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Liberalization-Privatization Paths: Policies and Politics

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Abstract - We empirically investigate the political determinants of deregulation policies in six network industries of 30 OECD countries over 1975-2007. We unbundle privatization and liberalization and propose an econometric study in which we allow for the joint adoption of the two policies by governments. We find, contrary to conventional wisdom, that right-wing executives tend to privatize more and to liberalize less, relative to left-wing governments. Thus, we show that ideological cleavages affect the 'structure' of deregulation, i.e. the way in which liberalization and privatization are combined. This result may shed new lights on the analysis of the political determinants of market-oriented policy, and suggest new issues for further theoretical and empirical research

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1. Introduction

In the last three decades, OECD network industries experienced a deep wave of market-oriented policies. Pro-competitive interventions were adopted by governments so intensively that – at present – an almost complete convergence among sectoral deregulation has been reached in passenger air transport, telecommunications, electricity, gas, post, rail and road (Conway and Nicoletti, 2006).

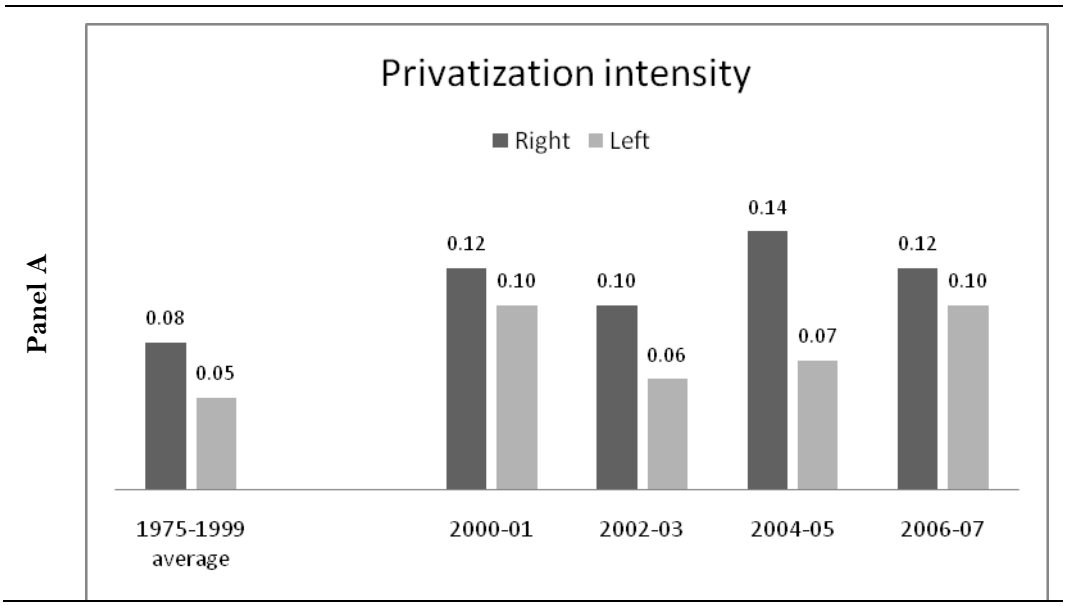
Theoretical and empirical economic research has unveiled a complex array of determinants behind such pro-market policies' evolution in network industries. A well-defined field of study has in particular focused on the role played by government's ideology (i.e. right-wing versus left-wing political orientation) in affecting privatization policies (Alesina, 1988; Alesina and Rosenthal, 1995; Biais and Perotti, 2002; Alesina *et al.* 2005; Bortolotti and Pinotti, 2008; Arin and Ulubasoglu, 2009). An unanimous consensus emerges from the empirical literature (Arin and Ulubasoglu, 2009; Bortolotti and Pinotti, 2008; Appel, 2000): privatization in OECD countries is boosted by right-wing governments relative to left-wing governments, as the conventional wisdom would predict. Some recent works confirm this result also for liberalization policies (Duso, 2002; Pitlik, 2007; Potrafke, 2010).

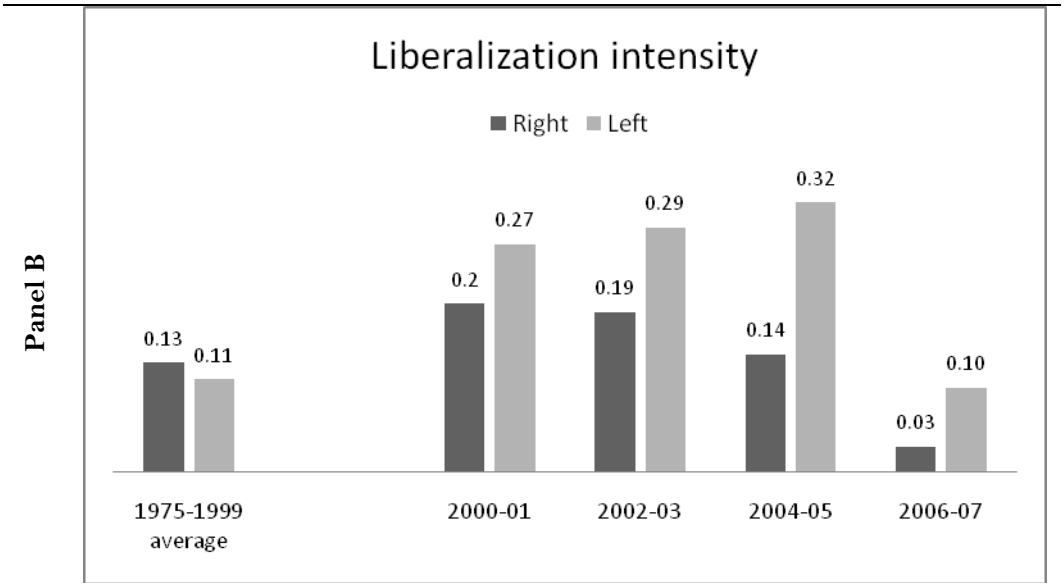
The basic assumption behind this empirical literature is to treat distinct pro-market policies – specifically, liberalization and privatization – in the same vein, as if the motivations and consequences behind their adoption were economically and politically alike. In reality, the two policies may have rather distinct efficiency and distributional impacts. On the one side, 'privatization' refers to the process of a deliberate sale by a government of part or all of State-owned shares in enterprises, generally aimed at improving managers' incentives and at increasing the efficiency of the newly privatized firms (Megginson and Netter, 2001). On the other side, 'liberalization' could be depicted as the process aimed at removing those regulations which inhibit entry to the market through, for example, legal provisions that raise the cost of accessing markets or that explicit limit the number of competitors (Conway and Nicoletti, 2006). Notwithstanding the rather different architectures and objectives of privatizations and liberalizations, a great part of the empirical literature has so far interpreted the two policies as two aligned components of pro-market deregulation. Thus, according to conventional wisdom, a government choosing a given pace of privatization should also foster, in the same vein,

liberalization and vice-versa. Should this assumption be correct, then right-wing parties in office would implement both privatization and liberalization policies to a greater extent than left-wing governments.

In our view, this conventional conclusion contrasts, on the one side, with economic theories showing the distinct rationale and the different outcomes of, respectively, liberalization and privatization policies (De Fraja, 1991, 1994; Newbery, 2002, 2004; Levy and Spiller, 1996; Stiglitz, 1999; Armstrong and Sappington, 2006; Arin and Ulubasoglu, 2009), also with reference to their speed, timing and sequencing (Roland, 1994; Fink *et al.*, 2002; Wallsten, 2002; Li and Xu, 2004; Bagdadioglu and Cetinkaya, 2007); and, on the other side, it contrasts with new available data showing a growing path of left-wing market-oriented policies. In particular, recent data from a sample of 30 OECD network industries unveil that, from the late Nineties onward, right-oriented governments undoubtedly pushed towards privatization policies more intensively than left-oriented ones, while left-wing executives pushed towards liberalization policies more intensively than right-oriented ones. This pattern is shown in Figure 1, which suggests a correlation between the intensity of liberalization and privatization policies and political colour of parties in office so far neglected by the existing literature.

FIGURE 1. Privatization and liberalization intensity averaged over six network industries and 30 OECD countries for right-wing/left-wing governments (source: elaboration from OECD (2009) and World Bank (2010)).





Note: privatization is measured by subtracting the OECD's (2009) indicator of public ownership from its maximum value (the index ranges from 0 to 6): the privatization initiatives' intensity (panel A) is then calculated as two-year variations of the privatization index; liberalization is measured by subtracting the OECD's (2009) indicator of entry barriers from its maximum value (the index ranges from 0 to 6): the liberalization initiatives' intensity (panel B) is then calculated as two-year variations of the liberalization index. On the right side of the graph in both panels the average intensity before 2000 is displayed, on the left side two-year variations after 2000 are shown.

In this paper, we attempt to develop a systematic and rigorous econometric study of the political determinants of privatization and liberalization policies in OECD countries. We investigate, specifically, whether causal effects can be detected behind the correlation graphically shown in Figure 1.

The existing empirical literature on liberalization and privatization has so far analyzed the two policies as distinct and aligned governmental decisions, where the decision to liberalize and to privatize are considered as independent from each other. In our analysis, differently, we allow for the possibility that privatization and liberalization are jointly chosen. We use the largest database available on deregulation policies (OECD, 2009), which covers 30 OECD countries observed over the period from 1975 to 2007, whereas previous analyses focused on a smaller number of countries and on a shorter period coverage. We employ information on sectoral privatization and liberalization for six network industries (passenger air transport, telecommunications, electricity, gas, post, and rail), and thus exploit three sources of exogenous variation (country, time, and sectors). We then estimate two equations (one for explaining privatization interventions and one for explaining liberalization interventions) using Seemingly Unrelated Regression (SUR), in

order to account for the presence of unobservable factors responsible for the simultaneous determination of privatization and liberalization policies adoption.

Our econometric analysis shows that right-wing governments do promote privatization to a greater extent with respect to left-wing governments. In this respect, our results confirm previous empirical literature. However, contrary to that literature, we find that left-wing executives do exert a positive effect on liberalization initiatives and this effect is significantly higher than that induced by right-wing governments. We confirm this result controlling for the existing regulatory conditions that executives find once elected, for policy diffusion and supranational drivers of deregulation choices, and check the statistical robustness of the parameter estimates to possible outlier values.

Our empirical findings reveal a crucial issue, so far neglected by the political economy approach to network industries' deregulation. Ideological cleavages affect the 'structure' of deregulation, i.e. the way in which liberalization and privatization are combined, rather than the decision to deregulate *per se*. The policy mix chosen by OECD countries, hence, turns out to be determined by the political orientation of executives.

This result reverses one of the main conclusion of the available empirical literature on the political determinants of deregulation. Right-wing parties do not maintain, as generally argued, the same attitude towards privatization and liberalization. At the same time, a comparatively greater pressure towards liberalization should be expected under left-wing rather than under right-wing governments. This conclusion sheds new light on the analysis of the political determinants of deregulation and may outline a neglected political rationale behind policy choices. Further research may investigate on the economic relevance of this evidence and raise further explanation of the observed diversity in countries' deregulation paths. In this paper, we limit our analysis to the following conclusions: first, contrary to conventional wisdom, in an increasing globalized world, deregulation of network industries clearly belongs to a bipartisan policy agenda; second, the combination of privatization and liberalization policies depends on government ideology, but in a rather different way from how the traditional literature would predict. Political orientation, thus, turns out to be a prerequisite to predict how individual governments approach market-oriented reforms.

The paper is organized as follows: section 2 briefly discusses the empirical literature on government ideology and deregulation and introduces our research hypothesis; section 3

presents our estimation analysis of sectoral reforms in OECD network industries; in section 4 we check the robustness of our estimation results to policy diffusion and outlier values. Section 5 concludes.

2. Related empirical studies and the hypothesis to be tested

The political economy of market-oriented policies in OECD countries has mainly focused on studying privatization choices, while the analysis of institutional and political determinants of liberalizations is still in its infancy. Nevertheless, an homogeneous picture seems to emerge from this literature, as the empirical results so far available reflect the conventional wisdom and identical conclusions are proposed for both privatization and liberalization.

On the one hand, a positive relationship between right-wing governments and State-owned firms privatization has been found by the empirical research in both micro and macro econometric analyses. For example, Arin and Ulubasoglu (2009) perform a panel analysis on time-series data from a sample of individual Turkish firms over the 1984-1999 period and find that right-wing executives are more likely to undertake privatization initiatives with respect to left-wing ones. Similarly, Bortolotti and Pinotti (2008) show how left-wing executives tend to delay the launch of privatization programs through a cross-country study on OECD countries over 1977-2002. These findings are confirmed by several analyses showing empirical evidence of privatization's benefits with increasing dissatisfaction and opposition among citizens and policymakers (Kikeri and Nellis, 2004; Wood, 2004). Other scholars have investigated to which extent ideology determines the design and implementation of privatization programs (Appel, 2000), outlining how right-wing office-holders with re-election concerns design privatization to spread share ownership among domestic voters.

On the other hand, for liberalization, the empirical evidence seems to sustains an identical conclusion. Duso (2002) studies entry liberalization in the telecommunications industry in the 1991-1997 period and finds that left-wing governments liberalize less than right-wing governments. Corroborating evidence is provided by Pitlik (2007), which performs a cross-country analysis over the 1970-2000 period and obtains that left-wing executives are less favorable towards liberalization. Potrafke (2010) analyzes 21 OECD countries over the 1980-2003 period and estimates the impact of government ideology on both privatization

and liberalization as two independent and aligned items of deregulation programs; he suggests that, again, right-wing governments are more likely associated to both privatization and liberalization initiatives.

Thus, surprisingly, the existing literature on market deregulation does not detect any evidence in favor of left-led liberalizations – which are instead unveiled by OECD (2009) data as shown in Figure 1 – and sustains that right-wing governments promote privatization and liberalization to the same extent while left-wing governments hinder both.

We believe that the empirical research so far available on the political determinants of deregulation policies encounters two main limitations. First, it is based on data which do not cover, at least, the last 8 years (it does worth to emphasize that, in OECD network industries, many deregulation measures – especially liberalization initiatives – were undertaken after 2000). Second, the available empirical research models privatization and liberalization as if they were two independent and aligned policies within deregulation programs. However, to assume independence between privatization and liberalization in empirical analysis is too cavalier, as a notable theoretical literature on policies adoption proposes plausible models in which market-oriented policies are complementary, and in which they are never treated as independent (see, for instance, Harrington (1993), Martinelli and Tommasi (1997), and Cukierman and Tommasi (1998)).

In this paper we try to overcome these limitations (as we will further discuss in the next section), and econometrically investigate the following hypothesis suggested by the descriptive evidence we presented above: *right-wing governments have been more active in implementing privatization policies with respect to left-wing executives, while left-wing governments have been more active in adopting liberalization initiatives with respect to right-wing ones.*

3. Regression analysis

3.1. Data and empirical strategy

The existing empirical literature on liberalization and privatization political determinants has so far analyzed the two policies as distinct and aligned governmental decisions. As we

have mentioned in the previous section, Bortolotti and Pinotti (2008), for example, study the political determinants of privatization interventions in 21 OECD countries, taking privatization initiatives in isolation; similarly, Potrafke (2010) investigates how political ideology affects both privatization and liberalization in 21 OECD countries, and performs an equation-by-equation estimation, where the decision to liberalize and to privatize are considered as independent from each other. In our analysis, differently, we allow for the possibility that privatization and liberalization are jointly chosen. In particular, we estimate two equations (one for explaining privatization interventions and one for explaining liberalization interventions) using Seemingly Unrelated Regression (SUR) by Zellner (1962). This method allows us to estimate the two equations simultaneously while accounting for correlated residuals. The correlation between the disturbances of different equations, indeed, is expected to reflect the presence of some unquantifiable factors responsible for the simultaneous determination of privatization and liberalization policies adoption.

In order to perform the empirical analysis we collect data from various sources over the 1975-2007 period. The base sample we use is the largest possible given the data availability (30 countries).[1] Our sample period covers entirely the deregulation wave observed in Western countries in the last three decades through 2007, whereas previous analyses focused on a smaller number of countries and on a shorter period coverage.

As the dependent variables of our econometric study we consider an index of the intensity of liberalization interventions on a one-year basis (which we call *LiberalizationIntensity* in our empirical analysis) and an index of the intensity of privatization interventions on a one-year basis (which we call *PrivatizationIntensity* in our empirical analysis). To construct such indexes, we use the OECD's (2009) indicators of entry barriers and of public ownership. The OECD indicators are based on the *OECD Regulatory Indicators Questionnaire*, which collects information on the ranking of explicit policy settings (see Conway and Nicoletti (2006)) and measures the simple average of entry barriers and public ownership levels through seven sectoral indicators (which cover: passenger air transport, telecommunications, electricity, gas, post, rail, and road). The sectoral indicators, specifically, measure for each country the strictness of the legal conditions of entry and the

[1] Australia, Austria, Belgium, Canada, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Luxembourg, Mexico, Netherlands, New Zealand, Norway, Poland, Portugal, Slovak Republic, South Korea, Spain, Sweden, Switzerland, Turkey, United Kingdom, United States.

extent of public ownership in the companies operating in the considered network industries, which we interpret, respectively, as proxies for sectoral liberalization and privatization. On the one hand, we measure liberalization policy by subtracting the OECD entry barriers index from its maximum value (let us call this variable *LiberalizationLevel*), and then calculate the intensity of liberalization interventions (*LiberalizationIntensity*) by looking at the one-year differences of *LiberalizationLevel*. On the other hand, we measure privatization policy by subtracting the OECD public ownership index from its maximum value (let us call this variable *PrivatizationLevel*), and then calculate the intensity of privatization interventions (*PrivatizationIntensity*) by looking at the one-year differences of *PrivatizationLevel*. We build both *LiberalizationIntensity* and *PrivatizationIntensity* at a sectoral level, so that we can exploit three sources of variation in our estimation: time, country, and sector. Note that the original dataset provided by OECD (2009) does not contain information on public ownership for road industry, thus we do not consider this sector in our analysis, and use information on six sectors (passenger air transport, telecommunications, electricity, gas, post, and rail).

To measure the governments' political ideology, we use data obtained from the Database of Political Institutions (DPI) by World Bank (2009). Information provided by the DPI have been routinely used in cross-country quantitative studies on the political determinants of economic policies (see, for instance, Dutt and Mitra (2005), Krause and Méndez (2005), and Giuliano and Scalise (2009)). Elaborating on the coding provided by the DPI, we construct three dummy variables – which we call *Rightwing*, *Leftwing* and *Centre* in our empirical analysis – that respectively equal 1 if: the government party is defined as conservative, Christian democratic or right-wing (*Rightwing*); it is defined as socialist, social-democratic, communist or left-wing (*Leftwing*); or it is defined as centrist or does not fit into the two previously mentioned categories (*Centre*).

The adoption of economic policies is likely to be path dependent, with the intensity of policy initiatives at *t* being affected by the intensity of the policy initiatives made at *t-1*. Moreover, the intensity of privatization and liberalization measures is likely to be influenced also by the existing absolute level of both privatizations and liberalizations (e.g., Roland (2008)). To account for such inter-temporal effects, we express *LiberalizationIntensity* and *PrivatizationIntensity* as a function of their one-year lagged values, so including an autoregressive term of order 1 (*AR(1)Term*) in the equations. Furthermore, we consider liberalization and privatization intensity as possibly determined

by both one-year lagged liberalization and privatization levels (respectively, *LiberalizationLevel* and *PrivatizationLevel*), in order to control for the absolute level of entry barriers and public ownership that executives find when elected.

As legislature-specific control variables, we consider the following characteristics of national governments: *GovHeterogeneity* (this variable is defined as the probability that two deputies picked at random from among the government parties will be of different parties; source: World Bank, 2009), and *Herfindahl* (the sum of the squared seat shares of all parties in the governments, we consider this variable as a proxy of political concentration; source: World Bank, 2009). In this way, we control for the effective lawmaking power of the government and for the executive's capacity to implement economic policies (Roemer, 2001). Finally, we also include a dummy variable for the adoption of the Euro, as suggested by Dang *et al.* (2006), which we call *EuroAdoption* (it equals one if the country adopts the Euro, 0 otherwise; source: authors' coding). Notice that we regress *LiberalizationIntensity* and *PrivatizationIntensity* variables on one-year-lagged covariates (including the political orientation dummies), in order to avoid attributing the adoption of a certain policy measure to an executive just elected; in doing so, we also reduce the possible presence of endogeneity or reverse causality problems in our estimation.

Descriptive statistics of the variables are provided in Table 1.

TABLE 1. Descriptive statistics.

	Rightwing **[one-year lagged]**		***Centre*** **[one-year lagged]**		***Leftwing*** **[one-year lagged]**	
Variable	**Mean**	**Std.Dev.**	**Mean**	**Std.Dev.**	**Mean**	**Std.Dev.**
LiberalizationIntensity	0.139	0.590	0.109	0.558	0.150	0.622
PrivatizationIntensity	0.081	0.436	0.048	0.270	0.046	0.348
LiberalizationLevel	2.118	2.266	1.423	2.056	2.262	2.343
PrivatizationLevel	2.014	2.276	1.240	1.538	2.036	2.239
GovHeterogeneity	0.251	0.243	0.558	0.183	0.154	0.226
Herfindahl	0.353	0.105	0.245	0.076	0.352	0.103
EuroAdoption	0.089	0.284	0.065	0.247	0.070	0.255

Table 1 shows that, from a descriptive point of view, sectoral liberalization initiatives have a higher average value under left-wing and centre governments, while sectoral privatization initiatives show higher values, on average, under right-wing executives.

Moreover, the index of government heterogeneity has a higher average value under centre and right-wing executives, and the Herfindahl index shows similar values under left-wing and right-wing governments.

Formally, we consider the two following cross-country cross-sector panel equations:

$$\begin{aligned} \text{'PrivatizationIntensity'}_{i,s,t} = {} & \beta_0 + \beta_1 \text{ 'Rightwing'}_{i,t-1} + \beta_2 \text{ 'Leftwing'}_{i,t-1} + \\ & + \beta_3 \text{ 'PrivatizationIntensity'}_{i,s,t-1} + \beta_4 \text{ 'PrivatizationLevel'}_{i,s,t-1} + \\ & + \beta_5 \text{ 'LiberalizationLevel'}_{i,s,t-1} + \beta_{6\ldots Z} \mathbf{V}_{i,t-1} + \varepsilon_{i,s,t} \end{aligned} \quad (1)$$

$$\begin{aligned} \text{'LiberalizationIntensity'}_{i,s,t} = {} & \beta_0 + \beta_1 \text{ 'Rightwing'}_{i,t-1} + \beta_2 \text{ 'Leftwing'}_{i,t-1} + \\ & + \beta_3 \text{ 'LiberalizationIntensity'}_{i,s,t-1} + \beta_4 \text{ 'LiberalizationLevel'}_{i,s,t-1} + \\ & + \beta_5 \text{ 'PrivatizationLevel'}_{i,s,t-1} + \beta_{6\ldots Z} \mathbf{V}_{i,t-1} + \eta_{i,s,t} \end{aligned} \quad (2)$$

with $t = 1975, 1976, \ldots, 2007$, and where i identifies the country, s identifies the sector, $\mathbf{V}$ is the vector of control variables (which also include a set of industry dummies, in order to control for time invariant specificities of the individual sectors), parameters from β_0 to β_Z, define the parametric structure of the two equations, one-year lagged *PrivatizationIntensity* and *LiberalizationIntensity* on the right-hand side represent the autoregressive term (*AR(1)Term*), and where ε and η are idiosyncratic disturbances that change across countries (i), sectors (s), and years (t), whose correlation is accounted for in our SUR estimation.

The operative sample that we use in the estimation analysis is obtained by using yearly data on 30 countries observed over the 1975-2007 period. We consider information on sectoral level reforms for six network industries (passenger air transport, telecommunications, electricity, gas, post, and rail), and exclude the road sector, since data on privatization levels for the road industry are not provided in the OECD's (2009) dataset. The OECD's database also shows some missing data for some countries and years. Therefore we finally exploit 4774 observations.

3.2. Estimation results

The estimation results are reported in Table 2. While the first column lists the variables, the remaining columns report the estimated coefficients and standard errors of the *PrivatizationIntensity* and *LiberalizationIntensity* equations.

The estimation results for the privatization equation show that, being the dummy for centre governments (*Centre*) the benchmark, the estimated parameter associated to right-wing governments (*Rightwing*) is positive and statistically significant (at 5% level), while that associated to left-wing governments (*Leftwing*) is positive and not statistically significant. Vice versa, the estimation results for the liberalization equation show that, being again the dummy for centre governments the benchmark, the estimated parameter associated to left-wing governments is positive and statistically significant (at 1% level), while the parameter associated to right-wing governments is not statistically significant. We have then performed the Wald test for the null hypothesis of zero difference between the estimated parameters of right-wing and left-wing governments for both the equations. The result of the Wald test show that, for both the equations, such difference is non-null and statistically significant.

These empirical findings unveil that the effect of right-wing executives on sectoral privatizations in the OECD's network industries is positive and greater than that of the left-wing ones, as the existing empirical literature predicts. At the same time, however, they also reveal that the presence of left-wing governments in office does exert a positive effect on the intensity of sectoral liberalizations, which is greater than that associated to the presence of right-wing executives. Thus, both right-wing and left-wing governments are shown to adopt pro-market policies, with respect to centre or non-classifiable governments. However, their ideology (i.e., their political orientation) does affect the 'structure' of the public intervention, right-wing executives implementing a policy mix which favors privatization and left-wing executives implementing a policy mix which favors liberalization.

Besides, the estimation results show that the autoregressive component (*AR(1)Term*) has a positive and statistically significant effect (at 1% level) in both the equations. This suggests that the intensity of sectoral privatization measures does stimulate further sectoral privatization initiatives, and that the same holds for liberalization. Moreover, we find that the absolute levels of liberalization and privatization that executives find when elected are relevant too. In particular, our findings show that a high level of privatization in a certain sector does stimulate further liberalization initiatives in the same sector, while, in a similar way, a high level of sectoral liberalization does foster subsequent privatization (this is showed by the positive effect of *PrivatizationLevel* and *LiberalizationLevel* at *t-1* on, respectively, *LiberalizationIntensity* and *PrivatizationIntensity* at *t*). At the same time,

however, when the absolute level of liberalization is high, the intensity of further liberalization initiatives tends to be lower, and the same holds for privatization (this is showed by the negative effect of *LiberalizationLevel* and *PrivatizationLevel* at *t-1* on, respectively, *LiberalizationIntensity* and *PrivatizationIntensity* at *t*).

As for the remaining control variables, we find that the index of political concentration (*Herfindahl*) does exert a negative effect on liberalization intensity, while it seems not to affect privatization intensity, and that the government's heterogeneity (*GovHeterogeneity*) is not associated to a statistically significant parameter in both equations. Finally, Euro adoption (*EuroAdoption*) turns out to have a positive and statistically significant effect on the intensity of liberalization interventions, and to have a not statistically significant effect in the privatization equation.

Table 2. Seemingly unrelated regression: basic model specification.

	SURE MODEL (BASIC SPECIFICATION)			
	PrivatizationIntensity **equation**		*LiberalizationIntensity* **equation**	
Variable	**Coef.**	**(Std.Err.)**	**Coef.**	**(Std.Err.)**
Leftwing	0.010	(0.017)	0.073	(0.026) ***
Rightwing	0.035	(0.016) **	0.017	(0.025)
AR(1)Term	0.072	(0.015) ***	0.071	(0.015) ***
PrivatizationLevel	-0.028	(0.003) ***	0.017	(0.005) ***
LiberalizationLevel	0.023	(0.003) ***	-0.031	(0.005) ***
GovHeterogeneity	-0.022	(0.037)	-0.018	(0.055)
Herfindahl	0.052	(0.086)	-0.333	(0.128) ***
EuroAdoption	-0.030	(0.026)	0.080	(0.039) **
Constant	-0.007	(0.043)	-0.190	(0.064) ***
F-stat for H_0: $\beta(Leftwing) - \beta(Rightwing) = 0$	3.36 *		7.48 ***	
Number of observations	4774		4774	
Fixed effects estimation	yes		yes	
R-squared	0.031		0.016	
F-stat [*p*-value]	11.94 [0.000]		6.08 [0.000]	

Note: * < 0.10 confidence level, ** < 0.05 confidence level, *** < 0.01 confidence level.

4. Robustness checks

4.1. Controlling for European policy diffusion

Domestic liberalization choices may be determined by transnational diffusion of public policies. Simmons and Elkins (2005) define policy diffusion as the influence that a policy decision adopted by some countries plays on the choices made by the neighbors. Policy diffusion might be due to rather different mechanisms: policy competition (according to which a domestic policy reduces the benefits of the same policy adoption for others, and increases the relative payoff of the first mover), learning (i.e., governments follow the policy strategies previously adopted by neighbor successful countries), and supranational institutional drivers (where economic and institutional integration, such as joining the European Union, fosters policy convergence among member countries). Simmons and Elkins (2005), Dang *et al.* (2006) and Pitlik (2007), among others, show empirical evidence corroborating the effect of policy diffusion on the deregulation choices adopted by European governments. This might be relevant also in our empirical study, as about 2/3 of our sample's countries joined the European Union.

Here we test whether the effect of governments' political orientation on privatization and liberalization choices we detected is robust to policy diffusion or if it is simply driven by an exogenous clustering of liberal economic practices.

In order to conduct this robustness check of our results, we include two different variables in the equations. First, we consider a dummy variable for the EU membership (*EUMembership*), which equals 1 when the country is a member of the EU, 0 otherwise (source: authors' coding). This variable allows us to account for supranational institutional drivers of deregulation policies. Second, we include the one-year lagged level of privatizations and liberalizations averaged over EU member countries (respectively, *EUPrivatizationLevel* and *EULiberalizationLevel*) as a covariate in, respectively, the privatization and liberalization equation. The two variables *EUPrivatizationLevel* and *EULiberalizationLevel* allow us to account for policy diffusion at *t* induced by policy interventions adopted in EU's countries up to *t-1* (in this way we account for possible policy competition and learning).

Descriptive statistics of the additional variables are provided in Table 3.

TABLE 3. Descriptive statistics of additional variables.

	Rightwing [one-year lagged]		*Centre* [one-year lagged]		*Leftwing* [one-year lagged]	
Variable	**Mean**	**Std.Dev.**	**Mean**	**Std.Dev.**	**Mean**	**Std.Dev.**
EULiberalizationLevel	1.711	1.755	2.282	2.081	1.937	1.754
EUPrivatizationLevel	1.394	1.063	1.646	1.263	1.489	1.063
EuroMembership	0.193	0.395	0.245	0.430	0.293	0.455

Now, the two considered equations take the following form:

$$\begin{aligned} \text{'PrivatizationIntensity'}_{i,s,t} = {} & \beta_0 + \beta_1 \text{ 'Rightwing'}_{i,t-1} + \beta_2 \text{ 'Leftwing'}_{i,t-1} + \\ & + \beta_3 \text{ 'PrivatizationIntensity'}_{i,s,t-1} + \beta_4 \text{ 'EUPrivatizationLevel'}_{i,s,t-1} + \\ & + \beta_5 \text{ 'PrivatizationLevel'}_{i,s,t-1} + \beta_6 \text{ 'LiberalizationLevel'}_{i,s,t-1} + \\ & + \beta_{7\ldots K} \mathbf{V}_{i,t-1} + \varepsilon_{i,s,t} \end{aligned} \tag{3}$$

$$\begin{aligned} \text{'LiberalizationIntensity'}_{i,s,t} = {} & \beta_0 + \beta_1 \text{ 'Rightwing'}_{i,t-1} + \beta_2 \text{ 'Leftwing'}_{i,t-1} + \\ & + \beta_3 \text{ 'LiberalizationIntensity'}_{i,s,t-1} + \beta_4 \text{ 'EULiberalizationLevel'}_{i,s,t-1} + \\ & + \beta_5 \text{ 'LiberalizationLevel'}_{i,s,t-1} + \beta_6 \text{ 'PrivatizationLevel'}_{i,s,t-1} + \\ & + \beta_{7\ldots K} \mathbf{V}_{i,t-1} + \eta_{i,s,t} \end{aligned} \tag{4}$$

with symbols having the same meaning as in equations (1) and (2), and where one-year lagged *PrivatizationIntensity* and *LiberalizationIntensity* on the right-hand side represent, again, the autoregressive term (*AR(1)Term*). Also in this case SUR estimation is performed.

The estimation results are reported in Table 4, where the first column lists the variables and the remaining columns report the estimated coefficients and standard errors of the two equations.

Table 4. Seemingly unrelated regression: controlling for European policy diffusion.

	SURE MODEL (EU POLICY DIFFUSION)			
	PrivatizationIntensity equation		*LiberalizationIntensity* equation	
Variable	**Coef.**	**(Std.Err.)**	**Coef.**	**(Std.Err.)**
Leftwing	0.014	(0.017)	0.071	(0.026) ***
Rightwing	0.043	(0.016) **	0.039	(0.024)
AR(1)Term	0.065	(0.015) ***	0.077	(0.014) ***
PrivatizationLevel	-0.030	(0.003) ***	0.016	(0.005) ***
LiberalizationLevel	0.007	(0.004) *	-0.081	(0.006) ***
EUPrivatizationLevel	0.048	(0.010) ***		
EULiberalizationLevel			0.072	(0.008) ***
GovHeterogeneity	-0.013	(0.037)	0.005	(0.054)
Herfindahl	0.121	(0.086)	-0.121	(0.127)
EUMembership	0.038	(0.016) **	0.124	(0.024) ***
Constant	-0.046	(0.043)	0.071	(0.063)
F-stat for H_0: $\beta(Leftwing) - \beta(Rightwing) = 0$	4.50 **		2.57 *	
Number of observations	4774		4774	
Fixed effects estimation	yes		yes	
R-squared	0.038		0.045	
F-stat [*p*-value]	13.67 [0.000]		16.24 [0.000]	

Note: * < 0.10 confidence level, ** < 0.05 confidence level, *** < 0.01 confidence level.

From this robustness checks we obtain two interesting results.

First, we find that policy diffusion plays a role in both sectoral privatization and liberalization choices of governments. Indeed, on the one hand, one-year lagged levels of privatization and liberalization (averaged over EU countries) act as positive and statistically significant stimulus on the intensity of, respectively, privatization and liberalization interventions of countries, so corroborating the argument of possible policy competition and learning effects (as discussed by Simmons and Elkins (2005)). On the other, to be a EU member is associated to a positive and statistically significant effect in both the privatization and liberalization equation; this confirms the presence of supranational institutional drivers of deregulation policies (as suggested by Pitlik (2007).

Second – and more importantly – notwithstanding the statistically significant relevance of policy diffusion effects, our findings on the political determinants of privatization and

liberalization do not change. In fact, the estimated parameter for right-wing governments remains positive and statistically significant in the privatization equation, while the estimated parameter for left-wing governments remains positive and statistically significant in the liberalization equation. Again, moreover, the results of the Wald test for the null hypothesis of zero difference between the estimated parameters of right-wing and left-wing governments confirm that such difference is non-null and statistically significant for both the equations.

In conclusion, the effect of governments' political orientation on privatization and liberalization choices we detected is not driven by the presence of policy diffusion.

4.2. Controlling for outlier values.

Countries included in our sample might show outlier values in their deregulation outcomes and institutional characteristics. Thus, here we test whether outlier values influence the statistical relevance of our estimation results. Specifically, we estimate the two equations using a 'jackknife' variance estimator. The use of the 'jackknife' variance estimator permits a cross-validation process, that helps to detect the possible relevance of influential outliers to the estimation results. In the 'jackknife' estimate the sample of size n is divided in g groups of size m (where $m = n - k$). The estimate of each parameter is computed g times, by ignoring the generic j-th group in each round. The overall parameter estimate is then obtained as the average of the g parameters. In this robustness check we consider the model specification in which controls for policy diffusion are included.

Table 5 reports the results obtained through a SUR 'jackknife' variance estimator. Parameter estimates are shown to be stable with respect to the possible influence of outlier values. In particular, the estimation results show that the estimated parameter associated to right-wing governments is positive and statistically significant (at 1% level) for the privatization equation, and that the estimated parameter associated to left-wing governments is positive and statistically significant (at 1% level) in the liberalization equation. The difference between the estimated parameters of right-wing and left-wing governments is confirmed by the Wald test to be non-null and statistically significant for both the equations.

This validates the statistical robustness of our main findings to outlier values, and further

sustains the possible existence of causal effects behind the relationship between political orientation of governments and privatization and liberalization policy interventions that we observed.

Table 5. Seemingly unrelated regression: robustness check for outliers.

	SURE MODEL (JACKKNIFE ESTIMATION)			
	PrivatizationIntensity equation		*LiberalizationIntensity* equation	
Variable	**Coef.**	**(Std.Err.)**	**Coef.**	**(Std.Err.)**
Leftwing	0.014	(0.015)	0.071	(0.025) ***
Rightwing	0.043	(0.015) ***	0.039	(0.023) *
AR(1)Term	0.065	(0.020) ***	0.077	(0.015) ***
PrivatizationLevel	-0.030	(0.004) ***	0.016	(0.005) ***
LiberalizationLevel	0.007	(0.005)	-0.081	(0.007) ***
EUPrivatizationLevel	0.048	(0.015) ***		
EULiberalizationLevel			0.072	(0.009) ***
GovHeterogeneity	-0.013	(0.031)	0.005	(0.046)
Herfindahl	0.121	(0.085)	-0.121	(0.099)
EuroMembership	0.038	(0.019) **	0.124	(0.030) ***
Constant	-0.046	(0.038)	0.071	(0.052)
F-stat for H_0: β*(Leftwing)*- β*(Rightwing)* = 0	4.06 **		2.68 *	
Number of observations	4774		4774	
Fixed effects estimation	yes		yes	
R-squared	0.038		0.045	
F-stat [*p*-value]	13.67 [0.000]		16.24 [0.000]	

Note: * < 0.10 confidence level, ** < 0.05 confidence level, *** < 0.01 confidence level.

5. Conclusion

In this paper we have shown how political parties in office result influencing the liberalization-privatization path of the country according to their ideological bias. We find, contrary to conventional wisdom, that right-wing governments privatize to a greater extent and liberalize to a lesser extent than left-wing executives. Our findings, based on the latest data relative to six network industries of 30 OECD countries from the Seventies to 2007, strongly contrast with the previous empirical literature arguing for an analogous

treatment of liberalization and privatization policies by political parties. According to this literature, right-wing governments do promote both policies, whereas left-wing parties oppose to them. Our results partially reverse conventional wisdom, and suggest a much more complex dynamics surrounding the structure of deregulation in network industries.

One of the main theoretical consequences of our investigation is that the measurement of political determinants of market-oriented policies in network industries should disentangle liberalization and privatization, being these policies two distinct – although interdependent – tools for promoting market deregulation, with different economic consequences. Political parties in office reveal, indeed, quite opposite preferences towards the combination of the two policies considered and systematically tend to re-direct the country's liberalization-privatization path towards the desired pattern.[2]

Our conclusion may shed new lights in the political economy literature on deregulation policies, as it outlines a sort of 'politically-determined' trade-off between privatization and liberalization, so-far neglected in the related literature. On the one side, the 'pro-market' paradigm of right-wing parties does not necessarily involve the same level of intensity along the vast array of market-oriented policies. According to our findings, right-wing parties seem to promote a privatization-biased pattern. As Gual and Jodar-Rosell (2009) recently pointed out, this might be due to the belief that quasi-monopolistic rents induce credible economic restructuring of formed State–owned enterprises and thus assure the success of privatization programs. On the other side, the circumstance that left-wing governments result coupling market liberalization with State control of incumbent firms may reveal a persistent aversion towards a full decentralized market economy and a political favor towards economic restructuring through incentives provided by competition, perhaps delaying privatization after liberalization reaches a critical threshold (Stiglitz, 1999). This recent pro-market attitude of left-oriented executives is largely acknowledged today by those political scientists who define as 'second-wave neo-liberalism' the phenomenon of the embracement of the neoliberal ideal of entrepreneurship by social democratic parties in Europe and North America (Roy *et al.*, 2006; Steger and Roy, 2010). Our empirical results are consistent with this argument. The liberalization of network industries may thus differ from other market-oriented policies in terms of its political appeal and rationale, as it may represent a politically sustainable way for left-wing

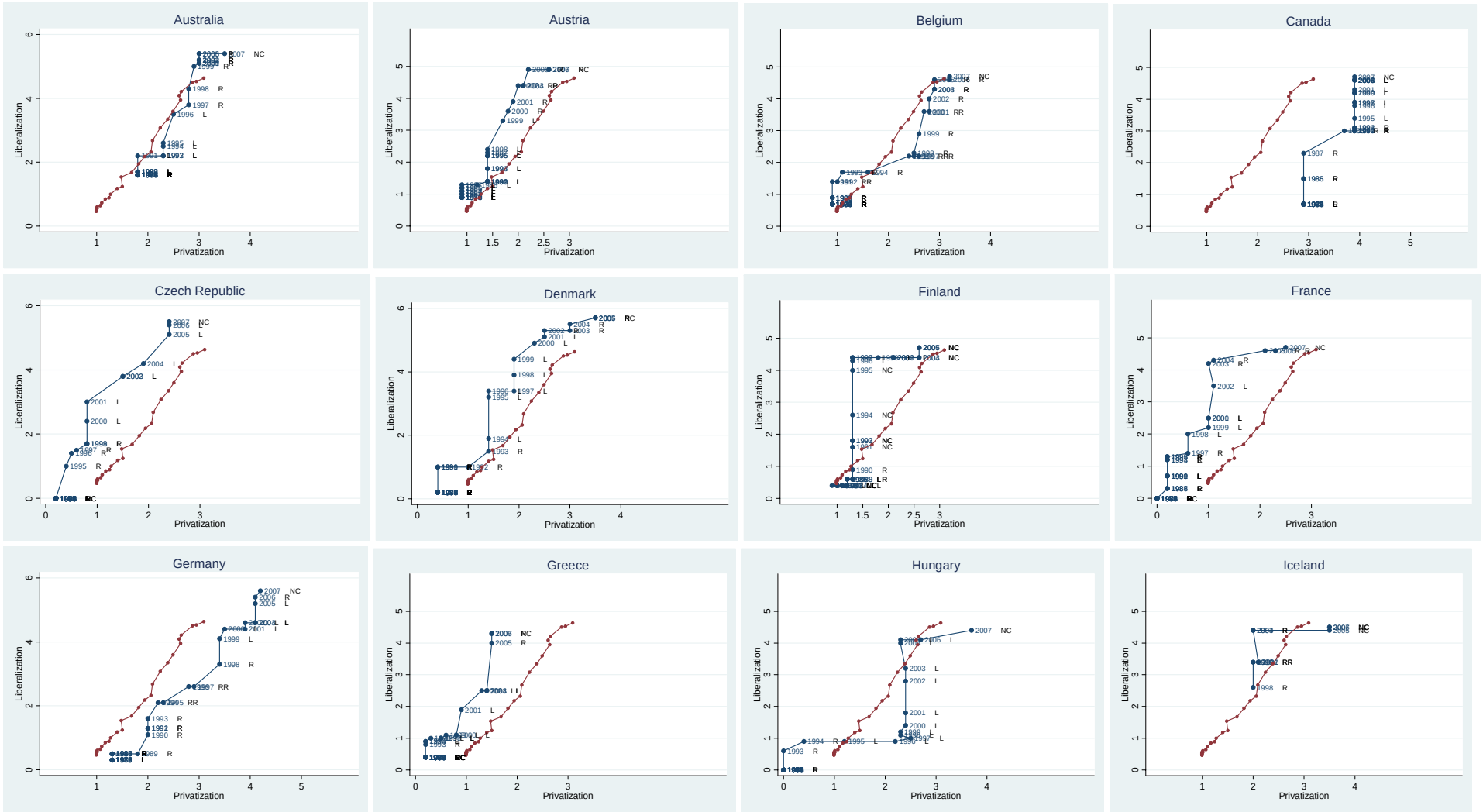
[2] In the Appendix we provide a panel of graphics showing liberalization-privatization patterns for each country considered in our empirical study.

executives to indirectly redistribute rents towards final low-income worker-customers and to grant universal access obligations and minimal level of quality (Armstrong and Sappington, 2006; Alesina and Giavazzi, 2007).

The analysis of the political economic rationale behind the ideologically oriented deregulation paths we find is far beyond the scope of our paper. Nonetheless, we believe that the empirical picture we have outlined raises new issues on the political determinants of market-oriented policies, which deserve further theoretical and empirical research.

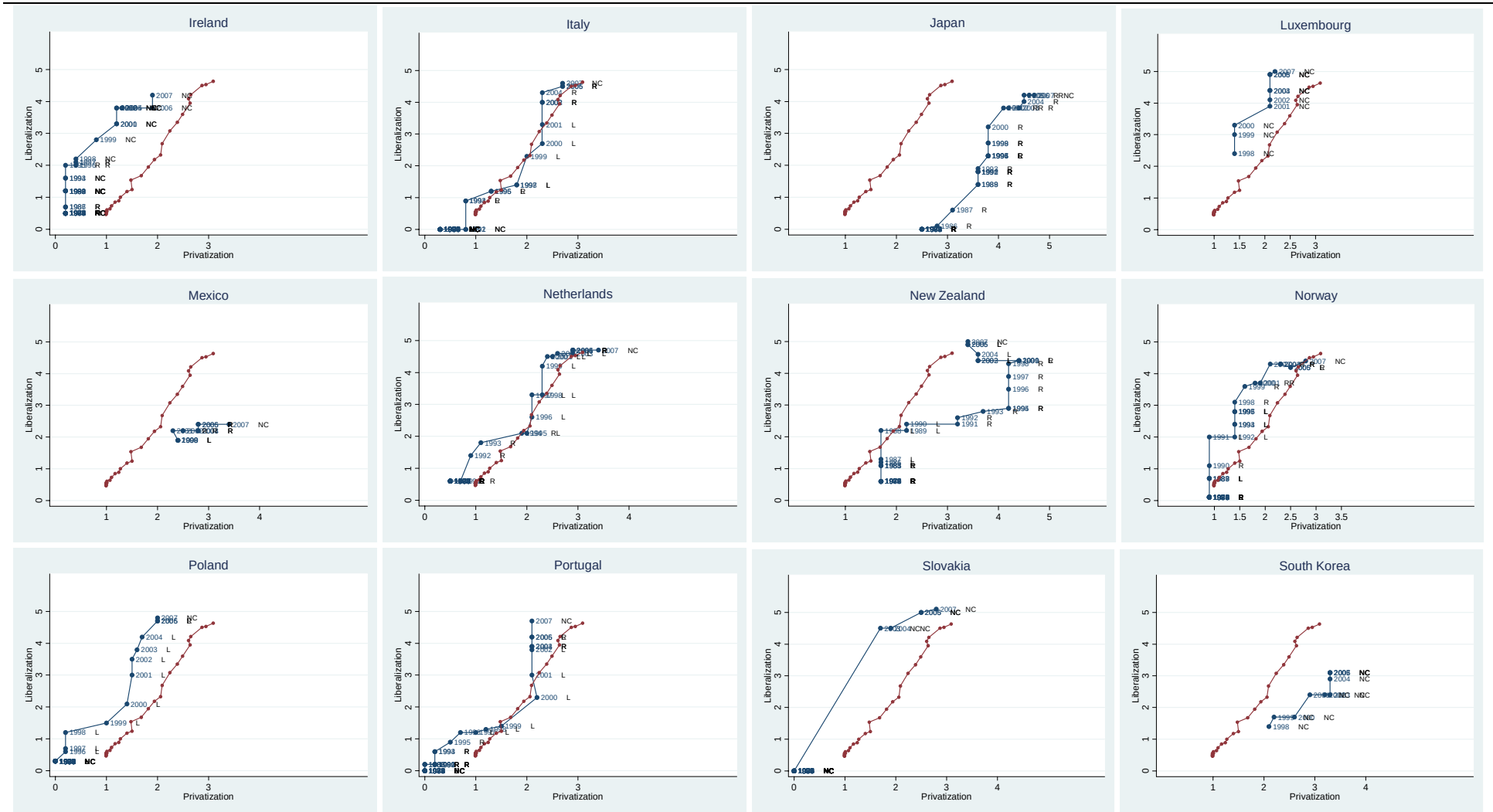
APPENDIX

FIGURE 2. Liberalization and privatization in OECD countries (network industries, 1975-2007): L = left-wing, R = right-wing, NC = centre and non-classifiable (source: elaboration from OECD (2009) and World Bank (2010)). The red line indicates the OECD average.



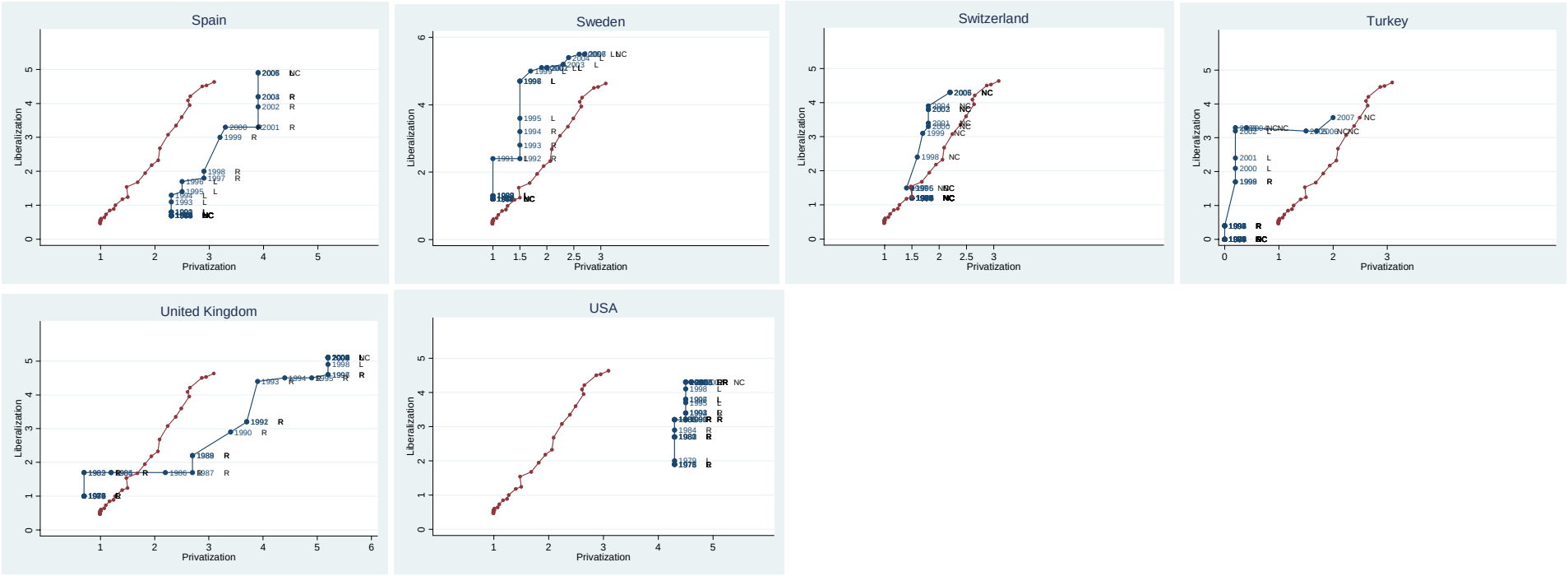
Note: liberalization is measured by subtracting the OECD's (2009) indicator of entry barriers to its maximum value, privatization is measured by subtracting the OECD's (2009) indicator of public ownership to its maximum value (both indexes range from 0 to 6).

FIGURE 2. *(Continued)*



Note: liberalization is measured by subtracting the OECD's (2009) indicator of entry barriers to its maximum value, privatization is measured by subtracting the OECD's (2009) indicator of public ownership to its maximum value (both indexes range from 0 to 6).

FIGURE 2. *(Continued)*



Note: liberalization is measured by subtracting the OECD's (2009) indicator of entry barriers to its maximum value, privatization is measured by subtracting the OECD's (2009) indicator of public ownership to its maximum value (both indexes range from 0 to 6.

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