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PRIVATISATION AROUND THE WORLD: NEW EVIDENCE FROM PANEL DATA

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Abstract

This paper presents new evidence about privatisation processes and their determinants from a panel of 34 countries over the 1977-99 period. The empirical analysis shows that privatisation takes place typically in wealthy and democratic countries, endowed with deep and liquid stock markets, and is affected by the governing political majority and public sector budget constraints. But the extent of privatisation in terms of revenues and stakes sold appears more limited in civil law countries, where shareholders are poorly protected, banks powerful, and capital markets less developed.

JEL Classification: L33, D72, G15, H6, K22.

Keywords: privatisation, public finance, political economy, law and finance, capital markets.

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1. Introduction

Privatisation, i.e. the transfer of ownership and control of State-owned enterprise (SOE),[1] all over the world. The process began in the late 1970s, with the Thatcher government in Great Britain, and spread across countries and continents to become a distinguishing feature of *fin de siècle* capitalism. Privatisations are now common to most countries and occur across geographical regions and sectors. From 1977 to 1999, 2,459 deals in 121 countries worth approximately US$1,110bn were reported. Global SOE value added decreased on average from 9% to 6% of GDP in the 1978-91 period (World Bank, 1995). Privatisation also had a tremendous impact on financial markets: by the middle of 2000 privatised SOEs boasted a market capitalisation worth US$3.31trn (Megginson and Netter, 2001).

The empirical literature has provided systematic evidence that privately-owned companies outperform SOEs, and that privatisation enhances the financial and operating performance of firms (Dewenter and Malatesta, 2001; D'Souza and Megginson, 2000). Despite the large welfare gains that could stem from privatisation, few governments have completely transferred ownership and control of SOEs to the private sector. In the reported public offerings between 1977-1999, the majority of stock was sold in only 30% of the 617 companies being considered, and it never happened in 11 out of 76 countries. This rough evidence indicates that control is still very much in State hands and that partial or incomplete sales are a common feature of privatisation processes.

Why do governments privatise? Why do some countries accomplish large scale privatisation programmes, and others never privatise at all? Moreover, how do governments privatise? Why do some governments privatise big stakes in SOEs, while others stick to partial privatisation?

This paper provides some answers to these important questions, implementing a two-stage empirical analysis on a panel of 34 developed and less developed economies over the 1977-99 period. At the first stage, we try and explain why some governments privatise, and others do not. At the second stage, we estimate the extent of privatisation in terms of the economic value of the assets transferred to the private sector, and of the percentages of capital sold in SOEs.

[1] Some authors define privatisation in a broader sense, as the downsizing of the economic activity of the State (López-de-Silanes, Shleifer, Vishny, 1995). Actually, in many countries over the last 20 years, the State withdrew from the public provision of private and public goods and services. But this process very often went beyond the privatisation as we define it, namely as the transfer of ownership and control of State-owned enterprise. In some cases (from the USA to Europe and Italy) the State outsourced the provision of goods and services to private firms. In other cases (e.g. in Middle East but also in Europe) the State liberalised the entry of private firms into former monopolistic industries, but maintained the public ownership and control of SOEs. In the two latter cases, no transfer of ownership took place, even if the process under review implied a greater role of the private sector in the economic system.

Our main results can be summarised as follows. The first stage of the empirical analysis shows that, as theory predicts, privatisation is associated with high levels of public debt, a well-functioning domestic stock market, and a right wing majority in office. First, fiscal unbalances trigger privatisation, as the windfall revenue can be used to square public finances. Second, incumbent governments take advantage of hot markets to float SOEs. Indeed, a liquid stock market allows divesting governments to obtain the full market value of the company sold, and to generate more revenue from the sales. Third, right wing governments resort to privatisation in order to diffuse "popular capitalism", achieving the political objective of increasing the support for market oriented platforms.

The first stage identifies possible reasons why some countries do *not* privatise. Less established democracies with weak political systems appear barely able to set SOE divestiture in motion. The soundness of political institutions is a key component of sovereign risk, which in turn is a priced factor. Therefore privatisation becomes less feasible in less democratic settings, as governments are forced to implement highly discounted fixed-price offerings. Furthermore, privatisation seems less likely to occur in German civil law countries, such as Austria, Germany, Japan, South Korea, Switzerland, and Taiwan. Interestingly, all these countries have bank-dominated financial systems. Banks may have a vested interest in financing SOE with soft budget constraints, and possibly may obstruct privatisation to preserve the status quo.

Privatising and non privatising countries emerge as two sharply distinct groups, and whose differences hinge upon the economic, political, and institutional environments where governments operate. But once the privatisation decision is taken, why does the extent of privatisation vary so much across countries?

The second stage of the empirical analysis shows the value of the shares privatised relative to GDP – our first proxy for the size of one country's privatisation –to be affected by domestic stock market development. A deep and liquid market allow the absorption of big issues, so that larger SOEs (and larger chunks of capital of these SOEs) can be more easily privatised. Furthermore, by producing information, market liquidity facilitates monitoring, increases the market value of the company, and allows the divesting shareholder to raise more proceeds from the sales.

Clearly, revenues are useful in providing a first measure of the economic impact of privatisation. Nevertheless, by focusing only on revenues one of the key question in privatisation remains unexplained: Did ownership change hands? To address this question, it is only natural to look at the percentage of capital sold to private investors – our second proxy for the extent of one country's privatisation -. Now, legal institutions play a role. Indeed, the empirical analysis shows that the transfer of ownership (and possibly control) appears more limited, and therefore privatisation more partial, in French civil law countries as opposed to

common law countries. The "law and finance" literature has shown that the French civil law origin is associated with poor minority shareholder protection. Legal protection matters also in the context of privatisation, as government should care about the class of newly created shareholders being expropriated by the managers of privatised SOEs. As a consequence, where the law affords weak protection to shareholders, governments are more reluctant to relinquish control, and privatisation remains partial.

Finally, we try and test the robustness of our empirical results performing the same tests in the OECD sub-sample. By eliminating a part of heterogeneity, we obtain similar but stronger results. In particular, the political economy theories of privatisation exhibit enhanced empirical validity once assessed in the more suitable context of well established democracies. Right wing governments are shown to be not only more likely to privatise, but also strongly associated with higher privatisation revenues. This result is particularly striking, as sales implemented by market oriented governments are more heavily underpriced, providing rather conclusive evidence privatisation to be politically motivated. Interestingly, privatisation appears less frequent, more limited in scale, and more partial in French and German civil law systems. In such countries, the State is probably bound to remain as a stable and influential blockholder in the long run.

From the 1980s onwards, privatisation has inspired an extensive empirical literature, and has now become an established field of research (see Megginson and Netter, 2001 for a comprehensive survey). However, to our knowledge our paper is the first multi-national study dealing with the determinants of privatisation using panel data analysis over a long period of time. Few empirical papers have dealt with the issue using cross sectional data. Bortolotti *et al.* (2001) provides first evidence that privatisation is affected by the political majority, budget deficits, and legal institutions. Jones *et al.* (1999) study underpricing in 137 privatised companies in 34 countries and find evidence that it is more frequent where governments need to gain domestic political support. Megginson *et al*. (2000) study the choice of a private placement vs. flotation on public equity markets in 1,992 privatisations in 92 countries, finding that the frequency of share offerings is positively related to the size of the firm.

The paper is organised as follows: section 2 states the theoretical hypotheses being tested; section 3 describes the data; section 4 presents the empirical methodology and the results of the econometric analysis. Section 5 concludes.

2. The determinants of privatisation

Which factors explain privatisation across all countries? This section describes the theories that we assess. The possible determinants of privatisation we focus on are classified

into four groups: (i) political preferences; (ii) hard budget constraints; (iii) legal origin; (iv) stock market liquidity.

2.1 Political preferences

It is often argued that privatisation has a political dimension. Conservative parties are believed to be more prone to privatise the economy than socialist or Christian-democratic parties. Indeed, large scale privatisation programmes have been often associated with the leadership of "right wing" market-oriented politicians. And the Thatcher's government in UK is the typical example.

But why should a right wing government privatise? A rationale for the choice may be a forward-looking behaviour of market oriented politicians aiming at gaining future support from the constituencies of shareholders of newly privatised firms.

Biais and Perotti (2001) formalise this intuition in a bi-partisan model of privatisation where two parties cannot commit to a platform before election. In this context, the right wing party maximises the utility of the rich, the left the utility of the poor, and each party needs the vote of the median class to win the elections. They show that by allocating a substantial amount of shares of privatised companies to the middle class, the right makes the median voter averse to the redistribution policies of the left, and more prone to vote with the right at future elections. A large scale privatisation program may therefore represent a strategy for switching to forms of "popular capitalism" by creating a constituency of voters interested in the maximisation of the value of their financial assets. Importantly, as the propensity to buy shares is increasing in wealth, strategic underpricing might be necessary to ensure the participation of the middle class when income inequality is high.

Another important dimension in the "political economy" of privatisation is the government's *credibility*, or ability to marshal the support of private investors. This ability is related to many factors, such as reputation of the government, the presence of restraints on policy reversals and on the implementation of economic policies, etc. Credibility is considered crucial for the financial success of privatisation, since it could affect an investor's willingness to pay (Kikeri, Nellis, and Shirley, 1992). A credible government should therefore be associated with more sales and more privatisation revenue.

Credibility may also affect the size of the stakes privatised. Perotti (1995) provides a theory of partial privatisation based on strategic commitment where, the structure of the offer conveys information on the willingness of governments to bear residual risk. Partial privatisations therefore commit governments not to shift policy in the future. The testable implication of this theory is that a credible government does not need to signal commitment and will be able to sell larger stakes in privatised firms.

Right wing governments are typically associated to enhanced commitment to market oriented platforms and credibility. Then, the political theories of privatisation yield the following prediction:

H1. *A right wing government is more likely to privatise, and it should be associated with higher privatisation revenue, and higher percentages of stock sold.*

2.2 Hard budget constraints

When a government is in financial distress, the pressure to square public finance provides an incentive to speed up privatisation and restructuring (Roland, 2000; La Porta *et al.,* 1999). Privatisation, indeed, has been often recommended as a policy of structural adjustment and stabilisation in developed and less developed economies.

Privatisation contributes directly to balance public finances. First, if inefficient State-owned enterprises are no longer financed by the government after privatisation, subsidies and transfers are cut, with a reduction of expenditures, and an improvement in the primary deficit. Second, privatisation revenues are typically allocated to the reduction of public outstanding debt, generating lower interest payments. Third, public sector debt instruments (such as debt-equity swaps) have been accepted in payment for shares of privatised companies, especially in heavily indebted countries like Mexico, and the Philippines. In this way, foreign debt is directly cancelled. Fourth, privatisation proceeds are sometimes used to finance current expenditure, although this policy does not consider the nonrecurring capital nature of the revenue. (Guislain, 1997)

Privatisation could also have an *indirect* effect on public finance. A sustained privatisation program provides a credible signal of policy change, which contributes to reduction of political risk over time (Perotti and Van Ojien, 1999). Indeed, enhanced credibility improves the credit rating for government bonds, generating lower interest payments, and an easier access to capital markets to finance budget deficits.[2]

A government with hard budget constraints has more incentives to sell. In this context, we should also observe more revenues since a financially distressed government will first sell more profitable companies. We can therefore state the following empirical implication:

[2] Clearly, in order to establish the net effect of privatisation on public finances one has to consider also the opportunity cost of a reduction of the cash flow rights in SOEs by the government. Indeed, the transfer of ownership entails the loss of the future income stream generated by the company, which could be used to finance the budget. If future dividends are appropriately discounted on privatisation prices, privatisation could theoretically be neutral on public finances. But budgetary shortfalls typically induce risk aversion, so that a certain windfall privatisation revenue is often preferred to an uncertain dividend stream.

H2. *A government with a hard budget constraint should be more likely to privatise, and should be associated with a higher privatisation revenue, and higher percentages of stock sold.*

2.3 Legal origins

It is a well documented fact that civil law countries - particularly within the French civil law tradition - have a larger SOE sector with respect to common law countries. The average of SOE value-added and SOE investment as a proportion of GDP for common law countries is roughly 11%, in French and German civil law countries it is 15% and 12% respectively.[3] The State is typically an influential blockholder in French civil law countries. Furthermore, interventionist French civil law countries exhibit a relatively low level of government performance so they are presumably running SOEs quite poorly (La Porta *et al.*, 1999, La Porta, López-de-Silanes, Shleifer, 2001).

A government in a French civil law country has more SOEs to sell, and owns big stakes in unprofitable companies. In principle, the French civil law origin should be associated with large scale privatisation.

However, a large size of government might be an equilibrium outcome. Politicians in French civil law systems are unwilling to relinquish control in SOEs, which is a powerful instrument of redistribution policy. Interestingly, constitutional provisions that restrain the scope of the private sector, granting the State's monopoly in the provision of strategic services, are typical in French civil law countries.[4] According to this theory, we would therefore expect a lower quantity of privatisations, and lower stakes sold in French civil law countries *in spite of* their big SOE sector.

Different legal traditions are also associated with radically different patterns of investor protection and corporate governance around the world. Common law countries afford extensive

[3] These figures refer to the sample of 49 countries in La Porta *et al.,* 1998. Both variables are referred to the period 1978-91 and are taken from World Bank (1995).

[4] According to the 1946 French Constitution, "all property and enterprises of which the running has, or acquires, the character of a national public service or of an actual monopoly are to become public property." (Graham and Prosser, 1991, p.76) Obviously, this provision does not imply the total prohibition of asset disposals by a French government willing to privatise. Nevertheless, it would face more difficulties in implementing fundamental changes. The Italian Constitution (art.43) also grants special rights to the State in strategic sectors: "for purpose of general utility the law may reserve in the first instance or transfer, by means of expropriation and payment of compensation, to the State, to public bodies, or to labor or consumer communities, certain undertakings or categories of undertakings operating essential public services, sources of power, or exercising monopolies and invested primarily with a character of general interest." (art. 43) The Portuguese Constitution declared irreversible the 1974 nationalization, and it had to be amended twice in 1982 and 1989 to allow for privatisations. Outside Europe, The Mexican and the Brazilian constitutions also grant monopoly rights to the State and have been amended in 1990 and 1995 respectively. Similar provisions can be find in Bolivia and Indonesia. Moreover, the constitutions of Benin, Morocco, Senegal and Togo require the parliamentary approval of privatisation law. Conversely, United Kingdom, Australia, Malaysia, and New Zealand (which are all common law countries), grant governments the power to privatise without the intervention of the legislature (Guislain,1997).

legal protection to shareholders and creditors; at the polar opposite, French civil law countries, such as Italy, protect both classes of investors much less. The legal protection of investors also affects corporate governance: widespread ownership is positively correlated to investors' protection so that French civil law countries exhibit a higher ownership concentration and less developed capital markets. Access to external funds - debt or equity - becomes more difficult the weaker the legal protection a country affords to corporate investors. (La Porta *et al.* 1997, 1998)

Investor protection could be an important determinant of a country's privatisations. The market value of a company and consequently its privatisation proceeds should be lower where legal protection is poor since there will be a lower demand for privatised equity by minority shareholders. In this context, governments are reluctant to sell big stakes since they know that investors will discount the risk of being expropriated by the managers of privatised firms. As a consequence, privatisation remains sporadic and partial.

To summarise, the role of French civil law on privatisation can be summarised as follows:

H3. *As opposed to common law countries, French civil law countries should be less likely to privatise, and should be associated with lower privatisation revenue, and lower percentages of stock sold.*

The German civil law tradition could also be associated with a different pattern of privatisation. First, countries belonging to this group are interventionist, having a relatively large SOE sector, but display a quite high government performance (La Porta *et al.* 1999). If one infers the efficiency of SOEs from the general performance of the State, German civil law countries possibly have fewer incentives to privatise since they are not forced to sell inefficient firms. Second, German civil law countries give creditors solid protection (especially secured creditors), though not shareholders (La Porta *et al.* 1998). This differential in terms of legal protection could explain why in those countries - with the exception of Japan - equity markets are on average very small as compared to debt markets, and banks powerful. The role of powerful incumbent banks in the privatisation process has not been theoretically investigated. One could claim that banks are fearful of stock market development in the aftermath of privatisation because stock markets reduce their business. More simply, one could claim that incumbent banks have a vested interest in financing SOEs with soft budget constraints and, consequently, they will thwart privatisation.

To summarise, German civil law countries could be associated with a lower quantity of privatisation and lower stakes sold since they are not forced to sell inefficient SOEs and since powerful banks oust State sell-offs.

H4. *As opposed to common law countries, German civil law countries should be less likely to privatise, and should be associated with lower privatisation revenue, and lower percentages of stock sold.*

2.4 Stock market liquidity

The legal origin dummies developed may be good exogenous proxies for the size of a country's capital markets. But an important element of financial development is still missing in our analysis: market liquidity. Liquidity is crucial because it facilitates diversification (Pagano, 1993; Levine, 1997), information aggregation (Grossman, 1976), monitoring of managers (Hölmstrom and Tirole, 1993; Jensen and Meckling, 1976) and regulation of firms (Faure – Grimaud, 1999).

Clearly, if a liquid stock market is available when privatisation sales occur, it will favour the absorption of big issues, increasing the likelihood of privatisation of large State monopolies. But stock market liquidity is also a natural candidate for the explanation of the financial success of privatisation in terms of proceeds. First, investors require a discount for shares traded in an illiquid market. Second, by facilitating information aggregation, a liquid market allows fuller extraction of company's market value from private investors. A higher stock market liquidity should be therefore associated with higher privatisation revenues.

Furthermore, the ability of a liquid market to monitor managers through informative prices and the threat of takeover should make governments less reluctant to relinquish control since the shareholders face less risk of expropriation. This observation has a straightforward implication in terms of privatised stock: governments operating in economies with liquid markets should sell higher stakes.[5]

H5. *Countries with liquid (domestic) stock markets should be more likely to privatise, should be associated with a higher privatisation revenue, and higher percentages of stock sold.*

The next sections will describe how we bring these hypotheses to the data.

3. Data

[5] It is worth noting that financial market development – and obviously liquidity – is endogenous to privatisation. Unlike private owners which are typically affected by co-ordination problems, a privatising government as the *single* owner of several companies might internalise the externalities stemming from

To implement the empirical analysis, we have assembled panel data set, referred to a broad cross section of countries – developed and developing - for the 1977-99 period. We have chosen 1977 as initial year because our source (*Privatisation International)* reports the sale of British Petroleum (BP) which occurred in June 1977 as the first privatisation.[6]

The rules for sampling are as follows. We started from the list of 49 countries studied by La Porta et al. (1998), which identifies countries with some non-financial firms with no government ownership traded on their stock exchanges in 1993. The selection of countries is suitable for our purposes: first, we are particularly interested in studying the role of financial markets in shaping privatisation processes; second, legal origin indicators are available in the literature only for this list of countries.

We then identified a minimum set of variables that could be used to test the hypotheses set forth in section 2. We collected these data for the 1977-99 period only from official centralised sources.[7] The variables and sources are described in Table 1. These sample rules provide all the relevant data for each observation, which in turn allows to perform the empirical analysis by using exactly the same number of observations even when different variables are included as regressors.

Table 1. Description of the variables

Variable	Definition	Source
CAP	Stock market capitalisation to Gross Domestic Product in country *i* in year *t*. Stock market capitalisation in year *t* is calculated as the average between the end-of-year market capitalisation deflated by the end-of-year Consumer Price Index in yeat *t* and *t-1*. Stock market capitalisation refers to a country's main stock exchange.	*Beck, Demirgüç-Kunt, and Levine (1999), updated using data from IFC, Emerging Stock Markets Factbook, and FIBV.*
CENTER	Dummy variable taking the value 1 when the incumbent executive in country *i* in year *t* was supported by "centrist" parties, and 0 otherwise. This label include parties which are in the centre of the political spectrum without officially adhering to free market values, Christian-democratic parties and wide coalitional governments without a clearly discernible orientation.	*Banks et al. (1997), Wilfried Derksen's Electoral Web Sites (www.agora.stm.it/elections), Zarate's World Political Leaders 1945-2001 (www.terra.es/personal2/monolith), Library of Congress Country Studies (http://lcweb2.loc.gov/frd/cs/cshome.html)*
COMMON LAW	Dummy variable taking value 1 for common law countries, and 0 otherwise.	*La Porta et al. (1998)*
DEALS	Number of privatisations transactions in country *i* in year *t.* The variable includes *Public Offers* (PO) and *Private Sales* (PS).	*Privatisation International Database, IFR Thomson Database*
DEBT	Total debt as a percentage of Gross Domestic Product of country *i* in year *t*. Total debt is expressed as the whole stock of direct, government, fixed term contractual obligations to others outstanding at a particular date. It includes domestic debt (such as debt held by monetary authorities, deposit money banks, nonfinancial public enterprises, and households) and foreign debt (such as debt to international development institutions and foreign governments).	*International Financial Statistics*

the listing decision, and try and increase the liquidity of the home market through a sequence of well designed issues (Pagano, 1993). We will face the issue of simultaneity in the empirical analysis.

[6] However, BP was not the first historically. The first privatisation in modern times is considered the sale of Volkswagen by Adenauer government in 1961 (see also Megginson and Netter, 2001).

[7] Countries use different methodologies and definitions in the production of official statistics. Therefore data collected from disparate national source are hardly comparable. In our empirical analysis, the series we use come only from centralised sources displaying data for all the countries (see Table 1).

ELECTION	Dummy variable taking the value 1 on the year of a country's elections, and zero otherwise. In presidential systems, presidential elections are considered. In parliamentary systems, general elections are considered.	*Banks et al. (1997), Wilfried Derksen's Electoral Web Sites (www.agora.stm.it/elections), Persson and Tabellini (2001)*
FRENCH LAW	Dummy variable taking value 1 for French civil law countries, and 0 otherwise.	*La Porta et al. (1998)*
GDP PER CAPITA	Ratio of Gross Domestic Product in constant 1996 US Dollars to population in country *i* in year *t*. Total population counts all residents regardless of legal status or citizenship.	*World Development Indicators, World Bank, International Financial Statistics*
GERMAN LAW	Dummy variable taking value 1 for German civil law countries, and 0 otherwise.	*La Porta et al. (1998)*
GROWTH	Annual percentage growth rate of Gross Domestic Product at market prices based on constant local currency in country *i* in year *t*. Aggregates are based on constant 1995 U.S. dollars.	*World Development Indicators, and http://www.worldbank.org*
LEFT WING	Dummy variable taking the value 1 when the incumbent executive in country *i* in year *t* was supported by "left wing parties". parties, and 0 otherwise. Left-wing parties include labour, socialist, social-democratic, and communist parties.	*Banks et al. (1997), Wilfried Derksen's Electoral Web Sites (www.agora.stm.it/elections), Zarate's World Political Leaders 1945-2001 (www.terra.es/personal2/monolith), Library of Congress Country Studies (http://lcweb2.loc.gov/frd/cs/cshome.html)*
NONDEM	Dummy variable taking the value 1 when the incumbent executive in country *i* in year *t* privatisation was dictatorial, military, or authoritarian.	*Banks et al. (1997), Wilfried Derksen's Electoral Web Sites (www.agora.stm.it/elections), Zarate's World Political Leaders 1945-2001 (www.terra.es/personal2/monolith), Library of Congress Country Studies (http://lcweb2.loc.gov/frd/cs/cshome.html)*
PO/DEALS	Privatisations by *Public Offers* to total privatisations (PO and PS) in country *i* in year *t*. It is a missing variable in country-years where no privatisation is reported.	*Privatisation International Database, IFR Thomson Database*
REV/GDP	Total revenues from privatisation to Gross Domestic Product in country *i* in year *t*. Total revenues are revenues in current US dollars from total privatisation deals (*Public Offers* and *Private Sales*). Gross Domestic Product is expressed in current US dollars.	*Privatisation International Database, IFR Thomson Database, World Development Indicators*
RIGHT WING	Dummy variable taking the value 1 when the incumbent executive in country *i* in year *t* was supported by "democratic-conservative parties", and 0 otherwise. Democratic conservative parties are defined as parties adhering to traditional values in combination with free-market ideology and law-and-order positions.	*Banks et al. (1997), Wilfried Derksen's Electoral Web Sites (www.agora.stm.it/elections), Zarate's World Political Leaders 1945-2001 (www.terra.es/personal2/monolith), Library of Congress Country Studies (http://lcweb2.loc.gov/frd/cs/cshome.html)*
SCAND LAW	Dummy variable taking value 1 for Scandinavian civil law countries, and 0 otherwise.	*La Porta et al. (1998)*
STOCK	Weighted average percentage of capital privatised by Public Offer (PO) and Private Sale (PS) in country *i* in year *t*. The weights are given by the ratios between the revenues from privatisations by PO and PO in year *t*, and total revenues, respectively. The percentage of capital refers to each privatisation deal.	*Privatisation International Database, IFR Thomson Database*
TURNOVER	Stock market total value traded to total market capitalisation in a country in year *t*. Total market value in year *t* is deflated by the Consumer Price Index in year *t*. Market capitalisation in year *t* is calculated as the average between the end-of-year market capitalisation deflated by the end-of-year Consumer Price Index in yeat *t* and *t-1*. Trading value and market capitalization refer to a country's main stock exchange.	*IFC Emerging Stock Markets Factbook 1999, Federation International des Bourse des Valeurs (FIBV)*

The actual sample size is determined by data availability. We have an unbalanced panel with 34 countries. For 6 countries out of 34, we have all the series in the 1977-99 time span; 29 out of the 34 countries have contiguous observations, although the start and end point of the

series differ; 5 countries have holes in the data. The average and median length of the period is 17.2 and 17 years, respectively.

The countries in the sample cover all geographical areas, with the sole exception of socialist or "transition" economies. The main reason for this exclusion is that privatisation in transition economies is a unique phenomenon. Even if the governments of the former socialist countries shared many of the general objectives of privatisation, initial conditions were radically different. In centrally planned economies, the private sector barely existed and had to be created out from scratch. Furthermore, privatisation occurred often in the absence of established financial markets and suitable legal institutions, which are critical elements of our analysis. By the same token, comparable information on financial development and legal protection is not available for those countries. Not surprisingly, privatisation in transition economies is becoming a separate field in theoretical and empirical research (Roland, 2000).

3.1 Privatisation data and variables

Privatisation data are obtained from *Privatisation International* (from 1998 part of *IFR-Platinum Database* of Thomson Financial) that is the most comprehensive source of historical data at the transaction level.[8] Our source reports privatisation transactions worth more than US$500,000. Sample selection bias therefore becomes the issue.

As far as Italy is concerned, official sources report 592 sales worth US$65.2bn during the period July 1992-December 1997 (see Ministero del Tesoro). For the same period, our source reports only 49 major deals. In fact, the revenues from those deals amount to US$60.1bn, approximately 92.1% of the total revenues raised by the whole population of Italian privatisations. As to Mexico, López-de-Silanes reports 361 non-financial privatisations during the period 1983-92 with revenue worth 6.6% of 1992 GDP (US$22.1bn approximately). For the same period, our source reports only 30 major deals with revenues worth US$21.7bn, approximately 98.2% of the total value. Unfortunately, we are unable to further the analysis of the coverage of our data set due to lack of information. However these two examples suggest that it is representative of the population of major deals. By the same token, it is clear that our source is not suitable for the statistical analysis of small scale operations.

During the period under observation, 2,459 major operations were reported (905 public offers -henceforth PO - and 1,554 private sales - henceforth PS) in 121 countries, generating more than US$1.1trn in revenues. Again sample selection bias within the *Privatisation International* data bank should be limited, since the US$831.8bn in revenues raised by the 34 countries in our sample account approximately for 75% of total revenues for the 1977-99 period.

A first step in our analysis is to find a quantitative indicator about the volume of State assets disposal by a country in a given year. In this direction, we construct a variable given by the *total gross revenues from privatisation sales (in US$ millions) in country i in year t,* and scale it by GDP (in US$ millions) to allow for cross-country comparisons. We define this variable *REV/GDP*. The numerator of this ratio corresponds to the value of shares of SOEs privatised in a country in a given year. As the numerator and the denominator are flow variables, there is no need to deflating.

Revenues are useful in providing a first measure of the willingness of governments to privatise and of the economic impact of one country's privatisation. Nevertheless, by focusing only on revenues some key questions remain unexplained. To what extent the ownership of SOEs changed hands? Furthermore, did privatising governments relinquish control?

To address these questions, it is only natural to look at the stakes sold by privatising governments.

At this stage, a crucial distinction has to be made between PO and PS. PS involve smaller companies often privatised fully and generally under private control after privatisation. For the whole sample, the average estimated value of a company – given by the ratio of revenues to the percentage of capital sold, and then multiplied by 100 - privatised by PO is US$4.5bn, whereas by PS it is US$0.57bn. The average stake sold by PO is 26%, whereas by PS it is 41%. POs typically involve larger companies, with the consequence that substantial revenues can be raised even through small partial sales. The simple mean therefore overestimates the average amount of stock privatised in a country that has more frequently sold through PS than PO but raised more revenues by PO than by PS.

To correct this bias, we have constructed *a weighted average percentage of capital sold by the government in country i in year t,* where the weights are given by the ratios between the revenues from privatisation, by PO and PS, and total revenues in country *i* in year *t*. We define this variable *STOCK*.

An example would clarify the working of this weighting procedure. In 1999, a country like Italy has privatised 14 companies (6 by PO and 8 by PS) generating US$26,586ml in revenues. The average stake sold by PO is 37%, while the one by PS is 68%. The simple mean of privatised stock is 55%. Given that 97% of proceeds were generated by PO, the weighted average is 39.5%. In this way, the average privatised stock is closer to the value that, on average, has generated the largest proportion of revenues.

REV/GDP and STOCK will be the only privatisation variables used as dependent variables in our empirical analysis. However, the previous paragraph suggests that it is important to control for the privatisation method. Indeed, PO typically involve larger companies, with shares issued in a sequence of seasoned offerings. In contrast, PS are used to

[8] This source is the most widely used in the empirical analysis of privatisation (see Jones et al., 1999;

divest the control, often allocating large blocks to strategic (often foreign) investors. Furthermore, PO and PS often differ by the pricing method; the first are often highly discounted fixed price offerings; the second are typically private equity placements, often implemented through an auction. We measure the privatisation method by use of *the ratio of the number of PO to the total number of privatisation deals in country i in year t.* We define this variable *PO/DEALS.*

3.2 Explanatory variables

Political dummy variables. To test the political theories described in section 2, we need data about the partisan dimension of privatisation. In particular, we want to identify the political orientation of privatising governments overtime.

In this direction, we have retrieved the political history of the 49 countries in the La Porta *et al.* (1998) sample from Banks *et al*. 1997 edition of the *Political Handbook of the World*. This source reports election dates, dates of appointment of the cabinets, and a description of political systems around the world up to 1997. We updated this information for the years 1998-99 by use of Internet sources listed in Table 1.

We then used Wilfried Derksen's *Electoral Web Sites*[9] and classification system to label incumbent governments, considering the platform and ideological orientation of the supporting parties. Four possible categories are identified: (i) democratic conservative (right wing); (ii) centrist and Christian-democratic; (iii) democratic left-wing; (iv) non democratic.

Democratic conservative governments are defined as governments supported by parties adhering to free-market ideology and law-and-order positions. Democratic left-wing parties include labour, socialist, social-democratic, and communist parties. The category "centrist" includes governments supported by coalitions which cannot be clearly labelled in any of the above two ways, like broad multi-party coalitional cabinets, non-party transitional cabinets, "national unity" governments, but also governments supported by parties which are in the centre of the political spectrum without explicitly adhering to free market values or without a clearly discernible orientation (i.e. Christian-democratic, nationalistic, rural, religious or ethnic parties). As for highly factionalised ruling parties, they are classified considering the dominant faction in the government, when clearly discernible (i.e. the Mexican Partido Revolucionario Institutional (PRI) or the Indian Congress Party). The label "non democratic" is applied to countries under authoritarian rule, as dictatorial, military, or one-party regimes, where political competition is absent or extremely limited.

Megginson *et al.*, 2001).

[9] This is considered the standard source for this type of information, and has already been used by Beck *et al.* (2001).

When ideological orientation of the government remained unclear (due to frequent party changes and merges in countries such as Turkey, Peru, Pakistan, South Korea), we referred to the description of the political settings and institutions by the Federal Research Division of the Library of Congress of the United States. This source allowed us to classify also the most controversial cases.

In order to identify correctly the political preferences of the incumbent governments, we distinguish presidential and parliamentary systems. In the former, we considered the political orientation of the president's party and his cabinet; in the latter, the political orientation of the parliamentary majority supporting the cabinet. By the same token, in order to identify political switches, we consider presidential elections in presidential systems, and general elections - or simple changes of parliamentary majorities - in parliamentary systems. Determining whether political systems are presidential or not depends on answering a number of questions: following Persson and Tabellini (2001), we choose to check first if the executive depends to a parliamentary majority, second if President is elected by direct popular vote or with a *de facto* similar way of choice (like in U.S. system) and he forms and lead the cabinet appointing and dismissing ministers (including the Prime Minister, if this office is present), and third (in those few cases where the political system is still uncertain to classify) if the President is the most important decision maker, holding the core of the executive power. We considered presidential ballots *and* parliamentary majorities only in France, a presidential country which is customarily considered parliamentary in case of "cohabitation". "Cohabitation" occurs when President lose parliamentary majority support and must abandon the reality of power to the prime minister if ever a party other than his own has a majority in the National Assembly (Aron, 1982).

We have to attribute a political label to each country-year. When we observed a change in government's political orientation after elections or (in parliamentary regimes) during the same legislature, we matched the political data with the dates of privatisation sales. We attributed the political label to the government implementing the majority of the sales in the year. For example, a political switch from centrist to right-wing majority occurs in Italy on May 1994: five deals out of 9 were implemented by the newly elected government in 1994, so we attached the label "right wing" to that year. When a tie occurred, we used the (current) dollar amount of revenues to discriminate. For example, in France after the 1997 elections in June, the newly elected left wing government implemented the same number of sales (2) of the former right wing government. The left wing government raised 93% of total revenues of the year, so we attached the left wing label to France 1997.

This methodology allows us to attach unambiguously one of the political dummies (i.e. RIGHT WING, CENTER, LEFT WING, NON DEM) to each country-year.

Theoretically, political cycles shape privatisation processes. Therefore, it is important to control also for election years. Indeed, the pace of privatisation could slow down around

elections. First, elections introduce uncertainty about the identity of winning governments. And the incumbent government may avoid to leave a windfall privatisation revenue to the opposition. Second, a newly elected government needs time to implement privatisation, so it is less likely to observe privatisation just in the aftermath of elections.

An interesting case of privatisation strongly shaped by the electoral cycle is Colombia. As a pure presidential system, government has a four-year fixed tenure. Since its beginnings in 1991, and for three different presidential administrations, the Colombian privatisation process halts during the first year of each new administration (1995, 1999), and boasts a peak of revenues during the last year of each presidential tenure (1994, 1997). As for OECD countries, Ireland is another clear example of privatisation process shaped by political cycles. The Irish process is strongly partisan (with right-wing governments obtaining 81.7% of total revenues), and it also shows regular breaks with a total interruption of sales during electoral periods and the first year of a new government (1990, 1992, 1994, 1997). Similarly, in Australia electoral dates are associated with slow down in privatisation. After its start in 1989, the Australian privatisation process stopped in the electoral year 1990. The process resumed the following year, but the frequency of sales is again lower in the electoral year. Indeed, in the electoral year 1996 only 7 deals were implemented, dwarfed by the 14 operations implemented in both 1995 and in 1997. Only small scale operations are reported in the electoral year 1998.

We have therefore constructed a dummy variable, ELECTION, taking the value one in the relevant election years, and zero otherwise. We considered only nation-wide general election for the lower house for parliamentary systems, or presidential elections in presidential systems. Presidential *and* parliamentary elections are considered only in France. In case of electoral systems with second turn or ballots (i.e. France, Peru), we considered the latter electoral date.

Public finance. There are sound theoretical reasons to believe that government budget constraints matter in privatisation. *Ceteris paribus*, government should launch or speed up privatisation when public finance deteriorates, and use privatisation proceeds (directly and indirectly) to relieve from fiscal unbalance. To measure the current outlook of public finances in a country in a given year we take the value of total (domestic and foreign) debt as a percentage of GDP, and define this variable DEBT.

Some purposely chosen facts demonstrate the role of debt in triggering privatisation, both in developed and in developing economies.

In Europe, the convergence criteria established by Maastricht Treaty in 1992 foresaw a debt target not exceeding of 60% of GDP. The ratification of the Treaty induced several European countries to launch a program of macroeconomic stabilisation which included a privatisation package. For example, in 1992 Italy was verging on financial collapse, with a

level of debt close to 105% of GDP, which became 116% in 1994. After some scattered sales in the 1980s, the privatisation process picked up speed just from 1992 onwards. In eight years, privatisation brought to the Treasury revenues US$101bn, that were allocated to funds for the amortisation of public debt. During the 1990s, public finances improved substantially: budget deficits were reduced from 10% of GDP in 1992 to 1.9% in 1999. Similarly, Germany experienced a serious deterioration in state finances in 1995, with public debt raising from 29 to 36% of GDP. Interestingly, the privatisation process resumed in 1996 with the first tranche of Deutsche Telekom, yielding US$13bn revenues. In the last part of the 1990s, privatisation sales totalled US$61bn, and in 1999, the debt-to-GDP ratio was back to 19%, as in 1982.

Fiscal distress was behind privatisation in several Latin American countries, traditionally hampered by high public and (especially) foreign debt. Mexico, for instance, experienced a debt crisis in 1982 that prevented it from normal borrowing on world capital markets for about seven years. In 1987 the debt GDP ratio was roughly around 69%. In 1988, the newly elected President Salinas launched a macroeconomic stabilisation policy which included privatisation. The debt ratio declined steadily, with the budget deficit turning into a surplus in 1992-1993, before the new debt crisis that occurred in 1994.

Some recent facts in the Far East are also worth noticing, where substantial waves of privatisation coincided with budgetary shortfalls. Malaysia entered the 1990s encumbered with debt: the debt ratio was 79%, 20% of which held by foreigners. During the decade, they embarked in privatisation, with a sequence of issues on national monopolies and transports. In 1998, the debt ratio was 39%, and budget deficit was 1.7% of GDP. In 1999, privatisation halted. In Korea the debt-to-GDP ratio raised from 10 to 15% in the 1997-98; in the following years, some important sales in electricity and telecommunication occurred, yielding US$7bn.

Legal origin dummies. The “law and finance” literature has stressed to role of legal institutions in shaping the various forms of capitalism around the world. Importantly, the literature has established that legal origins are proxies for different degrees of State interventionism in the economy, and investor protection, with civil law (common law) associated with a larger (smaller) size of the SOE sector, and lower (higher) protection of property rights (Beck, Demirgüç-Kunt, and Levine 2001)

We test the effect of these two factors by use of the legal origin dummies developed by La Porta *et al.* (1998). The dummy COMMON LAW takes the value one in countries belonging to the common law. The dummies FRENCH LAW, GERMAN LAW and SCAND LAW COMMON LAW take the value one in countries belonging to countries belonging to the French, German, and Scandinavian civil law, respectively.

French law countries have the larger size of the SOE sector, and the lowest shareholder and creditor protection. German law countries stick out for having more efficient bureaucracies

(La Porta *et al.* 1999). If we infer the efficiency of SOE from the overall performance of the State, these countries should have less incentives to privatise. Furthermore, German law countries warrant extensive protection of creditors (La Porta *et al.* 1998) and have powerful banks. Lending-oriented commercial banks might lose from a switch to debt to equity financing of SOEs. This arguments suggest that it is particularly important to test for the effect of German law in the empirical analysis of privatisation. The "law and finance" literature has also described Scandinavian civil law countries as similar but "distinct". As customary, in the empirical analysis we will treat them as a separate family.

Stock market liquidity. To complete the picture of a country's financial development, we include two measures: the ratio of stock market capitalisation to GDP in a country in year *t*, and the turnover ratio, given by the stock market total value traded to market capitalisation in a country in year *t*. We define these variables CAP and TURNOVER, respectively.

The variable CAP is a measure of the relative size of the domestic stock markets; the turnover ratio is one of the most widely accepted measures of stock market liquidity, as it is given by the percentage of outstanding shares which are effectively traded (Amihud, 2000).

Both variables are ratios of stock and flow variables. The stock variable (i.e. market capitalisation) is measured at the end of period, while the flow variables (i.e. GDP and the stock market total value traded) are defined relative to a period. To deflate appropriately these variables, we divide the end-of-year market capitalisation by end-of-year CPI , and deflate the GDP and the total value traded by the annual CPI. Then, we compute the average of the real stock market capitalisation in year *t* and *t-1*, and divide the average by real GDP measured in year *t*, which yields the variable CAP. We divide instead the real value of traded measured in year *t* by the average of the real stock market capitalisation in year *t* and *t-1* to obtain the variable TURNOVER (Beck, Demirgüç-Kunt, and Levine, 1999).

A large and liquid stock market indeed facilitates divestiture, allowing governments to maximise revenues. The case of privatisation of Nippon Telegraph & Telephone (NTT) - the Japanese telecommunication monopoly – is interesting in that respect. NTT went public on October 1986. The Japanese government sold 12% of stock, yielding $US15bn. During the 1987, the stock market boomed, with 30% increase in capitalisation. The government took advantage of a hot market by issuing a second tranche of same size in November 1997, which boasted revenues worth $US40bn. The secondary offering of NTT is still one of the world's largest share issue in history, with shares priced at ¥ 2,550,000 (Megginson and Boutchkova, 2000). Japan's 70% decline in stock market value in the 1989-98 period probably explains the slowing down of privatisation in the 1990s, which resumed in 1999 with two NTT sales as Japan rescued from the financial crisis.

Macroeconomic control variables. Among the possible determinants of privatisation, we include two macroeconomic variables: GDP per capita (in constant dollars 1996) and annual growth rates of GDP. Both variables are referred to country *i* in year *t*, and are labelled GDP and GROWTH, respectively. The first variable allows to test the hypothesis that privatisation is driven by economic development, with wealthy and mature countries experiencing the roll-back of the State from economic activity after a stage when it played a crucial role in capital accumulation and investment in infrastructure. The second variables allows to control for the business cycle. High growth rates in GDP are typically associated with a booming economy and high fiscal revenue. In this context, budget constraints are less binding, and there might be less incentives to privatise.

3.3 Data description

Table 2 presents the aggregate data on privatisation processes. Countries are ranked by GDP per capita and classified into two broad categories (developed and less developed countries) using the median value of the ranking variable to split the sample.

Sri Lanka is the only country of our sample which never implemented a major privatisation during the 1977-99 period. As to the number of privatisation deals, the developed countries' average is 48.29, while the corresponding average for less developed countries is 19.71. The difference in means is significant at the 5% level. With 169 operations, the UK leads the ranking, accounting for 14.61% of total sales, followed by Australia with 108 privatisations (9.34% of the total). Among privatising countries, Switzerland and Uruguay are last in terms of privatisation deals, with only 2 sales each. European countries instead appear particularly involved in divestiture: Austria, Spain, France, Germany and Italy have implemented from 40 to 80 operations. Within the less developed countries sub-sample, Turkey leads the ranking with 60 operations, followed by Israel. Mexico has a great bearing on the number of sales, accounting for 17.91% of the deals implemented by all less developed countries. Within the group of African countries, Nigeria sticks out with19 major deals.

Analysing privatisation deals, the stage of economic development seems to matter, but a more exhaustive picture will emerge by looking at revenues.

Now, the average total revenues for developed countries are around US$49.2bn, and only US$5.3bn for less wealthy economies, with highly statistically significant differences in means. In some cases the data on revenues confirm the previous results; not surprisingly, the UK once again ranks in a leading position, being placed second; with only US$19.9ml, Uruguay is last also in terms of privatisation proceeds. Developed countries like Australia, France, Germany, and especially Italy have raised also substantial revenues from the sales. A higher number of sales is also correlated to higher proceeds in some developing countries such as Mexico. But it

is also interesting to notice that the opposite is true for developed countries such as Austria, Canada, Australia, and developing countries such as Israel, Turkey, and especially Nigeria. Few sales are instead associated with substantial revenues in Japan, boasting the highest level of proceeds per sale (US$13.5bn), and to a smaller extent in Korea.

Table 2. Privatisation across countries

This tale reports the aggregate figures on privatisation in 34 countries for the 1977-99 period. Countries are ranked by the average GDP per capita in the 1976-99 and are classified as «developed» and «less developed» using the median value of the variable to split the sample. Deals is the total number of privatisations. Revenues is total revenues (US$ml 1996) from total privatisations. Rev/GDP is the ratio of total revenues cumulated in the period to 1999 GDP (in US$ml 1996). Stock is the average of the positive values of the yearly weighed average of privatised stock. PO/Deals is the ratio of the number of privatisations by Public Offer to the total number of privatisations. ***, **, * denote statistical significance at the 1, 5, and 10 percent, respectively.

Country	Deals	Revenues	Rev/GDP	Stock	PO/Deals
Switzerland	2	5,734.052	0.02268	74.95000	0.50000
Norway	12	3,106.571	0.02199	56.06943	0.79167
Japan	14	189,400.139	0.04437	34.32778	1
Sweden	21	14,898.401	0.06775	48.01722	0.64444
Germany	75	71,576.558	0.03541	53.80227	0.35014
Finland	26	10,387,738	0.08479	22.49022	0.83333
France	67	81,524.477	0.05952	26.58321	0.84109
Canada	57	21,079.210	0.03546	60.13323	0.47397
Austria	40	10,081.478	0.04967	33.19907	0.68333
The Netherlands	28	15,482.922	0.04143	36.99554	0.37500
Belgium	11	5,963.538	0.02499	42.78714	0.08333
Australia	108	70,596.051	0.18651	70.79184	0.37500
United Kingdom	169	153,394.000	0.11497	71.39784	0.48815
Italy	80	105,936.681	0.09484	33.79306	0.64462
Singapore	22	6,507.614	0.07887	23.22259	1
New Zealand	34	12,077.033	0.23188	78.10296	0.24861
Spain	55	59,421.927	0.10881	34.52101	0.68773
Developed countries avg.	48.29	49,245.200	0.07670	47.12849	0.58944
Israel	52	7,421.008	0.07712	31.18976	0.59303
South Korea	17	14,690.547	0.03717	22.43911	0.89881
Uruguay	2	19.908	0.00101	75.50000	0
Mexico	41	29,487.942	0.06392	56.91530	0.13788
South Africa	13	3,496.831	0.02746	64.12599	0.36667
Chile	16	2,622.630	0.03798	37.18750	0.25000
Malaysia	24	7,821.708	0.10790	49.12484	0.43290
Turkey	60	3,228.023	0.01764	65.61105	0.16429
Colombia	10	5,850.749	0.06799	69.46000	0.20000
Thailand	12	2,061.313	0.01713	32.20139	0.91667
Zimbabwe	5	190.056	0.03423	56.66667	1
Philippines	14	2,166.028	0.02960	38.28922	0.50000
Indonesia	14	5,223.897	0.03815	26.93213	0.71429
Nigeria	19	37.974	0.00090	47.83698	1
Sri Lanka	0	0	0.00000	0	.
Pakistan	12	1,453.027	0.02498	41.58111	0.33333
India	24	5,536.303	0.01240	21.92303	0.76786
Less developed countries avg.	19.71	5,371.055	0.03503	46.0615	0.51723
Test of means (*t*-statistic)	2.58**	3.18***	2.63**	0.17	0.69

The extent of privatisation could be determined by the size of the economy. In Table 2 we report the cumulated total revenues in the 1977-99 period (expressed in 1996 US$ml) suitably scaled by 1999 GDP (also expressed in 1996 US$ml).

The means for developed and less developed countries are substantially different. Expressed as a percentage of GDP, the average privatised assets in developed countries are worth twice the value reported for less developed countries, with a statistically significant difference in means.

Overall, large revenues are associated with higher values of the same variables scaled by GDP. Wealthy economies such as Australia, the UK, Italy, and Spain still occupy high positions in the ranking, the Uruguay remains last. Nevertheless, some exceptions warrant attention. As to developed countries, New Zealand now leads the ranking, with privatisation revenues worth 23% of its GDP. Germany and importantly Japan drop to middle-low positions (3 and 4% of GDP, respectively). The picture of developing countries is similar. Israel and Mexico still occupy pre-eminent positions, but now Malaysia leads the ranking, with revenues worth 10% of GDP. Colombia reports a high percentage. Korea instead loses the bearing it had on revenues in absolute terms.

Privatisation revenues and deals are crucial measures to gauge the extent of divestiture, but equally important are the percentages of capital which is privatised, as a measure of governments' willingness of selling big stakes, and eventually relinquishing control. Table 2 provides some statistics at the country level about this important facet of privatisation.

We do not report any substantial nor statistically significant difference in the (weighted) average percentage of privatised stock (Stock) between the averages in developed and less developed economies. Economic development does not seem to matter much in this respect. In the first group, the average privatised capital is well above the critical level of 51% in common law countries like the UK, New Zealand, and Australia. On the contrary, French civil law countries such as France, Spain, Italy, the Netherlands privatise smaller stakes, and seem more reluctant to relinquish control. In developing countries, Mexico shows also a quite high percentage of stock (56%) confirming the bearing it had on revenues and deals. Colombia and South Africa have privatised the largest stakes, without having privatised much in terms of quantity. India reports the lowest level, a bare 16%.

A crucial element in SOE divestiture is the choice of the privatisation method, i.e. the choice to sell the company in public or private equity markets. Analysing the ratio of PO to total privatisation sales (PO/Deals in Table 2), some interesting facts emerge. First, some countries have always privatised on public equity market over the entire period 1977-99 period: Japan and Singapore among developed countries; Nigeria and Zimbabwe among less developed countries. Interestingly, the first two countries have well developed capital markets, while the opposite is true for the other two countries. Indeed, a deep and liquid stock market makes a

public offering of shares more likely. But it is also true that privatisation might be a strategy to foster financial market development, a key ingredient of sustained growth. As to developed countries, France, Finland, and Norway implement privatisation by PO in more than 80% of the sales. Conversely, Belgium and New Zealand report instead the higher frequencies of private sales. Among less developed countries, Thailand, Korea, India, and Indonesia are more willing to privatise on public markets. Turkey, instead, shows a strong preference for private equity placements.

This data description is obviously unsatisfactory since it provides only some preliminary information about the role of economic development in privatisation. Importantly, the aggregate analysis at the country level does not allow to analyse the temporal dimension of SOE divestiture.

The figures for the privatisation variables are worth noticing. The (unreported) overall mean of REV/GDP and STOCK is 0.3 and 18 percent, respectively. The comparison between the standard deviations of the Between and Within allows to relate the variation across countries with the variation over time. Interestingly, on average revenues-to-GDP show a larger variability overtime than across countries, confirming the presence of a global trend. The difference in the cross-section and temporal dimension of the stakes sold (STOCK) is less marked.

As stated above, we aim at taking into account other determinants of privatisation besides economic development. We therefore perform a detailed descriptive analysis based on univariate tests where the main explanatory factors are used as ranking variables for our privatisation measures.

First, we try and identify systematic differences between privatising and non-privatising countries, comparing the averages of our explanatory variables in country-years when privatisation occurred, and when it did not occurred. Second, we try to establish the existence of some correlation between the extent of privatisation measured in terms of revenues and stakes sold and the explanatory variables. The results of these univariate tests are found in Table 3 and 4.

We have 589 observations in our sample, and privatisation is reported in 251 country-years (42% of total observations). Table 3 shows that privatisation seems to be associated with developed capital markets, high levels of sovereign debt, and high per capita income, and a right wing majority in office. Privatisation appears to be relatively absent in non democratic periods.

The role of capital markets is particularly striking: the ratio of stock market capitalisation to GDP (CAP) in privatising countries is almost twice than non-privatising countries, with a highly statistically significant difference in means (t = 6.20). Privatising countries are also associated with higher stock market liquidity: the difference in TURNOVER between the two

Table 3. Univariate tests: Privatising versus non-privatising countries

This table presents the test of statistical significance of the differences in means of the independent variables. It reports the differences between the average values of the explanatory variables taken in country *i* in year *t* when at least a privatisation occurred (DEALS > 0) and when no privatisation occurred (DEALS = 0).

Explanatory Variable	DEALS > 0	DEALS = 0	Difference	*t*-statistics
CAP	0.5012	0.2707	0.2305	*6.2072****
COMMON LAW	0.4405	0.3947	0.0458	*1.1136*
DEBT	56.549	44.9799	11.569	*3.4580****
ELECTION	0.2421	0.2374	0.0047	*0.1312*
FRENCH LAW	0.3532	0.3501	0.0030	*0.0760*
GERMAN LAW	0.3532	0.1602	0.1929	*5.3294****
SCAND LAW	0.0873	0.0950	-0.0076	*-0.3197*
GDP PER CAPITA	14,662.34	10,822.46	3839.88	*4.5644****
GROWTH	3.5339	3.4186	0.1153	*0.3994*
NONDEM	0.0476	0.1899	-0.1423	*-5.6309****
RIGHT WING	0.3968	0.2730	0.1238	*3.1511***
TURNOVER	0.5019	0.3345	0.1673	*4.7545****

groups is still positive, and statistically significant. Overall, this preliminary evidence suggests the existence of developed equity markets – an objective of privatisation itself – may render privatisation feasible.

Interestingly, financial distress seems to trigger privatisation. The debt-to-GDP ratio (DEBT) is on average 11.5 points higher in privatising countries, and with highly statistically significant differences in means. As we mentioned previously, the windfall privatisation revenue can be allocated to funds for the amortisation of debt, a policy which contributes to reducing interest payments, improving credit risk ratings, and eventually squaring public finances.

The univariate tests confirms further the preliminary evidence stemming from the analysis of the aggregate data shown in Table 3. Economic development still matters: privatising governments are typically wealthy economies, with an average per capita GDP of 14,662 dollars, which above to the median value (12,202). The average for non privatising countries is instead 10,822, and the difference is highly statistically significant.

Politics could also explain why government privatise. In established democracies, privatisation is associated with market-oriented ideology. Government supported by right wing coalition are incumbent in around 40% of the country-years when privatisation is observed. In non privatising countries, right wing ideology is found only 27% of the cases, and the difference is statistically significant at the 5% level. Interestingly, divestiture seems deeply

affected by how established and democratic are political institutions. Indeed, we find a large, negative and highly statistically significant difference between the average values of the political dummy NONDEM. In particular, privatisation has been implemented by non democratic governments (i.e. authoritarian, military, or dictatorial) in the bare 4% on the country years. Clearly, democracy is related to economic development, so one could object that we are just observing a spurious correlation between privatisation and per capita GDP, which already emerges in the analysis of Table 3. It will be interesting to see whether this factor will play a role in the econometric analysis, while controlling for economic development.

Among legal origin indicators, the German civil law tradition seems to be on average associated to a higher frequency of privatisation. This preliminary evidence is partly surprising, as our theoretical a priori about the effect having relatively more efficient SOE sector and powerful banks pointed in the opposite direction. However, in the univariate test we are using all the residual legal traditions as a benchmark, while a more appropriate test – which will be performed in the empirical analysis - would match German with common law legal origin.

Table 3 tentatively identified some basic political, economic, and institutional factors which may induce governments to privatise. Table 4 provides instead some preliminary evidence about the determinants of the extent of the privatisation effort, measured in terms of revenues, and percentages of capital sold. This table reports the averages of the explanatory variables in the top and bottom quartile of the distribution of REV/GDP and STOCK, the difference and the associated *t*-statistics.

Interestingly, several factors that seemed important in explaining why some countries privatise, and some other do not, appear to be critical also in determining the extent of the privatisation.

Consider first financial market development: larger and more liquid markets are associated with higher privatisation revenues and larger stakes sold. We find highly statistically significant differences in the size of the domestic market (CAP) and its liquidity (TURNOVER) in the analysis of revenues; only capitalisation seem instead to matter in explaining the stakes sold. Overall, this preliminary evidence suggests that well developed stock markets could allow the government to extract the full market value of the company and to underprice shares less, facilitating the absorption of big issues and larger percentages of capital.

We noticed before that the absence of democracy could explain the absence of privatisation. Now, privatisation implemented in non democratic countries appear to be smaller in scale, and more partial. Non democratic governments have little or no bearing in the top quartile of the distribution of revenues and stock. Politics seems to play a similar role in the

Table 4. Univariate tests: Privatisation revenues and the percentage of stock sold

This table presents the test of significance of the differences in means of the explanatory variables. Panel A and B report the statistical significance of the differences between the average values of the explanatory variables in the top and bottom quartile of the distribution of the positive values of the variable REV/GDP and STOCK, respectively. ***, **, * denote statistical significance at the 1, 5, and 10 percent, respectively.

Panel A

Variables	**REV/GDP (Top 25 %)**	**REV/GDP (Bottom 25 %)**	**Difference**	***t*-statistics**
CAP	0.6287	0.3807	0.2480	*2.9910***
COMMON LAW	0.5079	0.4444	0.0635	*0.7093*
DEBT	57.767	56.134	1.6330	*0.2334*
ELECTION	0.2063	0.2063	0	*0*
FRENCH LAW	0.2857	0.3968	-0.1111	*-1.314*
GDP PER CAPITA	14866.98	12363.81	2503.17	*1.5183*
GERMAN LAW	0.1270	0.0952	0.0317	*0.5631*
GROWTH	3.7051	3.2001	0.5050	*0.8896*
NONDEM	0.0159	0.0952	-0.0794	*-1.9587**
PO/DEALS	0.5135	0.5558	-0.0424	*-0.5533*
RIGHT WING	0.4603	0.4444	0.0159	*0.1776*
SCAND LAW	0.0794	0.0635	0.0159	*0.3433*
TURNOVER	0.5775	0.4016	0.1759	*2.2865***

Panel B

Variables	**STOCK (Top 25 %)**	**STOCK (Bottom 25 %)**	**Difference**	***t*-statistics**
CAP	0.6991	0.3972	0.3019	*3.0379****
COMMON LAW	0.6136	0.3103	0.3033	*3.1503****
DEBT	46.242	58.387	-12.145	*-1.9028**
ELECTION	0.2045	0.3103	-0.1058	*-1.2185*
FRENCH LAW	0.25	0.4655	-0.2155	*-2.307***
GDP PER CAPITA	14955.26	14418.86	536.40	*0.2828*
GERMAN LAW	0.0454	0.1207	-0.0752	*-1.4042*
GROWTH	3.0046	3.6703	-0.6656	*-1.2016*
NONDEM	0	0.0517	-0.0517	*-1.7633**
PO/DEALS	0.2355	0.8244	-0.5889	*-9.1138****
RIGHT WING	0.5454	0.3276	0.2179	*2.2201***
SCAND LAW	0.0909	0.1034	-0.0125	*-0.2105*
TURNOVER	0.4214	0.4744	-0.0530	*-0.8285*

analysis of the stakes sold: as theory suggests, right wing governments seem more willing to privatise larger percentages of capital, possibly to increase the spread of ownership.

There is however a new potential determinant that did not appear in the first stage univariate test: legal protection of investors, proxied by the two legal origin indicators

COMMON LAW and FRENCH LAW. Common law countries, which warrant extensive legal protection to shareholders seems to privatise larger stakes; the opposite happens in French civil law countries, protecting investors poorly. The difference between the two averages of the dummies is highly statistically significant, although a little higher for the dummy COMMON LAW. This preliminary evidence suggest that governments might find easier to privatise large stakes where private minority investors risk less being expropriated by the managers.

The choice of the privatisation method also warrants attention, with – not surprisingly – larger stakes privatised by PO. Indeed, PO involve larger companies, which are typically privatised in tranches.

Overall, these preliminary results suggest that our determinants may have some explanatory power, indicating the need for thorough econometric testing.

4. Econometric analysis

In order to study the issues at stake, we perform a two-stage empirical analysis. In the first stage, we try and identify the determinants of the government's choice on whether or not to privatise; in the second stage, we try and explain what determines the quantity of privatisation in terms of revenues and the size of the stakes sold. It is appropriate to use the same set of explanatory variables in both stages of the empirical analysis, as the theories set forth in Section 2 apply.

4.1 The testing strategy

At the first stage, we want to estimate the probability that privatisation occurs in country *i* in year *t*. The dependent variable is a binary choice variable y_{it} which takes the value 1 when privatisation is observed in country *i* at time *t*. Following Baltagi (1995), we assume that governments privatise when their "utility" is above a certain unobservable threshold $y^*_{it,}$ which can be described as follows:

$y_{it} = 1$ if $y^*_{it} > 0$ $i = 1, \ldots N$

$y_{it} = 0$ if $y^*_{it} \leq 0$ $t = 1, \ldots, T$

where $y^*_{it} = x^{'}_{it}\beta + u_{it}$, where X_{it} is the vector of explanatory variables, N the number of countries, and T the number of years.

Denote p_{it} the probability of a privatisation taking place in country *i* at time *t*, then

$$E(y_{it}) = p_{it}$$

This probability is modelled as a function of some explanatory variables

$$p_{it} = \Pr[y_{it} = 1] = \Pr[y_{it}^{*} > 0] = \Pr[u_{it} > -x_{it}^{'}\beta] = E(y_{it} | x_{it}) = F(x_{it}^{'}\beta)$$

and can be estimated by using a normal cumulative distribution function to constrain the probability between 0 and 1, which yields the probit model.

It is known that the presence of individual effects complicates matters significantly in probit models as there are no sufficient statistics to sweep fixed-effects out of the likelihood (Hsiao, 1986; Baltagi, 1995). In order to test for individual fixed effects, we run a pooled probit model with country indicators. Since the time dimension is not negligible, we feel that even if biased, the resulting estimates are an acceptable starting point. Besides we also run a random-effects probit model, under the assumption that $u_{it} = \mu_i + \upsilon_{it}$, where the first term does not vary within the cross-sectional unit and the second varies both within the cross-sectional unit and across units. We assume also that $\mu_i \sim IID(0, \sigma_{\mu}^2)$ and $\upsilon_{it} \sim IID(0, \sigma_{\upsilon}^2)$.

When legal origin indicators (COMMON, FRENCH, GERMAN, SCAND LAW) are included as regressors, we cannot run the pooled model as they are perfectly collinear with the country effects. In this case, we will present only the results of the random effects model. In this models, these dummies allow also to account partially for the time invariant cross-country heterogeneity.

At the second stage, we estimate the revenues raised by governments (REV/GDP) and the percentage of privatised stock (STOCK) in country *i* at time *t*, when privatisation occurred. We therefore performed the estimation for the country-years reporting positive values of the two dependent variables of privatisation. We do not attempt to model sample selection, i.e. to estimate the correlation between the disturbances of the probit and the regression equation in a panel data setting. The properties of these estimators in panel data models have been established only recently (Arellano and Honoré, 1999) and applications are still scanty.

We control for country heterogeneity by conventional fixed and random-effects panel models. The general model we referred to can be written as follows:

$$z_{it} = x_{it}^{'}\beta + \mu_i + \upsilon_{it}$$

where z_{it} is the privatisation dependent variable (i.e. REV/GDP or STOCK). The fixed-effects specification assumes that country-specific effects μ_i are fixed. The estimator (also

called the within estimator) is obtained, under the hypothesis of non correlation between the υ_{it} and the independent variables, by the OLS estimation of the following equation:

$$(z_{it} - \bar{z}_i) = (x_{it} - \bar{x}_i)\beta + (\upsilon_{it} - \bar{\upsilon}_i)$$

The hypothesis of fixed country-specific effects causes a loss of degrees of freedom that may be reduced by using a random-effects model, which assume that $\mu_i \sim IID(0, \sigma_\mu^2)$ and $\upsilon_{it} \sim IID(0, \sigma_\upsilon^2)$, μ_i are independent from the υ_{it} and both are uncorrelated from the independent variables.

The random effect model has the form

$$(z_{it} - \theta\bar{z}_i) = (1-\theta)\alpha + (x_{it} - \theta\bar{x}_i)\beta + [(1-\theta)\mu_i + (\upsilon_{it} - \theta\bar{\upsilon}_i)]$$

where θ is a function of σ_μ^2 and σ_υ^2.

The random and the fixed effects models allow for specific effects. In order to assess the consistency of the random effects, we have performed a Hausman (1978) specification test, under the null of non systematic differences in coefficients. If they do not statistically differ (i.e. the test is not significant at the conventional levels), the random-effects model is more efficient. Clearly, the test is performed only on the coefficients of the time-varying variables included in both models.

4.2 Endogeneity

Conceptually, some explanatory variables are endogenous to privatisation. In particular, privatisation is known to affect directly and indirectly public finances and financial market development. In many countries, privatisation revenues allowed governments to balance the budget, and to boost domestic stock markets, both in terms of capitalisation, and maybe more importantly, in terms of liquidity.

We address the issue of simultaneity by using the *lagged* debt-to-GDP ratio (DEBT), the stock market capitalisation to GDP (CAP), and the turnover ratio (TURNOVER) as explanatory variables. Clearly, the lagging provides only a partial solution to the problem, as the lagging simply entails predeterminedness, but not strict exogeneity. However, it is known that as *T* becomes large, the bias that we introduce is negligible (see Baltagi, 1995). The times series dimension of our panel is relatively long (23 years), suggesting that this result should apply.

4.3 Results

We perform the first stage estimation using the probit models. Overall, the results in Table 5 appear robust: the sign of the coefficients and the statistical significance of several variables of interests are maintained in the pooled models with country effects and in random effects model. Notice that 25 observations are dropped in the pooled model for a technical reason: for three countries, the model predicts failure or success perfectly (i.e. in the first case, no privatisation is reported in each country years; in the second, a privatisation is reported in all country years, so that a probability cannot be estimated). And this slight difference in the sample size is partly responsible of the difference in the coefficients of the pooled and random effects models.

We perform two kind of specification tests. The first is carried out by comparing the pooled model with country indicators with the model with random effects. The second is performed by dropping one of the variables of interest (the political dummy RIGHT) which allows to compare the two models. This test is also important for the economic interpretation of the coefficients of the political variables. When both dummies RIGHT and NONDEM, are included, we are using the dummies CENTER and LEFT as "benchmark". This specification is suitable to test the political theories of privatisation in democratic settings, but not to isolate the effect of the absence democratic political institutions on privatisation. This test is therefore performed by including appropriately only the political dummy NONDEM.

The results of probit analysis in Table 5 confirm most of the results of the univariate tests in Table 3, when we compared the explanatory variables in privatising versus non privatising countries. Privatisation is more likely when country has developed financial markets, high levels of foreign debt, and high per capita income.

The role of financial development is once again striking: the coefficients of the lagged capitalisation (CAP) and the lagged turnover ratio (TURNOVER) are always positive and statistically significant at the 1% level. The theoretical prediction about the role of market liquidity in privatisation (H5) is largely confirmed in our data. Privatisation waves are associated with high market liquidity. Government take advantage of hot markets, supplying shares of privatised companies when there is excess demand, which in turn allows to fetch a better price. The absence of a deep and liquid stock market is key obstacle to privatisation.

High levels of sovereign debt induce governments to privatise, confirming the role of public finance in SOE divestiture stated in the hypothesis H2. The coefficient of the lagged value of debt-to-GDP (DEBT) ratio is significant in several specifications, especially in random

Table 5. Probit equation for probability of privatisation

This table reports the estimated coefficients and associated standard errors (in parenthesis) of probit estimation. The dependent variable is an indicator taking the value one when a privatization deal (DEALS > 0) is observed in country *i* in year *t*. The suffix *(t-1)* indicates that the variable is lagged of one year. Equations 1 and 3 refer to a pooled model with country indicators (the coefficients of the individual country effects are not reported). Equations 2, 4, and 6 refer instead to a panel data estimation under the assumption of normality of the individual effects. ***, **, * denote statistical significance at the 1, 5, and 10 percent, respectively.

Explanatory variables	Pooled Model (1)	Random Effects (2)	Pooled Model (3)	Random Effects (4)	Random Effects (5)	Random Effects (6)
CONSTANT		-2.2135***		-2.0670***	-2.2023***	-2.0615***
		(0.3165)		(0.2998)	(0.3588)	(0.3539)
GDP PER CAPITA	0.00009***	0.00005***	0.00009***	0.00005***	0.00006***	0.00006***
	(0.00002)	(0.00001)	(0.00002)	(0.00001)	(0.00002)	(0.00002)
GROWTH	0.0323	0.0322	0.0323	0.0319	0.0305	0.0298
	(0.0215)	(0.0209)	(0.0215)	(0.0208)	(0.0208)	(0.0207)
RIGHT WING	0.3014	0.2823*			0.3199*	
	(0.1861)	(0.1684)			(0.1715)	
NONDEM	-0.7177**	-0.5977**	-0.7733**	-0.6775**	-0.6214**	-0.6944**
	(0.3416)	(0.2804)	(0.3347)	(0.2785)	(0.3152)	(0.3071)
ELECTION	-0.0865	-0.0865	-0.0651	-0.0655	-0.0950	-0.0719
	(0.1512)	(0.1459)	(0.1500)	(0.1446)	(0.1459)	(0.1448)
DEBT*(t-1)*	0.0058**	0.0060***	0.0057**	0.0058***	0.0053***	0.0053***
	(0.0023)	(0.0016)	(0.0022)	(0.0018)	(0.0018)	(0.0018)
CAP*(t-1)*	1.7433***	1.6011***	1.6930***	1.5503***	1.4583***	1.4088***
	(0.3221)	(0.2822)	(0.3194)	(0.2711)	(0.2647)	(0.2544)
TURNOVER*(t-1)*	1.0546***	0.9517***	1.0186***	0.9354***	1.0607***	1.0125***
	(0.2561)	(0.2097)	(0.2548)	(0.2064)	(0.2215)	(0.2173)
FRENCH LAW					0.3988	0.3364
					(0.3536)	(0.3639)
GERMAN LAW					-1.5086**	-1.3597**
					(0.72206)	(0.5987)
SCAND LAW					-0.7156	-0.7815
					(0.5667)	(0.6105)
LogLikelihood	-256.98	-315.01	-258.30	-316.41	-310.96	-312.66
Nobs:	564	589	564	589	589	589

effects models. This result corroborates the preliminary evidence emerging from the descriptive analysis. Privatising governments are typically encumbered by debt. And windfall privatisation revenues are allocated to improve (directly and indirectly) fiscal conditions.

Furthermore, economic development matters: the probability of privatisation is higher in wealthy economies with high levels of per capita GDP. The role of economic development already emerged in the analysis of the aggregate data presented in Table 3 and in the univariate test in Table 3. The econometric analysis is fully consistent with the preliminary evidence, and suggests that privatisation characterises a more advanced stage of economic development.

Interestingly, privatisation does not seem instead related the business cycle, measured by growth rates of GDP.

Some interesting results emerge in the econometric analysis of the political dimension of privatisation. The coefficient of the dummy RIGHT WING is positive and statistically significant at the 10% level, although it loses some significance in the pooled model (equation 2 in Table 5). A theoretical prediction of the Biais and Perotti (2001) model is partly confirmed in our data: privatisation is indeed more likely to be implemented by right-wing governments, maybe to increase the support for market-oriented platforms in future elections.

Sound political institutions are key in privatisation: privatisation tends to be absent if democratic political institutions are not in place. Importantly, these results survive when we control for spurious correlation by use of per capita GDP. Indeed, the dummy NONDEM is always statistically significant at 5% level. There are good reasons why a lower frequency of privatisation is observed in less established democracies. Indeed, political accountability is a typical component of country risk. And if investors are wary of being expropriated, the shares of SOE issued by non democratic governments will be heavily discounted. In turn, this reduces the feasibility of the privatisation program.

Finally, legal origin, and more precisely, the German civil law tradition negatively affects the probability of privatisation. German Law countries such as Austria, Germany, Japan, South Korea, Switzerland, and Taiwan seem particularly reluctant to privatise as opposed to common law countries, which is we use as a benchmark. This results is more convincing with respect to the evidence emerging from the univariate tests, which instead opposed German Law to all remaining legal origins. The results obtained in the econometric analysis in equation 5 and 6 in Table 5 confirm the theoretical prediction. German law is associated with a relatively efficient SOE sector, and with strong banks. The first factor lowers the incentives to privatise; the second reduces the feasibility of a privatisation program, as entrenched financial intermediaries have an interest in financing a relatively profitable SOE sector.

We now turn to the second stage of the estimation, where we try and estimate the quantity of privatisation in terms of revenues as a fraction of GDP (REV/GDP) and stakes sold (STOCK). Results are shown in Table 6 and 7. As to the choice of independent variables, we use the same specification of the probit model, adding only the variable which allows to control for the privatisation method (PO/DEALS), which clearly could not be used in the first stage. We run conventional fixed and random effects models and compare qualitatively the results obtained.

As compared with the probit models, the explanatory power of our variables is more limited. Furthermore, the results appear less robust, as they do not always survive the specification tests. However, some of them are interesting and worth mentioning.

We single out two factors explaining the quantity of privatisation in terms of revenues: the privatisation method and market liquidity. Curiously, lower revenues are associated with the government's choice of privatisation on public equity markets. Conversely, selling shares by

Table 6. Panel data estimations: Privatisation revenues

This table reports the estimated coefficients and associated standard errors (in parenthesis) of panel data estimation. The dependent variable is given by the ratio of total revenues form privatisation to Gross Domestic Product in country *i* in year *t*. The suffix *(t-1)* indicates that the variable is lagged of one year. The fixed effects (within) model assumes that each cross section unit has its own intercept; the random effects model assumes that intercepts are drawn from a normal distribution. F tests the null of joint significance of the parameters in the fixed effects models. Hausman χ^2 test the null of non systematic differences in the coefficients of the fixed and random effects model. ***, **, * denote statistical significance at the 1, 5, and 10 percent, respectively.

Explanatory variables	Fixed Effects (1)	Random effects (2)	Fixed Effects (3)	Random Effects (4)	Random effects (5)	Random Effects (6)
Constant	0.0061	0.0037	0.0077	0.0046	0.0062*	0.0072**
	(0.0056)	(0.0030)	(0.0055)	(0.0029)	(0.0036)	(0.0034)
GDP PER CAPITA	-1.03e-07	4.84e-08	-9.32e-08	4.72e-08	1.09e-07	1.14e-07
	(2.87e-07)	(1.01e-07)	(2.88e-07)	((9.93e-08)	(1.23e-07)	(1.21e-07)
GROWTH	0.00035	0.00025	0.00036	0.00026	0.0002	0.0002
	(0.0003)	(0.00025)	(0.0003)	(0.00025)	(0.00025)	(0.00025)
RIGHT WING	0.0026	0.0018			0.0015	
	(0.0017)	(0.0015)			(0.0016)	
NONDEM	-0.0039	-0.0027	-0.0039	-0.0031	-0.0025	-0.0028
	(0.0056)	(0.0039)	(0.0056)	(0.0039)	(0.0040)	(0.0039)
ELECTION	-0.0006	-0.0005	-0.00024	-0.00030	-0.0003	-0.00012
	(0.0015)	(0.0015)	(0.0015)	(0.0015)	(0.0015)	(0.0015)
DEBT*(t-1)*	0.00003	0.00002	0.00001	0.00002	0.00001	5.49e-06
	(0.00005)	(0.00003)	(0.00005)	(0.00003)	(0.00003)	(0.00003)
CAP*(t-1)*	-0.0021	0.0011	-0.0024	0.0012	0.00001	-0.00007
	(0.0028)	(0.0018)	(0.0028)	(0.0017)	(0.0019)	(0.0019)
TURNOVER*(t-1)*	0.0049**	0.0024	0.0052**	0.0024	0.0032	0.0032
	(0.0023)	(0.0019)	(0.0023)	(0.0019)	(0.0020)	(0.0020)
PO/DEALS	-0.0045**	-0.0031*	-0.0044**	-0.0031*	-0.0034*	-0.0034*
	(0.0021)	(0.0.0018)	(0.0021)	(0.0018)	(0.0018)	(0.0018)
FRENCH LAW					-0.0034	-0.0039
					(0.0026)	(0.0025)
GERMAN LAW					-0.0050	-0.0051
					(0.0040)	(0.0039)
SCAND LAW					-0.0035	-0.0041
					(0.0045)	(0.0043)
Nobs	251	251	251	251	251	251
Tests						
F	1.85*		1.79*			
χ^2		10.86		10.80	10.13	7.95

private equity placement pays off more in terms of proceeds. The coefficient of the PO/DEALS variable is always negative and significant across specifications. This evidence is partly surprising as larger companies are typically sold through public offers. However, it is

largely documented that share issue privatisations (i.e. PO) are strongly underpriced, and often more than their private sector counterparts (Dewenter and Malatesta, 1997). Furthermore, large companies are often sold piecemeal in several seasoned offers, so that only a fraction of equity is sold (Jones *et al.*, 1999) On the contrary, PS are typically block auctions for the majority of stock, so that control rights and the associated benefits are also transferred at privatisation, raising revenues.

In the univariate tests, market liquidity seemed to be associated with higher privatisation revenues. Regression analysis confirms this result: the coefficient of the lagged turnover ratio (i.e. the stock market total value of trades to capitalisation) is positive and significant at the 5% level in the fixed effect models. If we combine the evidence stemming from the probit and regression analysis, we can conclude that liquidity not only makes privatisation feasible, but allows to maximise proceeds from the sale. This evidence is consistent with the theoretical literature showing the positive role of liquidity in information aggregation, so that governments floating SOEs in liquid markets extract the full market value of the companies and undeprice shares less. Furthermore, a liquid market allows the absorption of big issues, facilitating the divestiture of large firms. By the same token, one can explain why privatisation waves are often associated with booming stock markets. However, the coefficient of the turnover ratio maintains the sign but loses significance at conventional levels in the more efficient random effects model, which always survive the Hausman specification test. Collinearity may be responsible for the drop in statistical significance of this coefficient when legal origin indicators are included. As Table 5 shows, TURNOVER is highly correlated with the dummy GERMAN LAW (0.44).

The political dummies RIGHT WING and NONDEM and the legal origin dummies displays consistent signs with the probit estimates but are never significant.

Besides revenues, the second stage of the estimation involves the econometric analysis of the percentages of capital sold. This part is crucial as it allows to explain why in some countries privatisation is only partial, and in others more accomplished.

Three factors appear particularly relevant in that respect: the privatisation method, legal origin and the size of domestic stock markets.

First, the econometric analysis confirms neatly the fact that PO involve the privatisation of smaller stakes. The ratio of PO to total privatisation sales (PO/DEALS) is negatively related to the average percentages of capital sold, with coefficients statistically significant at the 1% level. This result suggests that in the empirical analysis of stock is important to control for the government's choice of public or private capital markets.

Second, genuine and full privatisation seem particularly difficult to implement in civil law countries. The French law dummy yields the strongest results, with a negative and highly significant coefficient. We have learned from the "law and finance" literature that the French

civil law is a proxy for a extensive government ownership, and weak legal protection of investor. Our results suggest that French civil law governments appear reluctant to privatise in spite of their large stakes in the SOE sector, maybe to keep political interference in firms. Government ownership and legal protection of investors are probably jointly determined, as

Table 7. Panel data estimations: The percentage of stock sold

This table reports the estimated coefficients and associated standard errors (in parenthesis) of panel data estimation. The dependent variable is given by the weighted average of privatised stock in country *i* in year *t*. The suffix *(t-1)* indicates that the variable is lagged of one year. The fixed effects (within) model assumes that each cross section unit has its own intercept; the random effects model assumes that intercepts are drawn from a normal distribution. F tests the null of joint significance of the parameters in the fixed effects models. Hausman χ^2 test the null of non systematic differences in the coefficients of the fixed and random effects model. ***, **, * denote statistical significance at the 1, 5, and 10 percent, respectively.

Explanatory variables	Fixed Effects (1)	Random effects (2)	Fixed Effects (3)	Random Effects (4)	Random effects (5)	Random Effects (6)
Constant	61.364***	57.959***	64.19***	60.46***	67.573***	70.813***
	(12.008)	(6.7895)	(11.826)	(6.664)	(7.774)	(7.3668)
GDP PER CAPITA	-0.0002	0.00019	-0.00019	0.00017	0.00031	0.0003
	(0.0006)	(0.0002)	(0.0006)	(0.0002)	(0.0003)	(0.0002)
GROWTH	0.8174	0.1671	0.8065	0.1834	0.04798	0.0209
	(0.6164)	(0.5674)	(0.6173)	(0.5692)	(0.5643)	(0.5649)
RIGHT WING	4.6127	5.1380			4.3776	
	(3.6547)	(3.2951)			(3.3240)	
NONDEM	-7.5871	3.4094	-7.4496	1.9884	4.6899	3.8641
	(12.7522)	(9.2002)	(12.771)	(9.2462)	(8.9807)	(8.9101)
ELECTION	-6.2159**	-6.1857**	-5.6285*	-5.5367*	-5.5535*	-4.9712
	(3.1273)	(3.0890)	(3.0972)	(3.0643)	(3.0969)	(3.0766)
DEBT*(t-1)*	-0.0438	-0.0478	-0.0694	-0.0628	-0.0891	-0.1058*
	(0.1042)	(0.0612)	(0.1024)	(0.0612)	(0.0622)	(0.0606)
CAP*(t-1)*	6.1404	6.9179*	5.5932	6.7440*	3.9046	3.4663
	(5.8177)	(3.9461)	(5.8103)	(3.9846)	(4.0939)	(4.0650)
TURNOVER*(t-1)*	2.4250	0.1134	3.0141	0.6736	2.3677	2.7789
	(4.8276)	(4.1329)	(4.8124)	(4.1404)	(4.2858)	(4.2777)
PO/DEALS	-32.854***	-33.413***	-32.67***	-33.28***	-34.981***	-35.128***
	(4.3664)	(3.8324)	(4.3707)	(3.8492)	(3.8828)	(3.8826)
FRENCH LAW					-13.144**	-14.501***
					(5.7481)	(5.5837)
GERMAN LAW					-15.5233*	-15.871*
					(8.6421)	(8.5347)
SCAND LAW					-4.9240	-6.7076
					(9.7625)	(9.5430)
Nobs	234	234	234	234	234	234
Tests						
F	8.99***		9.89***			
χ^2		13.89		11.12	13.53	13.74*

minority shareholders do not need protection if they barely exist. However, poor legal protection affects the incentives of privatising governments. When suitable legal institutions are

not in place and enforced, governments may opt for partial privatisations, discounting the risk of entrenchment or expropriation by management that minority shareholders will face.

The same negative (although less statistically significant) relation is found with the German civil law countries. But the underlying reasons why privatisation remains partial are different with respect to French law countries. In the first stage of the empirical analysis (Table 5) we have shown that German law was associated to a lower probability of privatisation, and explained this evidence by stressing that those countries are interventionist but more efficient in running SOEs, so that they have fewer incentives to privatise. Furthermore, these countries have powerful banks with an interest in financing SOE. The same arguments can be applied to explain why smaller stakes are sold in German law countries.

Stock market development plays also a role in the analysis of the percentages of capital sold. The coefficient of the stock market capitalisation (CAP) in two random effects models (equations 2 and 4 in Table 7) is positive and statistically significant. Importantly, both model survive the specification test. When instead we add legal origin dummies, the capitalisation becomes insignificant. This drop in significance is probably due to multicollinearity, as legal origin is known to affect financial market development and especially the size of equity markets (La Porta *et al.*, 1997) Overall, this evidence suggests the empirical validity of the hypothesis H5: a developed stock market is critical to achieving full privatisation. A large stock market allows the issue of larger tranches. The stock market provides monitoring so governments will privatise big stakes more easily, and possibly relinquish control. In this context, governments are less fearful that managers of privatised companies will entrench themselves since their performance will be carefully scrutinised (Hölstrom and Tirole, 1993; Faure – Grimaud, 1999).

Finally, elections seem to make governments more reluctant to sell. The dummy ELECTION, which is attached to each electoral year in the countries of our sample, is negatively and significantly related to the percentages of stock sold. On the one hand, incumbent governments are maybe wary to relinquish a substantial privatisation revenue to the opposition in case of electoral defeat. On the other hand, they do not halt the privatisation process completely, as there is also some chance of being in office to manage the allocation privatisation proceeds.

4.4 An analysis of the OECD sub-sample

The statistical analysis has clarified that economic and institutional factors seem to shape privatisation around the world. In particular, economic development, measured by per capita GDP, draws a sharp distinction between privatising versus non-privatising countries, with wealthy economies more involved in the process. Political institutions appear equally

important: countries with non democratic political regimes are barely able to set the privatisation in motion.

These facts lead us to eliminate a part of the heterogeneity in our sample, performing the empirical tests in the sub-sample of OECD countries. These countries are not only the most industrialised and wealthy economies in the world, but have obtained membership for being established democracies rooted on sound political institutions.

Table 8 presents the first-stage estimates of the probability of privatisation in the OECD sample.

Table 8. Probit equation for probability of privatisation (OECD sample)

This table reports the estimated coefficients and associated standard errors (in parenthesis) of probit estimation. The dependent variable is an indicator taking the value one when a privatization deal (DEALS > 0) is observed in country *i* in year *t*. The suffix *(t-1)* indicates that the variable is lagged of one year. Equation 1 refers to a pooled model with country indicators (the coefficients of the individual country effects are not reported). Equations 2 and 3 refer instead to a panel data estimation under the assumption of normality of the individual effects. ***, **, * denote statistical significance at the 1, 5, and 10 percent, respectively.

Explanatory variable	Pooled (1)	Random Effects (2)	Random Effects (3)
CONSTANT		-5.2050***	-2.9964***
		(0.7397)	(0.5298)
GDP PER CAPITA	0.00005	0.00005**	0.00003*
	(0.00003)	(0.00002)	(0.00002)
GROWTH	0.00598	0.00244	0.00906
	(0.0422)	(0.0410)	(0.0405)
RIGHT WING	0.4180	0.5133*	0.6025**
	(0.2836)	(0.2713)	(0.2408)
ELECTION	-0.0391	-0.0535	-0.0623
	(0.2331)	(0.2216)	(0.2270)
DEBT*(t-1)*	0.0788***	0.0559***	0.0624***
	(0.0164)	(0.0078)	(0.0094)
CAP*(t-1)*	2.1221***	2.0695***	2.5338***
	(0.7515)	(0.5654)	(0.5587)
TURNOVER*(t-1)*	1.2151***	1.5410***	1.4310***
	(0.4608)	(0.3480)	(0.3672)
FRENCH LAW			-1.0951***
			(0.4103)
GERMAN LAW			-1.9636***
			(0.4874)
SCAND LAW			-0.6382
			(0.4007)
LogLikelihood	-97.14	-134.24	-143.94
Nobs:	309	317	317

Overall, the results are very similar to the ones obtained in the whole sample, with a general improvement in the statistical significance of the estimated coefficients. In particular, the impact of the two measures of financial market development (the lagged CAP and

TURNOVER) on the probability is still very large, especially in the random effects models. The debt-to-GDP ratio gains significance at the 1% level. Interestingly, also the coefficient of the RIGHT WING dummy remains positive gaining more significance. This result is reassuring, and reinforces the empirical validity of the political theory of Biais and Perotti (2001), which, according to the authors, should be more suitably applied to democracies or at least to countries in transition towards democracy. Finally, legal origin appear even more relevant in explaining privatisation in the OECD sample. The GERMAN LAW dummy gains significance at the 1% level. The FRENCH LAW dummy, which had a negligible effect in the whole sample, now is has negative and highly significant coefficient. The reluctance of French law countries to privatise stated in H3 appears remarkable in the context of wealthy economies.

The second stage of the estimation yields also some interesting results. As Table 9 shows, the privatisation method and market liquidity still strongly affect revenues.

The coefficient of turnover ratio in the fixed effects model (equation 1) is noteworthy, as it now gains significance at the 1% level. Indeed, floating SOEs in liquid OECD markets allow to extract more fully the value of the company, and to raise more proceeds. Importantly, ideology matters in privatisation in OECD countries. Right wing governments are not only associated with a higher probability of privatisation, but also with a higher quantity of privatisation as a percentage of GDP. As predicted by the theory, privatisation waves are associated with market oriented politicians in office, willing to spread share ownership across the population in order to increase the popular support for market oriented platforms. As stated in the section about the determinants of privatisation (hypothesis H1), the correlation of higher revenues with right wing politicians in office can also be explained in terms of credibility (Perotti, 1995). Conservative parties can more easily signal commitment to market oriented platforms, which are often included in their political manifestos). This increases investors' willingness to pay, as they risk less being expropriated *ex post*, which in turn provides a premium in terms of revenues. Unfortunately, the random effects models do not survive the specification, so we are not able to check further the robustness of the empirical analysis of revenues in the OECD sample.

Overall, the econometric analysis of the percentages of capital sold in OECD yields consistent results with respect to the whole sample, which are presented in Table 10.

Fortunately, the random effects with legal origin dummies (equation 3) now survives the specification tests. The privatisation mode (i.e. the PO versus PS) is still an important determinants of the variable STOCK, with lower percentages sold in privatisations in public equity markets. Finally, civil law countries are find again strongly reluctant to privatise large stakes. Legal origin may really represent a lasting obstacle to genuine privatisation.

Table 9. Panel data estimations: Privatisation revenues (OECD sample)

This table reports the estimated coefficients and associated standard errors (in parenthesis) of panel data estimation. The dependent variable is given by the ratio of total revenues form privatisation to Gross Domestic Product in country *i* in year *t*. The suffix *(t-1)* indicates that the variable is lagged of one year. The fixed effects (within) model assumes that each cross section unit has its own intercept; the random effects model assumes that intercepts are drawn from a normal distribution. F tests the null of joint significance of the parameters in the fixed effects models. Hausman χ^2 test the null of non systematic differences in the coefficients of the fixed and random effects model. ***, **, * denote statistical significance at the 1, 5, and 10 percent, respectively.

Explanatory variables	Fixed Effects (1)	Random effects (2)	Random effects (3)
Constant	0.0036	0.0018	0.0080
	(0.0080)	(0.0051)	(0.0056)
GDP PER CAPITA	-2.01e-07	-5.93e-08	-8.81e-08
	(3.4e-07)	(1.85e-07)	(2.17e-07)
GROWTH	0.00003	0.00002	0.00001
	(0.0004)	(0.0004)	(0.0004)
RIGHT WING	0.0044**	0.0040**	0.0033*
	(0.0021)	(0.0019)	(0.0020)
ELECTION	0.00028	-00018	0.00040
	(0.0019)	(0.0018)	(0.0018)
DEBT*(t-1)*	0.00011	-0.00007	-0.000089*
	(0.00008)	(0.00005)	(0.000053)
CAP*(t-1)*	-0.0024	0.0023	0.0006
	(0.0049)	(0.0034)	(0.0035)
TURNOVER*(t-1)*	0.0086**	0.0057**	0.0074***
	(0.0033)	(0.0026)	(0.0029)
PO/DEALS	-0.0065**	-0.0047**	-0.0048**
	(0.00257)	(0.0024)	(0.0024)
FRENCH LAW			-0.0104**
			(0.0044)
GERMAN LAW			-0.0084
			(0.0054)
SCAND LAW			-0.0041
			(0.0058)
Nobs	160	160	160
Tests			
F	3.66***		
χ^2		79.08***	40.79***

Table 10. Panel data estimations: The percentage of stock sold (OECD sample)

This table reports the estimated coefficients and associated standard errors (in parenthesis) of panel data estimation. The dependent variable is given by the weighted average of privatised stock in country *i* in year *t*. The suffix *(t-1)* indicates that the variable is lagged of one year. The fixed effects (within) model assumes that each cross section unit has its own intercept; the random effects model assumes that intercepts are drawn from a normal distribution. F tests the null of joint significance of the parameters in the fixed effects models. Hausman χ^2 test the null of non systematic differences in the coefficients of the fixed and random effects model. ***, **, * denote statistical significance at the 1, 5, and 10 percent, respectively.

Explanatory variables	Fixed Effects (1)	Random effects (2)	Random effects (3)
Constant	59.833***	64.24***	77.21***
	(18.295)	(10.152)	(10.714)
GDP PER CAPITA	-0.00002	7.56e-06	9.47e-06
	(0.0008)	(0.00036)	(0.00042)
GROWTH	1.6881*	1.1515	1.1145
	(0.9149)	(0.8456)	(0.8294)
RIGHT WING	5.3371	6.5738	4.5270
	(4.6794)	(4.1311)	(4.0959)
ELECTION	-4.9086	-5.8141	-3.6790
	(0.4.1354)	(3.9505)	(3.9173)
DEBT*(t-1)*	-0.0190	-0.10834	-0.0741
	(0.1959)	(0.0985)	(0.0998)
CAP*(t-1)*	9.6531	15.122**	9.5027
	(10.68)	(6.6608)	(6.8248)
TURNOVER*(t-1)*	0.7065	-3.3504	3.1081
	(7.3875)	(5.7345)	(6.1163)
PO/DEALS	-36.82***	-37.82***	-38.38***
	(5.699)	(5.0427)	(4.9561)
FRENCH LAW			-23.14***
			(7.4575)
GERMAN LAW			-22.03**
			(9.7717)
SCAND LAW			-10.35
			(9.9899)
Nobs	150	150	150
Tests			
F	8.43***		
χ^2		191.96***	2.76

5. Conclusions

This paper has tried to explore empirically the reasons why governments privatise, and to assess the size and extent of privatisation processes around the world.

As predicted by theory, privatisation has institutional, political, and economic determinants. First, privatisation requires sound democratic political institutions to be set in motion. Indeed, assets can be credibly transferred from the State to the private sector only if the country has an established rule of law tradition, a strong and impartial court system, and

provision for an orderly succession of power. Second, privatisation is facilitated by a well-functioning financial system. Deep and liquid domestic equity markets allow the privatisation of large State-owned enterprise, and to extract the full market value of the company sold. Interestingly, German civil law countries with strong banks appear less involved in privatisation, maybe due to the vested interests of these powerful intermediaries in financing State-owned enterprises. Third, government preferences and budget constraints matter: divestiture is typically triggered by right wing market-oriented majorities in office and by high levels of sovereign debt.

Politics and financial market development also explain the size of privatisation as a percentage of economic activity, particularly in richer and more democratic countries. Large scale privatisation programs are typically implemented by right wing parties in power, in order to increase the spread of ownership and build political support for pro-market platforms. We find also that market liquidity, measured by the turnover ratio, strongly affects revenue generation, and this explains why privatisation waves are associated with hot markets.

Finally, legal origin seems to affect the governments' incentives to sell big stakes in privatised companies and eventually to relinquish control. As opposed to common law countries, civil law countries governments are reluctant to privatise. But the reasons for this fact may be different within the civil law family. On the one hand, French law countries are more interventionist and protect shareholders poorly, so that privatisation is often unwanted or unfeasible, given the risk of expropriation that minority investors will face. On the other hand, German law countries protect creditors well, and are bank-dominated. Banks might be averse to privatisation being fearful of losing a part of their business as State-owned enterprises would switch from debt to equity finance.

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