

Disentangling liberalization and privatization policies: Is there a political trade-off? §

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Abstract

We empirically investigate the political determinants of liberalization and privatization policies in six network industries of 30 OECD countries (1975-2007). We unbundle liberalization and privatization reforms and study their simultaneous determination in a two-equation model. Unlike previous studies, we account for cross-effects between the two pro-market measures. Our findings unveil that both right-wing and left-wing governments implement liberalizations and privatizations, showing a common trend under the so-called neo-liberalism wave. However, although the privatization rate is higher than liberalization in right-wing environments, the opposite occurs under left-wing governments. We argue that ideological cleavages still affect pro-market reforms, particularly the combination of privatization and liberalization policies. We conclude that different deregulation patterns should be expected under governments characterized by different political ideologies. Our results shed new light on the literature investigating the political-economic rationale underpinning pro-market choices.

Keywords: liberalization, privatization, network industries, partisanship

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1. Introduction

In the last three decades, most OECD countries have experienced a deep and extensive wave of pro-market reforms in sectors once dominated by State-controlled monopolies, such as network industries (Armstrong and Sappington, 2006; Guriev and Megginson, 2007; Roland, 2008). Policies aimed at removing restrictions to entry into previously heavily regulated markets (e.g., electronic communications, transportation, energy, postal services) and promoting government withdrawal from corporate ownership have been implemented throughout the world, and especially in OECD countries (Conway and Nicoletti, 2006), stimulated by globalization and by the diffusion of pro-market reforms.

In addition to the analysis of economic determinants (Vickers and Yarrow, 1991; Levy and Spiller, 1996; Newbery, 1997, 2002; Armstrong and Sappington, 2006), a large group of scholars have investigated the role of institutional and political determinants of market-oriented policy in network industries, following the “political economics” approach (Persson and Tabellini, 2000; Persson, 2002; Besley and Case, 2003; Besley *et al.*, 2010). Within this framework, empirical studies commonly consider privatizations and liberalizations as a whole, under the comprehensive umbrella of pro-market policies (e.g., Pitlik, 2007; Bortolotti and Pinotti, 2008; Potrafke, 2010). However, disentangling privatization and liberalization initiatives suggests that the extent and implementation of the two policies in OECD network industries followed quite a heterogeneous pattern. Some countries have actually focused more on decreasing barriers to entry (i.e., liberalization policies) in previously State-owned monopolies, and some others have been much more concerned with the reduction of State ownership in incumbent firms (i.e., privatization policies).¹ Thus far, the empirical literature has failed to acknowledge country-level variations in which liberalizations and privatizations have been differently combined in network industries. Consequently, we still lack a full understanding of how so many countries adopting similar reforms, simultaneously and in identical sectors, actually differ in their policy “bundling”, intensity and implementation of, respectively, liberalizations and privatizations.

The purpose of this article is to investigate precisely the determinants behind such cross-government variations in pro-market policy adoptions. Different political and economic

¹ In the Appendix, we provide a panel of graphics (Figure A1) showing liberalization-privatization patterns of OECD countries.

configurations, partisan politics, and interest concentrations may play roles in this respect. Here, all else being equal, we focus our analysis on the role of partisan orientation in the government in shaping the different liberalization-privatization patterns we observed in OECD network industries over the last thirty years.

A traditional view still supports the idea that governments dominated by right-wing parties tend to espouse liberal economic programs, including deregulation, privatization and liberalization, and, generally, the introduction of competition (Boix, 1998; Rodine-Hardy, 2013). Conversely, left-wing governments typically are assumed to foster stronger State intervention, defending “national champions” as massive employers and heavily regulated markets as a secure manner with which to control price and wage dynamics (e.g., Appel, 2000). According to this view, the enduring wave of pro-competitive initiatives should be exclusively attributed to right-wing executives. Recent empirical research shows, however, that after the nineties, the so-called “second-wave neoliberalism” also flooded left-wing governments, boosted by a process of policy diffusion and imitation in the global arena (Dobbin *et al.*, 2007; Stiglitz, 2008). Accordingly, we should expect a convergent pattern between right-wing and left-wing governments, with the former fully embracing the entire range of pro-market policies and the latter progressing toward a similar path.

Surprisingly, available data, when properly parsed, suggest quite a different story. In Figure 1, we report the intensity of liberalization and privatization policies adopted by right-wing and left-wing governments in OECD network industries, measured as the yearly variation of, respectively, the OECD’s 2009 indicators of entry barriers and public ownership over the last three decades. Data show that right-wing governments pushed for privatization policies more intensively than left-oriented ones, whereas left-wing governments favored liberalization over privatization.

Insert Figure 1 about here

Disentangling pro-market policies reveals that, within the common neo-liberalism wave, a partisan trade-off between privatization and liberalization characterizes OECD countries’ governance of network industries. Thus, on the one side, the alleged primacy of right-wing governments in advocating opening markets to competition - by both privatization and liberalization policies - is to be challenged. On the other, data suggest that traditional ideological biases have not been completely absorbed by converging policy diffusion processes in the globalization era. Rather, alternative pro-market paradigms, based on various combinations of privatization and liberalization intensity, appear

to have emerged in OECD network industries, driven by governments' partisan orientation. If confirmed by rigorous econometric inquiry, this result would overturn the main conclusions reached thus far by the existing empirical literature, forcing reconsideration of the political and economic rationale behind these two alternative pro-market paradigms as they have evolved and been reinforced over the last decades.

In this paper, we investigate whether such observed patterns are robust enough for a rigorous econometric analysis. We employ the largest available database on pro-competitive policies (OECD, 2009). This database covers 30 OECD countries observed from 1975 to 2007. In addition to being the longest time span for which rigorous data are available, this period also includes the entire liberalization and privatization waves observed in OECD network industries. We used information on sectoral privatization and liberalization concerning six sectors (passenger air transport, telecommunications, electricity, gas, post, and rail) and thus utilized three sources of exogenous variation (country, time, and industry). We then estimated two equations (one explaining privatization interventions and the other explaining liberalization interventions) using Seemingly Unrelated Regression (SUR) to account for the presence of unobservable factors responsible for the simultaneous determination of privatization and liberalization. Our econometric analysis identifies the existence of a causal relation underpinning the graphical correlation between governments' ideology and pro-market policies displayed in Figure 1, with right-wing parties favoring privatization over liberalization and left-wing parties favoring liberalization over privatization. These effects are shown to be robust in a number of different empirical specifications.

In addition to the econometric findings, our study contributes to existing empirical political and economic literature on pro-market reforms in three manners.

First, we approach liberalization and privatization policies as two distinct components of a general pro-market reform process. This is a significant innovation because standard empirical literature tends to treat the two policies as two aligned and substitutable issues under the comprehensive umbrella of pro-market reforms (e.g., Potrafke, 2010). The distinction between liberalization and privatization policies has often been confused in the economic literature, and the two concepts have often been overlapped and conflated in a generic notion of "pro-competitive deregulation". It is not only a matter of definition; it is also a matter of content and of alternative political and economic rationales behind the governmental choice of a policy mix. In our study, by disentangling privatization and liberalization, we emphasize that the two policies may have different economic and political motivations and consequences. Whereas liberalization should properly denote the abatement

of legal provisions impeding the free entry of new competitors into a market and does not directly involve corporate ownership changes, privatization is a process of formerly State-owned firms going private and does not imply legal free entry into the market (without liberalization, privatization simply determines a shift from a public to a private monopoly).

Second, we acknowledge that the effects of liberalization are not independent of the level of privatization in the market and vice-versa. On the one hand, entry barrier abatement before privatization reduces the monopolistic rents of the incumbent and lowers the price at which the State will be able to sell its shares of a company; on the other, the State's withdrawing from ownership before liberalization increases the returns that the State can obtain from privatization. This is suggested by many studies on pro-market policy effect (De Fraja, 1991, 1994; Roland, 1994; Wallsten, 2001, 2002; Li and Xu, 2004; Armstrong and Sappington, 2006); however, it has been thus far ignored by the extant empirical political economic literature.

Third, we employed the largest database available on market reforms in network industries and systematically studied both liberalization and privatization processes from the beginning to the end whereas other empirical inquires have examined shorter periods and smaller groups of countries.

Our choice to focus on network industries is motivated by the fact that these sectors have long been characterized by the presence of natural monopoly segments, network externalities, and firms having non-economic objectives (e.g., universal service obligations). Given these peculiar characteristics, network industries have typically been burdened with legal restrictions to entry, widespread public ownership, and extensive cross-subsidies to a larger extent than other sectors. Only since the end of the 1970s have technological advances, the evolution of governance and regulatory techniques, and an increasing international exposure made liberalization and privatization possible in these sectors, thus allowing governments to reveal in practice their pro-market preferences. OECD network industries are therefore an appropriate and interesting case for exploring the reform aptitudes of governments. Moreover, the intense reform processes in network industries have stimulated economists to collect quantitative information of a higher quality than for other sectors, thus making rigorous data on these industries available for econometric analysis.

Our paper fits easily into various veins of political economic literature. As for the political determinants of pro-market reforms, our study relates to a number of empirical papers that have focused alternatively on privatization or liberalization policies in isolation, most often suggesting that both policies are a prerogative of right-wing governments (Duso, 2002; Pitlik, 2007; Bortolotti and Pinotti, 2008; Arin and Ulubasoglu, 2009; Duso and Seldeslachts, 2010; Potrafke, 2010; Belloc and

Nicita, 2011, 2012). More generally, our paper relates to the literature on partisanship and macroeconomic policy-making (Alesina and Tabellini, 1988; Alesina and Rosenthal, 1995; Roemer, 2001; Biais and Perotti, 2002; Osterloh, 2012) and on policy diffusion (Simmons and Elkins, 2004; Clifton *et al.*, 2006; Rodine-Hardy, 2013). Our study also coincides with the literature on the economic determinants of pro-market reforms (Bertero and Rondi, 2002; Berg *et al.*, 2012; Bortolotti *et al.*, 2013), to the extent that it shows how free competition spurs progressive State-ownership reductions and vice-versa in regulated environments.

Finally, it is worth emphasizing what we do not do in this paper. Our empirical analysis provides statistically significant evidence on governments' policy strategies (i.e., whether they favor liberalization over privatization or vice-versa) but cannot tell us anything regarding the governments' political strategies (i.e., why they favor liberalization over privatization or vice-versa). However, although assessing political strategies of governments requires a dedicated interdisciplinary analysis that goes well beyond a pure econometric study, we indicate how our findings can stimulate future research on this issue in the concluding section.

The remainder of the paper is organized as follows: in Section 2, we present our estimation analysis of liberalization and privatization reforms in OECD network industries; in Section 3, we check the robustness of our estimation results against variables such as governments' stability, policy diffusion and outlier values; in Section 4, we draw our conclusions.

2. Regression analysis

2.1. Empirical strategy

The objective of our empirical study is to measure whether (and, if yes, to what extent) the intensity of liberalization and privatization initiatives adopted by a government diverges under right-wing compared with left-wing administrations. To analyze econometrically the effect of the political orientation of governments on both liberalization and privatization policies raises three main technical issues.

First, liberalization and privatization initiatives are likely to be considered simultaneously by executives (see, e.g., Roland, 1994, De Fraja, 1994, and Wallsten, 2002). The analysis of the effect of a government's political orientation on liberalization policy must account for the same government's

policy decisions regarding privatization and vice-versa. From a statistical point of view, this requires estimating two regression equations – one explaining privatization interventions and one explaining liberalization interventions, both as a function of the political orientation of governments – in such a manner that the residuals of the equations may be correlated. The correlation between the disturbances of the equations is expected to reflect the presence of some unquantifiable factors responsible for the simultaneous determination of privatization and liberalization policies adoption. Contrary to previous empirical literature, we therefore estimate two equations using Seemingly Unrelated Regression (SUR) by Zellner (1962). This method allows us to estimate the two equations simultaneously while accounting for correlated residuals.

Second, the extent of privatization in a sector may affect the intensity of future sectoral liberalization (whether this influence has a positive or negative effect is an empirical question). Similarly, the level of barriers to entry into a market may affect the intensity of policy interventions aimed at reducing State ownership. These causal channels generate cross-effects that must be explicitly modeled in a regression analysis; otherwise, misspecification problems and omitted variable biases occur. Econometric theory suggests Vector Autoregressive Models (VARs) as a standard manner of empirically analyzing cross-effects. In our regression context, however, VARs cannot be employed because of our panel structure, in which the cross-section dimension is quite large (30 countries, over 6 sectors) with respect to the time coverage (the 1975-2007 period on a yearly basis). Moreover, the unbalanced nature of our panel because of the presence of missing data and the large number of control variables we must include in the analysis, as explained below, prevent us from implementing VAR-type techniques. In our estimation, we therefore account for cross-effects between policies by constructing variables measuring the absolute level of sectoral liberalization and privatization to be used as additional explanatory variables in the policies' intensity equations. Identification requirements for the two-equation model are met by using different sets of regressors in the two equations.

Third, policy decisions take time to be implemented, and once adopted, they may affect administrative changes and other country characteristics. Consequently, estimating the effect of a government's political orientation and other country variables in a given year on policy outcomes measured in the same year may induce attribution of the adoption of a certain policy measure to a newly elected executive (not responsible for that policy action) and may cause endogeneity or reverse causality in our estimation. We circumvent this problem by regressing liberalization intensity and privatization intensity variables on lagged covariates (including the political orientation indicators).

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

$$\begin{aligned} \text{'Privatization Intensity Index'}_{ist} = & \beta_0 + \beta_1 \text{'Dummy for Rightwing Gov'}_{it-1} + \beta_2 \text{'Dummy for Leftwing Gov'}_{it-1} + \\ & \beta_3 \text{'Privatization Intensity Index'}_{i,s,t-1} + \beta_4 \text{'State Ownership Level'}_{i,s,t-1} + \beta_5 \text{'Entry Barriers Level'}_{i,s,t-1} + \\ & \beta_{6\dots z} \mathbf{V}_{it-1} + \varepsilon_{ist} \end{aligned} \quad (1)$$

$$\begin{aligned} \text{'Liberalization Intensity Index'}_{ist} = & \delta_0 + \delta_1 \text{'Dummy for Rightwing Gov'}_{it-1} + \delta_2 \text{'Dummy for Leftwing Gov'}_{it-1} \\ & + \delta_3 \text{'Liberalization Intensity Index'}_{i,s,t-1} + \delta_4 \text{'State Ownership Level'}_{i,s,t-1} + \delta_5 \text{'Entry Barriers Level'}_{i,s,t-1} + \\ & \delta_{6\dots z} \mathbf{V}_{it-1} + \eta_{ist} \end{aligned} \quad (2)$$

in which $t = 1975, 1976, \dots, 2007$, i identifies the country, s identifies the sector, \mathbf{V} is a vector of control variables (which also includes a set of industry dummies to control for time-invariant specificities of the individual sectors), parameters from β_0 to β_z and from δ_0 to δ_z define the parametric structure of the two equations, one-year lagged *Privatization Intensity Index* and *Liberalization Intensity Index* on the right-hand side represent an auto-regressive term (*AR(1)Term*), and 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. A panel fixed-effect regression was performed.²

The empirical procedure that we followed requires two steps. First, we estimated the model defined by equations (1) and (2) over the period 1975-2007 and obtained parameter β_1 , β_2 , δ_1 and δ_2 (i.e., the coefficients for the effects of, respectively, right-wing and left-wing governments on privatization and liberalization policies' intensity). Second, we performed the Wald test for the null hypothesis of zero difference between β_1 and β_2 and between δ_1 and δ_2 in each equation. A statistically significant difference between the two parameters indicates a statistically significant difference in the intensity at which right-wing and left-wing governments have implemented the given policy.

2.2. Data and variables

To perform the empirical analysis, we collected data from various sources. The sample we used is

² A simultaneous equation model in this case is justified both on a theoretical ground (liberalizations and privatizations may be simultaneously determined by governments, see, e.g., Roland, 1994) and on an empirical ground (correlation between residuals causes inefficient Ordinary Least Squares (OLS) estimates). Nonetheless, as we have verified in unreported regressions (available upon request), our results are robust to the estimation method. The SUR model indeed provides estimated coefficients substantially similar to a standard equation-by-equation regression (SUR models rely on the Feasible Generalized Least Squares – FGLS estimator, and it is shown (e.g., Greene, 2003) that their main advantage is in providing smaller standard errors than for the OLS).

the largest possible data availability (30 countries).³ The time period considered entirely covers the wave of pro-market reforms observed in Western countries in the last three decades up to 2007 whereas previous analyses focused on a smaller number of countries and on a shorter time period.

As the dependent variables of our econometric study, we considered an index of the intensity of liberalization interventions on a one-year basis (which we call the *Liberalization Intensity Index* in our empirical analysis) and an index of the intensity of privatization interventions on a one-year basis (which we call the *Privatization Intensity Index*). To construct such indexes, we use the OECD's 2009 indicators of entry barriers and of public ownership, as in – among others – Alesina *et al.* (2005). The OECD indicators are based on the “OECD Regulatory Indicators Questionnaire”, which is aimed at collecting information on the ranking of explicit policy settings and at measuring entry barriers and public ownership levels by seven sectoral indicators (which cover passenger air transport, telecommunications, electricity, gas, post, rail, and road). The sectoral indicators specifically measure the strictness of the legal conditions of entry and the extent of public ownership in the companies operating in the considered network industries for each country. We interpret the former as a proxy for sectoral liberalization and the latter as a proxy for privatization. On one hand, we measure liberalization policy by subtracting the OECD entry barriers index from its maximum value (let us call this variable *Entry Barriers Level*; note that higher values of *Entry Barriers Level* indicate lower levels of entry barriers) and then calculate the intensity of liberalization interventions (*Liberalization Intensity Index*) by looking at the one-year differences of *Entry Barriers Level*. Conversely, we measure privatization policy by subtracting the OECD public ownership index from its maximum value (let us call this variable *State Ownership Level*; again, note that higher values of this variable indicate lower levels of State ownership) and then calculate the intensity of privatization interventions (*Privatization Intensity Index*) by looking at the one-year differences of *State Ownership Level*.

The two indicators, *Entry Barriers Level* and *State Ownership Level*, range from 0 to 6 (0 being the maximum level of entry barriers and state ownership and 6 the minimum level). This range is only conventional because a given value from 0 to 6 for a certain sector and country does not indicate the number of interventions of entry barriers removal or company privatization; however, it does represent (on a continuous scale) the degree of advancement that the processes of liberalization and

³ 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. For those countries that experienced non-democratic governments, country-observations under dictatorship are not included in the political orientation database used in the estimation.

privatization have reached in a given year. Indeed, the two original OECD indexes of entry barriers and public ownership are synthetic measures conflating various aspects of the liberalization and privatization processes. With respect to liberalization, the index includes aspects such as the percentage of the retail market open to consumer choice and the legal conditions of entry into the market among other aspects that may vary across sectors. With respect to privatization, the index is mainly based on the percentage of shares in the incumbent firms owned by the government at the various levels of the vertical structure of the industry with different weights for different sectors (see Conway and Nicoletti, 2006, for details on the coding procedure).

Furthermore, it is important to emphasize that our *Liberalization Intensity Index* and *Privatization Intensity Index* variables are first differences of the two original measures of entry barriers and state ownership levels (i.e., they are given by, respectively, “*Entry Barriers Level_t – Entry Barriers Level_{t-1}*” and “*State Ownership Level_t – State Ownership Level_{t-1}*” for each country and sector). The empirical choice to use first differences is in line with previous studies (see, among others, Potrafke, 2010) showing that the most appropriate manner in which to measure the effect of ideology on reform choices is to estimate the effect of the political orientation of the government in office in a given year on the annual variation of a reform’s index; the use of a reform indicator expressed in absolute levels as the dependent variable prevents us from obtaining a precise measure of the relative contribution of an individual government to the reform process on a yearly basis. We build both *Liberalization Intensity Index* and *Privatization Intensity Index* 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 the OECD in 2009 does not contain information on public ownership for the road industry; thus we do not consider this sector in our analysis and use information on the other six sectors (passenger air transport, telecommunications, electricity, gas, post, and rail).

To measure governments’ political orientation, we use data obtained from the Database of Political Institutions (DPI) of the World Bank (2010). Information provided by the DPI has often been 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 *Dummy for Rightwing Gov*, *Dummy for Leftwing Gov* and *Dummy for Center Gov* in our empirical analysis – that equal 1 if the government party is defined as conservative, Christian-democratic or right-wing; it is defined as socialist, social-democratic, communist or left-wing; or it is defined as centrist or does not fit into the two previously mentioned categories. The variable *Dummy for Center Gov* acts as the

benchmark dummy in our regression.⁴

As control variables, on the right-hand side of equations (1) and (2), we consider a set of variables accounting for cross-effects between liberalization and privatization and for the effective lawmaking power of the government (i.e., the executive's capacity to implement economic policies, as suggested by Roemer, 2001). First, we model cross-effects by including the two indicators, *Entry Barriers Level* and *State Ownership Level*, as explanatory variables in both equations (1) and (2). Moreover, an autoregressive term of order 1 (*AR(1)Term*) is added to the equations to account for the inter-temporal effects of liberalization and privatization measures' intensity. Second, we include two variables measuring the political heterogeneity of the government: *Gov Heterogeneity* (i.e., the probability that two deputies randomly picked from among the executive members will belong to different parties) and *Gov Herfindahl* (i.e., the sum of the squared seat shares of all parties in the governments). In particular, *Gov Herfindahl* is an index of political concentration in government composition, built in the identical manner as the well-known Herfindahl index commonly used in antitrust analysis to measure competition levels. In our context, *Gov Herfindahl* ranges from $1/N$ to 1, where N is the number of political parties in the given country; the lower its level, the lower the political concentration of the government. Finally, we included a dummy variable for the adoption of the euro as suggested by Dang *et al.* (2006), which we call *Euro Adoption*. See Table 1 for summary statistics.

Insert Table 1 about here

The variables' description and data sources are collected in Table A1 in the Appendix.

The final sample that we used in the estimation analysis was obtained by using yearly data on 30 countries observed from 1975 to 2007 in six network industries. The DPI and the OECD's database show some missing data for some countries and some years. Therefore, in the basic regressions we finally utilized 4774 observations.

2.3. Basic regression results

In our basic regression analysis, we estimated two versions of the model defined by equations (1) and (2). In the first version, we considered a two-equation model in which the effect of the political

⁴ We are aware that the political ideology data by the World Bank (2010) may evidence some miscoding. For this reason, in our dataset, we have checked each country record included in our sample and corrected the coding for Italy (for the years 1994 and 1997-2001) and for Hungary (for the years 1999-2002).

orientation of governments is captured by the two variables *Dummy for Rightwing Gov* and *Dummy for Leftwing Gov*, *Dummy for Center Gov* being the benchmark. This provided us with estimated coefficients for right-wing and left-wing executives with respect to both privatization and liberalization intensity. We then tested for the significant difference between these governments' coefficients.⁵ In a second version, we ran a two-equation model in which the two variables *Dummy for Rightwing Gov* and *Dummy for Leftwing Gov* were combined with an index of government cohesiveness given by “1 – Gov Heterogeneity” to obtain the two interaction variables “*Dummy for Rightwing Gov* × [1 – Gov Heterogeneity]” and “*Dummy for Leftwing Gov* × [1 – Gov Heterogeneity]”. In this manner we were able to verify whether the effect of the political orientation of governments on the intensity of policy adoption is stronger under more cohesive executives. If a certain government's political orientation is positively associated with a given policy, then the magnitude of this association should be higher if the government composition shows a higher degree of political homogeneity. Analogous to the previous version of the analysis, the significant difference between the estimated parameters of the interaction variables was tested.

The estimation results of the two model versions are reported in Table 2 and Table 3. In both tables, the first column lists the variables whereas the other columns report the estimated coefficients and standard errors of the privatization intensity and liberalization intensity equations. The test results for the difference between β_1 and β_2 and between δ_1 and δ_2 are reported at the bottom of the two tables.

Insert Table 2 about here

Insert Table 3 about here

⁵ Note that we coded the categorical political orientation variables provided by the DPI through a traditional dummy coding procedure to obtain three dummy variables (*Dummy for Rightwing Gov*, *Dummy for Leftwing Gov* and *Dummy for Center Gov*). We then employed only two dummy regressors in the model (i.e., *Dummy for Rightwing Gov* and *Dummy for Leftwing Gov*) and used *Dummy for Center Gov* as the benchmark category. This is a standard procedure because the set of three dummy variables is perfectly collinear and the inclusion of three dummies prevents us from calculating unique least-squares estimates for the model. What we do estimate is a parameter for *Dummy for Rightwing Gov* and *Dummy for Leftwing Gov* with respect to *Dummy for Center Gov*. Because we are interested in obtaining the relative estimated effect of right-wing governments compared with left-wing governments (and not in a comparison with centrist governments), we ran a test for the statistical difference between the two coefficients for *Dummy for Rightwing Gov* and *Dummy for Leftwing Gov*. If the difference is statistically significant in both equations, we can assert that right-wing (left-wing) governments have privatized (liberalized) more intensively – in a statistically significant manner – than left-wing (right-wing) governments.

The estimation results reported in Table 2 show that in the 1975-2007 period, right-wing governments are associated with a positive parameter (statistically significant at the 5% level) in the privatization intensity equation and to a statistically insignificant parameter in the liberalization equation whereas the estimated parameter for left-wing governments is positive and statistically significant (at the 1% level) in the liberalization equation and not statistically significant in the privatization equation. The test for the parameters' difference shows that the coefficients of government political orientation are significantly different in the two equations. Thus, our estimation unveils a “political trade-off” because right-wing governments are shown to implement privatization policies with a greater intensity than left-wing governments and left-wing governments tend to adopt more intense liberalization measures with respect to right-wing executives.⁶

These results are confirmed by model version 2, in which the dummies for the governments' political orientation are substituted with interaction variables provided by the scalar product between the political orientation dummies and an index of government cohesiveness. As Table 3 shows, we obtain estimation findings substantially similar to those produced by model version 1. Moreover, the estimated coefficients associated with right-wing governments in the privatization equation and with left-wing governments in the liberalization equation show an increase – albeit small – in both their magnitude and statistical significance.

In addition, we find strong evidence of the presence of cross-effects between liberalization and privatization policies, i.e., the level of State ownership and entry barriers to market that executives find in place in $t-1$ are relevant to policy choices in t . In particular, a low level of State ownership in the sector does stimulate further liberalization initiatives and less intense privatization initiatives in the identical sector whereas in a similar manner, a low level of sectoral entry barriers does foster subsequent privatization and discourages additional liberalization (this is shown in both Table 2 and Table 3 by the positive effect of the one-year lagged *State Ownership Level* and *Entry Barriers Level* on, respectively, the *Liberalization Intensity Index* and *Privatization Intensity Index* and by the negative effect of the one-year lagged *State Ownership Level* and *Entry Barriers Level* on, respectively, the *Privatization Intensity Index* and the *Liberalization Intensity Index*). Our estimation results show that the auto-regressive component ($AR(1)Term$) also has a positive and statistically significant effect (at 1%

6 In an unreported regression, we have verified that the estimated coefficients of the government ideology variables considered in t (i.e. without lag) are similar to those reported in Table 2. In particular, in the liberalization equation, left-wing governments are associated with a positive and statistically significant parameter (whereas right-wing governments with an insignificant one); in the privatization equation, right-wing governments are associated with a positive parameter (of a lower statistical significance than in the basic regression with lagged variables) whereas left-wing governments to a negative and insignificant one.

level) on both equations. This suggests that an increase in the intensity of sectoral privatizations does stimulate further sectoral privatization initiatives and that the same is true for liberalization (i.e., both privatizations and liberalizations are sectoral path-dependent cumulative processes, on average without reversals). The positive effect of the auto-regressive component in our estimation may be because of the attempt by governments to exploit the full potential of a given set of pro-market measures. This explanation is in line with Alesina *et al.* (2005), who noted that the marginal effect of regulatory reforms on investments is higher when intensive deregulation initiatives have previously been implemented.

As for the remaining control variables, we observed that *Gov Herfindahl* has a negative and statistically significant effect on the liberalization equation whereas neither of the indexes of the political heterogeneity of governments (*Gov Heterogeneity* and *Gov Herfindahl*) is associated with a statistically significant parameter in the privatization equation. The euro adoption (*Euro Adoption*) is statistically significant in the liberalization equation and insignificant in the privatization equation.

It is important to note that our basic results are not driven by the time period (i.e., 1975-2007) chosen for the regression analysis. In particular, we observe that before 1980 there was a higher frequency of left-oriented governments in our sample than after 1980 and that the *Liberalization Intensity Index* and *Privatization Intensity Index* do not vary significantly in the 1970s (their mean is, respectively, 0.002 and 0.001 in the 1970s and 0.160 and 0.079 after 1980); however, we also observed that the estimated coefficients of the two political orientation variables of our interest remain virtually unchanged in a regression run on the 1980-2007 sub-period. This is shown in Table 4.⁷

Insert Table 4 about here

3. Robustness checks

3.1. Controlling for outlier values

Countries included in our sample may show outlier values in their policy outcomes and institutional

⁷ Another manner in which the choice of the time period may affect our results is indicated by the presence of some countries in our sample reaching the maximum level of privatization before the end of the period; thus there is no longer scope for privatization even if the country is run by a right-wing government (we indeed observe such a pattern in a few Anglo Saxon countries in the airlines sector). To determine whether this problem does influence our estimates, we have performed – in an additional estimation – our basic regression excluding the observations showing the maximum level of privatization (i.e., the maximum level in the *State Ownership Level* variable). Estimated parameters remain virtually unchanged (the table of results is available upon request).

characteristics. Therefore, we tested whether outlier values influence the statistical relevance of our estimation results. Specifically, we estimated the two equations using a “jackknife” variance estimator, which 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 (in which $m = n - k$). The estimate of each parameter is computed g times, ignoring the generic j -th group in each round. The overall parameter estimate is then obtained as the average of the g parameters.

Insert Table 5 about here

Table 5 reports the results obtained through an SUR “jackknife” variance estimator. Parameter estimates appear to be stable with respect to the possible influence of outlier values. In particular, the estimation results show that the estimated parameter associated with right-wing governments is positive and statistically significant (at the 5% level) in the privatization equation; conversely, the estimated parameter associated with left-wing governments is positive, statistically significant (at the 1% level) and higher than the right-wing parameter in the liberalization equation. The difference between the estimated parameters of left-wing and right-wing governments is statistically significant in both equations.

This validates the statistical robustness of our main findings to outlier values.

3.2. Controlling for different lag structures

As a second check of our results’ robustness, we estimate an additional version of the two-equation model in which the lag structure of the auto-regressive components allows for causal relations over two- and three-year intervals. Whereas in the basic version of the model we considered only one-year lagged variables, here we accounted for the possibility that the effects of privatization and liberalization measures on the intensity of further reforms nevertheless are still in effect after two and three years. To this aim, we included auto-regressive components of order 2 ($AR(2)Term$) and order 3 ($AR(3)Term$) in the equations. The results of this robustness check are shown in Table 6.

Insert Table 6 about here

Our main findings remain substantially unchanged. As before, we observed that right-wing

governments tend to adopt privatization reforms with a greater intensity than left-wing governments, whereas left-wing executives implement liberalization reforms with a greater intensity than right-oriented ones. Moreover, we observed that the auto-regressive components $AR(2)Term$ and $AR(3)Term$ do have a statistically significant influence on the liberalization equation and that only $AR(2)Term$ has a statistically significant effect on the privatization equation. We conclude from such results that the intensity of both liberalization and privatization measures has followed a non-ergodic process. This finding reveals the existence of path dependency in the reform process because each policy intervention is shown to increase the likelihood that the identical policy choice will be repeated in a successive step of the process. In general, institutional path dependency may be defined as the persistence of a certain form of institutional arrangement over time (Pierson, 2000). With respect to the reform process in network industries, the auto-regressive structure of the relations we detected in the empirical analysis indicates that both the liberalization and privatization processes tend to advance progressively, with each step linked to the preceding one. This can be because of fixed costs regarding economic and political developments of reform (i.e., costs related to the establishment of regulatory authorities, reallocation of public resources, employment adjustments, changes in policy priorities, and redefinition of rent positions) so that single policy measures are likely to be partitioned over two- or three-year intervals. The progressive nature of the liberalization and privatization processes may also be because of learning effects (i.e., governments implement reforms gradually as new information on the best manner in which to proceed becomes available).

3.3. Controlling for a government's stability

We then tested whether political stability – measured by the executive control of the lawmaking houses, by the number of years the executive has already been in office, by the number of years left in the current term of office and by electoral competitiveness – does affect liberalization and privatization initiatives.

The effect of political stability on economic policy has been empirically identified in several spheres of macroeconomic policies. For instance, Alesina *et al.* (2006) observed that the number of years left in a government's current term of office increases the likelihood of fiscal adjustments that reduce budget deficit. More recently, Roe and Siegel (2011) showed that political stability positively affects financial market development. Similarly, with respect to regulation policy, Fredriksson and Svensson (2003) demonstrated that political instability induces sub-optimal governmental interventions in environmental policy formation. Chang and Berdiev (2011) observed that the number of years the

executive has been in office positively influences pro-market policies in the regulation of energy industries. As Spiller (1996) argued, focusing on the utility sector, regulatory policies may be influenced by how much time remains in the government's term of office because it affects the executive's concern for meeting the needs of key constituencies and achieving re-election.

Because the average stability of left-wing and right-wing governments may be different, we ran two additional estimations. In a first regression, we substituted the variables on the political heterogeneity of governments (*Gov Heterogeneity* and *Gov Herfindahl*) with a dummy variable indicating whether the party of the executive has an absolute majority in the houses that have lawmaking powers (*Houses Majority*) and with two discrete variables indicating, respectively, the number of years the chief executive has been in office (*Years in Office*) and the number of years left in the chief executive's current term of office (*Years Left*). In a second regression, *Houses Majority*, *Years in Office* and *Years Left* are in their turn substituted with an index of executive electoral competitiveness (*Electoral Competitiveness*). For a description of the additional variables, see Table A1.

Insert Table 7 about here

Insert Table 8 about here

Results are reported in Table 7 and Table 8. Again, we observed that right-wing governments are associated in a statistically significant manner with a higher intensity of privatization reforms adoption whereas left-wing executives are associated with relatively more intense liberalization measures than right-wing governments. Notably, we also observe that a government's stability has a positive – although weak in terms of statistical significance – influence on reform adoption. Specifically, *Years in Office* and *Years Left* show a positive and statistically significant parameter in the privatization equation, and the degree of competitiveness in the executive elections (*Electoral Competitiveness*) shows a positive and statistically significant effect on the liberalization equation.

3.4. Controlling for policy diffusion and globalization

In a final robustness check, we verified whether our main findings are simply a result of the foundation of the European Union, which could have determined a convergence of governmental policies to the neo-liberal ideal of free market, or to political and economic globalization dynamics that may have driven market reforms in OECD countries. This perspective relates to the argument that policy diffusion – rather than an autonomous policy-making process at a national level – has

driven market reforms in Western countries in the last twenty years. According to the literature on policy diffusion in globalized markets (Simmons and Elkins, 2005), domestic policy choices may be determined by the transnational propagation of public policies. Simmons and Elkins (2005) define policy diffusion as the influence that a policy decision adopted by some countries has on the choices made by neighboring countries. Policy diffusion may be a result of rather different mechanisms: policy competition (according to which a domestic policy reduces the benefits of the identical policy adoption for others and increases the relative payoff of the first mover), learning (i.e., governments follow the policy strategies previously adopted by successful neighboring countries), and supranational institutional drivers (in which economic and institutional integration such as joining the European Union fosters policy convergence among member countries). Chang and Berdiev (2011), Simmons and Elkins (2005), Dang *et al.* (2006) and Pitlik (2007), among others, presented empirical evidence corroborating the effect of policy diffusion on the pro-market choices adopted by OECD governments. Clifton *et al.* (2006) argued that the European integration has been one of the main drivers of privatizations in EU member states.

Controlling for policy diffusion is relevant to our empirical study because approximately 70% of the countries included in our sample are members of the European Union. For this section, we thus tested whether the detected influence of governments' political orientation on privatization and liberalization choices is robust to policy diffusion or whether it has been simply a result driven by an exogenous clustering of liberal economic practices.

To conduct this robustness check of our results, we considered two modified versions of the basic model defined by equations (1) and (2).

First, we substituted the *Euro Adoption* variable with a dummy variable for the EU membership (*EU Membership*), which allowed us to account for supranational institutional drivers of pro-market policies⁸ and introduce the one-year lagged level of State ownership (*EU Privatization Level*) and entry barriers to markets (*EU Liberalization Level*) averaged over EU member countries in, respectively, the privatization and liberalization equations. Note that a higher value of *EU Privatization Level* implies a lower level of State ownership and that a higher value of *EU Liberalization Level* implies a lower level of entry barriers to markets. Both the *EU Privatization Level* and the *EU Liberalization Level* are calculated at a sectoral level. Hence, they allow us to account for policy diffusion at t induced by sectoral policy interventions adopted in EU countries up to $t-1$ (in this

⁸ The two variables *Euro Adoption* and *EU Membership* cannot both be included in the same equation because of collinearity issues.

manner, we account for possible policy competition and learning). A detailed description of these additional variables is included in Table A1.

Second, we ran an additional model version in which we included a globalization index (*Globalization*) that represented a synthetic measure of the degree of political and economic globalization at a country level (specifically, we used the KOF index of globalization (Dreher *et al.*, 2008); see Table A1 for a description).

The two-equation models so obtained were then estimated over the entire 1975-2007 period. The results are collected in Table 9 and Table 10.

Insert Table 9 about here

Insert Table 10 about here

From this robustness check, we obtained two interesting results.

First, we identified that policy diffusion plays a role in both sectoral privatization and liberalization choices of governments. In particular, we observe in Table 9 that the one-year lagged levels of privatization and liberalization (averaged over EU members) act as positive and statistically significant stimuli on the intensity of, respectively, privatization and liberalization interventions, thus corroborating the hypothesis of possible policy competition and learning effects (as discussed by Simmons and Elkins, 2005). Moreover, being an EU member country is associated with a positive and statistically significant effect in both of the privatization and liberalization equations presented in Table 9; this confirms the presence of supranational institutional drivers of pro-market policies (as suggested by Pitlik, 2007). In addition, we observe in Table 10 that the degree of country globalization also has a positive and statistically significant role in influencing the intensity of the reforms.

Second – and more important – the statistically significant relevance of policy diffusion does not affect our findings on the political determinants of privatization and liberalization. Indeed, the estimated parameter for right-wing governments remains positive and statistically significant in the privatization equation whereas the estimated parameter for left-wing governments remains positive and statistically significant in the liberalization equation. Again, 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 a difference is non-null and statistically significant for both the equations. Therefore, the influence of governments' political orientation on privatization and

liberalization choices is not driven by the presence of policy diffusion.

In conclusion, it is worth mentioning that policy diffusion and globalization forces influenced sectoral privatization and liberalization with different intensities in the various network industries. In particular, in unreported estimations performed sector-by-sector, we observed that the estimated parameter of the variable *Globalization* shows a relatively higher magnitude in the privatization equation run on the telecommunications sector sub-sample.⁹ This result suggests that the privatization process in OECD telecommunications reacted to international convergence in policy-making and to economic and political integration within the EU more than in other sectors (for a discussion on these issues see, among others, Rodine-Hardy, 2013). In addition, estimated fixed effects from our basic regression reveal that telecommunications-specific factors have made this sector relatively more exposed to pro-competitive reforms.¹⁰ Such findings help explain why we observe, on average, more intense privatization initiatives (both under left-wing and right-wing governments) in the telecommunications industry as represented in Figure 1.

4. Conclusions

Although it is well documented how political and economic globalization processes have sustained the increase in pro-market reforms in OECD countries and particularly in network industries, a detailed analysis of the manner in which such reforms have been designed, articulated and combined at the country level has received much less attention.

Disentangling privatization and liberalization policies in OECD network industries reveals a significant country-level variation in the manner in which governments have combined the two policies. However, because existent empirical political economy research failed to outline this pervasive feature of pro-market policy implementation, we lack understanding of why OECD countries have chosen, over the same period, different options within the identical pro-market policies paradigm.

⁹ Tables of results are not reported for reasons of space; they are available upon request.

¹⁰ The rail industry being the benchmark, the sectoral fixed effects are as follows: 0.059* for air transport, 0.070** for electricity, 0.026 for gas, 0.061* for post and 0.103*** for telecommunications in the basic liberalization equation; 0.102*** for air transport, 0.030 for electricity, 0.062*** for gas, -0.015 for post and 0.121*** for telecommunications in the basic privatization equation (note: *<0.10, **<0.05, ***< 0.01 statistical significance).

In this paper we argued that, even under the common trend of “neoliberalism wave”, the political ideology of governing parties has influenced the pro-market initiatives implemented by OECD countries over the last thirty years. We have unbundled liberalization and privatization policies and investigated how they have been adopted by executives of different political affiliations. Our econometric findings reveal that right-wing governments privatize to a greater extent and liberalize to a lesser extent than left-wing governments; thus, different countries have taken different pro-market paths according to the political orientation of the government in office. We also showed that this empirical result is robust to the presence of cross-effects between liberalization and privatization, to sectoral path-dependency in policy adoption, and to policy diffusion across European countries.

Our results suggest a much more complex dynamic surrounding the structure of the pro-competitive reform process in network industries than is commonly proposed by empirical political-economic literature. In particular, the evidence provided in this paper reveals that political ideology influences the composition of the policy combinations chosen by governments rather than the reforms’ aggregate level as is generally argued.

What can be learned from our study is that even within a common shift toward pro-market reforms at the global level (the so-called neo-liberalism waves of the ‘80s and ‘90s), ideology still affects policy design and that the relation between policy and politics cannot be reduced to the anachronistic view of left-wing governments hindering competition and right-oriented parties promoting market development.

Although contributing to current political economy literature with counter-intuitive and rigorous econometric evidence, our empirical inquiry may also influence three different areas of future research. First, our results suggest the importance of investigating the economic effects of different policy sequencing. Several economists have argued that gradualism in policy adoption is crucial to the success of a pro-market reform process (e.g., Dewatripont and Roland, 1992, and Roland, 1994): privatizing without first granting free entry hampers the emergence of effective competition in the market and an efficient corporate restructuring of incumbents. If governments choose different liberalization-privatization paths, then it is interesting to measure the economic outcomes of the various policy mixes and to understand whether an optimal sequencing of reforms does exist. Second, our analysis may also encourage deeper econometric work on the effect of economic policies on political equilibriums and indirectly on subsequent economic outcomes. Causality factors may indeed run both ways, i.e., from politics to economic policy and vice-versa. In the econometric model presented in this paper, we used lagged ideology and governmental characteristics variables to

circumvent endogeneity issues. Nevertheless, to investigate the effect of pro-market reforms on executives' re-election and composition is an area of research that deserves further exploration. Third, we believe that more effort should be expended in collecting qualitative data on the reforms' progress. Available measures of the liberalization and privatization initiatives implemented in OECD countries allow a quantitative evaluation of pro-market processes (see OECD, 2009) but do not say anything regarding the quality of the reforms. How has the process of the removal of entry barriers been combined with regulatory infrastructures? How have privatization programs been conducted with respect to the method of sale and the valuation procedure? Which systems of both corporate and industrial governance have emerged from the liberalization-privatization wave? The production of new qualitative data would be of great help in answering these and other questions that await a conclusive analysis.

Appendix

Insert Table A1 about here

Insert Figure A1 about here

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Table 1. Summary statistics.

Variable	<i>Right-wing</i> [one-year lagged]		<i>Center</i> [one-year lagged]		<i>Left-wing</i> [one-year lagged]	
	Mean	Std.Dev.	Mean	Std.Dev.	Mean	Std.Dev.
<i>Liberalization Intensity Index</i>	0.139	0.590	0.109	0.558	0.150	0.622
<i>Privatization Intensity Index</i>	0.081	0.436	0.048	0.270	0.046	0.348
<i>Entry Barriers Level</i>	2.118	2.266	1.423	2.056	2.262	2.343
<i>State Ownership Level</i>	2.014	2.276	1.240	1.538	2.036	2.239
<i>Gov Heterogeneity</i>	0.251	0.243	0.558	0.183	0.154	0.226
<i>Gov Herfindahl</i>	0.353	0.105	0.245	0.076	0.352	0.103
<i>Euro Adoption</i>	0.089	0.284	0.065	0.247	0.070	0.255
<i>EU Liberalization Level</i>	1.711	1.755	2.282	2.081	1.937	1.754
<i>EU Privatization Level</i>	1.394	1.063	1.646	1.263	1.489	1.063
<i>EU Membership</i>	0.193	0.395	0.245	0.430	0.293	0.455
<i>Houses Majority</i>	0.266	0.442	0.126	0.332	0.282	0.450
<i>Years In Office</i>	4.019	3.038	3.178	2.277	3.801	2.786
<i>Years Left Term</i>	1.649	1.306	1.841	1.375	1.668	1.305
<i>Electoral Competitiveness</i>	6.961	0.295	6.803	0.937	6.963	0.308
<i>Globalization</i>	72.461	12.839	71.359	13.008	74.160	11.598

Table 2. Seemingly unrelated regression: basic model specification (model version 1).

Explanatory variables:	SUR MODEL (BASIC SPECIFICATION 1)	
	Eq. (1)†	Eq. (2)††
	Coeff. (Std.Err.)	Coeff. (Std.Err.)
<i>Dummy for Leftwing Gov</i> ^a	0.010 (0.017)	0.073 (0.026) ***
<i>Dummy for Rightwing Gov</i> ^a	0.035 (0.016) **	0.017 (0.025)
<i>AR(1)Term</i>	0.072 (0.015) ***	0.071 (0.015) ***
<i>State Ownership Level</i> ^a	-0.028 (0.003) ***	0.017 (0.005) ***
<i>Entry Barriers Level</i> ^a	0.023 (0.003) ***	-0.031 (0.005) ***
<i>Gov Heterogeneity</i> ^a	-0.022 (0.037)	-0.018 (0.055)
<i>Gov Herfindahl</i> ^a	0.052 (0.086)	-0.333 (0.128) ***
<i>Euro Adoption</i> ^a	-0.030 (0.026)	0.080 (0.039) **
<i>Constant</i>	-0.007 (0.043)	0.190 (0.064) ***
Number of observations	4774	4774
Fixed effects estimation (country, year, sector FE)	yes	yes
RMSE	0.413	0.612
<i>F</i> -stat [<i>p</i> -value]	11.94 [0.000]	6.08 [0.000]
<i>F</i> -stat for H ₀ : $\beta_2(\text{Leftwing Gov}) - \beta_1(\text{Rightwing Gov}) = 0$	3.36 *	
<i>F</i> -stat for H ₀ : $\delta_2(\text{Leftwing Gov}) - \delta_1(\text{Rightwing Gov}) = 0$		7.48 ***

Note: * < 0.10, ** < 0.05, *** < 0.01 statistical significance.

† Dependent variable of eq. (1): *Privatization Intensity Index*.

†† Dependent variable of eq. (2): *Liberalization Intensity Index*.

^a: one-year lagged.

Table 3. Seemingly unrelated regression: basic model specification (model version 2).

	SUR MODEL (BASIC SPECIFICATION 2)	
	Eq. (1)†	Eq. (2)††
Explanatory variables:	Coeff. (Std.Err.)	Coeff. (Std.Err.)
<i>Dummy for Leftwing Gov</i> × [1 - <i>Gov Heterogeneity</i>] ^a	0.016 (0.024)	0.097 (0.036) ***
<i>Dummy for Rightwing Gov</i> × [1 - <i>Gov Heterogeneity</i>] ^a	0.051 (0.024) **	0.034 (0.036)
<i>AR(1)Term</i>	0.072 (0.015) ***	0.071 (0.015) ***
<i>State Ownership Level</i> ^a	-0.028 (0.003) ***	0.017 (0.005) ***
<i>Entry Barriers Level</i> ^a	0.023 (0.003) ***	-0.030 (0.005) ***
<i>Gov Heterogeneity</i> ^a	0.001 (0.043)	0.026 (0.064)
<i>Gov Herfindahl</i> ^a	0.043 (0.086)	-0.330 (0.128) ***
<i>Euro Adoption</i> ^a	-0.031 (0.026)	0.077 (0.039) **
<i>Constant</i>	-0.011 (0.045)	0.172 (0.067) ***
Number of observations	4774	4774
Fixed effects estimation (country, year, sector FE)	yes	yes
RMSE	0.413	0.612
<i>F</i> -stat [<i>p</i> -value]	11.97 [0.000]	6.03 [0.000]
<i>F</i> -stat for H ₀ : $\beta_2(\text{Leftwing Gov}) - \beta_1(\text{Rightwing Gov}) = 0$	4.15 **	
<i>F</i> -stat for H ₀ : $\delta_2(\text{Leftwing Gov}) - \delta_1(\text{Rightwing Gov}) = 0$		6.13 **

Note: * < 0.10, ** < 0.05, *** < 0.01 statistical significance.

† Dependent variable of eq. (1): *Privatization Intensity Index*.

†† Dependent variable of eq. (2): *Liberalization Intensity Index*.

^a: one-year lagged.

Table 4. Seemingly unrelated regression: basic model specification (1980-2007 sub-period).

	SUR MODEL	
	Eq. (1)†	Eq. (2)††
Explanatory variables:	Coeff. (Std.Err.)	Coeff. (Std.Err.)
<i>Dummy for Leftwing Gov</i> ^a	0.008 (0.019)	0.070 (0.029) **
<i>Dummy for Rightwing Gov</i> ^a	0.034 (0.018) *	0.007 (0.027)
<i>AR(1)Term</i>	0.071 (0.015) ***	0.069 (0.015) ***
<i>State Ownership Level</i> ^a	-0.030 (0.003) ***	0.017 (0.005) ***
<i>Entry Barriers Level</i> ^a	0.022 (0.003) ***	-0.036 (0.005) ***
<i>Gov Heterogeneity</i> ^a	-0.022 (0.041)	-0.029 (0.061)
<i>Gov Herfindahl</i> ^a	0.075 (0.097)	-0.361 (0.144) **
<i>Euro Adoption</i> ^a	-0.031 (0.027)	0.080 (0.033) **
<i>Constant</i>	-0.010 (0.048)	0.223 (0.071) ***
Number of observations	4391	4391
Fixed effects estimation (country, year, sector FE)	yes	yes
RMSE	0.430	0.636
<i>F</i> -stat [<i>p</i> -value]	11.33 [0.000]	6.27 [0.000]
<i>F</i> -stat for $H_0: \beta_2(\text{Leftwing Gov}) - \beta_1(\text{Rightwing Gov}) = 0$	3.02 *	
<i>F</i> -stat for $H_0: \delta_2(\text{Leftwing Gov}) - \delta_1(\text{Rightwing Gov}) = 0$		8.26 ***

Note: * < 0.10, ** < 0.05, *** < 0.01 statistical significance.

† Dependent variable of eq. (1): *Privatization Intensity Index*.

†† Dependent variable of eq. (2): *Liberalization Intensity Index*.

^a: one-year lagged.

Table 5. Robustness check: controlling for outlier values ('Jackknife' estimation).

	SUR MODEL	
	Eq. (1)†	Eq. (2)††
Explanatory variables:	Coeff. (Std.Err.)	Coeff. (Std.Err.)
<i>Dummy for Leftwing Gov</i> ^a	0.010 (0.015)	0.073 (0.026) ***
<i>Dummy for Rightwing Gov</i> ^a	0.035 (0.015) **	0.017 (0.024)
<i>AR(1)Term</i>	0.072 (0.021) ***	0.071 (0.015) ***
<i>State Ownership Level</i> ^a	-0.028 (0.004) ***	0.017 (0.005) ***
<i>Entry Barriers Level</i> ^a	0.023 (0.004) ***	-0.031 (0.004) ***
<i>Gov Heterogeneity</i> ^a	-0.022 (0.030)	-0.018 (0.047)
<i>Gov Herfindahl</i> ^a	0.052 (0.084)	-0.333 (0.101) ***
<i>Euro Adoption</i> ^a	-0.030 (0.026)	0.080 (0.037) **
<i>Constant</i>	-0.007 (0.037)	0.190 (0.053) ***
Number of observations	4774	4774
Fixed effects estimation (country, year, sector FE)	yes	yes
RMSE	0.413	0.612
<i>F</i> -stat [<i>p</i> -value]	11.94 [0.000]	6.08 [0.000]
<i>F</i> -stat for $H_0: \beta_2(\text{Leftwing Gov}) - \beta_1(\text{Rightwing Gov}) = 0$	3.14 *	
<i>F</i> -stat for $H_0: \delta_2(\text{Leftwing Gov}) - \delta_1(\text{Rightwing Gov}) = 0$		7.32 ***

Note: * < 0.10, ** < 0.05, *** < 0.01 statistical significance.

† Dependent variable of eq. (1): *Privatization Intensity Index*.

†† Dependent variable of eq. (2): *Liberalization Intensity Index*.

^a: one-year lagged.

Table 6. Robustness check: controlling for different lag structures.

	SUR MODEL	
	Eq. (1)†	Eq. (2)††
Explanatory variables:	Coeff. (Std.Err.)	Coeff. (Std.Err.)
<i>Dummy for Leftwing Gov</i> ^a	0.009 (0.019)	0.075 (0.028) ***
<i>Dummy for Rightwing Gov</i> ^a	0.035 (0.018) **	0.015 (0.027)
<i>AR(1)Term</i>	0.069 (0.015) ***	0.075 (0.015) ***
<i>AR(2)Term</i>	0.047 (0.015) ***	0.049 (0.015) ***
<i>AR(3)Term</i>	0.004 (0.017)	0.030 (0.015) **
<i>State Ownership Level</i> ^a	-0.031 (0.003) ***	0.020 (0.005) ***
<i>Entry Barriers Level</i> ^a	0.022 (0.003) ***	-0.042 (0.005) ***
<i>Gov Heterogeneity</i> ^a	-0.020 (0.040)	-0.021 (0.059)
<i>Gov Herfindahl</i> ^a	0.070 (0.094)	-0.337 (0.138) **
<i>Euro Adoption</i> ^a	-0.031 (0.027)	0.092 (0.040) *
<i>Constant</i>	-0.012 (0.046)	0.196 (0.068) ***
Number of observations	4466	4466
Fixed effects estimation (country, year, sector FE)	yes	yes
RMSE	0.426	0.626
<i>F</i> -stat [<i>p</i> -value]	10.58 [0.000]	6.36 [0.000]
<i>F</i> -stat for $H_0: \beta_2(\text{Leftwing Gov}) - \beta_1(\text{Rightwing Gov}) = 0$	3.13 *	
<i>F</i> -stat for $H_0: \delta_2(\text{Leftwing Gov}) - \delta_1(\text{Rightwing Gov}) = 0$		8.02 ***

Note: * < 0.10, ** < 0.05, *** < 0.01 statistical significance.

† Dependent variable of eq. (1): *Privatization Intensity Index*.

†† Dependent variable of eq. (2): *Liberalization Intensity Index*.

^a: one-year lagged.

Table 7. Robustness check: controlling for governments' stability (version 1).

	SUR MODEL	
	Eq. (1)†	Eq. (2)††
Explanatory variables:	Coeff. (Std.Err.)	Coeff. (Std.Err.)
<i>Dummy for Leftwing Gov</i> ^a	0.015 (0.017)	0.051 (0.025) **
<i>Dummy for Rightwing Gov</i> ^a	0.034 (0.016) **	0.001 (0.025)
<i>AR(1)Term</i>	0.070 (0.015) ***	0.069 (0.014) ***
<i>State Ownership Level</i> ^a	-0.026 (0.003) ***	0.013 (0.005) ***
<i>Entry Barriers Level</i> ^a	0.021 (0.003) ***	-0.026 (0.004) ***
<i>Houses Majority</i> ^a	0.022 (0.014)	-0.016 (0.021)
<i>Years In Office</i> ^a	0.005 (0.002) **	0.001 (0.003)
<i>Years Left</i> ^a	0.008 (0.004) *	-0.006 (0.006)
<i>Constant</i>	-0.039 (0.023) *	0.099 (0.034) ***
Number of observations	4779	4779
Fixed effects estimation (country, year, sector FE)	yes	yes
RMSE	0.412	0.613
<i>F</i> -stat [<i>p</i> -value]	12.51 [0.000]	4.77 [0.000]
<i>F</i> -stat for $H_0: \beta_2(\text{Leftwing Gov}) - \beta_1(\text{Rightwing Gov}) = 0$	2.11	
<i>F</i> -stat for $H_0: \delta_2(\text{Leftwing Gov}) - \delta_1(\text{Rightwing Gov}) = 0$		6.41 **

Note: * < 0.10, ** < 0.05, *** < 0.01 statistical significance.

† Dependent variable of eq. (1): *Privatization Intensity Index*.

†† Dependent variable of eq. (2): *Liberalization Intensity Index*.

^a: one-year lagged.

Table 8. Robustness check: controlling for governments' stability (version 2).

	SUR MODEL	
	Eq. (1)†	Eq. (2)††
	Coeff. (Std.Err.)	Coeff. (Std.Err.)
Explanatory variables:		
<i>Dummy for Leftwing Gov</i> ^a	0.018 (0.016)	0.048 (0.025) *
<i>Dummy for Rightwing Gov</i> ^a	0.039 (0.016) **	0.000 (0.024)
<i>AR(1)Term</i>	0.072 (0.015) ***	0.069 (0.014) ***
<i>State Ownership Level</i> ^a	-0.026 (0.003) ***	0.013 (0.005) ***
<i>Entry Barriers Level</i> ^a	0.020 (0.003) ***	-0.026 (0.004) ***
<i>Electoral Competitiveness</i> ^a	0.014 (0.012)	0.040 (0.018) **
<i>Constant</i>	-0.102 (0.087)	-0.188 (0.130)
Number of observations	4813	4813
Fixed effects estimation (country, year, sector FE)	yes	yes
RMSE	0.411	0.611
<i>F</i> -stat [<i>p</i> -value]	13.94 [0.000]	5.87 [0.000]
<i>F</i> -stat for $H_0: \beta_2(\text{Leftwing Gov}) - \beta_1(\text{Rightwing Gov}) = 0$	2.57 *	
<i>F</i> -stat for $H_0: \delta_2(\text{Leftwing Gov}) - \delta_1(\text{Rightwing Gov}) = 0$		6.01 **

Note: * < 0.10, ** < 0.05, *** < 0.01 statistical significance.

† Dependent variable of eq. (1): *Privatization Intensity Index*.

†† Dependent variable of eq. (2): *Liberalization Intensity Index*.

^a: one-year lagged.

Table 9. Robustness check: controlling for policy diffusion.

	SUR MODEL	
	Eq. (1)†	Eq. (2)††
Explanatory variables:	Coeff. (Std.Err.)	Coeff. (Std.Err.)
<i>Dummy for Leftwing Gov</i> ^a	0.012 (0.017)	0.067 (0.026) ***
<i>Dummy for Rightwing Gov</i> ^a	0.042 (0.016) **	0.037 (0.024)
<i>AR(1)Term</i>	0.065 (0.015) ***	0.074 (0.014) ***
<i>State Ownership Level</i> ^a	-0.029 (0.003) ***	0.016 (0.005) ***
<i>Entry Barriers Level</i> ^a	0.006 (0.004) *	-0.082 (0.006) ***
<i>EU Privatization Level</i> ^a	0.047 (0.010) ***	
<i>EU Liberalization Level</i> ^a		0.070 (0.008) ***
<i>Gov Heterogeneity</i> ^a	-0.014 (0.037)	0.002 (0.054)
<i>Gov Herfindahl</i> ^a	0.126 (0.086)	-0.112 (0.127)
<i>EU Membership</i>	0.047 (0.015) ***	0.142 (0.023) ***
<i>Constant</i>	-0.049 (0.043)	0.066 (0.063)
Number of observations	4774	4774
Fixed effects estimation (country, year, sector FE)	yes	yes
RMSE	0.411	0.602
<i>F</i> -stat [<i>p</i> -value]	13.93 [0.000]	17.04 [0.000]
<i>F</i> -stat for $H_0: \beta_2(\text{Leftwing Gov}) - \beta_1(\text{Rightwing Gov}) = 0$	4.74 **	
<i>F</i> -stat for $H_0: \delta_2(\text{Leftwing Gov}) - \delta_1(\text{Rightwing Gov}) = 0$		2.36 *

Note: * < 0.10, ** < 0.05, *** < 0.01 statistical significance.

† Dependent variable of eq. (1): *Privatization Intensity Index*.

†† Dependent variable of eq. (2): *Liberalization Intensity Index*.

^a: one-year lagged.

Table 10. Robustness check: controlling for globalization.

	SUR MODEL	
	Eq. (1) [†]	Eq. (2) ^{††}
Explanatory variables:	Coeff. (Std.Err.)	Coeff. (Std.Err.)
<i>Dummy for Leftwing Gov</i> ^a	0.014 (0.018)	0.050 (0.027) **
<i>Dummy for Rightwing Gov</i> ^a	0.045 (0.017) ***	0.033 (0.026)
<i>AR(1)Term</i>	0.065 (0.015) ***	0.080 (0.015) ***
<i>State Ownership Level</i> ^a	-0.031 (0.003) ***	0.012 (0.005) **
<i>Entry Barriers Level</i> ^a	0.006 (0.004)	-0.087 (0.006) ***
<i>EU Privatization Level</i> ^a	0.050 (0.010) ***	
<i>EU Liberalization Level</i> ^a		0.077 (0.007) ***
<i>Gov Heterogeneity</i> ^a	-0.024 (0.038)	-0.057 (0.056)
<i>Gov Herfindahl</i> ^a	0.152 (0.090) *	-0.022 (0.132)
<i>Globalization</i> ^a	0.001 (0.000) **	0.006 (0.000) ***
<i>Constant</i>	-0.160 (0.064) **	-0.383 (0.095) ***
Number of observations	4617	4617
Fixed effects estimation (country, year, sector FE)	yes	yes
RMSE	0.413	0.605
<i>F</i> -stat [<i>p</i> -value]	13.19 [0.000]	17.79 [0.000]
<i>F</i> -stat for H ₀ : $\beta_2(\text{Leftwing Gov}) - \beta_1(\text{Rightwing Gov}) = 0$	5.706 **	
<i>F</i> -stat for H ₀ : $\delta_2(\text{Leftwing Gov}) - \delta_1(\text{Rightwing Gov}) = 0$		1.69 *

Note: * < 0.10, ** < 0.05, *** < 0.01 statistical significance.

[†] Dependent variable of eq. (1): *Privatization Intensity Index*.

^{††} Dependent variable of eq. (2): *Liberalization Intensity Index*.

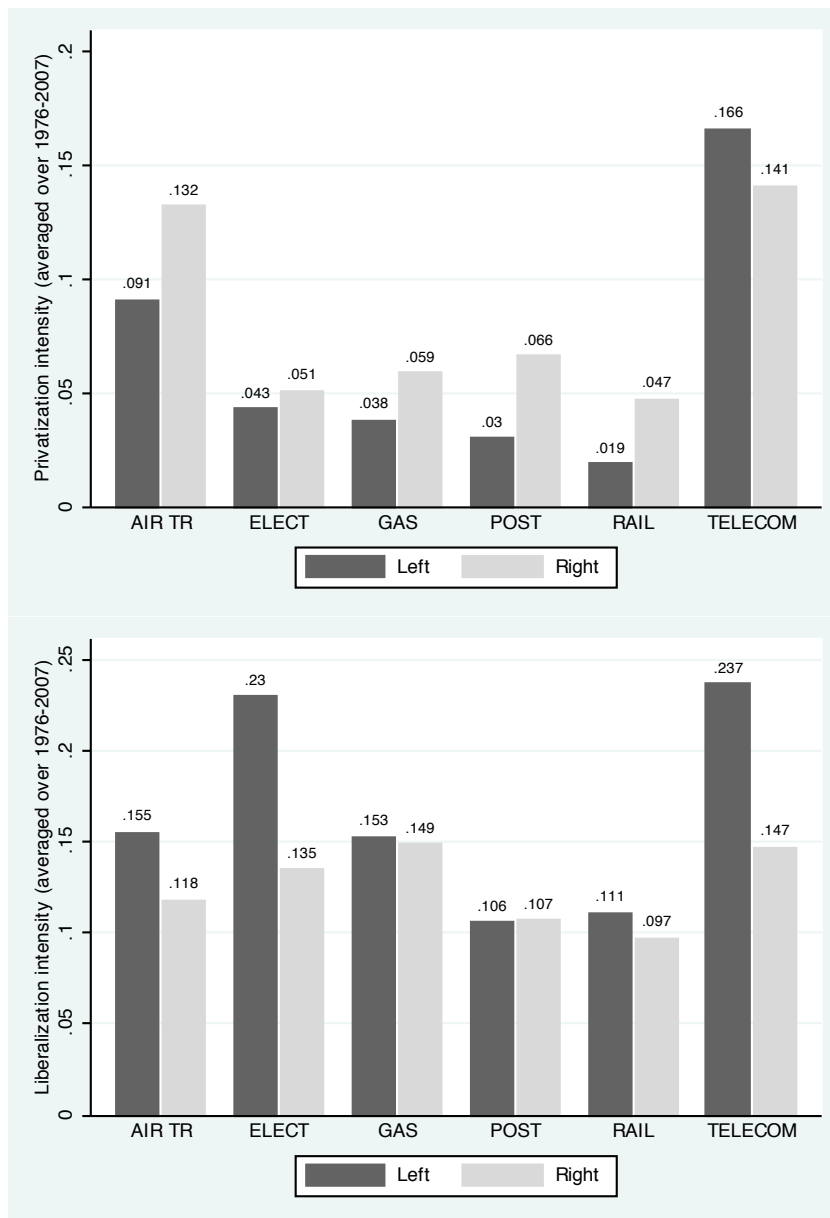
^a: one-year lagged.

Table A1. Description of the variables used in the econometric study.

Variable name	Definition of the variable	Sources of variation	Source of the data
<i>Dummy for Leftwing Gov</i>	Dummy variable that equals 1 if the government party is defined as socialist, social-democratic, communist or left-wing (0 otherwise)	$i = \text{Australia, ... , USA}$ $t = 1975, \dots, 2007$	Database of Political Institutions - DPI (World Bank, 2010)
<i>Dummy for Rightwing Gov</i>	Dummy variable that equals 1 if the government party is defined as conservative, Christian democratic or right-wing (0 otherwise)	$i = \text{Australia, ... , USA}$ $t = 1975, \dots, 2007$	Database of Political Institutions - DPI (World Bank, 2010)
<i>Dummy for Center Gov</i>	Dummy variable that equals 1 if the government party is defined as centrist or does not fit into the two previously mentioned categories (0 otherwise)	$i = \text{Australia, ... , USA}$ $t = 1975, \dots, 2007$	Database of Political Institutions - DPI (World Bank, 2010)
<i>State Ownership Level</i>	Extent of public ownership in the companies operating in the industry (from 1 = maximum public ownership to 6 = minimum public ownership)	$i = \text{Australia, ... , USA}$ $s = \text{Tlc, AirTr, Post, Rail, Gas, Elctr}$ $t = 1975, \dots, 2007$	Authors' elaboration on <i>OECD Regulatory Indicators Questionnaire</i> (OECD, 2009)
<i>Entry Barriers Level</i>	Strictness of the legal conditions of entry (from 1 = maximum strictness to 6 = minimum strictness)	$i = \text{Australia, ... , USA}$ $s = \text{Tlc, AirTr, Post, Rail, Gas, Elctr}$ $t = 1975, \dots, 2007$	Authors' elaboration on <i>OECD Regulatory Indicators Questionnaire</i> (OECD, 2009)
<i>Privatization Intensity Index</i>	One-year difference of <i>State Ownership Level</i>	$i = \text{Australia, ... , USA}$ $s = \text{Tlc, AirTr, Post, Rail, Gas, Elctr}$ $t = 1975, \dots, 2007$	Authors' elaboration on <i>OECD Regulatory Indicators Questionnaire</i> (OECD, 2009)
<i>Liberalization Intensity Index</i>	One-year difference of <i>Entry Barriers Level</i>	$i = \text{Australia, ... , USA}$ $s = \text{Tlc, AirTr, Post, Rail, Gas, Elctr}$ $t = 1975, \dots, 2007$	Authors' elaboration on <i>OECD Regulatory Indicators Questionnaire</i> (OECD, 2009)
<i>AR(1,2,3)Term</i>	One-year, two-year, or three-year lagged values of the dependent variable (<i>Privatization Intensity Index</i> and <i>Liberalization Intensity Index</i>)	$i = \text{Australia, ... , USA}$ $s = \text{Tlc, AirTr, Post, Rail, Gas, Elctr}$ $t = 1975, \dots, 2007$	Authors' elaboration on <i>OECD Regulatory Indicators Questionnaire</i> (OECD, 2009)
<i>EU Privatization Level</i>	<i>State Ownership Level</i> averaged over the EU member countries	$s = \text{Tlc, AirTr, Post, Rail, Gas, Elctr}$ $t = 1975, \dots, 2007$	Authors' elaboration on <i>OECD Regulatory Indicators Questionnaire</i> (OECD, 2009)
<i>EU Liberalization Level</i>	<i>Entry Barriers Level</i> averaged over the EU member countries	$s = \text{Tlc, AirTr, Post, Rail, Gas, Elctr}$ $t = 1975, \dots, 2007$	Authors' elaboration on <i>OECD Regulatory Indicators Questionnaire</i> (OECD, 2009)
<i>Gov Heterogeneity</i>	Probability that two deputies randomly picked from among the executive members will belong to different parties	$i = \text{Australia, ... , USA}$ $t = 1975, \dots, 2007$	World Bank (2010)

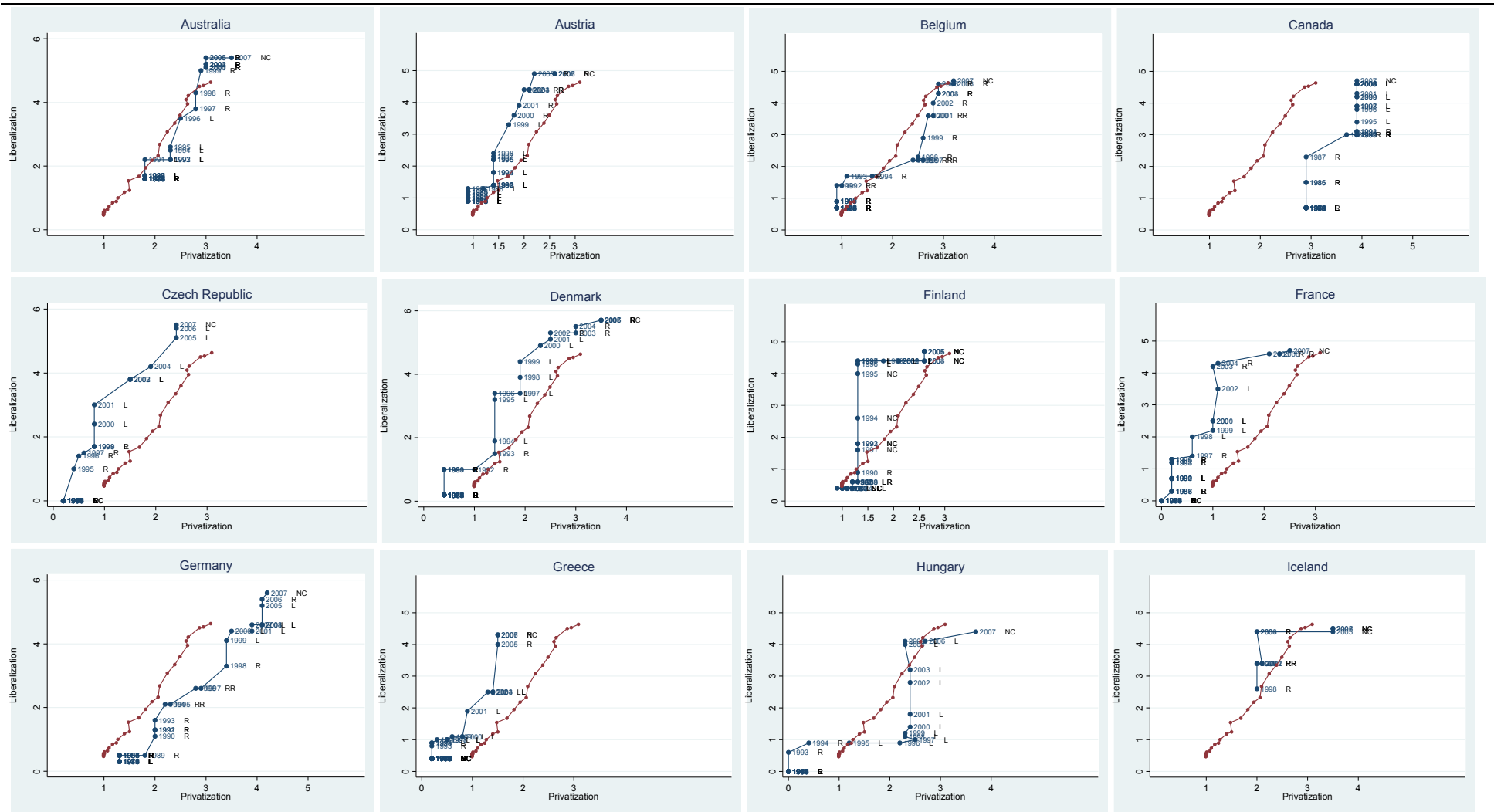
<i>Gov Herfindahl</i>	Sum of the squared seat shares of all parties in the governments	$i = \text{Australia, ... , USA}$ $t = 1975, \dots, 2007$	World Bank (2010)
<i>Houses Majority</i>	Dummy variable that equals 1 when the governing party has an absolute majority in the houses that have law-making powers	$i = \text{Australia, ... , USA}$ $t = 1975, \dots, 2007$	World Bank (2010)
<i>Years In Office</i>	Number of years the chief executive has been in office	$i = \text{Australia, ... , USA}$ $t = 1975, \dots, 2007$	World Bank (2010)
<i>Years Left</i>	Number of years left in the current term	$i = \text{Australia, ... , USA}$ $t = 1975, \dots, 2007$	World Bank (2010)
<i>Electoral Competitiveness</i>	Index of executive electoral competitiveness, based on the number of parties participating to elections and the percentage of seats won by the largest party (from 1 = minimum competitiveness to 7 = maximum competitiveness)	$i = \text{Australia, ... , USA}$ $t = 1975, \dots, 2007$	World Bank (2010)
<i>Euro Adoption</i>	Dummy variable that equals 1 when the country adopt Euro currency (0 otherwise)	$i = \text{Australia, ... , USA}$ $t = 1975, \dots, 2007$	Authors' own coding
<i>EU Membership</i>	Dummy variable that equals 1 when the country is a member of the EU (0 otherwise)	$i = \text{Australia, ... , USA}$ $t = 1975, \dots, 2007$	Authors' own coding
<i>Globalization</i>	KOF index of overall globalization, based on sub-indicators of trade flows, tariffs and import barriers, tourism and communication technologies diffusion, cultural proximity, international treaties and membership in international organizations, and other issues.	$i = \text{Australia, ... , USA}$ $t = 1975, \dots, 2007$	Dreher <i>et al.</i> (2008)

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)).



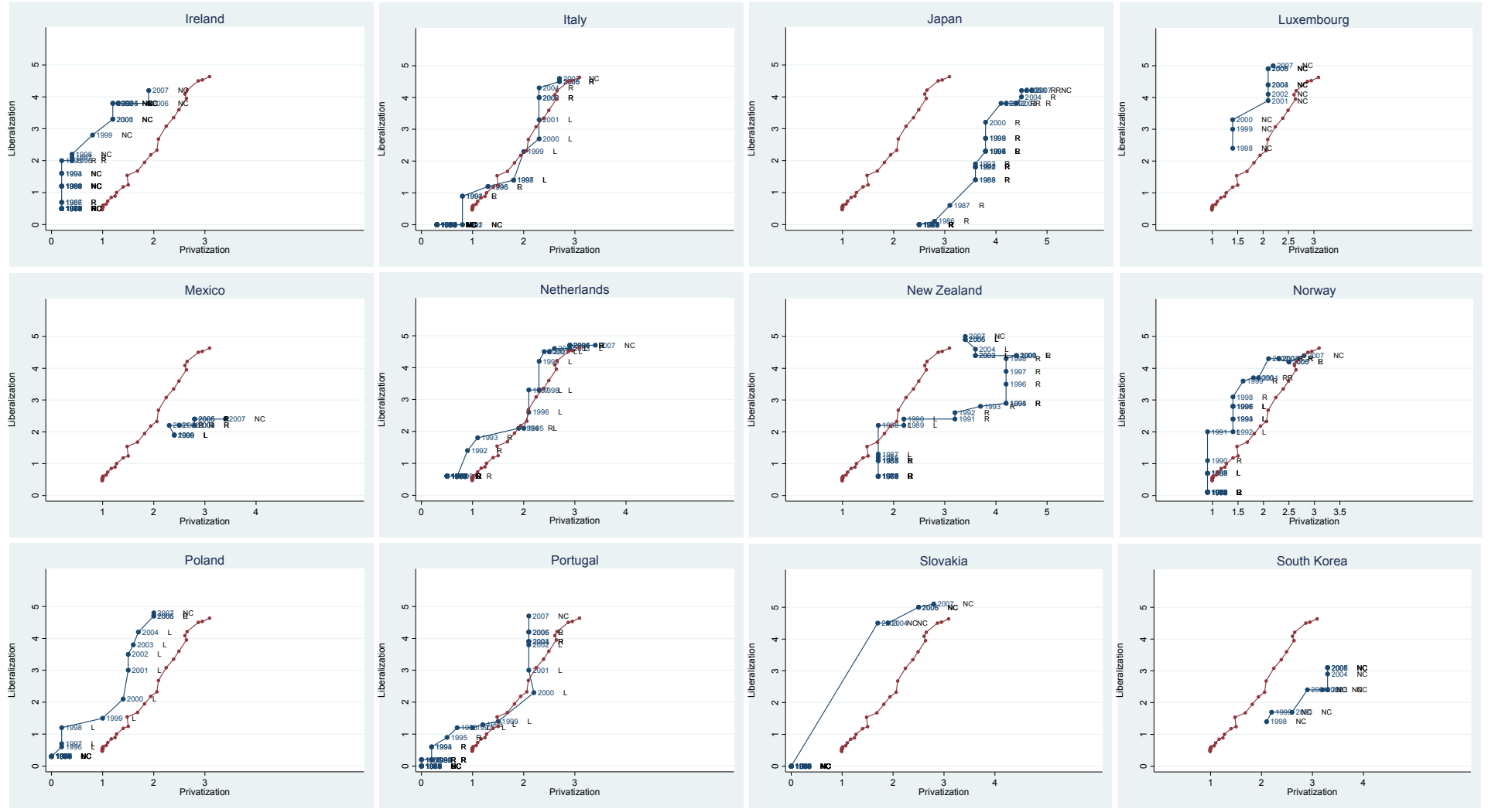
Note: privatization is measured by subtracting the OECD's (2009) indicator of public ownership from its maximum value (the index ranges from 0 to 6); the privatization initiatives' intensity is then calculated by examining the variations of the privatization index on a yearly basis; by the same token, 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 is then calculated by examining the variations of the liberalization index on a yearly basis. In both panels, the average privatization and liberalization intensities are calculated over the 1975–2007 timespan. The political orientation of governments is considered one-year lagged.

Figure A1. Liberalization and privatization in OECD countries (network industries, 1975-2007): L = left-wing, R = right-wing, NC = center and non-classifiable (source: elaboration from OECD (2009) and World Bank (2010)). The red line indicates the OECD average.



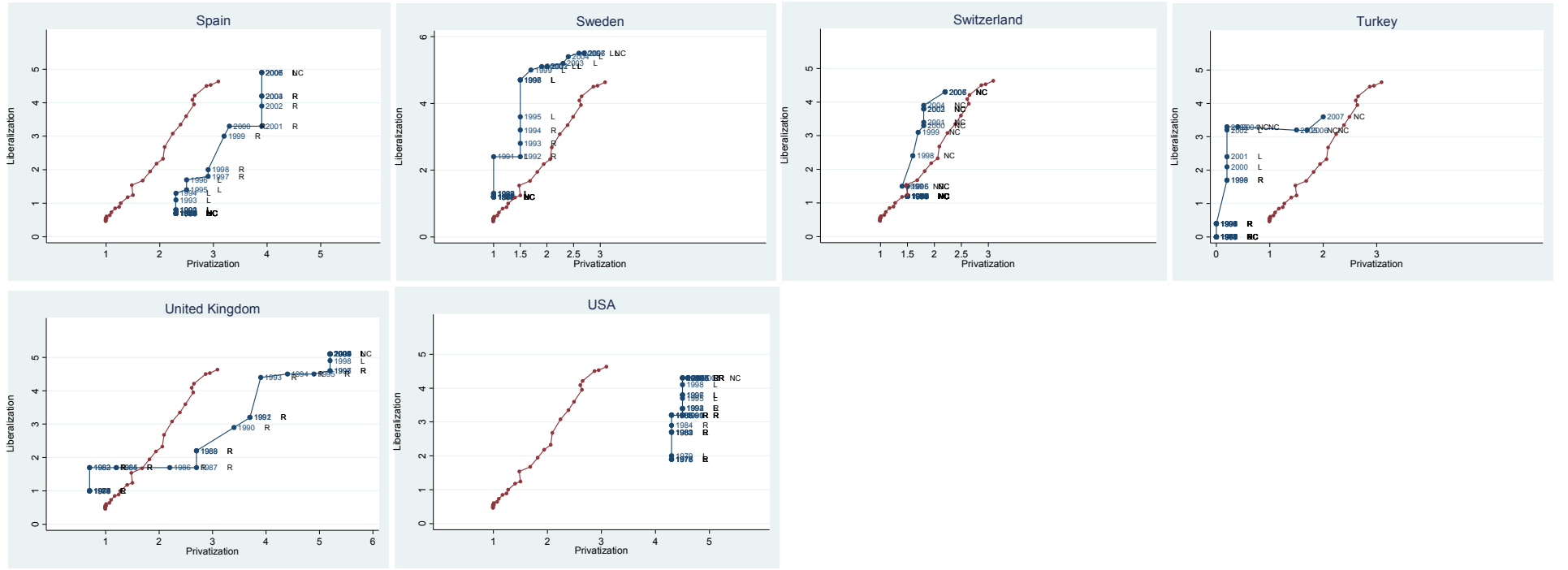
Note: liberalization is measured by subtracting the OECD's (2009) indicator of entry barriers to its maximum value, privatization is measured by subtracting the OECD's (2009) indicator of public ownership to its maximum value (both indexes range from 0 to 6).

Figure A1. (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 A1. (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).