countries" (Jahn 2006: p. 408). This leads to the following hypotheses.

H1: Countries adopt the privatization policy of other countries located in their geographical proximity.
H2: Privatization policy diffuses amongst countries with a similar cultural background.
H3: Governments adopt the policy of their most important trading partners.

Furthermore, governments may imitate those policy outputs expected to lead to the intended outcome. Regarding privatization policy, one central political objective has been to improve the financial and operating performance of public enterprises. Political decision-makers have emphasized the importance of corporate governance techniques (i.e. formal privatization) as well as the divestment of shares (i.e. material privatization) as important tools for resolving agency problems and, as a consequence, for increasing efficiency at the company level (Megginson and Netter 2001; Shleifer and Vishny 1997). Governments may observe the economic performance of privatized firms in other countries. If privatization efforts do indeed lead to improvements in the performance indicators of the telecommunications provider in question, it is expected that the political decision-maker will imitate these policy strategies (Meseguer 2005).

H4: Governments implement the privatization policies of those countries where privatization appears to have improved the performance of the national telecommunications provider.

However, it is likely that the effect of diffusion is conditioned by national characteristics. Country attributes might mediate the relevance of diffusion in domestic policy choices since not all countries are equally sensitive to diffusion mechanisms (Gilardi 2010; Brooks 2007). First, the diffusion of privatization policy may be shaped by the party composition of the government. The ideology and the prior beliefs of political actors constrain the influence of new information (Gilardi 2010: p. 651). The imitation of privatization policy is more likely when the government is controlled by right-wing parties since market-oriented policies are more compatible with their party platform. By contrast, left-wing parties should, in principle, be

more sceptical of, and reluctant to adopt, liberalization and privatization policies (Martin 2010).

Second, it is likely that governments in open economies will be more receptive to diffusion mechanisms. If markets are highly open to external influences, political actors will adopt international trends to a greater extent. This is of special relevance for the privatization of public enterprises. If governments in open economies were to disregard the global trend of privatization, companies might not be competitive in international markets and might not be "capable of meeting [the challenge of][6] other national champions" (Thatcher 2004: p. 30; Schmidt 2002). This might particularly effect open economies with a high dependence on international markets. In less open economies with a greater focus on the domestic market, the costs of dropping behind might be lower. This leads to the following hypotheses:

H5: Leftist governments are assumed to be more reluctant to facilitate the diffusion of privatization policy.
H6: In open economies diffusion processes are of greater relevance than in less open economies.

The EU literature also discusses diffusion mechanisms associated with Europeanization (Börzel and Risse 2003; Olsen 2002). Radaelli (2003, 2008), in particular, links Europeanization to policy learning and policy diffusion. Besides the pressures on member states arising from directives and regulations passed at the European level, the EU might influence the member states by "soft" framing mechanisms and by triggering learning dynamics (Radaelli 2003: p. 43, 2008; Börzel and Risse 2003). Indeed, learning "becomes an especially important feature where the EU does not work as a law-making system" (Bulmer and Radaelli 2004: p. 11). However, in the telecommunications sector EU regulations and directives set "targets for the date, kind and amount of liberalization" (Schmidt 2002: p. 897). Moreover, privatization programmes were implemented partly before they were discussed at the European level and primarily by non-European countries. Therefore, it is unlikely that discourses about the privatization of telecommunications services were restricted to the European Union or that privatization diffused differently or to a greater extent within the European Union than elsewhere.[7]

Data and Methods

Measurement and description of public entrepreneurship

One of the central limitations of existing empirical literature is the measurement of privatization. The proceeds obtained by privatization, which are typically used as an indicator, only permit the analysis of the

divestment of shares and not the extension of public entrepreneurship. Furthermore, none of the existing indicators incorporates formal privatization as a dimension that is especially relevant to network based utilities. Therefore, a new 'index of public entrepreneurship' has been developed which brings together the concepts of formal and material privatization.[8] Pubic entrepreneurship refers to the state acting as entrepreneur and the index denotes the level of public involvement in the provision or production of market goods and services. Based on this, a completely new database has been generated which provides internationally comparative data for all telecommunications providers.

Formally, the Index of Public Entrepreneurship is calculated as follows:

$$I = X_i^{DA} + \alpha \cdot X_i^{PC} + \beta \cdot \sum_{i \in SC_j} X_i^{SC} \cdot s_i^{SC} \quad (1)$$

X^{DA} 1 = Departmental Agency; 0 = Other Organizational Form
X^{PC} 1 = Public Corporation; 0 = Other Organizational Form
X_i^{SC} 1 = State Company; 0 = Other Organizational Form
α Weighting for Formal Privatization, Type I
β Weighting for Formal Privatization, Type II
s_i^{SC} Shares held by the State

The index identifies the type of organizational form (Departmental Agency, Public Corporation, State Company) and the percentage of shares owned by the government (*s*) on an annual basis and has a range from 0 to 1. The different organizational forms are weighted according to their autonomy from the political centre of authority. If a departmental agency (DA) provides national telecommunications services, the index equals 1 which is the maximum value (in this case X^{DA} equals 1 and X^{PC} as well as X^{SC} 0). When the state transforms the departmental agency into a public corporation (PC), then X^{PC} is weighted with α (here X^{DA} and X^{SC} are 0). α has to be smaller than 1 to indicate the retreat of the state and the enterprise's greater autonomy from political actors. The weighting for a transformation into a joint stock company is β. Since the possibilities for political actors to influence operational decisions are lower with a joint stock company than with a public corporation (even though the state remains the unique shareholder), β has to be smaller than α. If the state additionally sells public shares (material privatization) the index value further decreases. When, for instance, 49 per cent of the public shares are divested, the weighting equals $\beta \times .51$ as the state still holds 51 per cent of the shares. Once a firm becomes completely privately owned ($s = 0$), it drops out of the index.[9] The sample includes 18 OECD countries[10] and covers the period from 1980 to 2007.[11]

To illustrate the national privatization paths, Table 1 shows the development of public entrepreneurship in 18 OECD countries for the period between 1980 and 2007.

It reveals a remarkable degree of variation over time and across space. While in most countries, telecommunications services were provided by departmental agencies at the beginning of the observation period (e.g. Germany & Norway), other countries (e.g. Spain & the United Kingdom) start at a relatively lower level of public entrepreneurship. Furthermore, countries such as France or the Netherlands restructured their telecommunications enterprises gradually, while New Zealand, for example, has radically privatized its telecommunications provider. The national timing of privatization also differs greatly from country to country. Japan, New Zealand and the United Kingdom started to privatize in the 1980s. By contrast, other countries such as Switzerland and Finland did not jump onto the privatization bandwagon until the 1990s. Overall, a clear downward convergence trend is observable, even though the state has not completely withdrawn from telecommunications services in most countries.

Method

The basic assumption of this paper is that privatization policy diffuses across space. Spatial interdependencies can be modelled by including a spatial term as a regressor (spatial lag model) (Anselin 2003). The general spatio-temporal autoregressive model (STAR) can be expressed as follows:

$$y = \rho \cdot Wy + \phi \cdot My + X\beta + \varepsilon \qquad (2)$$

where y is private involvement in the telecommunications sector. Private involvement is measured by 1 minus the level of public entrepreneurship I (for the 'Index of Public Entrepreneurship I', see above).[12] ρ is a spatial autoregressive coefficient and Wy the weighted average of the dependent variable (spatial lag). The spatial weight matrix W ($NT \times NT$) reflects the relative connectivity of each country i to every other country at time t. The effect on a focal country is then a weighted sum of outcomes across countries (Lee and Strang 2006). ϕ is the temporal autoregressive coefficient and M an $NT \times NT$ matrix to create the first order temporal lag (ones on the minor diagonal). X is a set of exogenous right hand side variables. Before analyzing the different diffusion mechanisms, it must be checked whether there is spatial association in the dependent variable. Moran's I as well as Geary's C indicate spatial correlation for all estimated models. Furthermore the local indicators for spatial association show that the spatial correlation is not caused by a single value.

True spatial interdependence has to be carefully distinguished from other sources of spatial association in order to solve Galton's problem. Spatial patterns in the dependent variable might also be caused by common

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Table 1. Dynamics of Public Entrepreneurship in OECD Countries

	Cells show the level of public entrepreneurship																												
Country/year	1980	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	2000	01	02	03	04	05	06	07	
Norway	1	1	1	1	1	1	1	1	.75	.75	.75	.75	.75	.75	.5	.5	.5	.5	.5	.5	.39	.39	.39	.31	.27	.27	.27	.27	
Switzerland	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	.33	.33	.33	.33	.31	.31	.31	.31	.27	.26	
Belgium	1	1	1	1	1	1	1	1	1	1	1	1	.75	.75	.5	.5	.26	.26	.26	.26	.26	.26	.26	.26	.26	.26	.26	.26	
France	1	1	1	1	1	1	1	1	.75	.75	.75	.75	.75	.75	.75	.75	.5	.4	.31	.31	.28	.21	.21	.21	.16	.16	.16	.14	
Austria	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	.5	.47	.37	.37	.24	.24	.24	.24	.15	.15	.13	.13	
Germany	1	1	1	1	1	1	1	1	1	1	.75	.75	.75	.75	.75	.5	.37	.3	.25	.22	.22	.16	.16	.13	.12	.08	.08	.08	
Finland	1	1	1	1	1	1	1	1	1	1	1	1	1	1	.75	.75	.75	.5	.39	.34	.32	.32	.1	.1	.07	.07	.07	.07	
Australia	1	1	1	1	1	1	1	1	1	.75	.75	.5	.5	.5	.5	.5	.5	.34	.34	.25	.25	.25	.25	.25	.25	.25	.09	0	
Denmark	1	1	1	1	1	1	1	.75	.75	.75	.5	.5	.5	.48	.28	.28	.28	0	0	0	0	0	0	0	0	0	0	0	
New Zealand	1	1	1	1	1	1	1	.5	.5	.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Ireland	1	1	1	.75	.75	.75	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.4	.4	0	0	0	0	0	0	0	0	0	
Sweden	.75	.75	.75	.75	.75	.75	.75	.75	.75	.75	.75	.75	.75	.5	.5	.5	.5	.5	.5	.5	.35	.35	.23	.23	.23	.23	.23	.19	
Japan	.75	.75	.75	.75	.75	.5	.5	.48	.46	.45	.43	.41	.39	.37	.35	.34	.32	.3	.28	.26	.25	.24	.24	.23	.23	.21	.19	.17	
Netherlands	.75	.75	.75	.75	.75	.75	.75	.75	.75	.5	.5	.5	.5	.5	.35	.23	.23	.23	.23	.23	.2	.14	.14	.14	.14	.11	0	0	
Portugal	.75	.75	.75	.75	.75	.75	.75	.75	.75	.5	.5	.5	.5	.5	.36	.25	.12	.12	.06	0	0	0	0	0	0	0	0	0	
UK	.75	.5	.5	.5	.24	.24	.24	.24	.24	.24	.24	.13	.13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Greece	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.47	.38	.33	.26	.26	.21	.17	.17	.18	.13	.2	.14	
Canada	.5	.5	.5	.5	.5	.5	.5	.12	.12	.12	.12	.12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Spain	.2	.2	.2	.2	.2	.2	.2	.17	.17	.17	.17	.17	.17	.17	.17	.11	.11	0	0	0	0	0	0	0	0	0	0	0	

Source: Compiled by the author.

shocks, trends or unobserved spatial heterogeneity. The only way to disentangle spatial dependence from its alternatives is to model it and include appropriate right hand side variables (Pluemper and Neumayer 2010: p. 215). A failure to account for such alternatives will bias the spatial lag coefficient. To control for common shocks, I added period dummies. Furthermore, a lagged dependent variable captures common trends and temporal dynamics.[13] A lagged dependent variable has the disadvantage of accounting for the largest part of the variance in the dependent variable and of absorbing the explanatory power of the other substantial right hand variables. However, the focus in this paper is to guarantee reliable results for the spatial lags and *not* to identify the substantive influence for the control variables. Therefore, the procedure can be seen as a conservative test strategy for the hypotheses dealing with spatial interdependencies since "a statistically significant effect (…) under such a condition, (…) is a valuable evidence of a causal effect" (Kittel 1999: p. 230). To cope with unobserved spatial heterogeneity, unit fixed effect models are estimated. Additionally, a spatial diagnostic tests on the residuals of the non-spatial model using OLS gives further information about the nature of the spatial association. The Robust Lagrange Multiplier Test against the spatial lag or spatial error alternative might indicate whether the spatial association is caused by unobserved factors. The results for the tests are displayed in the regression tables (Franzese and Hays 2007, 2008; Anselin et al. 1996).

In the empirical analysis, I analyze instantaneous spatial interdependencies and time-lagged spatial interdependence since we do not know if privatization policies in different countries influence each other simultaneously or with a time lag. The estimation of instantaneous spatial interdependencies causes several methodological problems. The spatial lag on the right hand side of the equation is a weighted average of the left hand side variable. Therefore the spatial lags are endogenous and covary with the residuals. Spatial OLS estimations would be inconsistent and affected by simultaneity bias. To deal with this problem, I estimate spatial maximum likelihood models. Spatial maximum likelihood estimation provides consistent and efficient parameter estimates in the case of instantaneous interdependencies (Franzese and Hays 2007, 2008; Hays 2009). The models with a temporally-lagged spatial lag are not affected by simultaneity bias (in the absence of temporally autocorrelated residuals) and can therefore be estimated by spatial OLS regressions. In the spatial OLS models, I dealt with heteroscedasticity by estimating the models with robust standard errors.

Weight matrices and control variables: Measurement

When estimating spatial lag models the weighting matrix must be carefully specified. In order to test the hypotheses, I use several different

weighting matrices. The baseline model weights the privatization policy of all other countries equally. To test the hypothesis of whether the geographical proximity determines spatial interdependencies, the privatization policy is weighted by the inverse distance between the capitals (H1). The weight matrix expressing linguistic proximity is a binary variable which is expressed by the number one if two countries share a common language (H2). Weighting the change of public entrepreneurship with the sum of exports and imports between two countries as a percentage of the total trade volume allows a check on whether trading partners adopt similar policies (H3). Hypothesis 4 assumes that governments implement privatization policies which are associated with the intended microeconomic improvements. To test H4, I use the annual change in the turnover of the national telecommunications provider for the weight matrix. Since the growth of turnover might be negative, the values are rescaled on a range from 0 to 1. All weighting matrices are row standardized so that each row adds up to a total of one.

In addition, I include a comprehensive set of political and economic control variables discussed in the research literature to determine the extent and timing of privatization policy. Policymaking at the European level might have accelerated privatization in the member states even though privatization was not directly required by EU policies. Europeanization is taken into account with a dummy for EU membership and with dummies for the most important EU legislation (the dummy equals 1 when a country is affected by the specific legislation concerned). The following instruments are included in the empirical analyses: The green paper in 1987 (COM/87/290) that promoted the liberalization of the telecommunications market, Directive 96/19/EC concerning the implementation of full competition of telecommunications and networks by 1998[14], and the establishment of a set of procedures to ensure a similar implementation of the European regulatory framework enacted by Directive 2002/21/EC (Gilardi 2005; Schmidt 2002; Schneider 2001; Schneider and Häge 2008). The openness of the economy as an indicator of global integration is measured by the sum of imports and exports in relation to GDP. According to the efficiency hypothesis, a highly open economy should be associated with a reduction of public involvement in economic affairs (Garrett and Mitchell 2001). Leftist governments are assumed to privatize less. The higher the percentage of cabinet seats controlled by leftist parties, the lower the retreat of the state from telecommunications services should be (Boix 1997). Since privatization is often seen as an instrument for restoring public budgets, I assume that an increase in the deficit as a percentage of the GDP is associated with greater privatization efforts (Bortolotti et al. 2003). The level and the growth of GDP indicate the economic situation of the country. A high level of GDP growth should go hand in hand with moderate privatization policy due to

the relatively low economic pressure that this entails (Bortolotti et al. 2003). Moreover, the institutional setting may impose constraints on privatization (Immergut 1992). Theoretically, a high number of veto points should be associated with low levels of privatization.[15] The details of the measurements of all variables are presented in Table A1.

Empirical Analysis

Table 2 presents the findings for the maximum likelihood estimations that test for instantaneous spatial interdependencies. All the right hand side variables with the exception of the spatial lag are serially lagged by one year to address potential problems of endogeneity. Models 1 to 5 use different theoretically informed weight matrices. Model 1 is the baseline model and includes a spatial lag weighting the privatization policies of all other countries equally. The coefficient of the spatial lag in the baseline model 1 is not significant. In contrast, the hypothesis that governments adopt the policies of countries which are located in close proximity to them is supported by the empirical evidence. The spatial lag in model 2 using the geographical distance as the weighting clearly improves the model fit in comparison to the baseline model. The coefficient is positive and significant at the 5 per cent level and the substantive effect (.124) is stronger than in the baseline model. Countries in close geographical proximity move in the same direction. For example, in 1993 the Swedish government formally privatized its telecommunications provider by transforming 'Televerket' into a joint stock company 'Telia AB'. Norway followed suit one year later by turning the national telecommunications provider 'Telenor' into a state company. The merger in 2002 of the Swedish 'Telia AB' and the Finnish 'Sonera Corporation' to form 'TeliaSonera' AB, with the Swedish and Finnish states as main shareholders, also illustrates that cross national interdependencies are highly shaped by geographical distance. Furthermore, governments tend to follow the policy trend that is dominant among important trading partners and implement privatization strategies when economically related countries have reduced their public involvement in the telecommunications sector. The coefficient has a substantive size of .116 and is also significant at the 5 per cent level. When, for instance, the Dutch government discussed and decided to privatize its network-based utility sectors, Germany paid attention as the Netherlands is one of Germany's most important trading partners. In 1994 Dutch policy makers sold 30 per cent of the national telecommunications provider KPN (Koninklijke PTT Nederland). Two years later, the German government divested 26 per cent of Deutsche Telekom AG as part of an initial public offering.

There is little evidence that a common language leads to countries mimicking culturally affiliated countries. The hypothesis that countries adopt

TABLE 2. Spatial Interdependencies in Privatization (Maximum Likelihood Estimation)

Dependent variable: Private Involvement in the Telecommunication Sector[a]					
Independent variables	(1) EQUAL	(2) DISTANCE	(3) LANGUAGE	(4) TRADE	(5) TURNOVER
Private Involvement$_{t-1}$	.848***	.842***	.845***	.845***	.848***
	(.024)	(.024)	(.024)	(.024)	(.024)
Openness	.0002	.0001	1.01e-06	.0002	.0002
	(.0005)	(.0005)	(.0005)	(.0005)	(.0005)
GDP per capita	1.52E-06	1.19E-06	2.20E-06	1.48E-06	1.50E-06
	(1.60E-06)	(1.53E-06)	(1.43E-06)	(1.48E-06)	1.59E-06
GDP growth	−.004*	−.004	−.004	−.003	−.004
	(.002)	(.002)	(.002)	(.002)	(.002)
Deficit	−.002	−0.002	−0.002	−0.002	−0.002
	(.001)	0.001	0.001	0.001	0.001
Institution	.016	.015	.021*	.012	.016
	(.013)	(.013)	(.013)	(.013)	(.013)
EU Membership	.032	.032	.029	.030	.032
	(.022)	(.022)	(.022)	(.022)	(.022)
Leftist Government	−1.74e-05	−3.34e-05	−2.43e-05	−.3.75e-05	1.81e-05
	(9.75e-05)	(9.76e-05)	(9.79e-05)	(9.77e-05)	(9.75e-05)
Spatial Lag (average)	.085				
	(.070)				
Spatial Lag (distance)		.124**			
		(.059)			
Spatial Lag (language)			.029		
			(.024)		
Spatial Lag (trade)				.116**	
				(.052)	
Spatial Lag (turnover)					.087
					(.068)
RLM (Spatial Lag)	2.971*	7.483***	1.981	5.530**	3.389*
RLM (Spatial Error)	1.314	2.567	.478	.802	1.566
Wald Chi	7157.24***	4163.46***	6098.64***	4348.59***	4476.09***
N	468	468	468	468	468

Note: The fixed effects are suppressed to conserve space; standard errors in parentheses; *** z, $p < 0.01$, ** z, $p < 0.05$, * z, $p < 0.1$; a: Private involvement is measured by 1 minus the Index of Public Entrepreneurship I; RLM = Robust Lagrange Multiplier Test on the residuals of the nonspatial OLS models against the spatial lag or spatial error alternative.

the policies from other countries with similar cultural background is not sustained empirically. The coefficient is substantively low and far from being significant. The results for the spatial lag weighted by the development of turnover in model 5 are similar to those for the spatial lag in the baseline model. This finding does not support the hypothesis that governments implement

policies chosen by countries with relatively well-performing telecommunications providers. In sum, the relevant spatial interdependencies appear to be determined by the geographical and economic attributes of the countries concerned rather than by cultural attributes such as a common language or the economic performance of the public enterprises in question.

The results for the impact of Europeanization are also insignificant. Neither the inclusion of the EU membership dummy nor controlling for the effect of the most important EU legislation (not displayed) makes a difference. Moreover, there is no empirical evidence that privatization policy diffused within the European Union in a different manner or to a greater extent than outside the European Union. The results for the spatial lag using a weight matrix that equals 1 when two countries both belong to the European Union (or when neither do) are far from being significant.[16] Overall, the development of privatization policy in the telecommunications sector does not differ between EU member states and non-member states. The results lend weight to the findings of Levi-Faur (2004) which state that the similar transformations take place everywhere around world independently of the European Union (p. 3; Schneider 2001; Thatcher 2004).[17] The coefficients of the other control variables remain mainly insignificant primarily due to the inclusion of the lagged dependent variable. However, the inclusion of the lagged dependent variable is necessary to control for common trends.

Table 3 presents the results based on the assumption that privatization policies influence each other with a one year time lag.[18] Models 1 to 3 analyze the relevance for the spatial lag weighting the policies equally, by trade and by distance. The results for time-lagged spatial interdependencies in models 1 to 3 support the findings of Table 2. The coefficient of the spatial lag in model 1 is insignificant. Model 2, which uses the distance-weighted spatial lag, clearly demonstrates that the geographical proximity is highly relevant for the diffusion of privatization policy. The spatial lag weighted by economic interdependence performs better than the baseline model in terms of efficiency. In contrast, the models using common language or the turnover growth once again indicate that the spatial interdependencies are not defined by a common cultural background or the operational development of the companies (not reported).

Models 4 and 5 test whether the impact of diffusion is conditioned by the domestic party ideology or the openness of the economy.[19] When estimating interaction effects, coefficients and effects have to be carefully distinguished (Franzese and Kam 2010). The effects of the spatial lag depend on the level of the other variable with which the spatial lag interacts. Since the variables have been centred before building the interaction term via crossproducts, the coefficient of the spatial lag only tells us something about the situation when the other part of the interaction effect equals the mean. Therefore, the development of the spatio-autoregressive

TABLE 3. Spatial Interdependencies in Privatization Policy (Spatial OLS)

Dependent variable: Private Involvement in the Telecommunication Sector[a]					
Independent variables	(1) EQUAL	(2) DISTANCE	(3) TRADE	(4) INTERACTION	(5) INTERACTION
Private Involvement$_{t-1}$	.837***	.826***	.832***	.810***	.821***
	(.043)	(.045)	(.044)	(.047)	(.047)
Openness	.0002	6.70e-05	8.41e-05	−.001b	−2.55e-05
	(.0006)	(.0006)	(.0006)	(.001)	(.0006)
GDP per capita	8.26E-07	5.69E-07	1.62E-06	−8.78E-07	4.34E-08
	(1.58E-06)	(1.39E-06)	(1.21E-06)	(1.52E-06)	(1.36E-06)
GDP growth	−.004	−.003*	−.003	−.002	−.003
	(.002)	(.002)	(.002)	(.002)	(.002)
Deficit	−.002	−.002	−.002	−.003*	−.002
	(.002)	(.002)	(.002)	(.002)	(.002)
Institution	.013	.013	.011	.009	.013
	(.016)	(.015)	(.016)	(.016)	(.015)
EU Membership	.041	.043	.040	.053	.046
	(.028)	(.029)	(.029)	(.029)	(.029)
Leftist Government	6.14E-06	−7.36e-06	−1.40e-05	−6.0e-05	−9.41e-06b
	(.0001)	(.0001)	(.0001)	(.0001)	(.0001)
Spatial Lag$_{t-1}$ (average)	.168				
	(.128)				
Spatial Lag$_{t-1}$ (distance)		.214**		.291***b	.233**b
		(.102)		(.114)	(.106)
Spatial Lag$_{t-1}$ (trade)			.148*		
			(.083)		
Spatial Lag$_{t-1}$ (distance) × Openness				.002***	
				(.001)	
Spatial Lag$_{t-1}$ (distance) × Left					−.0005
					(.0004)
F	774.96***	762.72***	767.73***	855.24***	787.94***
N	450	450	450	450	450

Note: The country and period fixed effects are suppressed to conserve space; standard errors in parentheses; *** $p < .01$, ** $p < 0.05$, * $p < 0.1$; a: The private involvement is measured by 1 minus the Index of Public Entrepreneurship I. b: the standard error and significance level refer to the situation when the other part of the interaction effect equals its mean.

coefficient (and the standard error) according to the openness of the economy and the party ideology, is separately presented in Table 4.[20]

The results for the interaction effects strongly support the assumption that national characteristics influence the impact of diffusion mechanisms. Open economies are highly spatially interdependent and governments are more receptive to international trends than in less open economies. The coefficient of the spatial lag is .211 when the openness of the economy equals

TABLE 4. Coefficients of the Spatial Lag according to the Openness of the Economy or the Party Ideology

Openness		Party Ideology	
Value of Openness	Coefficient of Spatial Lag	Value of Party Ideology	Coefficient of Spatial Lag
20	.211**	0	.255**
	(.102)		(.110)
50	.259**	20	.244**
	(.109)		(.108)
80	.307***	40	.233**
	(.118)		(.106)
110	.354***	60	.222**
	(.128)		(.105)
140	.402***	80	.211**
	(.139)		(.104)
170	.449***	100	.200*
	(.151)		(.105)
185	.473***		
	(.158)		

Notes: Standard error in parentheses, *** $p < .01$, ** $p < 0.05$, * $p < 0.1$.

the minimum, .291 at its mean and .473 at its maximum. The effect of the diffusion variable (Spatial lag distance) is duplicated when turning from an economy that is internationally isolated to an economy that is highly involved in international trade flows. Thus, very open economies such as Belgium and the Netherlands are more strongly influenced by the privatization policy of closely related countries than are countries with economies that are highly domestically oriented. Party ideology also matters, but to a lesser extent. If the cabinet does not include a leftist party, the coefficient equals .255 and is significant at the five per cent level. In contrast, in a 100 per cent leftist cabinet the coefficient of the spatial lag is .200 and turns out to be less significant. Table 4 summarizes the development of the coefficient and the respective standard error of the spatial lag in accordance with the conditioning factors.

Conclusion

Overall, four empirical findings stand out. First, the results clearly show that spatial interdependencies matter regarding privatization policy, despite controls for alternative sources of spatial patterns such as common trends or spatial clustering in the explanatory variables. Governments do not implement privatization policies independently of each other. Second, the relevant spatial interdependencies are determined by geographical proximity and economic relationships. Countries clearly tend to privatize when trading partners or countries that are geographically close to them do so. Third, there is no evidence that governments adopt policies of countries

with similar cultural backgrounds or simply where privatization leads to the intended outcomes at the company level. Fourth, the diffusion of privatization policy is highly influenced by the openness of the economy. Open economies are more receptive to diffusion mechanisms than economies that are only moderately involved in the international market.

The descriptive results presented in the paper clearly show a downward trend in public entrepreneurship, although in general the state has not completely abandoned the telecommunications sector. All analyzed countries have formally privatized their telecommunications providers. However, in most of the countries the state still holds public shares in these companies. Besides the above mentioned common trends, countries differ greatly in terms of the timing, initial size and dynamics of the reform process. The wave of privatization swept across countries in a specific way and through specific channels of diffusion. Nonetheless, empirical findings of the quantitative analysis support the assumption that spatial interdependencies have to be considered because the trend amongst geographically and economically related countries drives forward the diffusion of privatization policy. One striking result is that countries seem not to adopt the policy strategies of countries with a similar cultural background nor is policy diffusion influenced by the microeconomic performance of the national telecommunications provider. Furthermore, the privatization of telecommunications services was a global trend and not primarily triggered by the European Union.

The empirical findings support the notion that governments only superficially learn from each other and copy the policy of closely related countries rather than scan all the available information about the success and failure of policy reforms. Policymakers seem to jump on the bandwagon due to desire not to be left behind or to "avoid the stigma of backwardness" within their reference group (Meseguer 2009: p. 27). The possible consequences of asymmetric, incomplete or mistaken information and of policy fashions has been shown quite plainly by the global trend of deregulating the financial markets, and this is ultimately what plunged the world into the recent global financial and economic crisis.

NOTES

1. The terms network based utilities and public utilities are used interchangeably in this paper.
2. The concept of formal and material privatisation is described in further detail in section 3.
3. Text in square brackets added by the author.
4. A departmental agency can also be directly transformed into a state company subject to private law.
5. Due to the heterogeneity in meanings and the different uses across the research literature, the terms cannot be clearly differentiated. Some authors would not assign themselves to the field of policy diffusion literature (Rose 1991), for example, states that lesson-drawing differs from diffusion studies. However, these concepts are part of a general phenomenon which in this paper (and many others) is defined as policy diffusion (Dobbin et al. 2007; Lee and Strang 2006). For overviews and conceptualizations of the different notions and mechanisms concerning policy diffusion see Freeman (2008), Dobbin et al. (2007), Bennett and Howlett (1992), May (1992) and Stone (1999).

6. Text in square brackets added by the author.
7. An empirical test supports this assumption; see footnote 14. Moreover, in the empirical analyses, I control for the influence of EU directives; see section 4 and 5.
8. To generate this database, information from national governments, regulatory agencies, national laws, and public enterprises was collected, compiled and analysed. The index has also been developed for other sectors and for each national economy.
9. If more than one publicly owned firm operates in the sector then the firms enter in the index relative to their output in terms of revenues.
10. Australia, Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Japan, The Netherlands, Norway, New Zealand, Portugal, Spain, Sweden, Switzerland, and the United Kingdom. The United States and Canada were excluded since the telecommunications sectors in these countries had been organized privately before period of observation began.
11. Since no theoretical justification for the selection of α and β exists, sensitivity analyses were applied using different weightings. The results do not differ substantially when using different weightings. Therefore formal and material privatization is weighted equally in this paper with formal privatization being subdivided into two different types. This means that α equals .75 and β .5.
12. To avoid confusions about the sign, the private involvement is taken and not the level of public entrepreneurship.
13. One common shock or common trend that might have affected the privatization of telecommunications services is the technological progress in the telecommunications sector (e.g. the emergence of the Internet).
14. The dummy equals 1 from 1998 forward, as this was the year by which Directive 96/19/EC had to be implemented.
15. Competition is often mentioned in this context. However, competition is not a cause of privatization. It is rather a consequence of or the result of the same underlying process.
16. The spatial lag coefficient is .037 (.042). The results for the Robust Lagrange Multiplier Test are 1.896 (spatial lag) and 1.705 (spatial error). I also checked whether diffusion mechanisms weighted by distance or trade are fostered within the European Union. The coefficients of the interaction effects are also close to zero.
17. However, it needs to be emphasized that the results reflect overall patterns. It may be the case that particular countries are influenced by the European Union to implement specific privatization steps.
18. A decreasing coefficient for the estimations including two-year and three-year lagged spatial lags (not reported) indicates that policies diffuse in close temporal proximity (i.e. over relatively short spaces of time).
19. To conserve space, the results for the interaction effects are only presented for the spatial lag weighted by the distance. The findings for the spatial lag and the interaction effect using the trade-weighted spatial lag remain the same.
20. The marginal effect $\delta y/\delta x$ is calculated by $\beta_X + \beta_{XZ} * z$. Therefore the same sign of β_X and β_{XZ} strengthen the effect of x and vice versa.

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CARINA SCHMITT
Political Science
University of Bremen
Linzer Str. 9A
Bremen 28359
Germany
e-mail: carina.schmitt@sfb597.uni-bremen.de

APPENDIX

TABLE A1. Measurement and Sources of the Variables

Variable	Description	Source
Private Involvement	1- Index of Public Entrepreneurship	Own data sources
Leftist Government	Cabinet seats of leftist parties as a percentage of total cabinet posts (weighted by days)	Armingeon et al. (2008)
Openness	Sum of exports and imports as a percentage of GDP	Heston et al. (2009)
Deficit	Annual deficit (government primary balance) as a percentage of GDP	Armingeon et al. (2008)
GDP per capita	Real GDP per capita	UN (2009)
GDP growth	Growth of real GDP	OECD (2008)
EU Membership	EU membership on an annual basis (1 = yes; 0 = no)	Own assessment
Institution	Additive index of constitutional structures composed of five indicators: (1) federalism (0 = absence, 1 = weak, 2 = strong), (2) parliamentary government = 0, versus presidentialism or other = 1, (3) proportional representation = 0, modified proportional representation = 1, majoritarian = 2, (4) bicameralism (1 = weak, 2 = strong), (5) frequent referenda = 1.	Armingeon et al. (2008)
Weighting Matrix - Turnover	Annual point changes in the turnover of the national telecommunication provider	Own data source
Weighting matrix - Distance	Inverse distance between the capitals in km	http://www.theglobetrotter.de/weltreise/weltreise/planung/entfernungen.html
Weighting Matrix - Trade	Sum of exports and imports between two countries as a percentage of the total trade volume	IMF Direction of Trade Statistics
Weighting Matrix - Language	Binary variable (1 = sharing a common language; 0 = not sharing a common language)	Own assessment