

## **Chapter 1: Introduction**

The purpose of this chapter is twofold. First, it provides an introduction to the complex and currently widespread phenomenon of privatization, namely the sale of state-owned enterprises (SOEs) to the private sector. Second, it focuses on two important issues in the privatization debate - the underpricing of shares and the effect of ownership on performance. In that context, I survey the existing theoretical and empirical research, and I discuss the questions addressed in the remaining chapters of this dissertation.

The chapter is organized as follows. Section 1 provides an historical perspective on privatization, and it describes the objectives, the privatization techniques and the outcomes of the privatization policies that many governments all around the world have adopted since the late 70s. Section 2 focuses on the underpricing phenomenon in privatization, and it reviews the literature that investigates why we observe high initial returns for privatized stock. In this section, I preview the model presented in chapter 2, which provides a theoretical explanation of underpricing in privatization. Finally, Section 3 addresses the question of whether we should expect privatization to improve the company's financial and economic performance. In this section, I present the most relevant theoretical and empirical contributions to the analysis of this issue, and I discuss the empirical question addressed in chapter 3 and the findings presented in that chapter. As later explained in more detail, the purpose of my empirical analysis in chapter 3 is to estimate the long-term effect of the British privatization program on the government's

public finances, which requires an evaluation of the effect of privatization on the financial performance of the British privatized sector<sup>1</sup>.

## **1. Privatization Programs around the World: an Overview.**

The decades of the 80s and 90s have witnessed a major worldwide shift, away from state ownership of productive assets and in favor of private enterprise. Many governments have embraced privatization policies, selling state-owned enterprises (SOEs) to the private sector.

The initial stimulus to privatization was provided by the comprehensive divestiture of SOEs in the United Kingdom carried out by the Thatcher Conservative government, which came to power in 1979. According to the official statistics, British SOEs accounted for 11 per cent of GDP in 1979, while they represented only 2.3 per cent of GDP in 1993. From 1979 to 1993, almost all the state companies were sold to the private sector. Together with a host of companies operating in competitive and oligopolistic markets, the British government privatized rail, telecommunications, and, with the exception of postal services, all the public utilities (electricity, water, gas). My estimates show that the cumulative gross sale proceeds from the British sales sum up to more than £46,300 million in 1993.

The successful offer for sale of a 50.2 percent tranche of British Telecom in 1984, the largest stock offer in history to that time, contributed to launching similar programs in other Western European countries, such as France, Italy, Germany, Sweden and Spain. By the late 80s, similar programs were embraced, to different extents, by governments in Canada, Latin

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<sup>1</sup> A comprehensive treatment of the theoretical issues associated with privatization can be found in Börs (1991), Vickers and Yarrow (1988), and Vogelsang (1990). For a complete and detailed survey of the empirical literature on privatization, see Megginson and Netter (2000).

America, South and East Asia, the Middle East, and Africa. The decade of the 90s began with an acceleration of privatization programs in Europe, particularly in Central and Eastern European countries, and at the same time it witnessed more privatizations in less-developed countries, such as India, Pakistan, Turkey, Brazil, Venezuela, Mexico, Taiwan, Malaysia, Portugal (Bourbakri and Cosset, 1998).

As reported by Shirley (1999), the largest share of world privatization revenues for the period 1988-1994 was recorded in Latin America and the Caribbean (53.8%), followed by East Asia with 19.2%, and East Europe and Central Asia with 18.5%. Sub-Saharan Africa lags behind with only 2.1% of world privatization proceeds.

Meggison and Netter (2000) provide the latest data. They report a reduction of the average worldwide level of state ownership by about one-half (to less than 6 per cent) over the past two decades, with annual privatization revenues constantly increasing over time, and reaching the cumulative value of \$1 trillion in 1999.

As for the official motivations put forward by various governments to justify their privatization programs, they are always very similar to the objectives stated by the British government in the late 70s. Of course, the weights placed on each goal vary considerably according to the country's specific economic and political circumstances. These objectives are to 1) raise revenues, 2) improve performance of SOEs by exposing them to market discipline and reducing government interference, 3) promote wider share ownership, sometimes called popular capitalism, 4) foster competition, and 5) develop stronger capital market institutions. The last objective is of particular importance to former communist countries and developing nations.

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Because of the complexity of goals and country-specific circumstances, different governments choose to structure and pace their programs in different ways. Two are the principal methods used to sell state assets to the private sector<sup>2</sup>: a *direct sale* of assets to a specific investor or group of investors (also referred to as *private sale*), or a sale through public share issue, referred to as *share issue privatization (SIP)*. If a SIP is chosen to sell the company, the government has different options regarding the choices of price of the issue, pace of the sale, and allocation rules. It can choose a fixed-price offer, thereby setting the share price and allowing the investors to submit applications that indicate their desired number of shares. In this case, the government may choose to sell the shares at discounts. Alternatively, the issue can be offered through tender, in which case investors present their bids, specifying how many shares they want to buy and what price per share they are willing to pay. With either fixed-price offers or tender offers, the company may be sold at once or in stages, with seasoned offers following the initial SIP. The government may also choose to adopt specific allocation rules, thereby targeting different types of investors differently: it may give preferential allocation of shares to employees and managers of the former SOE, and it may limit the holdings of foreign investors and institutions.

Clearly, SIPs allow governments to have much flexibility in structuring their privatization program, and in reaching the above stated goals according to their different priorities. For example, a government that desires to foster domestic capital markets and stimulate domestic share ownership, may choose a fixed-price offer and significantly discount the sale. Additionally, it may stimulate small investors' demand with advertising campaigns and various

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<sup>2</sup> A third method, voucher (mass) privatization, has been employed only in Central and Eastern Europe. It is used to distribute shares of SOEs virtually for free to the company's managers and employees and to large segments of the population.

incentive schemes (voucher schemes, free or discounted shares, installment payments, loyalty bonuses). If the government's main goal is to collect revenues, then the choices of a private sale or a tender offer might be preferable. For governments in countries where the domestic capital markets are not well developed, selling the company in stages or through private placement might be necessary to push forward a policy of privatization. A very poor country might indeed have little choice but to rely on private sales to wealthy foreign investors.

What is the evidence on how governments around the world have structured their country's privatization programs? Jones et al. (1999) present current data on the structure of 630 SIP offers (both initial SIPs and seasoned offers) from 59 countries during the period 1977-1997. The geographical distribution of their sample is as follows: two countries, U.K. and China, account for 133 of the offers, Western Europe for 238, Asia and Australia for 160, the Middle East and North Africa for 88, Eastern Europe for 64, the remainder of Africa and North America each account for 31 issues, and South America for 18. This is the largest aggregate body of information on SIPs presented to date, and I will therefore report some of their findings.

The mean and median size of SIPs, values of \$708 million and \$143 million respectively, are very large compared with the typical size of private IPOs. Additionally, although the direct sale method is used more frequently than SIPs in privatizations, SIPs constitute the largest type of privatizations, with an average size far larger than the average size of direct sales. These results are consistent with the finding that a large fraction of the firms sold through SIPs are telecommunications and utilities (20% of the total sample), because utilities are typically large companies.

Of the 384 initial SIPs, 11.5% are complete sales, while the remaining 88.5% are partial sales. All the UK sales after 1984 and most of the French issues in the period 1986-1987 are

complete sales. Fixed-price SIPs are the most popular choice of pricing method: 79.9% of the initial SIPs and 59.7% of the seasoned offers are entirely fixed-price offers.

The authors report a substantial average degree of underpricing for their sample: the mean level of initial returns (calculated from the market price at the closing of the first day of trading) is 34.1% for the initial SIPs and 9.4% for seasoned offers. The statistics also indicate that underpricing has not decreased over the time period considered in the sample, and that utilities are sold at higher discounts than other types of SOEs.

For 150 initial issues for which they could obtain detailed information on allocation methods, the authors find that over 90% are oversubscribed or fully subscribed, with 20% of the offers more than ten times oversubscribed. They also report a general tendency to adopt preferential share allocation rules, which typically favor employees and small investors against foreign investors and foreign institutions.

The British privatization program deserves special comment. It was the first large scale, comprehensive divestiture of SOEs in the worldwide privatization wave discussed above. In fact, it was largely completed by the early 90s, when most countries had yet to embark in their own privatization efforts, and therefore in many respects the British privatization experience served as a case study to other countries interested in privatizing their SOEs. It remains the largest privatization program in Western Europe to date: as mentioned, the contribution to the GDP of the British public sector shrank from 11% in 1979 to 2.3% in 1993. By 1993, more than 42 state companies had been sold to the private sector, including all the large utilities. Aside from very few, small tender offers at the beginning of the program, all British sales were fixed-price SIPs, and after 1984 the government totally abandoned partial sales in favor of complete

divestiture. The average degree of underpricing for the U.K. privatization program is the highest among the Western European privatizations: Dewenter and Malatesta (1997) report an average one-day return of 18%, well above the reported 12% for British private IPOs. The Conservative Thatcher government structured the program to target small, non-institutional domestic investors, increasing the fraction of the U.K. population holding shares from 7% in 1979 to 24% in 1990 (Megginson et al, 1994). It did so through advertising campaigns, special incentives for small investors to buy and retain shares, and preferential share allocations. Advertising, incentive schemes and low prices, all contributed to making virtually every sale a great success: all fixed-price offers were oversubscribed. Finally, the revenues from the privatization program helped a great deal to eliminate the British public deficit. In fact, financial considerations contributed to the quick shift of government attention from selling small firms to selling larger companies, and to abandoning partial sales.

## **2. Privatization and Underpricing.**

Many authors present evidence of significant underpricing in privatization. Vickers and Yarrow (1988) report on the degree of underpricing in the U.K., Jenkinson and Mayer (1988) present similar evidence for the U.K. and France. Perotti and Guney (1993) document high initial returns for privatizations in Malaysia, Spain, Turkey, and Nigeria, as well as France and the U.K. Dewenter and Malatesta (1997) report on underpricing in the privatization programs of 8 countries, and Jones et al. (1999) present similar findings for their international sample of 630 SIPs

Additionally, the same evidence suggests that for many countries the average degree of underpricing in privatization sales is greater than in private IPOs.

There are several models that attempt to explain underpricing in IPOs. In these models, underpricing is typically the result of informational asymmetries between the issuer, the underwriter and/or the investors.

In Baron (1982), the issuer wants to maximize net sale proceeds, and offers a delegation contract to the underwriter, who sets the price and distributes the shares. Both issuer and underwriter are risk neutral. The issuer is less informed than the underwriter, in that it does not observe some demand parameter prior to contracting, and it cannot monitor the underwriter's distribution effort. In this setting, Baron shows that the optimal offer price is a decreasing function of the issuer's uncertainty about the capital market conditions.

Rock (1986) assumes that there are two groups of investors, and one group is better informed than both the other group and the issuer about the actual value of the company. Because the informed investors will buy shares only when the offer is not overpriced, the uninformed investors receive larger allocations in overpriced offers than they do in underpriced offers. To overcome this winner's curse, the offers have to be underpriced on average to attract a sufficient number of investors. More asymmetry of information about the value of the issue will require more underpricing.

Allen and Faulhaber (1987), Grinblatt and Hwang (1989), and Welch (1989), they all model underpricing in IPOs as a signal of the firm's value. In these models, the issuer knows the true value of the offer, while investors are uninformed. The high value firm optimally signals its type through underpricing in the initial sale, because this will allow to charge higher prices in subsequent offers. Here, underpricing occurs in partial sales.

Can the models of underpricing in IPOs explain underpricing in privatization? Although some of the informational asymmetries considered by the authors can transfer to the environment in which privatization programs take place, the models themselves fall short of capturing both the complexity of government's objectives and the political background of privatization. A model of underpricing in privatization would have to account for at least some of the stylized facts I presented in this chapter, and it would have to reflect the political nature of the privatization process.

In Chapter 2, I present a model of privatization that explains underpricing and diffusion of share ownership in a political framework.

I consider a dynamic game of complete information, in which a government first privatizes a company and then competes for votes against an opposition party. The government's objective is to choose the price of shares and the level of promotional effort to maximize its expected net revenues. Risk neutral voters decide how many shares to buy, if any. They have identical exogenous income, but are differentiated by their transaction costs.

After the sale of the company to the public, the two parties announce the expropriation rate they would implement if they win the upcoming election. High promotional effort and low share price generate diffusion of asset ownership, which in turn lowers the expropriation rate that the two parties will simultaneously announce in equilibrium in the political game. I show that it is optimal for the incumbent party to underprice the stock with respect to its true value. This is done to increase the size of the shareholders' interest group, which will favor the party announcing a lower expropriation rate in the second period; investors' anticipation of a low expropriation rate allows the government to sell the company at a higher price. Typically, the optimal policy is characterized by underpricing of shares, a positive level of promotional effort, and wide share ownership.

There is another paper that explains underpricing in privatization. Perotti (1995) analyses privatization in the context of a signaling game between the government and the investors.

He offers the following explanation of underpricing and gradual or complete sales observed in privatization programs. A government that decides to sell a firm to private investors can be of two types: a type committed to avoiding interference after the sale, or an uncommitted type, which cannot resist adopting ex-post policies that will reduce the value of the private stock. The government's type is private information.

Both types strive to maximize sale proceeds, and the type that intervenes also gains from interference. Since investors are willing to pay more if there is no interference, the committed type wants to signal its commitment, while the intervening type has an incentive to imitate the other type's strategy. In a two-period signaling model, the author shows that a separating equilibrium exists in which the committed government sells only a fraction of the firm in period one and completes the sale in period two, while the uncommitted type sells the entire stock in the first period. There is a crucial value of the fraction sold in period one at (and below) which the uncommitted government's payoff from interference would be larger than the gains from avoiding interference in the first period and obtaining a higher price in the seasoned offer.

For larger fractions sold in the first period, a separating equilibrium through partial sale only does not exist. In this case, the author shows that the committed government can combine underpricing with a partial sale offer to induce separation. Underpricing is a dissipative signal and it affects the two types' payoff in the same way. Therefore underpricing alone cannot generate separation. Also, an offer for sale must be chosen by the government to strategically manipulate the price of shares. If the government is a committed type, the model predicts that we should observe either tender offers with partial sales and no underpricing, or a fixed-price

offer with partial sales and underpricing. The optimal equilibrium strategy for an uncommitted type is always to sell all at once through tender.

The model I present in Chapter 2 differs in three fundamental ways from Perotti's model. First, my model does not require that political parties have hidden characteristics: all actors in the model have complete information about the two parties' objectives. In fact, the two parties are identical with respect to their preferences and the decisions that they make in this model, although one party has the advantage of incumbency. Second, the rate of expropriation is determined endogenously, in the context of the electoral competition, when each party chooses to announce the rate of future expropriation that maximizes its chances of winning the election and its future expected financial gains from expropriation. Third, the signaling model of privatization predicts underpricing only when there is a partial sale of the state-owned company, but this result cannot explain the historical evidence of complete sales at prices lower than the companies' true values. My model generates exactly this prediction.

### **3. Ownership, Performance, and the Budgetary Impact of Privatization.**

Public enterprises are companies owned, controlled and operated by the government. A state-owned enterprise (SOE) engages in the production of goods and/or services, which are then sold at a price in the product market. The government being the owner, it has the rights to the residual earnings of the company.

The most cited economic argument for creating a public enterprise, or for nationalizing

an existing private company, is the presence of market failures, such as externalities or the potential for substantial market power due to natural monopoly conditions. The market forces alone would not guarantee economic efficiency, and government intervention is needed, intervention which indeed might take the form of direct ownership and control of the economic activity.

In reality, in many countries public firms exist for a variety of reasons, from ideological to purely accidental. As a consequence, state-owned companies are present in all types of markets, in monopolistic as well as more competitive environments.

The recent wave of privatization programs around the world, involving the sale of SOEs to the private sector, finds its economic rationale in the perceived failure of public companies to reach their goal of economic efficiency. Public firms are accused of being internally inefficient (i.e. they do not minimize costs), and privatization is expected to lead to better performance. If the company operates in less than competitive, or monopolistic, markets, and consequently privatization alone could deteriorate allocative efficiency, then the privatized firm should, and typically will, be regulated. Privatization programs therefore imply the recognition that the type of ownership of productive assets does matter for economic efficiency, and, more specifically, that private ownership will improve the performance of the company.

Does ownership indeed matter? To answer this question, we need to turn to the economic theories of public and private enterprise and analyze the main conclusions that those theories reach concerning the behavior of the firm under the two ownership structures.

### 3.1. Ownership Structure and the Behavior of the Firm.

Two fundamental aspects characterizing modern firm's behavior are common to both public and private enterprises. First, typically there is separation of ownership from control: the owner of the company (whether the government or private shareholders) is not the one responsible for the firm's day-to-day operations, the manager is. Because of this, the owner is typically less informed than the manager on the firm's cost or demand conditions. Secondly, it is reasonable to assume that the owner cannot perfectly monitor the actions of the manager, and therefore the manager can pursue objectives that do not necessarily coincide with the owner's objectives. A standard assumption is to have the utility of the manager depend positively on income, and perhaps other nonpecuniary benefits, and negatively on effort.

Separation of ownership from control, coupled with imperfect information of the owners and imperfect monitoring of the manager's actions, give rise to the well-known agency problem. It becomes crucial for the principal (the owner) to set up proper incentives for the agent (the manager) in order to guarantee the realization of the owner's objective. The standard results are "second best" solutions because of the asymmetry of information, with the agent typically exerting a sub-optimal level of effort.

As said before, the principal-agent problem is an issue for both private and public organizations. What a different allocation of property rights causes, though, is a change in the objective of the owners.

According to the public interest theories, the government wants to maximize social welfare, defined as the weighted sum of consumers' and producers' surpluses<sup>3</sup>. Private

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<sup>3</sup> Of course, the government, and/or the bureaucrats who run the company, might not maximize social welfare. This possibility is discussed later.

shareholders, on the other hand, are expected to seek maximization of profit. As the main objective of the firm changes with a change in ownership, the available structure of managerial incentives and the set of constraints on the firm's conduct will change as well. These changes will undoubtedly affect the company performance, but the final impact on economic efficiency rests on the relative effectiveness of the incentive schemes and constraints under the two types of ownership, as well as on the degree of competition in the industry where the firm operates.

Let us assume for the moment that monitoring management is equally effective under private and public ownership, bringing therefore the same results in terms of internal efficiency. Also, assume that the objective of the government is to maximize social welfare. Then, if the company operates in a competitive environment, allocation of property rights should not matter<sup>4</sup>: under competitive market conditions, profit maximization is in line with welfare maximization.

Now, under the same assumptions, consider the case of a firm that operates a natural monopoly. In this case, one can argue that public ownership should be preferred to private ownership, because it provides the government with direct power of intervention to control allocative efficiency. In fact, under private ownership, there would be the need of instituting a regulatory body to guarantee prices close to marginal cost, and this would further complicate the principle-agent problem with the presence of two principals, the regulator and private shareholders.

The conclusions above rest on two crucial assumptions: equally effective monitoring systems in public and in private companies, and governments acting to maximize welfare. In what follows, I will summarize the standard arguments raised in the literature to question both of these assumptions.

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<sup>4</sup> I am not considering here possible externalities and/or transaction costs arguments.

**The Monitoring Problem**

Can the managers of a public enterprise be made to work as hard as the managers of a private firm? One of the most common criticisms of public ownership relates precisely with government ownership lacking some of the incentive mechanisms available under private ownership. This line of criticism can be traced back to the property right tradition (Alchian and Demsetz, 1972). The lack of transferable private property rights in the case of public ownership is said to undermine effective monitoring of management.

First, while private shareholders share a common objective, profit maximization, the "owners" of a public company do not necessarily agree on a common goal. In addition, the great dispersion of ownership among citizens in the case of a public firm leads to free riding on the other citizens' monitoring effort. Secondly, and possibly most importantly, private managers face the disciplining forces of the capital markets. Private shares are traded in the stock market, and, assuming that capital markets work efficiently, share prices will reflect investors expectations of the future profitability of the company, providing shareowners with additional information concerning the effectiveness of the firm management. The owners can then use this information when contracting with the managers, for example making the financial compensation dependent on the capital market performance of the company's stock. Furthermore, the information on company performance provided by the price of shares in the market bears consequences for the manager's reputation in the labor market, and therefore for his future potential earnings.

The threats of takeovers and bankruptcy represent additional disciplining devices. A private company that performs below expectations represents a profitable opportunity for

corporate riders, who will acquire the company and substitute the inefficient managers. Similarly, bankruptcy treats the manager's position.

Counter arguments are of course possible. Large private corporations have disperse share ownership, which brings back the free-rider argument in monitoring management. In many countries private companies are subsidized when unprofitable. Acquisitions might be a rare event. Nevertheless, there is general consensus that the absence of a market for corporate control does undermine the ability of the government to monitor managers of the public firm. Therefore, everything else equal, a public firm is expected to be relatively less efficient than its private counterpart. In particular, this argument supports the hypothesis that private ownership is superior to public ownership in competitive environments.

In a recent paper, Cragg and Dyck (1999) analyze the effectiveness of the market for corporate control. Their sample consists of data on management resignation and performance information for 112 British companies over the period 1970 to 1994. Over the period considered, the data set includes state-owned, privatized, and publicly traded firms. The authors report significant negative relationship between improvements in performance and probability of resignation for privatized firms with at least four years in the private sector. State-owned firms and privatized firms in their first four years do not show a significant relationship between changes in performance and probability of managers' resignation. They conclude that the market for corporate control appears to function in replacing managers of privatized companies, and that this is mainly due to increased managerial accountability.

**Government's Objectives and Regulation of Private Firms**

To reach unequivocal conclusions on company's relative efficiency under the two types of ownership becomes more difficult if one considers, among others, two possibilities. First, the government might not maximize social welfare. Secondly, government intervention in the company's life does not typically end with the privatization of the firm.

It is often noted that SOEs are inefficient because they pursue socio-political objectives, such as employment and regional development, and that the politicians influence the company's behavior so to maximize political support. If the SOE addresses the objectives of politicians rather than maximize efficiency, then privatization can improve performance, reducing the extent of political control.

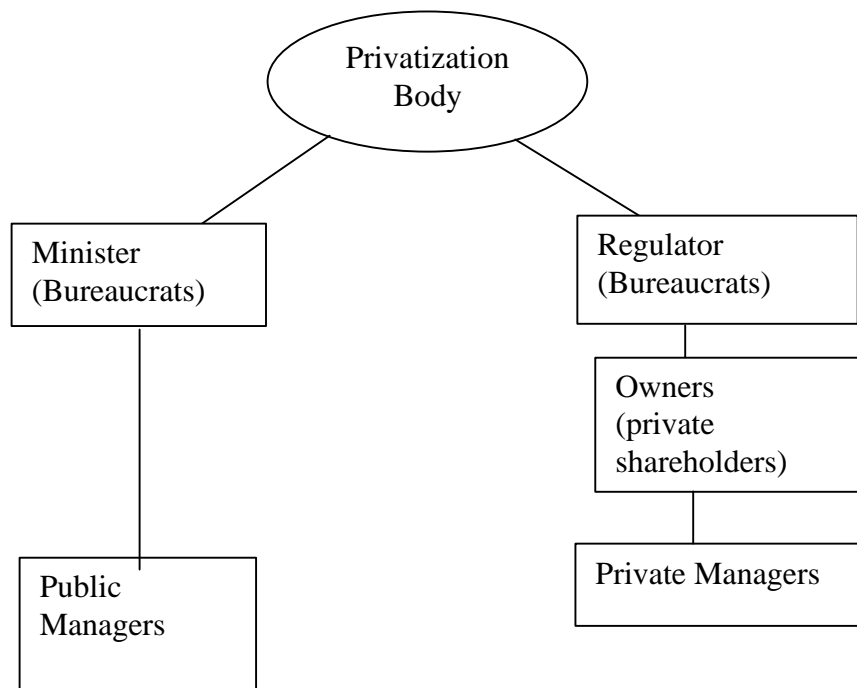
Boycko et al. (1996) show how privatization can work to reduce political control and increase efficiency. In their model, the working hypothesis is that an industrial minister, who controls the public enterprise, forces it to spend too much on labor, for political reasons. Therefore, by assumption the politician is causing the Treasury to forgo profits, and forces the firm to be inefficient, maintaining high level of employment. A "reformer", who represents the interests of the Treasury against those of the spending minister, privatizes the company, transferring control rights to the managers, and cash flow rights to both managers and outside shareholders.

Now the managers would choose the efficient level of employment and maximize profits. But political interference is still possible, because the minister can try to influence the managers' decision through the use of subsidies from the Treasury to the firm. A strategy of soft budget constraints can induce even the privatized firm to avoid restructuring.

The key difference between the two types of political influence is the cost of interference for the politician. The authors argue that it is politically less costly for the minister to "channel" the profits of the public company into high employment, without remitting them to the Treasury, than to subsidize the privatized firm. Politically, it is easier to disguise the first strategy, than it is to spend public money to subsidize a company that will not restructure. It is this difference in costs of political interference that drives the results of the model. Because it is associated with higher political costs, privatization will work, and the firm will restructure.

Let us now consider the fact that government intervention in the company's life does not necessarily end with privatization. Typically, the government intervenes to regulate privatized firms when they are likely to enjoy a substantial degree of monopoly power. This further complicates the agency relationships (and therefore the informational barriers) governing company performance, because of the presence of two principals, the shareholders and the regulator. While many papers have analyzed how regulation affects the behavior of a private firm, relatively few works so far have explored the consequences of a change in ownership (privatization) associated with the introduction of regulation.

Shapiro and Willig (1990) provide a very general framework for comparing models of public enterprise behavior versus regulated private enterprise behavior. Variations on this framework are presented in Laffont and Tirole (1991) and in Pint (1991). The fundamentals of the alternative institutional frameworks are represented in the figure below.



Source: Shapiro and Willig (1990) and Bös (1991)

Shapiro and Willig assume the presence of a welfare maximizing institution (the framer) which decides between a public and a privatized regulated firm. In their model, no informational barrier exists between ministers and public managers, and between shareholders and private managers respectively, and they concentrate on the effects of asymmetric information between the privatization body and the minister/manager, the privatization body, the regulator and the shareholders/managers respectively. Privatization introduces an additional informational barrier, because while the minister/manager of the public firm is perfectly informed on cost/demand conditions, the regulator of the private firm is not. Another important assumption in their framework concerns the objective of the minister and regulator respectively. Their

objective function is a weighted average of social welfare and a personal, private agenda. Higher weight attached to the private agenda indicates a more ill functioning political system.

The papers by Laffont and Tirole and Pint represent some variation on the above general structure of principal-agent relationships.

I will focus here on the basic conclusions obtained by the authors. Possibly the most important conclusion is that there are no general conditions under which privatization ought to be preferred to public ownership, the answer depending on many parameter values in each particular case.

In both Shapiro and Willig, and Laffont and Tirole, privatization reduces managerial effort, mainly because the privatized firm suffers from the presence of two principals. In setting up the optimal regulatory regime, the regulator has to allow an information rent to the shareholders, as well as to the managers<sup>5</sup>. The presence of the shareholders makes it more costly to extract managerial effort than in the public firm, and the regulator settles for lower effort level.

On the other hand, Shapiro and Willig show that privatization can reduce the possibility of the bureaucrats to pursue their own private agenda, while Laffont and Tirole show that privatization can increase investment, when investment is sunk, and it can yield benefits to either insiders (managers) or outsiders (the government). In this case, because privatization alters the allocation of residual property rights, it reduces the possibility of the government to ex-post expropriate the investment.

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<sup>5</sup> In Shapiro and Willig, a similar argument holds for the framer, who has to allow extra rents to the regulator in case of private ownership.

Which form of ownership should be preferred will therefore depend on the tradeoff between effects on managerial effort and on private agenda in one model, and between effects on managerial effort and on investment decision in the other model.

Finally, Pint's main predictions are that the state-owned firm will employ relatively more labor, and the regulated firm relatively more capital<sup>6</sup>, than what would be optimal. The public firm will also produce more output than the private firm will. Because of the government's bias toward more output and more labor, the managers in a public company could earn more relative to their private counterparts.

In all cases, the asymmetries of information typically generate rent extraction on the firm's part, with consequent deviation from the first-best outcomes in terms of allocative efficiency. The optimal compromise involves lower output and higher prices than one would observe in a world of perfect information.

The agency theory approach to the analysis of the effect of ownership on performance suggests that a comparison of overall efficiency outcomes between public and private ownership is not straightforward when the privatized firm is also regulated.

To summarize, before turning the attention to the empirical evidence on ownership: allocation of residual property rights cannot be considered in isolation from a variety of other factors that affect economic performance of the firm. Those factors will include the degree of competition in product markets, the effectiveness of monitoring designs, the political environment in which the firm operates, and the presence of regulation, among others. When markets are competitive and in the absence of regulation, it should be more likely to observe

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<sup>6</sup> Since she assumes rate of return regulation, the overcapitalization result is not surprising.

higher economic efficiency under private ownership, mainly determined by improved monitoring of managerial activity and reduction of political interference. In non-competitive, regulated environments, theory alone does not seem to provide clear-cut answers to the question of how ownership affects performance. In fact, in the ongoing debate on the economic implications of privatization policies, several authors assert that competition, deregulation, and managerial accountability might be more important than privatization in improving the economic efficiency of the firm [Yarrow (1986), Kay and Thompson (1986), Bishop and Kay (1989, 1990), Vickers and Yarrow (1988, 1991), Button and Weyman-Jones (1994)].

### **3. 2. The Empirical Evidence.**

Prior to the privatization wave of the 80s and 90s, most empirical studies on the effect of ownership on performance relied on cross-sectional comparisons of SOEs and private companies, and attempted to prove or refute the idea that in competitive environments ownership does matter. Because public enterprises often operate in less than competitive environments, these studies face a common problem, in that the validity of the results crucially depends on controlling for companies' differences in market structure, in regulatory regime, and in degree of competition in both product and input markets.

As pointed out by Vining and Boardman (1992), rarely these old studies properly controlled for such factors. As a consequence, the empirical findings have been quite literally all over the board. Further, different choices of performance indicators have made comparison of the results obtained by this literature rather difficult.

Both Boardman and Vining (1989) and Vining and Boardman (1992) survey the empirical literature of the 70s and early 80s, and they summarize the results in tables, which highlight the main conclusions of these studies (whether the results favor private or public ownership, or if they show no difference or ambiguous results). The works are grouped by sectors. Although many studies find that private companies are more efficient, there is a good number of them that concludes that either ownership does not matter, or that public companies exhibit superior performance. For example, a large body of literature compares private and public performance in the US electricity and water industries, and the results vary greatly. These industries are highly regulated, and the companies often are local monopolies, but many papers fail to control for these factors.

Because the focus of this survey wants to be on the effect of privatization on performance, I will report only on two of the old studies, which have been among the most influential.

Caves and Christensen (1980) compare the productivity performance of two rival Canadian railroad companies, the state-owned Canadian National and the private Canadian Pacific, over the period 1956-1975. The two large companies operate in the same market, they are of similar size, and both face strong competition from other mode of transportation (highway and water transport) in the period considered. And, according to the authors, both firms were not specially constrained by regulation in the period considered. They use total factor productivity (real output per unit of real inputs) as a measure of technical efficiency. Their results show no evidence of Canadian National being less efficient than Canadian Pacific. Their findings contradict the predictions of the property rights literature, and the authors conclude that effective competition in the market place, and not ownership, is what really matters for efficiency.

On the other hand, Boardman and Vining (1989) reach very different conclusions. They compare performance of private, mixed and public large corporations outside United States, using a sample of 409 companies from a list of 500 compiled by Fortune magazine in 1983. In order to test the property right hypothesis, they estimate the effect of the three forms of ownership on performance, while controlling for size, industrial sector, market share, concentration, and country. They use various measures of performance, profitability measures (such as return on equity and return on assets), as well as indicators of internal efficiency (sales per employee and sales per asset). They find that SOEs and mixed enterprises are less profitable and less efficient than the private companies in the sample, with mixed enterprises performing either similarly or worse than public firms. The authors' conclusion is that "there are performance differences between private and public companies in competitive environments"<sup>7</sup>.

More recent academic works on the effect of ownership on performance analyze the economic consequences of privatization. Some papers examine the impact of privatization in a single industry, a single country, or for one or a small number of individual firms. Many studies in this group focus on privatization in United Kingdom. Other studies use larger (international) samples of firms that have been privatized through share offerings only. I will first present findings from the single industry/country/firm studies.

Bishop and Kay (1989, 1990) analyze the effect of privatization on companies' performance in the United Kingdom. For the period 1979-1988, they compare financial and technical measures for a group of privatized companies (those being sold sometime during the period considered) with the same indicators for companies still in the public sector in 1988 (coal,

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<sup>7</sup> Vining and Boardman (1992) analyze in the same fashion a Canadian sample of the 500 largest non-financial

rail, steel, energy supply, and postal service). In particular, they compare information on revenues, growth of output, profits, profit margins, employment, and total factor productivity for the two groups. The results show improvement in performance over time for most of the industries considered, but, as the authors point out, for the most part there is no obvious relationship with privatization. Productivity growth for firms in the "public" group, for example, matches that of some privatized companies, while, on the other hand, the worst performer in terms of total factor productivity is the privatized company British Telecom. Companies that grew fast after privatization were fast growers before privatization, while some other privatized companies grew little both before and after the sale. Similarly for profitability measures, companies with increasing profits after privatization, were more and more profitable before privatization as well. And profits grew for the state-owned companies as well. As far as the employment measure is concerned, reductions in employment are shown for both groups, yet the largest decreases took place in the companies still in public hands. The authors suggest that the evidence leaves open a question of causality between British privatization and improvement in performance.

Martin and Parker (1995) compare the performance of 11 British firms privatized between 1981 and 1988, using rate of return on capital employed and growth in value-added per employee-hour. After controlling for business cycle effects, they obtain mixed results. Although several firms improved their performance before being privatized, they did not necessarily improve after privatization. Overall, less than half of the firms in their sample show clear improvements after privatization.

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corporations. The results are similar to those they obtained from the international sample.

Eckel, Eckel, and Singal (1997) analyze the effect of the privatization of British Airways in 1987 on U.S. competitors' stock prices, and test whether fares on competitive routes declined after privatization. They find that stock prices of competitors declined a significant 7% after the announcement of the sale, suggesting that rivals expected a more competitive and more efficient British Airways. Airfares in the international markets served by BA also dropped by 14.3% around the time of the privatization, and costs of operation declined as well. They also found that the compensation for managers of the privatized company increased significantly, and it became more contingent on performance.

LaPorta and López-de-Silanes (1999) examine 218 Mexican SOEs privatized prior to July 1992, comparing performance with industry-matched private firms. They find that the output of former SOEs increased dramatically, while employment decreased by half. Profitability increased by 24%. They determine that most of the performance improvement can be attributed to productivity gains (64%), while lower employment costs explain one third of the changes in performance.

Finally, in a detailed study sponsored by the World Bank, Galal et al (1994) analyze the welfare effects of the privatization of 12 firms (mostly airlines and regulated utilities) in 4 countries (Britain, Chile, Malaysia and Mexico). They compare actual post-privatization performance to predicted performance of the firms had they not been privatized. The authors construct careful estimates of the effect that each privatization program had on the welfare of consumers, producers, workers, and shareholders. They document net welfare gains in 11 of the 12 cases. Although they conclude that privatization led to an increase in overall welfare, they also suggest that more competition and better regulation would have generated a better outcome for most interest groups.

In general, the studies in this group support the idea that privatization improves performance, with the notable exceptions of the two studies by Bishop and Kay and Martin and Parker, both of which analyze multi-firm samples from the United Kingdom.

The last three empirical studies of privatization I present below share common characteristics. All of them use large, international samples of privatized companies, and in this respect they constitute a more comprehensive analysis of the recent worldwide privatization phenomenon. The authors adopt the same empirical methodology, first introduced by Megginson et al. (1994). The approach consists in comparing, for each company in the sample, the 3-year mean and median values of various performance measures post-privatization to the mean and median values that the same performance measures exhibit in the three years before privatization. All the three studies examine only share-issue privatizations (SIPs), with the only exception of few direct sales included in the analysis of Boubakri and Cosset (1999). Testing for the significance of median changes in the performance measures, the authors reach remarkably similar conclusions in support of privatization.

Megginson, Nash, and Randenborgh (1994) analyze data for 61 companies from 18 countries and 32 industries that were fully or partially privatized during the period 1961-1990. Their findings indicate that privatization was on average associated with increased profitability (measured by return on sales, return on assets, return on equity), higher dividend payments, more capital investment, increased output (real sales), and significant decreases in leverage (debt to assets). They do not document significant decline in employment. Boubakri and Cosset (1999) reach virtually the same conclusions for a sample of 79 companies privatized during the period 1980-1992 in 21 developing countries. D'Souza and Megginson (1999) reproduce the results

with a sample of 85 companies from 28 countries that were privatized sometime between 1990 and 1996. In this study, they document decrease in employment following privatization.

Few drawbacks of these large studies that can affect the significance of their results should be pointed out. One drawback relates to the data collection method. To construct their samples, the authors first identified a large number of candidate firms, and requested from each firm financial statements and information on the sales. They then constructed the final samples including only the firms that provided sufficient information, possibly supplemented through other sources, such as financial publications and databases. The final samples might therefore suffer from selection bias, if mostly successful, large, established firms provided the requested information. Another obvious drawback of multinational samples of this size is that it is hard to control for country, industry, market's specific conditions, and for differences in regulatory environments across countries. Additionally, the authors did not control for macroeconomic or industry-specific events that might have occurred over the 7-year period. Finally, the samples of Boubakri and Cosset and of Megginson et al., both did include primary offers. A primary offer refers to the issuing of new shares, when therefore new capital flows directly to the company, rather than the government simply selling its stake (secondary offers). Fresh capital injections for some companies in the sample would distort comparisons of financial performance measures.

### **3.3. The Effect of Privatization on the Public Finances.**

Despite the fact that share issues are often underpriced, one of the objectives that governments do reach through their privatization programs is undoubtedly to raise revenues. The short-term impact of privatization on public finances is rather clear (see for example Vickers

and Yarrow, 1988). In the year of the sale, on the one hand the government collects sale proceeds (net of the costs paid to organize the transaction), and perhaps avoids other capital expenses previously sustained to finance the public firm. On the other hand, it forgoes the annual company's gross profits. Although the cash inflow will depend on the size of both forgone profits and investment expenditure, relative to the size of the net sale proceeds, the outcome in the short run is typically an increase in liquidity for the public sector<sup>8</sup>.

The important question though is what the financial impact of the sale will be in the long term. The answer to this question crucially depends on the future financial performance of the privatized firm, on the price of shares, and on the transaction costs incurred by the government in the privatization process. In selling the company to the private sector, the government is forgoing the future stream of company's profits. If the company is equally profitable before and after privatization, and if the issue is priced so to reflect the future value of the company, then the net worth of the government will decrease by the amount of the transaction costs.

As discussed in this chapter, underpricing is a rather common phenomenon in privatization. Often, the implicit cost of underpricing will have to be added to the equation. Many studies also document improvements in financial performance after privatization. If the privatized company is more profitable than what it would have been had it remained state-owned, then the present discounted value of this change in profits will have to be set against both the underpricing cost and the transaction costs, to correctly evaluate the long term impact of the privatization policy on the public finances. In other words, only an improvement in performance which generates a discounted value in the year of the sale at least as large as the sum of

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<sup>8</sup> This is not the case for economies in transition, where the assets being privatized are often of little value and voucher schemes are used.

underpricing and transaction costs will be sufficient to avoid a reduction in the government's net worth.

In Chapter 3, I present a study on the long-term impact of privatization on the finances of the British public sector. The study formalizes the line of reasoning just described, and empirically determines the extent of the change in the government's net worth, using annual profit data for a sample of 42 companies that were privatized in the years 1979 to 1994, and detailed information on underpricing and transaction costs for each sale.

The regression analysis determines that privatization did not have a significant impact on average company's profitability, and similar results hold for the two sub-samples of regulated and unregulated firms. This result combines with the estimated large share discounts and high transaction costs to determine how much of a bad deal privatization was for the British government in the long run.

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