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From State to Market: A Survey of Empirical Studies on Privatization

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1. *Introduction*

THE POLITICAL AND economic policy of privatization, broadly defined as the deliberate sale by a government of state-owned enterprises (SOEs) or assets to private economic agents, is now in use worldwide. Since its introduction by Britain's Thatcher government in the early 1980s to a then-skeptical public (that included many economists), privatization now appears to be accepted as a legitimate—often a core—tool of statecraft by governments of more than 100 countries. Privatization is one of the most important elements of the continuing global phenomenon of the increasing use of markets to allocate resources.

It is tempting to point to the spread of privatization programs around the world during the past two decades and conclude that the debate on the economic and political merits of government versus private ownership has been decided. But such a conclusion is flawed, since 25 years ago proponents of state ownership could just as easily have surveyed the postwar rise of state-owned enterprises and concluded that their model of economic organization was winning the intellectual battle with free-market capitalism. Instead of pointing to the spread of privatization and calling it destiny, our goal is to assess the findings of empirical research on the effects of privatization as a policy. Therefore, this paper surveys the rapidly growing literature on privatization,

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attempts to frame and answer the key questions this stream of research has addressed, and then describes some of its lessons on the promise and perils of selling state-owned assets. Throughout this survey, we adopt the perspective of an advisor to a government policymaker who is wrestling with the practical problems of whether and how to implement a privatization program. The policymaker asks "What does the research literature have to tell us about these aspects of privatization as an economic policy?" We attempt to answer these important questions.

This paper is organized as follows. Section 2 provides a brief historical overview of privatization. We examine the impact that privatization programs have had in reversing SOE involvement in the economic life of developed and developing countries. Section 3 briefly surveys the recent theoretical and empirical research on the relative economic performance of state-owned and privately owned firms. Section 4 details the different types of transactions that are labeled "privatization" in different regions. We draw particular attention to the structure and pricing selected for share issue privatizations. We also evaluate the various forms of "voucher" or "mass" privatizations that have been implemented. This section also examines whether less radical methods of improving the performance of SOEs, such as deregulation and allowing greater competition (or more routine steps such as using management performance contracts), can effectively substitute for outright privatization. In section 5, we examine the issue of whether, and by how much, privatization programs have actually improved the economic and financial performance of divested firms. Our discussion first evaluates privatization in industrialized and developing countries, and then assesses privatization's overall impact in the transition economies. Section 6 asks whether domestic and international investors who purchase privatizing share offerings experience positive initial and long-term investment returns, and section 7 evaluates the impact of privatization on the development of non-U.S. capital markets over the past two decades. Finally, section 8 discusses how privatization programs have impacted the development of—and interest in—corporate governance practices around the world. Section 9 concludes and summarizes our survey.

2. *How Large Has Privatization's Impact Been to Date?*

Given the attention the press has given to the global movement toward markets, especially the privatization of state-owned enterprises, some might conclude that privatization has almost ended the involvement of state-owned enterprises in global economic activity.[2] This is a significant overstatement. To understand the impact of privatization on the state's role in different economies, we must first briefly review the history behind both privatization and its precursor, nationalization.

Throughout history, there has been a mixture of public (often including religious institutions) and private ownership of the means of production and commerce. Robert Sobel (1999) writes that state ownership of the means of production, including mills and metal working, was common in the ancient Near East, while private ownership was more common in trading and money lending. In

[2] Throughout this paper, we will use the World Bank's definition of state-owned enterprises, as described in World Bank (1995): "government-owned or government-controlled economic entities that generate the bulk of their revenues from selling goods and services."

ancient Greece, the government owned the land, forests, and mines, but contracted out the work to individuals and firms. In the Ch'in dynasty of China, the government had monopolies on salt and iron. Sobel notes that in the Roman Republic the "*publicani* (private individuals and companies) fulfilled virtually all of the state's economic requirements." Dennis Rondinelli and Max Iacono (1996) note that by the time of the Industrial Revolution in the western industrialized societies and their colonies, the private sector was the most important producer of commercial goods and was also important in providing public goods and services. This pattern, with more government involvement in some countries and less in others, continued into the twentieth century in western Europe and its colonies and former colonies. In the United States, there was less government involvement than in many other countries.

The Depression, World War II, and the final breakup of colonial empires pushed government into a more active role, including ownership of production and provision of all types of goods and services, in much of the world. In western Europe, governments debated how deeply involved the national government should be in regulating the national economy and which industrial sectors should be reserved exclusively for state ownership. Until Margaret Thatcher's conservative government came to power in Great Britain in 1979, the answer to this debate in the United Kingdom and elsewhere was that the government should at least own the telecommunications and postal services, electric and gas utilities, and most forms of non-road transportation (especially airlines and railroads). Many politicians also believed the state should control certain "strategic" manufacturing industries, such as steel and defense production. In many countries, state-owned banks were also given either monopoly or protected positions, as discussed in Rafael La Porta, Florencio López-de-Silanes, and Andrei Shleifer (2000a).

Rondinelli and Iacono (1996) argue that government ownership grew in the developing world for slightly different reasons, primarily that government ownership was perceived as necessary to promote growth. In the post-colonial countries of Asia, Africa, and Latin America, governments sought rapid growth through heavy investment in physical facilities. Another reason for government ownership, often through nationalization, was a historical resentment of the foreigners who had owned many of the largest firms in these countries (see also Roger Noll 2000).

Thus there had been tremendous growth in the use of SOEs throughout much of the world, especially after World War II, which in turn led to privatizations several decades later.[3] Most people associate modern privatization programs with Thatcher's government. However, the Adenauer government in the Federal Republic of Germany launched the first large-scale, ideologically motivated "denationalization" program of the postwar era. In 1961, the German government sold a majority stake in Volkswagen in a public share offering heavily weighted in favor of small investors.[4] Four years later, the

[3] The historical overview of postwar privatizations is based on a longer historical discussion in Megginson, Robert Nash, and Matthias van Randenborgh (1994). Other discussions of the historical evolution of privatization include Timothy Jenkinson and Colin Mayer (1988), Shirley and John Nellis (1991), World Bank (1995), Josef Brada (1996), Paul Bennell (1997), and Daniel Yergin and Joseph Stanislaw (1998).

[4] Using a broader definition of privatization—one that encompassed reactively changing the policies of an immediate predecessor government—the Churchill government's denationalization of

government launched an even larger offering for shares in VEBA. Both offerings were initially received favorably, but the appeal of share ownership did not survive the first cyclical downturn in stock prices, and the government was forced to bail out many small shareholders. It was almost twenty years before another major western nation chose to pursue privatization as a core economic or political policy.[5]

Although the Thatcher government may not have been the first to launch a large privatization program, it is without question the most important historically. Privatization was not a major campaign theme for the Tories in 1979, but the new conservative government embraced the policy. Thatcher adopted the label "privatization," which was originally coined by Peter Drucker and which replaced the term "denationalization" (Yergin and Stanislaw 1998, p. 114). Early sales were strenuously attacked by the Labour opposition, which promised that if it were reelected it would renationalize divested firms such as British Aerospace and Cable and Wireless.[6]

It was not until the successful British Telecom initial public offering in November 1984 that privatization became established as a basic economic policy in the United Kingdom. A series of increasingly massive share issue privatizations (SIPs) during the last half of the 1980s and the early 1990s reduced the role of SOEs in the British economy to essentially nothing after the Tories left office in 1997, from more than 10 percent of GDP eighteen years earlier.

We note that the objectives set for the British privatization program by the Conservatives were virtually the same as those listed by the Adenauer government twenty years before—and almost every government since. These goals, as described in Price Waterhouse (1989a,b), are to (1) raise revenue for the state, (2) promote economic efficiency, (3) reduce government interference in the economy, (4) promote wider share ownership, (5) provide the opportunity to introduce competition, and (6) subject SOEs to market discipline. The other major objective mentioned by the Thatcher and subsequent governments was to develop the national capital market.[7] We note these goals can be conflicting and we discuss the trade-offs further in the paper.

The perceived success of the British privatization program helped persuade many other industrialized countries to begin divesting SOEs through public share offerings. Jacques Chirac's government, which came to power in France in 1986, privatized 22 companies (worth $12 billion) before being ousted in 1988. The returning socialist government did not execute any further sales, but neither did it renationalize the divested firms. Beginning in 1993,

the British steel industry during the early 1950s could well be labeled the first "privatization." We thank David Parker for pointing this out to us.

[5] Pan Yotopoulos (1989) describes and assesses the Chilean programs, which began before the program in the U.K. The Pinochet government of Chile, which gained power after the ouster of Salvador Allende in 1973, attempted to privatize companies that the Allende government had nationalized. However, the process was poorly executed and required very little equity investment from purchasers of assets being divested. Thus, many of these same firms were renationalized once Chile entered its debt and payments crisis in the early 1980s. Chile's second privatization program, which was launched in the mid-1980s and relied more on public share offerings than direct asset sales (in which the government often acted as creditor as well as seller) was much more successful.

[6] Ironically, a labor government partially privatized an SOE just before Thatcher came to power. In 1977, the Labour government sold a relatively small fraction of the government's shares in British Petroleum as a means of raising cash.

[7] Kojo Menyah, Krishna Paudyal, and Charles Inganyete (1995) and Menyah and Paudyal (1996) have more detailed discussions of the goals of the British privatization program.

the Balladur government launched a new and even larger French privatization program, which has continued under the Jospin administration. The Socialists, in fact, launched the two largest French privatizations ever, the $7.1 billion France Telecom initial public offering (IPO) in October 1997 and the subsequent $10.5 billion seasoned France Telecom issue in November 1998.

Several other European governments, including those of Italy, Germany, and, most spectacularly, Spain, also launched large privatization programs during the 1990s. These programs typically relied on public share offerings, and were often launched by avowedly socialist governments. Privatization spread to the Pacific Rim, beginning in the late 1980s. Japan has sold only a relative handful of SOEs during the past fifteen years (usually relying on SIPs), but many of these have been truly enormous. The three Nippon Telegraph and Telephone share offerings executed between February 1987 and October 1988 raised almost $80 billion, and the $40 billion NTT offer in November 1987 remains the largest single security offering in history. Elsewhere in Asia, governments have taken an opportunistic approach to SOE divestment, selling pieces of large companies when market conditions are attractive, or when money is needed to plug budget deficits. It is unclear how the economic difficulties that gripped the region during the late 1990s will impact privatizations in the future.

Two Asian countries deserve special attention. These two countries are already the world's second and fifth largest economies on a purchasing-power-parity basis, and promise to become even more important over time. The People's Republic of China launched a major economic reform and liberalization program in the late-1970s that has transformed the productivity of the Chinese economy. While there have been numerous small privatizations, there have been relatively few outright sales of SOEs, thus the overall impact of privatization has been limited. Though the government recently (1999) reaffirmed its commitment to privatizing all but the very largest state enterprises, the fact that Chinese SOEs are burdened with so many social welfare responsibilities suggests that it will be extraordinarily difficult to implement a privatization program large enough to seriously undermine the state's economic role (Cyril Lin 2000 ; Justin Lin, Fang Cai, and Zhou Li 1998; and Chong-en Bai, David Li, and Yijaiang Wang 1997). The other special Asian case is India, which adopted a major economic reform and liberalization program in 1991, after being wedded to state-directed economic development for the first 44 years of its independence. India's reform program shares two key features with China's: it was adopted in response to highly disappointing SOE performance (Sumit Majumdar 1996), and privatization has thus far not figured prominently in the reform agenda.

On the other hand, Latin America has truly embraced privatization. Chile's program is particularly important, both because it was Latin America's first and because the 1990 Telefonos de Chile privatization, which used a large American depository receipt (ADR) share tranche targeted toward U.S. investors, opened the first important pathway for developing countries to directly tap western capital markets.

Mexico's program was both vast in scope and remarkably successful at reducing the state's role in what had been an interventionist economy. La Porta and López-de-Silanes (1999) report that in 1982, Mexican SOEs produced 14 percent of GDP, received net transfers and subsidies equal to 12.7 percent of

GDP, and accounted for 38 percent of fixed capital investment. By June 1992, the government had privatized 361 of its roughly 1,200 SOEs, and the need for subsidies had been virtually eliminated.

Several other countries in Latin America have also executed large divestment programs (Pablo Gottret 1999). For example, Bolivia's innovative "capitalization" scheme has been widely acclaimed. However, the most important program in the region is Brazil's. Given the size of Brazil's economy and its privatization program, and the fact that the Cardoso government was able to sell several very large SOEs (CVRD in 1997 and Telebras in 1998) in spite of significant political opposition, this country's program is likely to remain very influential.

Privatization in sub-Saharan Africa has been something of a stealth economic policy. Few governments have openly adopted an explicit SOE divestment strategy, but Bennell (1997) shows that there has been substantially more privatization in the region than is commonly believed. For example, Steven Jones, Megginson, Robert Nash and Netter (1999) show that Nigeria has been one of the most frequent sellers of SOEs, using public share offerings, although they were very small. The experience of the African National Congress after it came to power in South Africa also shows the policy realities that governments with interventionist instincts face in this new era. Though nationalization and redistribution of wealth have been central planks of ANC ideology for decades, the Mandela and Mbeki governments have almost totally refrained from nationalization and have even sold off several SOEs (though use of the word "privatization" remains taboo).

The last major region to adopt privatization programs comprises the former Soviet-bloc countries of central and eastern Europe. These countries began privatizing SOEs as part of a broader effort to transform themselves from command to market economies. Therefore, they faced the most difficult challenges and had the most restricted set of policy choices. After the collapse of communism in 1989–91, all of the newly elected governments of the region were under pressure to create something resembling a market economy as quickly as possible. However, political considerations essentially required these governments to significantly limit foreign purchases of divested assets.

Since the region had little financial savings, these twin imperatives compelled many—though not all—governments throughout the region to launch "mass privatization" programs. These programs generally involved distributing vouchers to the population, which citizens could then use to bid for shares in companies being privatized. The programs resulted in a massive reduction of state ownership and were initially popular politically, but became unpopular in many countries (especially Russia) because of the largely correct perception that they were robbery by the old elite and the new oligarchs. The net effects have been disappointing in some cases, but have varied widely. We discuss the empirical evidence on voucher privatization in section 5.

Although different regions have embraced privatization at varying speeds, governments have found the lure of revenue from sales of SOEs to be attractive—which is one reason the policy has spread so rapidly. According to *Privatisation International* (Henry Gibbon 1998, 2000), the cumulative value of proceeds raised by privatizing governments exceeded $1 trillion sometime during the second half of 1999. As an added benefit, this revenue has come to governments without raising taxes or

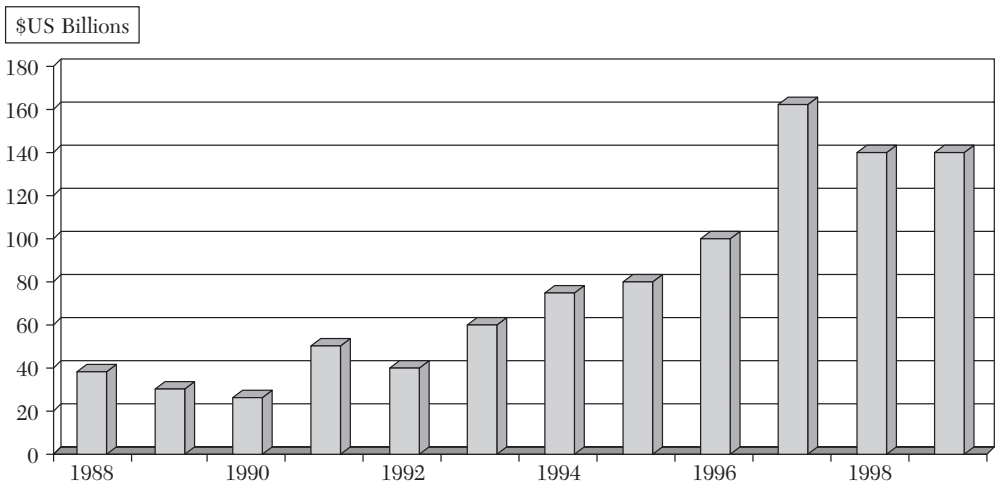

Figure 1. Annual Privatization Revenues for Divesting Governments, 1988–99

Source: Privatisation International.

cutting other government services. Annual proceeds grew steadily before peaking at over $160 billion in 1997. Since then, proceeds seem to have leveled off at an annual rate of about $140 billion. Figure 1 shows the annual revenues governments have received from privatizations from 1988 through 1999. Ladan Mahboobi (2000) reports similar figures classified by privatizations in OECD and non-OECD countries. He reports that since 1990 privatization in OECD countries has raised over $600 billion, approximately two-thirds of global privatization activity. Western Europe has accounted for over half of these proceeds. Finally, Jeffry Davis, Rolando Ossowski, Thomas Richardson, and Steven Barnett (2000) report for a sample of transition and non-transition countries that privatization proceeds were an average of one and three-quarters percent of GDP.

The historical discussion suggests that state ownership has been substantially reduced since 1979, and in most countries this has in fact occurred. Using data from Eytan Sheshinski and Luis Felipe López-Calva (1999), figure 2 demonstrates the role of state-owned enterprises in the economies of high-income (industrialized) countries has declined significantly, from about 8.5 percent of GDP in 1984 to less than 6 percent in 1991. Data presented in James Schmitz (1996), Mahboobi (2000), and Bernado Bortolotti, Marcella Fantini, and Domenico Siniscalco (1999a), as well as our own empirical work on share issue privatizations suggests that the SOE share of industrialized-country GDP has continued to decline since 1991, and is now probably below 5 percent.

The low-income countries show an even more dramatic reduction in state ownership. From a high point of almost 16 percent of GDP, the average SOE share of national output dropped to barely 7 percent in 1995, and has probably dropped to about 5 percent since then. The middle-income countries also experienced significant reductions in state ownership during the 1990s. Since the upper- and lower-middle-income groups include the transition economies of central and eastern Europe, this decline was expected, given the extremely

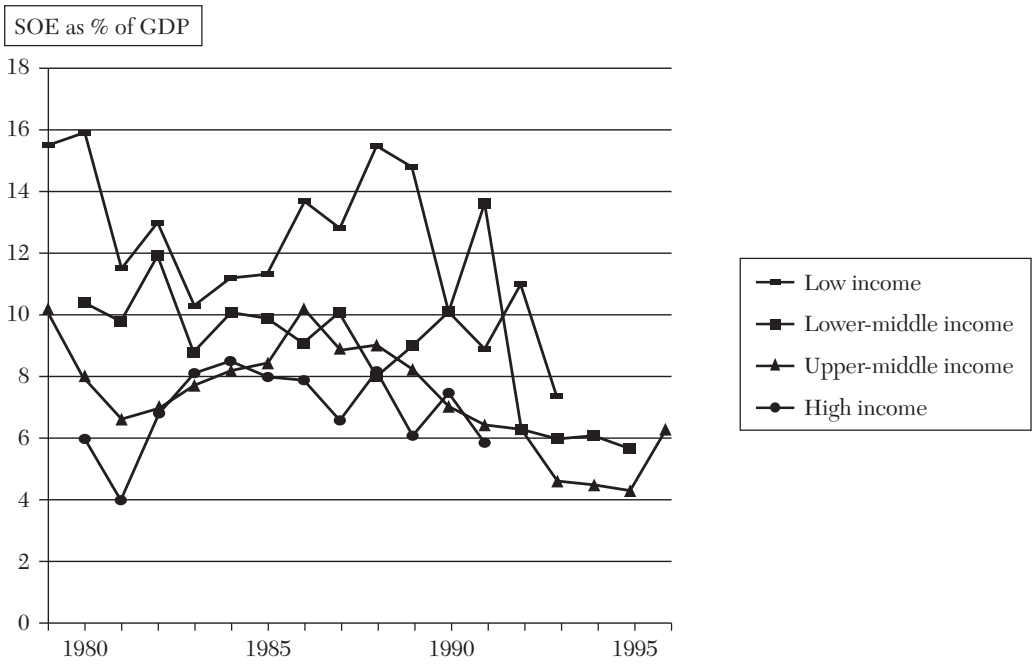

Figure 2. SOE Share of GDP by State of National Development, 1979–96

Source: World Bank, as reported in Sheshinski and López-Calva (1999).

high beginning levels of state ownership. For example, Nemat Shafik (1995) reports that the Czechoslovakian government owned 98 percent of all property in 1989.

3. *Why Have Governments Embraced Privatization?*

3.1 *Efficiency of State vs Private Ownership: Theory*

Throughout history, scholars, including economists, have debated the role of government in the economy.[8] Among economists, this debate now spans many areas, including welfare economics, public choice, public finance, industrial organization, law and economics, corporate finance, and macroeconomics. In this section, we summarize some of the important theoretical issues that arise in the study of privatization and that are needed to analyze the empirical evidence we review in the rest of the paper. We concentrate on empirical evidence because, as Jean-Jacques Laffont and Jean Tirole (1993) say after presenting their model analyzing trade-offs between government and private ownership in promoting efficiency, "theory alone is thus unlikely to be conclusive in this respect." There are also several excellent articles that discuss the theory of privatization and review the literature, including Anthony Boardman and Aidan Vining (1989), John Vickers

[8] For example, Friedrich von Hayek's (1994) passionate critiques of the welfare state and collectivism, exemplified in the 1944 book *The Road to Serfdom,* had a direct impact on policymakers in developing a motive for privatization. Yergin and Stanislaw (1998, pp. 98–107) discuss how Hayek's work was the intellectual basis for Keith Joseph and then Thatcher and the Tory politicians who began the intellectual campaign against statism in the U.K. that triggered the worldwide privatization movement.

and George Yarrow (1991), Shleifer (1998), Oleh Havrylyshyn and Donald McGettigan (2000), John Nellis (1999, 2000), Sheshinski and López-Calva (1999), Simeon Djankov and Peter Murrell (2000a,b) and Shirley and Patrick Walsh (2000).

The economic theory of privatization is a subset of the large literature on the economics of ownership and the role for government ownership (or regulation) of productive resources. An initial question to be asked is "what is the proper role of government?" Implicitly, we assume that the goal of government is to promote efficiency. Thus, we discuss the efficiency implications of government ownership and, more importantly, the movement from government ownership to privatization. To a large extent we ignore the arguments regarding the importance of equitable concerns such as income distribution, because they are beyond the scope of this review. The effects of privatization on productive efficiency, or at least observable variables that are proxies for productive efficiency, is the focus of most of the empirical literature we review here.

The theoretical arguments for the advantages of private ownership of the means of production are based on a fundamental theorem of welfare economics: Under strong assumptions, a competitive equilibrium is pareto optimal. However, the assumptions include requirements that there are no externalities in production or consumption, that the product is not a public good, that the market is not monopolistic in structure, and that information costs are low. Thus, a theoretical argument for government intervention based on efficiency grounds rests on an argument that markets have failed in some way, one or more of these assumptions do not hold, and that the government can resolve the market failure.

Intellectual arguments for government intervention based on efficiency considerations have been made in many areas. Governments perceive the need to regulate (or own) natural monopolies or other monopolies, intervene in the case of externalities (such as regulating pollution), and help provide public goods (such as providing national defense and education, or in areas where there is a public good aspect to providing information). The arguments for government intervention become more complicated when they extend to distributional concerns. For example, some argue that the role of government is to act as a "welfare state" (A. Briggs 1961), using state intervention in the market economy to modify the actions of the market.[9] Thus, the arguments for state ownership or control rest on some actual or perceived market failure, and countries have often responded to market failure with state ownership. Privatization, in turn, is a response to the failings of state ownership. Some theoretical arguments that have arisen in the privatization debate are discussed next.

3.1.1. *The impact of privatization depends on the degree of market failure.* As noted above, welfare theory (ignoring the theory of second best) argues that privatization tends to have the greatest positive impact in cases where the role for government in lessening market failure is the weakest, i.e., for SOEs in competitive markets or markets that can readily become competitive. Sheshinski and López-Calva (1999), in summarizing the theoretical literature, argue that there should be ". . . important efficiency gains from changes to private ownership in

[9] I. Gough (1989) notes that Briggs (1961) claims that Archbishop Temple first used the term in wartime Britain to differentiate Britain from the "warfare" state of Nazi Germany.

competitive structures." In fact, the effects of competition can be so strong that SOEs, in an increasingly global environment, may be forced to respond to pressures that maximize productive efficiency without the ownership change of privatization. (Shirley and Walsh 2000 provide additional discussion of the effects of competition on the privatization decision.)

In contrast, the justification for privatization is less compelling in markets for public goods and natural monopolies where competitive considerations are weaker. However, Shleifer (1998) and others have argued that even in those markets, government-owned firms are rarely the appropriate solution, for many of the reasons discussed below.

3.1.2. *Contracting ability impacts the efficiency of state and private ownership*. Government ownership of firms results in problems in defining the goals of the firm. While the shareholder-wealth-maximizing model of corporate organization is becoming increasingly dominant in part because of the advantages of having a well-defined corporate goal (see Henry Hansmann and Reinier Kraakman 2000), governments have other objectives than profit or shareholder-wealth maximization. Further, these objectives can change from one administration to the next. Government's inability to credibly commit to a policy can significantly reduce the efficiency of an SOE's operations and governance. Even if the government does attempt to maximize social welfare, for example, welfare is a difficult thing to measure and use in guiding policy.[10] In addition, the government's goals can be inconsistent with efficiency and maximizing social welfare, or even malevolent (see Laffont and Tirole 1993; Shleifer 1998).

In addition, even if the government and the nation's citizens agree that profit maximization is the goal of the firm, it is difficult to write complete contracts that adequately tie managers' incentives to that goal. Shleifer (1998) argues that the owners of public firms (the nation's citizens) are less able to write complete contracts with their managers because of diffuse ownership, making it difficult to tie the managers' incentives to the returns from their decisions. This is a subset of the broader arguments, based on property rights and agency costs, that there will be differences in performance between government and privately held firms because there is a broader range of monitoring devices under private ownership.[11]

3.1.3. *Ownership structure affects the ease with which government can intervene in firm operations.* Governments can intervene in the operations of any firm, either public or private. However, the government's transaction costs of intervening in production arrangements and other decisions of the firm are greater when firms are privately owned. Thus, to the extent that government intervention has greater costs than benefits, private ownership is preferred to public ownership (see David Sappington and Joseph Stiglitz 1987).

3.1.4. *A major source of inefficiency in public firms stems from less-prosperous firms being allowed to rely on the*

[10] Stiglitz (1998) provides an insightful analysis, based on personal experience, of the difficulty governments face in implementing pareto-efficient improvements due to information costs and the problems of commitment and dynamic bargaining. These arguments apply to both government regulation (the main case Stiglitz analyzes) and to state ownership.

[11] Armen Alchain (1977, p. 36) notes, "behavior under [public and private] ownership is different, not because the objectives sought by organizations under each form are different, but, instead, because even with the same explicit organization goals, the costs-rewards system impinging on the employees and the 'owners' of the organization are different."

government for funding, leading to "soft" budget constraints. The state is unlikely to allow a large SOE to face bankruptcy. Thus the discipline enforced on private firms by capital markets and the threat of financial distress is less important for state-owned firms. János Kornai (1988, 1993, 2000), Eric Berglof and Gérard Roland (1998), and Roman Frydman, Cheryl Gray, Marek Hessel, and Andrzej Rapaczynski (2000) all suggest that soft budget constraints were a major source of inefficiency in communist firms. They also note that supposedly "hard" budget constraints imposed on SOEs by government are not very effective either.

3.1.5. *Privatization can impact efficiency through its effect on government fiscal conditions.* As noted in section 1, governments have raised huge amounts of money by selling SOEs. Such sales have helped reduce the fiscal deficit in many countries. Though important, examining the efficiency effects of reducing government deficits is beyond the scope of this paper. Davis et al. (2000) review the evidence on the macroeconomic effects of privatization, discuss the difficulties of using macroeconomic privatization data and report some evidence on the effects from eighteen developing countries. They find evidence that the proceeds from privatization are saved by governments and not used to increase government spending.

3.1.6. *At a macroeconomic level, privatization can help develop product and security markets and institutions.* One important motivation for privatization is to help develop factor and product markets, as well as security markets. As discussed above, welfare economics argues that efficiency is achieved through competitive markets. Thus, to the extent that privatization promotes competition, privatization can have important efficiency effects. Inevitably, the effectiveness of privatization programs and markets themselves are simultaneously determined. It has been clear in the transition economies that the success of privatization depends on the strength of the markets within the economies, and vice versa. Thus, the impact of privatization will differ across countries depending on the strength of the existing private sector. Similarly, evidence suggests that the effectiveness of privatization depends on institutional factors such as the protection of investors. However, privatization can also stimulate the development of institutions that improve market operations.

3.2 *Summary of Privatization Theory*

Theoretical work that examines privatization offers many reasons why, even in the case of market failure, state ownership has important weaknesses. As Shleifer (1998) sums up much of the literature, ". . . a good government that wants to further 'social goals' would rarely own producers to meet its objectives." A question for the post-privatization world is the role of the public sector in the economy and in the regulation of firms. The alternative to state ownership is rarely purely private, unregulated firms. State ownership is only one form of the continuum of governance structures that reflect the level of state regulation of public and privately owned firms (Laffont and Tirole 1993). Many of the theoretical arguments for privatization are based on the premise that the harmful effects of state intervention have a greater impact under state ownership than under state regulation, not that the harmful effects can be eliminated through privatization. However, in this paper we leave to others the continuing debate on the proper role of regulation in a market-oriented economy. Instead, we analyze recent empirical literature examining the

relative effectiveness of state versus private ownership.[12]

3.3 *Efficiency of State vs Private Ownership: Empirical Evidence*

Comparing the performance of government-owned to privately owned firms is one method through which the impact of government ownership on firm performance can be analyzed.[13] In section 5 we present a more complete discussion of the potential problems in all empirical work in this area, which includes lack of data and bad data, omitted variables, endogeneity, and selection bias. There are two methodological difficulties that are especially pronounced in attempts to isolate the impact of ownership on performance. First, in comparing SOEs to privately owned firms, it is difficult, if not impossible, to determine the appropriate set of comparison firms or benchmarks, especially in developing economies with limited private sectors. Second, there are generally fundamental reasons why certain firms are government owned and others are privately owned, including the degree of perceived market failure within the particular industry. These factors that determine whether the firm is publicly or privately owned likely also have significant effects on performance. Thus, it is difficult to evaluate the effects of government ownership where the ownership structure is itself endogenous to the system that includes both political and performance goals. Despite these problems, researchers have compared SOE and private firm performance in several cases with some success. We summarize the papers included here in table 1.

Given the above noted limitations, Issac Ehrlich, George Gallais-Hamonno, Zhiqiang Liu, and Randall Lutter (1994) provide good evidence on productivity differences between state-owned and privately owned firms. They use a sample of 23 comparable international airlines of different (and in some cases changing) ownership categories over the period 1973–83 for which they are able to obtain good and comparable cost, output, and ownership data. They develop a model of endogenous, firm-specific productivity growth as a function of firm-specific capital and use the model as a basis for their fixed-effects regressions estimating a cost function in a simultaneous framework with input-demand equations. They argue that they are able to separate the impact of ownership changes on short-term levels of productivity changes from the long-term effects on the rate of productivity growth, improving on earlier studies that concentrated on static rather than dynamic effects of, and changes in, state ownership. Further, they suggest they are able to isolate the effects of ownership from other factors impacting the productivity growth rate, including market conditions and exogenous technical changes.

Ehrlich et al. (1994) find a significant

[12] The opinions of policymakers throughout the world have been moving closer to those expressed by Ronald Coase in his classic 1960 article, "The Problem of Social Cost." In analyzing market failure, Coase says, "All solutions have costs, and there is no reason to suppose that governmental regulation is called for simply because the problem is not handled well by the market or the firm." James Brickley, Clifford Smith, and Jerold Zimmerman (2001, p. 54), in a more recent analysis, say markets have worked better because, "First, the price system motivates better use of knowledge and information in economic decisions. Second, it provides stronger incentives for individuals to make productive decisions."

[13] A related literature that we do not review analyzes the relative performance of nonprofit firms and for-profit firms. James Brickley and R. Lawrence Van Horn (2000), in an analysis of large hospitals, argue that the evidence suggests there is little distinction between the behavior of nonprofit and for-profit hospitals. Their results suggest the similarities in behavior are due to the effects of competition and not identical objective functions of the managers.

TABLE 1
RECENT EMPIRICAL STUDIES ON PUBLIC VS PRIVATE OWNERSHIP

Study	Sample description, study period, and methodology	Summary of findings and conclusions
Boardman and Vining 1989	Examines economic performance of 500 largest non-US firms in 1983, classified by ownership structure as SOE, private, or mixed (ME). Employs 4 profitability ratios and 2 measures of X-efficiency.	SOEs and MEs are significantly less profitable and productive than private firms. MEs are no more profitable than pure SOEs—so full private ownership is required to gain efficiency.
Vining and Boardman 1992	Asks whether ownership "matters" in determining efficiency of SOEs, or if only the degree of competition is important. Estimates performance model using 1986 data from 500 largest nonfinancial Canadian firms, including 12 SOEs and 93 MEs.	After controlling for size, market share and other factors, private firms are significantly more profitable and efficient than MEs and SOEs, though now find that MEs outperform SOEs. Thus, ownership has an effect separable from competition alone.
Pinto, Belka, and Krajewski 1993	Tests whether privatization is required to improve performance of SOEs by examining how Polish state sector responded in the 3 years after "Big Bang" reforms of Jan. 1990, which liberalized prices, tightened fiscal/monetary policy and introduced competition, without privatization.	Significant performance improvement due to macroeconomic stabilization package, even without privatization; mostly due to hard budget constraints, tight bank lending policies, enhanced credibility of government's "no bailout" pledge.
Ehrlich, Gallais-Hamonno, Liu, Lutter 1994	Examines impact of state ownership on long-run rate of productivity growth and/or cost decline for 23 international airlines during 1973–83.	State ownership can lower long-run annual rate of productivity growth by 1.6–2.0% and rate of unit cost by 1.7–1.9%. Ownership effects not affected by degree of competition.
Majumdar 1996	Using industry-level survey data, compares performance of SOEs, MEs, and private Indian firms for 1973–89. SOEs and MEs account for 37% of employment and 66% of capital investment in India in 1989.	Documents efficiency scores averaging 0.975 for private firms, significantly higher than averages of 0.912 for MEs and 0.638 for SOEs. State sector efficiency improves during "efficiency drives" but declines afterwards.
Kole and Mulherin 1997	Tests whether postwar performance of 17 firms partly owned by US government due to seizure of "enemy" property during WWII differs significantly from performance of private US firms.	Though these firms experience abnormally high turnover among boards of directors, manager tenure is stable, and SOE performance is not significantly different from private firms.
Dewenter and Malatesta 2001	Tests whether profitability, labor intensity, and debt levels of SOEs listed among 500 largest non-US firms in 1975, 1985, and 1995 differ from private firms on same lists.	After controlling for business cycles, finds private firms significantly (often dramatically) more profitable, have significantly less debt, and less labor intensive production processes than SOEs.
LaPorta, Lopez-de-Silanes, and Shleifer 2000a	Using data from 92 countries, examines whether state ownership of banks impacts financial system development and growth rates of economy and productivity.	Extensive state ownership, especially in poorest countries, retards financial system development and restricts economic growth rates, mostly due to impact on productivity.
Tian 2000	Studies relation between state shareholding and firm performance of 825 publicly traded Chinese firms in 1998. 413 had some government ownership, 312 had none.	Performance of "private" enterprises significantly superior to "mixed" enterprises. Corporate value generally declines with state ownership, then increases after state share passes 45%.
Karpoff 2001	Examines 35 government financed and 57 privately funded expeditions to the Arctic from 1819–1909.	Private expeditions performed better using several measures of performance. More major discoveries were made by private expeditions; most tragedies occurred on government-sponsored expeditions. Robust results in regressions explaining expedition outcomes.

link between ownership and firm-specific rates of productivity growth. Their results suggest that private ownership leads to higher rates of productivity growth and declining costs in the long run, and these differences are not affected by the degree of market competition or regulation. Their estimates suggest that the short-run effects of changes from state to private ownership on productivity and costs are ambiguous, providing a possible explanation for some of the anomalous results in studies. However, their point estimates indicate that the change from complete state to private ownership in the long run would increase productivity growth by 1.6 to 2 percent a year, while costs would decline by 1.7 to 1.9 percent. Their empirics also suggest that a partial change from state to private ownership has little effect on long-run productivity growth—the benefits are based on complete privatization of the firm.

This paper has advantages over much of the other work in the area due to the good data, as well as guidance from a well-developed literature in estimating the determinants of productivity. The authors perform some of the more sophisticated econometric analysis of papers in this area. For example, they replicate their results with a subset of firms that did not experience any within-firm changes in ownership, enabling the authors to be sure that their time-ownership interaction term captures only between-firm variations in ownership. Ehrlich et al. also perform various other robustness checks using different specifications and subsamples, as well as controlling for the special characteristics of their sample period (oil price shocks and deregulation in the United States), and find that their results are robust. Finally, they consider the potential for simultaneity effects between ownership and productivity, and find that causality goes from ownership to productivity, and not vice versa. The weakness in the work is that it is based on one industry with relatively old data. The authors also note that they make the implicit assumption that all firms are cost minimizing, but if state-owned enterprises have other objectives, it is difficult to interpret the meaning of differences in costs.

Sumit Majumdar (1996) examines differences in efficiency between government-owned, mixed, and private-sector firms in India. He finds support for the superior efficiency of private and mixed-sector firms over SOEs. Using aggregate, industry-level survey data, Majumdar finds that SOEs owned by the central and state governments have average efficiency scores of 0.658 and 0.638, respectively, over the period 1973–89. Mixed enterprises score 0.92, and private enterprises score 0.975. A concern with Majumdar's study is that the aggregated nature of the data, along with problems arising from the reliance on survey data, limits his ability to identify any specific areas where private versus state ownership works best, and whether there are simultaneity and selection bias problems in trying to estimate the effects of ownership and productivity. In addition, he can provide little insight into the reasons for the efficiency differences between the sectors.

George Tian (2000) offers another country-specific study. He examines 825 companies listed on the Shanghai Stock Exchange, with 513 mixed-ownership firms and 312 private firms. He finds that private firms perform better than mixed ownership firms. In addition, he examines the valuation of the companies and finds that corporate value with small government shareholdings decreases with the fraction of state shareholding

but rises when the government is a large shareholder.

Another approach to studying the effects of government ownership on efficiency relies on a multi-industry, multinational, time-series methodology. While cross-sectional time series studies suffer from methodological problems we discuss later, they are able to capture differences that are not apparent in single-country or single-industry studies. An influential paper taking this approach is Anthony Boardman and Aidan R. Vining (1989) who examine the economic performance of the 500 largest non-U.S. industrial firms in 1983. Using four profitability ratios and two measures of X-efficiency, they show that state-owned and mixed (state and private) ownership enterprises are significantly less profitable and productive than are privately owned firms. They also find that mixed enterprises are no more profitable than SOEs, suggesting that full private control, not just partial ownership, is essential to achieving performance improvement. In a later study, Vining and Boardman (1992) use a sample of Canadian firms to re-examine the state versus private ownership question. Their results are qualitatively similar to their earlier findings. In addition, the Canadian study finds that mixed enterprises are more profitable than SOEs, though they fall far short of private-firm levels.

Kathryn Dewenter and Paul Malatesta (2001) follow the general approach of Boardman and Vining (1989) using more recent data. They test whether the profitability, labor intensity, and debt levels of SOEs in the 500 largest international companies, as reported in *Fortune* for 1975, 1985, and 1995, differ from privately owned firms in the same samples. Their data have 1,369 total firm years, of which 147 represent government-owned firms. Since *Fortune* excluded U.S. firms until 1995, the data are mainly international. After controlling for firm size, location, industry, and business-cycle effects, Dewenter and Malatesta find robust evidence that private companies are significantly (often dramatically) more profitable than SOEs, and also have lower levels of indebtedness and fewer labor-intensive production processes than do their state-owned counterparts.

Finally, Frydman, Gray, Hessel, and Rapaczynski (1999) compare the performance of privatized and state firms in the transition economies of Central Europe, and explicitly try to control for selection bias.[14] Using survey data for 506 midsize manufacturing firms in the Czech Republic, Hungary, and Poland in 1994, they compare four measures of firm performance—sales revenues, employment, labor productivity (revenue per employee) and material costs per unit of revenue. They compare the privatized group to the nonprivatized group with panel data, controlling for potential pre-privatization differences between the two groups. Frydman, Gray, Hessel, and Rapaczynski find that the average effect of privatization is that it works—privatized firms perform better than the state owned firms. However, the performance improvement is concentrated in revenue improvement (not cost reduction) in firms privatized to outside owners.

Frydman et al. (1999) make two important contributions. First, they show that while privatization improves performance, the effect is limited to certain measures of performance and cases where the SOE is sold to outside owners. Second, they attempt to control for the effects of selection bias in examining

[14] Frydman et al. also compare the performance of the privatized firms to that of the firms when they were SOEs. Thus, we also discuss the paper in section 5 and it is summarized in table 5.

the effects of privatization in several ways. They use a fixed effects model to control for selection bias caused by unobserved firm characteristics correlated with performance outcomes that are fixed over time. Further, they contrast the performance of firms privatized in one period with those privatized in another for two different time periods to compare the privatized firms with how they would have performed without privatization. Finally, to control partially for the possibility that better firms are selected for privatization, they contrast the pre-privatization performance of managerially controlled firms with those controlled by other owners. Thus, the paper does an excellent job of controlling for potential biases, though it necessarily depends on survey data.

We conclude this section with two studies that use unique situations to analyze the effects of government versus private ownership. Stacey Kole and J. Harold Mulherin (1997) set out to answer the basic question in the public versus private debate as posed by Sam Peltzman (1971), "If a privately owned firm is socialized, and nothing else happens, how will the ownership alone affect the firm's behavior?" Kole and Mulherin study seventeen firms with significant German or Japanese ownership when the United States entered World War II. The U.S. government assumed ownership of the foreign stock in these firms and ended up holding between 35 and 100 percent of the common stock for up to 23 years during and after World War II. Kole and Mulherin find industry controls for five firms, comprising 61 percent of the book value of the seventeen firms, and compare the performance of the government-owned firms. They find no significant difference between the performance of their sample with the private-sector firms and state "the preceding results stand in contrast to the typical results regarding the inefficiency of government enterprise." The authors argue that the fact that these firms were operating in competitive industries forced them to operate efficiently.

The Kole and Mulherin (1997) results are evidence that in a competitive environment, where the government has no agenda other than as a passive investor, factors other than ownership determine firm performance. Many of the firms were involved in the war effort, so the government had an incentive to run them efficiently. In addition, all the firms were eventually reprivatized, so the government was also concerned with running them efficiently to maximize the later sale value. Kole and Mulherin admit that their sample and the period they study is novel, limiting its generality. Further, their results are based on only five firms. Still, their findings do illustrate the importance of factors other than ownership in determining firm performance.

In a paper featuring a very interesting natural experiment, Jonathan Karpoff (2001) studies a comprehensive sample of 35 government-funded and 57 privately-funded expeditions to the Arctic from 1818 to 1909 seeking to locate and navigate a northwest passage, discover the North Pole, and make other discoveries in arctic regions. Karpoff finds that the private expeditions performed better using several measures of performance. He shows most major arctic discoveries were made by private expeditions, while most tragedies (lost ships and lives) were on publicly funded expeditions. He notes the fact that the public expeditions had greater losses could mean the public expeditions took greater risks, but then the public expeditions would have had a greater share of discoveries, which did

not occur. He also estimates regressions explaining outcomes in several ways (crew deaths, ships lost, tonnage of ships lost, incidence of scurvy, level of expedition accomplishment), controlling for exploratory objectives sought, country of origin, the leader's previous arctic experience, or the decade in which the expedition occurred. In essentially every regression, the dummy variable for private expedition is significant with a sign indicating that the private expedition performed better. Karpoff concludes that the incentives were better aligned in the private expeditions, leading to systematic differences in the ways public and private expeditions were organized. While the uniqueness of the sample limits its generality, he provides an interesting illustration of the impact of ownership on the performance of an organization.[15]

3.4 *Policy Alternatives to Privatization*

As discussed earlier, some argue that competition and deregulation are more important than privatization or governance changes in improving performance of firms (George Yarrow 1986; John Kay and D. J. Thompson 1986; Matthew Bishop and Kay 1989; John Vickers and Yarrow 1991; Franklin Allen and Douglas Gale 1999).

Others maintain that privatization is necessary for significant performance improvements (Vining and Boardman 1992; Maxim Boycko, Shleifer, and Robert Vishny 1994, 1996a,b; John Nellis 1994; Josef Brada 1996; and Shleifer 1998). Although much of this debate is outside the scope of this paper, there are a few empirical studies that examine countries where economic reform has been implemented instead of, or prior to, full privatization.[16]

Brian Pinto, Merek Belka, and Stefan Krajewski (1993) examine the way in which the Polish state sector responded in the three years following Poland's "Big Bang" reforms of January 1990. These reforms deregulated prices, introduced foreign competition to many industries, and signaled that tight monetary and fiscal policies would be pursued. However, the Polish government did not immediately launch a large-scale privatization program. The authors document significant performance improvements on the part of most manufacturing firms. They conclude that these improvements were due to the imposition of hard budget constraints reinforced by tighter bank lending behavior, consistency in the government's "no bailout signal," import competition, and reputational concerns of SOE managers.

The use of incentive contracts for management and workers is potentially the best way to improve performance in SOEs (Leroy Jones 1991). The World Bank endorsed these contracts in the 1980s. China has undergone widespread economic reform with minimal privatization through the use of these incentive contracts and offers a natural setting in which to study their impact.

Theodore Groves, Yongmiao Hong, John McMillan, and Barry Naughton (1995) discuss the ways incentives were added to the Chinese managerial labor market by the late 1980s, including replacement after poor performance and linking managerial pay to profits. Further, managers were selected by auctions, where the auction process

[15] Kelly Olds (1994) also uses data from the 1800s to show that after the privatization of the tax-supported Congregationalist churches in New England, demand for preachers and church membership rose dramatically.

[16] Majumdar (1996) also suggests that reform can improve SOE performance by showing that the gap between the private and public firms' performance partly closes during those periods when governments are pushing reform agendas.

revealed information about the managers that in a market economy could have come from observations of their performance. Groves, Hong, McMillan, and Naughton (1994) show that after 1978, when Chinese firms were given more autonomy and allowed to retain more profits and to increase workers' incentives through bonuses and differing work contracts, there were increases in workers' incomes (though not of managers') and in investment in the firms.

Wei Li (1997) documents marked improvements in the marginal and total factor productivity of 272 Chinese SOEs over the period 1980–89 as a result of economic reforms in China, including the increased use of incentives. He finds evidence of substantial increases in productivity over the reform period, much of which can be attributed to the reform. In addition, his evidence suggests that 87 percent of the growth in productivity was due to improved incentives and compensation. Li notes, however, the potential for selection bias in his study both in the firms selected for the survey and in the responses to the survey.

Shirley and Lixin Xu (1998) come to the opposite conclusion concerning the ability of incentive contracts to improve firm performance. They analyze the effects of these contracts in twelve monopoly SOEs, and find that the incentive contracts have no effect on profitability or labor productivity; they also find some evidence of negative effects on growth in total factor productivity. They attribute the failure of the contracts to the inability of governments to follow through on promised actions and the inability of supervisory agencies to negotiate and monitor the contracts effectively. It must be noted, however, that the study is based on a small sample, limiting the ability to draw conclusions, especially in light of the evidence from the studies of Chinese firms.

The evidence from China suggests that enterprise restructuring, concentrating on improving the allocation of property rights and incentives can yield large benefits even without privatization.[17] Naturally, this begs the question whether economic reform coupled with privatization could lead to even greater performance improvements. Unfortunately, this is little evidence on this question and it would be very difficult to develop such evidence. Note also that the evidence on the benefits of reform without privatization comes primarily from one country where country-specific factors may play an important but unidentified role. One thing we can say is that, as we note later in the paper, the evidence demonstrating the benefits of privatization is weakest for countries in eastern Europe, where privatization was implemented rapidly. This may suggest that privatization should have proceeded along a more gradual path. We address that question later on.

4. *How Do Countries Privatize?*

A key decision to be made by the privatizing government is on the method of transferring the state-owned asset to private ownership. This decision is difficult because, in addition to the economic factors such as valuing the assets, privatizations are generally part of an ongoing, highly politicized process. Some of the factors that influence the privatization method include: (1) the history of the asset's ownership, (2) the financial and competitive position of the SOE, (3) the government's ideological view of markets and regulation,

[17] This is consistent with the findings of Brickley and Van Horn (2000) that the managers of nonprofit hospitals face similar incentives to the managers of for-profit hospitals and behave in a similar manner.

(4) the past, present, and potential future regulatory structure in the country, (5) the need to pay off important interest groups in the privatization, (6) the government's ability to credibly commit itself to respect investors' property rights after divestiture, (7) the capital market conditions and existing institutional framework for corporate governance in the country, (8) the sophistication of potential investors, and (9) the government's willingness to let foreigners own divested assets.

The complexity of goals means that countries have used various methods for privatizing different types of assets. Although financial economists have learned much about selling assets in well-developed capital markets, we still have a limited understanding of the determinants and implications of the privatization method for state-owned assets. Theoreticians have modeled some aspects of the privatization process, but to be tractable, their models must ignore important factors. Empirical evidence on the determinants of privatization is also limited by the complexity of the goals of the privatization process.

4.1 *Methods of Privatization*

Brada (1996) presents an excellent taxonomy of privatization methods. Although the context of his paper is central and eastern Europe, his classification of four principal divestment methods is quite general. In addition, he provides a review of the successes and failures of each of these general approaches in central and eastern Europe. Of course, there are many variations within each of his categories, and he shows that many privatizations use combinations of different methods.

Brada's first category is *privatization through restitution.* This method is appropriate when land or other easily identifiable property that was expropriated in years past can be returned to either the original owners or to their heirs. This method is rarely observed outside eastern Europe, though it has been important there. For example, Brada (1996) reports that up to 10 percent of the value of state property in the Czech Republic consisted of restitution claims. The major difficulty with this method is that the records needed to prove ownership are often inadequate or conflicting.

The second method is *privatization through sale of state property*, where a government trades its ownership claim for an explicit cash payment. This category takes two important forms. The first is *direct sales* (or asset sales) of state-owned enterprises (or some parts thereof) to an individual, an existing corporation, or a group of investors. The second form is *share issue privatizations* (SIPs), in which some or all of a government's stake in an SOE is sold to investors through a public share offering. These are similar to IPOs in the private sector, but where private IPOs are structured primarily to raise revenue, SIPs are structured to raise money and to respond to some of the political factors mentioned earlier.

Brada's third category is *mass* or *voucher privatization*, whereby eligible citizens can use vouchers that are distributed free or at nominal cost to bid for stakes in SOEs or other assets. This method has been used only in the transition economies of central and eastern Europe, where it has brought about fundamental changes in the ownership of business assets in those countries, although it has not always changed effective control. Longer descriptions of the issues that these governments have confronted when designing voucher privatization programs are provided in Morris Bornstein (1994, 1999), Melinda Alexandrowicz (1994), Bernard Drum (1994) and Shafik (1995).

The final method is *privatization from below*, through the startup of new private businesses in formerly socialist countries. Havrylyshyn and McGettigan (2000) stress the importance of this type of economic growth in the transition economies. Although privatization from below has progressed rapidly in many regions (including China, the transition economies of central and eastern Europe, Latin America, and sub-Saharan Africa), a survey of this phenomenon is beyond the scope of our paper.

There are many other methods besides the four described above that governments can use to increase private-sector participation. For example, the term "privatization" in the United States means something different from any of these strategies. As López-de-Silanes, Shleifer, and Vishny (1997) show, the privatization debate in the United States refers to the choice between provision of goods and services by (state and local) government employees and the contracting out of that production to private firms. Their empirical study finds that the more binding are state fiscal constraints and the less powerful are public-sector unions, the greater the likelihood of privatization.

4.2 *The Choice of Sale Method*

Henry Gibbon (1997) provides one of the most helpful delineations of the decisions facing a government that wants to privatize through cash sales. Gibbon discusses the steps such a government must take in developing a divestment program. These include setting up a structure for privatization (including legislation, if necessary), providing adequate performance records for SOEs being sold (generating believable accounting data), developing any necessary new regulatory structures, and determining the appropriate post-sale relationship between the firm and the government. Others who examine non-pricing issues relating to actual divestment contracts include Carliss Baldwin and Sugato Bhattacharya (1991), Rondinelli and Iacono (1996), Klaus Schmidt (1996), Shafik (1996), and Francesca Cornelli and David Li (1997).

Two empirical papers analyze the choice of privatization method. One explicitly studies the choice between an asset sale and a share issue privatization. Using a sample of 1,992 privatizations that raised $720 billion in 92 countries, Megginson, Nash, Netter, and Annette Poulsen (2000) examine why 767 firms were divested using share offerings (in public capital markets), but 1225 companies were privatized via direct sales (in private markets). They find robust results that the choice is influenced by capital market, political, and firm-specific factors, and report that SIPs are more likely to be used when capital markets are less developed, presumably as a way to develop capital markets, and when there is less income inequality. SIPs are also more likely the larger the size of the offering and the more profitable the SOE. On the other hand, governments with greater ability to commit to property rights are more likely to privatize via asset sales. Perhaps the most interesting result is that governments choose to privatize the more profitable SOEs through SIPs—evidence supporting the possibility of sample selection bias in studies of performance of privatized firms. In the second paper, Bernardo Bortolotti, Marcella Fantini, and Domenico Siniscalco (1999a) estimate the determinants of the fraction of privatization revenues that come from public offerings (SIPs) for privatizations in 49 countries. They find that the greater the selling government's deficit and the more conservative the selling government, the more likely it is that

privatization will occur through public offerings. However, SIPs are less likely in French civil law countries. Bortolotti, Fantini, and Carlo Scapa (2000) examine factors that lead countries to sell shares in SOEs abroad.

4.3 *Restructuring SOEs, and Sequencing and Staging of Sales*

Some of the most complex issues involve the interrelated questions of when to privatize and at what pace, what order to follow in privatizing (sequencing), whether to sell an SOE all at once or in stages (staging), whether to restructure an SOE prior to sale, and the role of macroeconomic reform in privatization. Since these are complex issues that involve factors outside the scope of this article (especially macroeconomic reform which we do not discuss) we do not spend much time on them. Further, their complexity has limited empirical work in this area.

Several authors have theoretically modeled the sequencing and staging of SOE sales, including Barbara Katz and Joel Owen (1993, 1995), Boycko, Shleifer, and Vishny (1996b), Francesca Cornelli and David Li (1997), Enrico Perotti (1995), and Bruno Biais and Perotti (2000). The models illustrate the importance of sequencing and staging to build reputational capital with investors by the privatizing government, building domestic support for the program, and identifying bidders that will maximize the efficiency of the firm. While the complexities of these interrelationships have limited empiricists' ability to identify factors in sequencing and staging, several articles that empirically examine them are Perotti and Serhat Guney (1993), Dewenter and Malatesta (1997), Jones, Megginson, Nash, and Netter (1999), and Megginson, Nash, Netter, and Poulsen (2000).

A related practical question about privatization is whether governments should restructure SOEs (e.g., lay off redundant workers) prior to selling or leave this to the new owners. This is related to questions discussed in section 3.4: can governments reform SOEs (including reform without privatization) and should reform and privatization proceed quickly or slowly? Early advice from the World Bank (John Nellis and Sunita Kikeri 1989) was that governments should restructure SOEs prior to divestment, since governments are better able than private owners to cushion the financial blow to displaced workers by using unemployment payments or pensions. Government-led restructuring can thus provide a private buyer of the SOE with a "clean slate." Preparing companies for privatization was standard practice in the United Kingdom during the 1980s, in part to smooth the transition with the trade unions. However, by 1992, the same authors (Kikeri, Nellis, and Shirley 1992) had become more nuanced in their interpretation of the optimal strategy. They said (p. 54) that small and medium-sized SOEs "should be sold 'as is' at the best price possible, as quickly as possible." They also noted that in all cases (p. 60) new investments "should be left to private owners once a decision has been made to privatise the enterprise."

Two empirical papers that examine SOE reform prior to privatization are López-de-Silanes (1997) and Dewenter and Malatesta (2000). López-de-Silanes examines whether prior government restructuring of SOEs improves the net price received for the company, and finds evidence that it does not. He shows that prices would have increased by 71 cents per dollar of assets if the only restructuring step taken had been

to fire the CEO and if the assets had been divested an average of one year earlier. He argues that other restructuring steps slow down the process and consume too many resources to be worthwhile. The 71 cents per dollar in added value would be a significant improvement on the average 54 cents per dollar of assets actually received. However, this evidence is based on a small sample of banks, which limits its usefulness. Dewenter and Malatesta (2001) find some evidence that the improvements brought about by privatization occur before the SOE is privatized.

4.4 *Pricing and Allocation of Control and Ownership*

Although mass or voucher privatization programs have attracted a great deal of academic interest, asset sales and SIPs account for most of the value of assets that have been divested by governments in the past two decades.[18] Thus we focus on the latter two methods.

4.4.1 *Pricing Decisions in Asset Sales*

Four papers study the revenue impact of SOE direct sale pricing decisions. At a theoretical level, Jeremy Bulow and Paul Klemperer (1996) ask whether it is more profitable to sell a company through an auction with no reserve price or by using an optimally structured direct negotiation with one less bidder. They show that under most conditions, a simple competitive auction with N + 1 bidders will yield more expected revenue than a seller could expect to earn by fully exploiting his or her monopoly selling position against N bidders. López-de-Silanes' (1997) study of Mexican privatizations empirically supports this theoretical conclusion that maximizing the number of bidders in an open auction is usually the best way to maximize revenues.[19] He finds that prices received are sensitive to the level of competition in the auction process but that the Mexican government frequently restricted participation (particularly by foreigners) in spite of this fact. Nonetheless, the amount of revenue generated was the main criteria in selecting the winning bidder for more than 98 percent of the SOEs sold.

Rondinelli and Iacono (1996) examine auctions in central and eastern Europe, where thousands of small businesses have been auctioned off, as well as in Latin America and Russia, where larger SOEs have been sold. Many types of auctions have been used, including English, Dutch, first price, second price, double, and pro-rata sales. Auctions have been used to sell both lease rights and ownership rights. In other cases, governments have sold SOEs directly to groups of private investors or firms, setting prices and terms by negotiation. In some cases, the groups of investors consist of management or employees. In other cases, the government has liquidated the SOE and sold physical assets to a group of investors.

Archana Hingorani, Kenneth Lehn, and Anil Makhija (1997) examine an actual voucher privatization program, the first round of the Czech Republic's mass privatization in 1991. Because the mechanics of how companies are divested by this government are actually more similar to an asset sale than to any other method, we discuss their work here. Hingorani, Lehn, and Makhija test whether the level of share demand,

[18] However, it is also true that a much larger *number* of companies were transferred to private ownership through mass privatization programs. It is also likely that more employees were from firms that were transferred in mass schemes than from firms that were sold in SIPs. We thank John Nellis for pointing this out to us.

[19] The Mexican program relied almost exclusively on direct sales, rather than SIPs, as its principal divestment technique.

as measured by voucher redemptions by Czech citizens, effectively predicts the actual level of stock prices in the secondary market. The authors confirm the predictive power of share demand, and also document that share demand is positively related to the level of insider shareholdings and the extent of foreign ownership in a company being sold. They find that share demand is positively related to the level of past profitability, which itself shows that even imperfect accounting statements convey useful information. Additionally, they find that share demand is inversely related to the firm's market risk, which they measure as the post-offering coefficient of variation of stock prices.[20]

4.4.2 *Pricing and Share and Control Allocation in SIPs*

Any government that intends to privatize SOEs using public share offerings faces three sets of interrelated decisions: (1) how to transfer control, (2) how to price the offer, and (3) how to allocate shares. *The control transfer decision* includes whether to sell the SOE all at once or through a series of partial sales. If the government chooses the latter course, then it must determine how large a fraction of the company's shares to issue in the initial versus subsequent offers. The government must also decide whether to insert any post-privatization restrictions on corporate control. *The pricing decision* requires that the government determine the amount of underpricing, and whether the offer price should be set by a tender offer, a book-building exercise, or at a fixed price. If the latter, the government must decide whether the offering price should be set immediately prior to the offer or many weeks in advance. *The share allocation decision* requires the government to choose whether to favor one group of potential investors over another (i.e., domestic investors, SOE employees, or both, over foreign and institutional investors). It also requires deciding whether to use the best available investment banker as lead underwriter (regardless of nationality) or to favor a national champion.

Several papers empirically examine the choices governments make in designing SIP programs. Kojo Menyah and Krishna Paudyal (1996) and Menyah, Paudyal, and Charles Inyangete (1995) investigate how the aims and objectives of privatization influence the procedures and incentives used in the sale of state-owned shares on the London Stock Exchange by the U.K. government. Jones, Megginson, Nash, and Netter (1999), Qi Huang and Richard Levich (1998), and Dewenter and Malatesta (1997) present comprehensive studies of the pricing and share and control allocation decisions made by governments disposing of SOEs through public share offering. The results are broadly similar, so we concentrate on the paper by Jones et al. (1999) since it has the largest sample.

Jones et al. (1999), whose results are summarized in table 2, provide evidence on the way political factors impact the offer pricing, share allocation, and other terms in SIPs. They analyze a large sample of 630 SIPs from 59 countries made over the period June 1977 to July 1997.[21] One result they document

[20] Stijn Claessens (1997) examines the relation between ownership concentration and equity share prices from the voucher bidding rounds and the secondary market prices for the 1491 firms that emerged from the mass privatization voucher scheme in the Czech and Slovak Republics. He finds that the prices are related to the resulting ownership structure, with more concentrated ownership associated with higher prices.

[21] Though Jones et al. rely primarily on *Privatisation International* for the data used in this study; one of the authors has also developed from secondary sources (primarily the *Financial Times*,

TABLE 2
PRICING, SHARE ALLOCATION, AND CONTROL ALLOCATION PATTERNS IN SIPS

Sample of 630 share issue privatizations (SIPs) executed by 59 national governments during 1977–97. Measures are broken down for the 417 initial public offerings of SIP shares and the 213 seasoned SIP offerings.

	Initial SIPS			Seasoned Offers		
Measure	Mean	Median	Number	Mean	Median	Number
Pricing Variables						
Issue size (US$ million)	555.7	104.0	417	1,068.9	311.0	172
Initial return[1]	34.1	12.4	242	9.4	3.3	55
Percent of offer at fixed price[2]	85.0	100.0	273	61.0	100.0	77
Cost of sales as a percent of issue[3]	4.4	3.3	178	2.5	2.6	61
Share Allocation Variables						
Percent of offer allocated to employees	8.5	7.0	255	4.8	2.6	76
Fraction of offers with some allocation to employees	91.0		255	65.8		76
Percent of offer allocated to foreigners	28.4	11.5	348	35.9	32.5	142
Percent of offers with some allocation to foreigners	57.1		348	67.6		142
Control Allocation Variables						
Percent of capital sold in offer[4]	43.9	35.0	384	22.7	18.1	154
Percent of offers where 100% of capital sold	11.5		384	0		154
Percent of capital where 50% or more of capital sold	28.9		384	8.4		154

Source: Jones, Megginson, Nash, and Netter (1999).
Notes:
[1] also known as initial underpricing, the return an investor who bought shares at the offering price could earn by reselling those shares at end of the first day's trading.
[2] measures the fraction of an issue offered to investors at a predetermined, fixed price rather than an auction-determined price.
[3] a measure of the sum of cash expenses and underwriter discount charged by the investment banking syndicate managing the issue.
[4] measures the fraction of a firm's total common equity (which is not necessarily synonymous with total voting rights) sold in an offering.

is the sheer size of SIP offers—the mean (median) size of initial SIPs is $555.7 million ($104.0 million) and the mean size of seasoned issues is $1.069 *billion* (median $311.0 million), much larger than typical stock offerings. They also find that SIPs are significantly underpriced by government sellers. The mean level of underpricing for initial SIPs is 34.1 percent (median 12.4 percent). Even seasoned SIP offers are underpriced by an average of 9.4 percent (median 3.3 percent). We return to this issue in section 6.

The evidence of Jones et al. on allocation of control in SIPs supports a political interpretation of divesting governments' motives. Jones et al. find that nearly all SIPs are essentially secondary offerings, in which only the government sells its shares and no money flows to the firm itself. Since the divesting government sells an average (median) of

but also publications such as Price Waterhouse 1989b) an appendix that details similar information for an additional 500 SIPs. This appendix can be obtained upon request by contacting *wmegginson@ou.edu*.

43.9 percent (35.0 percent) of the SOE's capital in initial offers and 22.7 percent (18.1 percent) in seasoned issues, the offers represent significant reductions in direct government stock ownership. Although governments typically surrender day-to-day operating control of the SOE to private owners in the initial SIP, they retain effective veto power through a variety of techniques. The most common technique is government retention of a "golden share," which gives it the power to veto certain actions, such as foreign takeovers.[22]

4.5 *Voucher Privatizations*

Voucher privatization has been the most controversial method of divesting state-owned assets. Boycko, Shleifer, and Vishny (1994) show that the decision to pursue mass privatization, and even the specific program design, is largely dictated by politics. The privatization programs practiced in western Europe and elsewhere were politically difficult to execute in eastern Europe, although Hungary, Estonia, and Poland used case-by-case privatizations, which have been successful at a macro level. Nonetheless, voucher privatization schemes can be made attractive from an economic perspective, since they maximize value, foster free and efficient markets, and promote effective corporate governance.

Barbara Katz and Joel Owen (1997) investigate what they call the "voucher portfolio problem." This problem arises whenever the proportion of ownership resulting from a given voucher bid is unknown, but the post-privatization performance of a divested company largely depends on the skills of the new owners and their respective ownership stakes. Katz and Owen also provide a good discussion of the philosophical differences between the Czech program, which relied heavily on vouchers and prohibited post-sale trading of stock, and the Russian program, which privatized relatively small (29 percent on average) stakes in most firms and allowed unrestricted trading of vouchers.

Although most countries' actual experience with vouchers has been poor, none has been quite as dismal as Russia's. Although a variety of factors have played a role, Frydman, Katharina Pistor, and Rapaczynski (1996) show that insider control of privatized firms has been by far the most important impediment to effective reform. Initially, the Russian government had high hopes that the "voucher privatization funds" (VPFs) formed during the initial voucher distributions might be able to overcome the collective action problem inherent in mass privatization programs. Such funds might use their concentrated ownership in privatized firms to force managers to restructure. Though most funds attempted to exercise their "voice" in corporate boardrooms, insider dominance completely blocked their efforts. The VPFs turned instead to their "exit" option and sold shares on the secondary market.

Pistor and Andrew Spicer (1996) also examine the early promise and subsequent failure of privatization investment funds in Russia and the Czech Republic. In both countries, citizens have become owners of the worst performing privatized assets, while the "crown

[22] Though golden shares have been widely adopted, they are in fact almost never used to affect control contests (Patrick McCurry 2000). The EU is trying to block new adoptions of golden shares and roll back those already in place, charging they are designed to discourage free cross-border competition for corporate control. At a recent OECD conference, the director of Italy's privatization program, Vittorio Grilli, pointed out an additional political problem with exercising a golden share: When a government uses its share to veto a takeover bid, this is equivalent to publicly stating it does not approve of the bidder. Such a statement is awkward at best, and could cause an international incident if the bidder is a foreign company.

jewels" have all come under insider control. As the authors say, ". . . establishing property rights is a longer and more complicated process than allocating title." Olivier Blanchard and Phillipe Aghion (1996) also conclude that privatization is proceeding slowly in eastern Europe, largely because insiders, who currently have control of firms but no property rights, oppose outsider privatization. Given this reality, Blanchard and Aghion examine whether privatization would proceed more rapidly if governments were simply to allocate property rights to insiders (insider privatization). However, they find there is a wedge between the private value of the firm to insiders and its value to an outsider, and that this difference might well preclude value-increasing exchanges. Given the actual experience with insider dominance of most voucher privatizations, we conclude that this wedge is in fact alive, well, and fully operational.

5. *Has Privatization Improved Performance?*

Since privatization has been part of government policy tool kits for almost two decades now, academic researchers have had enough time to execute many empirical studies of the effect of divestment on the performance of former SOEs. However, there are difficult methodological problems with research in this area.[23] An important problem is data availability and consistency. The amount of information that must be disclosed is much less in most countries than in the United States, and these standards vary from country to country as well as within countries over time. A large literature in accounting has shown that management can manipulate U.S. accounting data, and this problem is probably greater for international firms. Furthermore, the possibility of sample selection bias can arise from several sources, including governments' desire to make privatization "look good" by privatizing the healthiest firms first. Another sample selection problem is that data availability tends to be greater in the more developed countries (and perhaps for the better performing firms within countries), so developed countries (and better performing firms) are overrepresented in empirical analysis. For example, in cross-sectional regressions using fixed effects, estimation will probably rely mainly on data from developed countries.

There are also many problems in measuring performance changes that arise from using accounting or stock data. We discuss the problems with stock return data in section 6; the problems with accounting data are more important since many empirical studies employ primarily accounting information. These problems include determining the correct measure of operating performance, selecting an appropriate benchmark with which to compare performance, and determining the appropriate statistical tests to use (Ahmed Galal, Leroy Jones, Pankaj Tandon, and Ingo Vogelsang 1994; and Brad Barber and John Lyon 1996). The finance literature has not reached a consensus on the ways to deal with these problems for U.S. companies, much less privatized international firms. Barber and Lyon (1996) argue that test statistics designed to determine whether there is abnormal performance using accounting data are misspecified when the sample firms have performed unusually well or

[23] Many of the difficulties are similar to those discussed in Jonathan Temple (1999), who surveys cross-country research on the determinants of growth. Temple discusses the substantial problems that arise in estimating and interpreting cross-country regressions. James Tybout (2000) also discusses the difficulties with data in attempting to assess the performance of manufacturing firms in developing countries.

poorly. They suggest that sample firms must be matched to control firms with similar pre-event performance, which is especially difficult in studies of privatized firms.

Therefore, the results of each of the studies we discuss must be kept in perspective. We also note that the studies of post-performance rarely examine the welfare effects on consumers. Most important, few studies control for the possible use of market power by the privatized firms; that is, performance improvements could be due to greater exploitation of monopoly power, which has harmful effects on allocative efficiency, rather than productive efficiency. Many of the studies on performance changes after privatization examine the effects of divestiture on groups such as workers, but few examine the effect of privatization on consumers. On the other hand, one of the principal reasons for launching privatizations, particularly of monopoly utilities, is consumer dissatisfaction with a firm's service. Furthermore, the studies cited here almost unanimously report increases in performance associated with privatization.[24] This consistency is perhaps the most telling result we report—privatization appears to improve performance measured in many different ways, in many different countries.[25]

With the above caveats in mind, this section evaluates the results of 38 studies that employ accounting and/or real output data to examine the impact of privatization on the operating efficiency, ownership structure, and/or financial performance of former SOEs in developed, developing, and transition economies. Though all these studies are detailed in the accompanying tables, and most are discussed at least briefly in the text, we also specify which studies we think are the most important—and why we think this is so. To effectively synthesize such a large number of empirical studies, we first categorize papers according to whether they examine privatization in transition or non-transition economies. The latter studies are evaluated in section 5.1, while the transition economies are examined in section 5.2. This dichotomization is necessary, since both direct observation and published research suggest that reforming transition economies invariably requires embracing a great many economic and political changes simultaneously, whereas privatization (and attendant regulatory changes) is often the sole major component of reform processes in non-transition economies. A further organizational step is to present, in tables 3 through 7, summary information for each of the studies we examine. Presenting this information in tabular form saves us from having to sequentially discuss each paper's sample construction methodology, estimation procedure, and empirical results in the section's text. Instead, we can identify key findings that appear in many different studies, and can discuss methodological pros and cons for entire groups of studies, rather than for each paper in turn.

5.1 *Empirical Studies of Non-Transition Economies*

We separate non-transition studies by empirical methodology, depending upon how the papers compare performance

[24] A cynic might say that all of the gains researchers have documented after privatization are due to selection bias. However, while there is some evidence discussed elsewhere that the better firms are privatized first, at least in SIPs the evidence is still strong that performance improves after privatization. Further, the paper that does the best job of controlling for selection bias, Frydman, Gray, Hessel, and Rapaczynski (1999), finds privatized firms perform better than SOEs.

[25] Temple (1999) also notes the importance of both historical case studies and cross-sectional analysis in assessing recent developments in the economic theory of growth.

changes resulting from privatization. The first set of papers examines a single industry, a single country, or one or a small number of individual firms. While these studies employ a variety of empirical techniques, most compare post-privatization performance changes with either a comparison group of non-privatized firms or with a "counterfactual" expectation of what would have occurred if the privatized firms had remained state-owned. The second set of studies examines only firms divested through public share offerings, and measures privatization-related performance changes by comparing the three-year mean or median operating and financial performance of divested firms to their own mean or median performance during their last three years as state-owned firms.

5.1.1 *Case, Single-Industry, and Single-Country Studies*

The studies we examine in this section are summarized in table 3. The first study listed merits detailed analysis because it has proven so influential, both due to the rigor of its methodology and because it was sponsored by the World Bank. Galal, Jones, Tandon, and Vogelsang (1994) compare the actual post-privatization performance of twelve large firms—mostly airlines and regulated utilities—in Britain, Chile, Malaysia, and Mexico to the predicted performance of these firms had they not been divested. Using this counterfactual approach, the authors document net welfare gains in eleven of the twelve cases considered which equal, on average, 26 percent of the firms' pre-divestiture sales. They find no case where workers are made significantly worse off, and three where workers significantly benefit. David Newberry and Michael Pollitt (1997) perform a similar counterfactual analysis of the 1990 restructuring and privatization of the U.K.'s Central Electricity Generating Board (CEGB), and document significant post-privatization performance improvements. However, they find that the producers and their shareholders capture all of the financial rewards of this improvement and more, whereas the government and consumers lose out. The authors conclude that CEGB's restructuring and privatization was in fact "worth it," but could have been implemented more efficiently and with greater concern for the public's welfare.[26]

Two of the studies described in table 3 examine national privatization experiences. Stephen Martin and David Parker (1995) find that, after adjusting for business cycle effects, less than half the British firms they study perform better after being privatized. The authors do, however, find evidence of a "shake-out" effect, where several firms improve performance prior to being privatized (but not afterward). The results of the second national study are far less ambiguous. La Porta and López-de-Silanes (1999) find that the former Mexican SOEs they study rapidly close a large performance gap with industry-matched private firms that had existed prior to divestment. These firms go from being highly unprofitable before privatization to being very profitable thereafter. Output increases 54.3 percent, in spite of a reduced level of investment spending, and sales per employee roughly double. The privatized firms reduce (blue- and white-collar)

[26] The privatization and liberalization of the British electricity industry is also discussed at length in David Newberry (1997) and Vickers and Yarrow (1991), while the regulatory regime adopted for earlier utility privatizations is described in M. E. Beesley and S. C. Littlechild (1989). None of these works showers the Thatcher government with praise for its policy decisions, though Beesley and Littlechild do find the RPI-X price regulation system adopted in the U.K. is superior to the U.S. rate of return regulatory regime.

TABLE 3
CASE STUDIES, COUNTRY AND INDUSTRY-SPECIFIC EMPIRICAL STUDIES: NON-TRANSITION ECONOMIES

Study	Sample description, study period, and methodology	Summary of findings and conclusions
Galal, Jones, Tandon, and Vogelsang 1994	Compares actual post-privatization performance of 12 large firms (mostly airlines and regulated utilities) in UK, Chile, Malaysia, Mexico to predicted performance if the firms remained SOEs.	Documents net welfare gains in 11 of the 12 cases which equal, on average, 26% of the firms' pre-divestiture sales. Find no case where workers were made worse off, and 3 where workers were made significantly better off.
Martin and Parker 1995	Using 2 measures (ROR on capital employed and annual growth in value-added per employee-hour), examines whether 11 UK firms privatized in 1981–88 improved performance after divestment. Attempts to control for business cycle effects.	Mixed results. Outright performance improvements after privatization found in less than half of firm-measures studied. Several firms improved prior to divestiture, indicating an initial "shake-out" effect upon privatization announcement.
Ramamurti 1996	Surveys studies of 4 telecom, 2 airline, and 1 toll-road privatization programs in Latin America during 1987–91. Discusses political economic issues, methods used to overcome bureaucratic/ideological opposition to divestiture.	Concludes privatization very positive for telecoms, partly due to scope for technology, capital investment, and attractiveness of offer terms. Much less scope for productivity improvements for airlines and roads, and little improvement observed.
Boles de Boer and Evans 1996	Estimates impact of 1987 deregulation and 1990 privatization of Telecom New Zealand on price and quality of telephone services. Examines whether investors benefited.	Documents significant declines in price of phone services, due mostly to productivity growth that cut costs at a 5.6% annual rate, and significant improvement in service levels. Shareholders also benefited significantly.
Petrazzini and Clark 1996	Using International Telecommunications Union (ITU) data through 1994, tests whether deregulation and privatization impact level and growth in teledensity (main lines per 100 people), prices, service quality, and employment by telecoms in 26 developing countries.	Deregulation and privatization both are associated with significant improvements in level and growth in teledensity, but have no consistent impact on service quality. Deregulation associated with lower prices and increased employment; privatization has the opposite effect.
Ramamurti 1997	Examines restructuring and privatization of Ferrocarilla Argentinos, the national railroad, in 1990. Tests whether productivity, employment, and need for operating subsidies (equal to 1% of GDP in 1990) change significantly after divestiture.	Documents a 370% improvement in labor productivity and a 78.7% decline in employment (from 92,000 to 19,682). Services were expanded and improved, and delivered at lower cost to consumers. Need for operating subsidies largely eliminated.
Eckel, Eckel, and Singal 1997	Examines effect of British Airways' privatization on competitors' stock prices. Tests whether fares on competitive routes decline after privatization.	Stock prices of US competitors decline on average 7% upon BA's privatization, and fares on routes served by BA and competitors fall by 14.3%. Compensation of BA executives increases and becomes more performance-contingent.
Newberry and Pollitt 1997	Performs cost-benefit analysis of the 1990 restructuring and privatization of Central Electricity Generating Board (CEGB). Compares actual performance of privatized firms to a counterfactual assuming CEGB remained state-owned.	Restructuring/privatization of CEGB resulted in permanent cost reduction of 5% per year. Producers and shareholders capture all this benefit and more. Consumers and government lose. Shows that alternative fuel purchases involve unnecessarily high costs and wealth flows out of country.
Ros 1999	Uses ITU data and panel data regression methodology to examine effects of privatization and competition on network expansion and efficiency in 110 countries over 1986–95.	Countries with at least 50% private ownership of main telecom firm have significantly higher teledensity levels and growth rates. Both privatization and competition increase efficiency, but only privatization is positively associated with network expansion.
La Porta and López-de-Silanes 1999	Tests whether performance of 218 Mexican SOEs privatized through June 1992 improves after divestment. Compares performance with industry-matched firms, and splits improvements documented between industry and firm-specific influences.	Output of privatized firms increased 54.3%; employment declined by half (though wages for remaining workers increased). Firms achieved a 24% point increase in operating profitability, eliminating need for subsidies equal to 12.7% of GDP. Higher product prices explain 5% of improvement; transfers from laid-off workers, 31%, and incentive-related productivity gains account for remaining 64%.

TABLE 3 *(Cont.)*

Study	Sample description, study period, and methodology	Summary of findings and conclusions
Wallsten 2000a	Performs econometric analysis of effects of telecommunications reforms in developing countries. Using panel dataset of 30 African and Latin American countries from 1984–97, explores effects of privatization, competition and regulation on telecommunications performance.	Competition is significantly associated with increases in per capita access and decreases in cost. Privatization is helpful only if coupled with effective, independent regulation. Increasing competition is single best reform; competition in combination with privatization is best. Privatizing a monopoly without regulatory reforms should be avoided.
Laurin and Bozec 2000	Compares productivity and profitability of 2 large Canadian rail carriers, before and after 1995 privatization of Canadian National (CN). Compares accounting ratios for 17-year period 1981–97 and 3 sub-periods: the fully state-owned era (1981–91), pre-privatization (1992–95), and post-privatization. Compares stock returns from 1995–98. Creates 6-firm comparison group of Canadian privatizations and computes accounting ratios and stock returns for these firms.	Total factor productivity of CN much lower than that of privately owned Canadian Pacific (CP) during 1981–91, but became as efficient during pre-privatization (1992–95), exceeded it after 1995. CN stock price outperformed CP, the transportation industry, and the Canadian market after 1995. Both firms shed workers after 1992, but CN's employment declined more (34% vs 18%) as average productivity almost doubled (97% increase). CN's capital spending increased significantly, though CP's increased more. Six-firm Canadian privatization comparison group experienced significant increases in investment spending and productivity and decline in employment.
Boylaud and Nicoletti 2000	Uses factor analysis and database on market structure and regulation to investigate effects of liberalization and privatization on productivity, prices and quality of long-distance and cellular telephone services in 23 OECD countries over 1991–97.	Prospective and actual competition both bring about productivity and quality improvements and lower prices in telecom services, but no clear effect was found for privatization.

employment by half, but those workers who remain are paid significantly more. The authors attribute most of the performance improvement to productivity gains resulting from better incentives, with at most one-third of the improvement being attributable to lower employment costs.

Three of the papers described in table 3 are essentially case studies of individual privatized companies, though two of the articles benchmark performance changes with respect to one or more private companies. Catherine Eckel, Doug Eckel, and Vijay Singal (1997) examine the effect of British Airways' (BA) 1987 privatization on *competitors'* stock prices and on fares charged in those routes where BA competes directly with foreign airlines. They find that the stock prices of U.S. competitors fall, as do airfares in markets served by BA; both findings suggest that stock traders anticipated a much more competitive BA would result from the divestiture.[27] Claude Laurin and Yves Bozec (2000) compare the productivity and profitability of two large Canadian rail carriers (one state-owned and one private-sector), both before and after the 1995 privatization of Canadian National (CN). They find that CN's relatively poor performance during the "fully state-owned period" (1981–91) rapidly converges on Canadian Pacific's performance levels during the pre-privatization but post-announcement period (1992–95), and then surpasses it thereafter. These

[27] Eckel, Eckel, and Singal also examine the two-stage privatization of Air Canada (from 100 percent state ownership to 57 percent, then to zero). Unlike BA, Air Canada does not compete with U.S. carriers on many routes, so there is no significant competitor stock price effect resulting from its divestiture. Air Canada's fares do not fall after the first, partial privatization, but fall a significant 13.7 percent after the final, complete divestiture of state ownership.

findings suggest two separable impacts of privatization on firm performance: an "anticipation" effect prior to divestiture and a "follow through" effect subsequently. The final case study, Ravi Ramamurti (1997), examines the 1990 restructuring and privatization of Ferrocarilla Argentino, the Argentine national freight and passenger railway system. The author documents a nearly incredible 370 percent improvement in labor productivity and an equally striking (and not unrelated) 78.7 percent decline in employment—from 92,000 to 18,682 workers.[28] Operating subsidies declined almost to zero, and consumers benefited from expanded (and better quality) service and lower costs. Ramamurti concludes that these performance improvements could not have been achieved without privatization.

No less than six of the studies detailed in table 3 examine the telecommunications industry, which has been transformed by the twin forces of technological change and deregulation (including privatization) since 1984—the year when the AT&T monopoly was broken up in the United States and the Thatcher government began privatizing British Telecom. Five of these are empirical studies, while Ramamurti (1996) provides a simple, though highly readable, summary of empirical studies examining four telecom privatizations in Latin America. Ramamurti concludes that all were judged to be political and economic success stories. Unfortunately, the empirical studies tell somewhat conflicting stories, probably due in part to differences in the nations covered and methodology employed. Ben Petrazini and Theodore Clark (1996), Agustin Ros (1999), and Scott Wallsten (2000a) examine developing countries exclusively or as separate subsamples, while Ros (1999) and Olivier Boylaud and Giuseppe Nicoletti (2000) provide similar coverage of OECD countries, and David Boles de Boer and Lewis Evans (1996) study the deregulation and privatization of Telecom New Zealand. Though Ros, Wallsten, and Boylaud and Nicoletti all use some variant of panel data methodology, they arrive at slightly different conclusions regarding the relative importance of deregulation/liberalization and privatization in promoting expanded teledensity (number of main lines per 100 population) and operating efficiency of national telecom companies, and the quality and pricing of telecom services. On balance, these studies generally indicate that deregulation and liberalization of telecom services are associated with significant growth in teledensity and operating efficiency, and significant improvements in the quality and price of telecom services. The impact of privatization, per se, is somewhat less clear-cut, but most studies agree that the combination of privatization and deregulation/liberalization is associated with significant telecommunications improvements. This is certainly the result predicted by Noll (2000) in his analysis of the political economy of telecom reform in developing countries. The Juliet D'Souza and Megginson (2000) study's findings—described in the following section—also support the idea that telecom privatization yields net benefits.[29]

[28] Ramamurti (1997) details the intense political maneuvering that accompanied the attempt to restructure and slim down FA. The generous severance payments awarded to displaced workers were instrumental in winning union acquiescence in the restructuring plan, while the presence of effective road transport competition for rail traffic reduced the threat of a potentially crippling strike weapon.

[29] Though they do not quite fit into our empirical classification scheme, six related studies deserve mention here. Peter Smith and Björn Wellenius (1999) and Wellenius (2000) present normative analyses of telecom regulation in developing countries, while Walter Wasserfallen and Stefan Müller (1998) discuss the privatization and

5.1.2 *Pre- vs Post-Privatization Performance for SIPs*

The studies summarized in table 4 all examine how privatization affects firm performance by comparing pre- and post-divestment data for companies privatized via public share offering. Since the first study to be published using this methodology is Megginson, Nash, and van Randenborgh (1994), we will refer to this as the MNR methodology. This empirical procedure has several obvious economic and econometric drawbacks. Of these, selection bias probably causes the greatest concern, since by definition a sample of SIPs will be biased towards the very largest companies sold during any nation's privatization program. Furthermore, since governments have a natural tendency to privatize the "easiest" firms first, those SOEs sold via share offerings (particularly those sold early in the process) may well be among the healthiest state-owned firms.[30] Another drawback of the MNR methodology is its need to examine only simple, universally available accounting variables (such as assets, sales, and net income) or physical units such as number of employees. Obviously, researchers must be careful when comparing accounting information generated at different times in many different countries. Most of the studies cited here also ignore (or, at best, imperfectly account for) changes in the macroeconomy or industry over the seven-year event window during which they compute pre- versus post-privatization performance changes. Finally, the studies cannot account for the impact on privatized firms of any regulatory or market-opening initiatives that often are launched simultaneously with or immediately after major privatization programs.

In spite of these drawbacks, studies employing the MNR methodology have two key advantages. First, they are the only studies that can examine and directly compare large samples of economically significant firms, from different industries, privatized in different countries, over different time periods. Since each firm is compared to itself (a few years earlier) using simple, inflation-adjusted sales and income data (that produce results in simple percentages), this methodology allows one to efficiently aggregate multinational, multi-industry results. This point is made clear in table 5, which summarizes the results of three studies that use precisely the same empirical proxies and test methodology—and can thus be aggregated and directly compared—yet examine non-overlapping samples. In total, these three studies examine seven performance criteria for 204 companies from 41 countries. Second, while focusing on SIPs yields a selection bias, it also yields samples that encompass the largest and most politically influential

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deregulation of western Europe's telecom industry. Michael Pollitt (1997) analyzes the impact of liberalization on the performance of the international electric supply industry, and Bortolotti, Fantini, and Siniscalso (1999b) document that effective regulation is a crucial institutional variable in electric utility privatization. Establishing such a regulatory regime allows governments to increase the pace of privatization, sell higher stakes, and maximize offering proceeds. Finally, Wallsten (2000b) shows that exclusivity periods, which are usually granted to telecom monopolies as they are being privatized, are economically harmful to consumers and do not achieve the efficiency objectives assigned to them at the time of divestment. Exclusivity periods do, however, raise the price that investors are willing to pay for privatized telecoms, which largely explains why they are employed.

[30] Megginson, Nash, Netter, and Poulsen (2000) find that governments selling SOEs tend to sell the more profitable SOEs in the public capital markets and the less profitable in the less transparent private markets. Those sold in the public capital markets are the firms that appear in studies of performance. Dewenter and Malatesta (2001) also show performance improvements before privatization in firms that are being privatized.

TABLE 4
EMPIRICAL STUDIES ON PERFORMANCE CHANGES FOR FIRMS PRIVATIZED VIA PUBLIC SHARE OFFERINGS: NON-TRANSITION ECONOMIES

These studies each employ samples from more than one country and more than one industry.

Study	Sample description, study period, and methodology	Summary of findings and conclusions
Megginson, Nash, van Randenborgh 1994	Compares 3-year average post-privatization performance ratios to 3-year pre-privatization values for 61 firms from 18 countries and 32 industries from 1961–89. Tests significance of median changes in post versus pre-privatization periods. Binomial tests for percent of firms changing as predicted.	Documents economically and statistically significant post-privatization increases in output (real sales), operating efficiency, profitability, capital investment spending, and dividend payments; significant decreases in leverage; no evidence of employment declines, but significant changes in firm directors.
Macquieira and Zurita 1996	Compares pre- versus post-privatization performance of 22 Chilean firms privatized over 1984–89. Uses Megginson, Nash and van Randenborgh (MNR) methodology to analyze first without adjusting for overall market movements (as in MNR), then with adjustment for contemporaneous changes.	Unadjusted results virtually identical to MNR: significant increases in output, profitability, employment, investment, dividend payments. After adjusting for market movements, changes in output, employment, and liquidity are no longer significant, and leverage increases significantly.
Boubakri and Cosset 1998	Compares 3-year average post-privatization performance ratios to 3-year pre-privatization values for 79 firms from 21 developing countries and 32 industries over 1980–92. Tests for significance of median changes in ratio values post- versus pre-privatization. Binomial tests for percentage of firms changing as predicted.	Documents significant post-privatization increases in output (real sales), operating efficiency, profitability, capital investment spending, dividend payments, employment; significant decreases in leverage. Performance improvements are generally larger than those documented by MNR.
D'Souza and Megginson 1999	Documents offering terms, sale methods, and ownership structure resulting from privatization of 78 firms from 10 developing and 15 developed countries over 1990–94. Compares 3-year average post-privatization performance ratios to 3-year pre-privatization values for subsample of 26 firms. Tests for significance of median changes in ratio values post- vs pre-privatization. Binomial tests for percent of firms changing as predicted.	Documents significant post-privatization increases in output (real sales), operating efficiency, and profitability, and significant decreases in leverage. Capital investment spending increases insignificantly, while employment declines significantly. More of the firms privitized in the 1990s are from telecoms and other regulated industries.
Verbrugge, Megginson, Owens 2000	Study offering terms and share ownership results for 65 banks fully or partially privatized from 1981 to 1996. Then compare pre- and post-privatization performance changes for 32 banks in OECD countries and 5 in developing countries.	Documents moderate performance improvements in OECD countries. Ratios proxying for profitability, fee income (noninterest income as fraction of total), and capital adequacy increase significantly; leverage ratio declines significantly. Documents large, ongoing state ownership, and significantly positive initial returns to IPO investors.
Boubakri and Cosset 1999	Examine pre- versus post-privatization performance of 16 African firms privatized through public share offering during 1989–96. Also summarize findings of three other studies pertaining to privatization in developing countries.	Document significantly increased capital spending by privatized firms, but find only insignificant changes in profitability, efficiency, output and leverage.
D'Souza and Megginson 2000	Examines pre- versus post-privatization performance changes for 17 national telecom companies privatized through share offerings during 1981–94.	Profitability, output, operating efficiency, capital spending, number of access lines, and average salary per employee all increase significantly after privatization. Leverage declines significantly; employment declines insignificantly.
Dewenter and Malatesta 2001	Compares pre- versus post-privatization performance of 63 large, high-information companies divested during 1981–94 over both short-term [(+1 to +3) versus (–3 to –1)] and long-term [(+1 to +5) versus (–10 to –1)] horizons. Examines long-run stock return performance of privatized firms and compares relative performance of a large sample (1,500 firm-years) of state and privately owned firms during 1975, 1985, and 1995.	Documents significant increases in profitability (using net income) and significant decreases in leverage and labor intensity (employees ÷ sales) over short- and long-term horizons. Operating profits increase *prior to* privatization, but not after. Significantly positive long-term (1–5 years) abnormal stock returns, mostly in Hungary, Poland, and UK. Results strongly indicate that private firms outperform SOEs.

TABLE 4 *(Cont.)*

Study	Sample description, study period, and methodology	Summary of findings and conclusions
Boardman, Laurin, and Vining 2000	Compares 3-year average post-privatization performance ratios to 5-year pre-privatization values for 9 Canadian firms privatized during 1988–95. Computes long-run (up to 5 years) stock returns for divested firms.	Profitability, measured as return on sales or assets, more than doubles after privatization; efficiency and sales increase significantly (though less drastically). Leverage and employment decline significantly; capital spending increases significantly. Privatized firms significantly outperform Canadian stock market over all long-term holding periods.

privatizations. As discussed in section 4, SIPs account for more than two-thirds of the $1 trillion of total revenues raised by governments since 1977. With these methodological caveats in mind, we turn to a summary of the findings of studies using the MNR technique.

All of these studies offer at least limited support for the proposition that privatization is associated with significant improvements in the operating and financial performance of SOEs divested via public share offering. Two of these studies focus on specific industries: banking (James Verbrugge, Wanda Owens, and Megginson 2000) and telecommunications (D'Souza and Megginson 2000); one examines data from a single country, Chile (Carlos Macquieira and Salvador Zurita 1996); and the other six employ multi-industry, multinational samples. Five of these studies—MNR (1994), Narjess Boubakri and Jean-Claude Cosset (1998), D'Souza and Megginson (1999, 2000), and Boardman, Laurin and Vining (2000)—document economically and statistically significant post-privatization increases in real sales (output), profitability, efficiency (sales per employee), and capital spending, coupled with significant declines in leverage. Macquieira and Zurita find similar results for Chilean firms using data that is not adjusted for changes experienced by other Chilean firms over the study period, but many of these improvements cease to be statistically significant once such adjustments are made. Verbrugge et al. (2000) document significant, though modest, increases in the profitability and capital adequacy of commercial banks privatized in OECD countries, as well as significant declines in leverage, but they also find substantial ongoing state involvement in these banks' affairs. Consistent with the result that state connections matter in bank operations, Philip Hersch, David Kemme, and Netter (1997) find that in Hungary the banks made it much easier for firms headed by former members of the nomenklatura to get loans than other firms.

Finally, Dewenter and Malatesta (2000) estimate the effects of government ownership and privatization using a sample of large firms from three separate time periods (1975, 1985, and 1995) compiled by *Fortune*. They estimate regressions explaining profitability controlling for firm size, location, industry, and the business cycle. They find that net income-based profitability measures increase significantly after privatization, but operating income-based measures do not. Instead, they find that operating profits increase prior to divestiture, once more supporting the idea that privatization can have a significant anticipation effect.

TABLE 5
PERFORMANCE OF NEWLY PRIVATIZED FIRMS

Results of three empirical studies comparing three-year average operating and financial performance of a combined sample of 211 privatized firms with average performance of those firms during their last three years as SOEs. The studies employ the Wilcoxon rank sum test (with its z-statistic) to test for change in median value, and multiple proxies for most economic variables being measured. This table summarizes one proxy per topic, and emphasizes the one highlighted in the studies (usually the variable that uses either physical measures, such as number of employees, or financial ratios using current-dollar measures in the numerator or denominator, or both). Efficiency and output measures are index values, with the value during the year of privatization defined as 1.000; inflation-adjusted sales figures are used in efficiency and output measures.

Variables and Studies Cited	Number of Observations	Mean Value before Privatization	Mean Value after Privatization	Mean Change due to Privatization	Z-Statistic for Difference in Performance	% of Firms with Improved Performance	Z-Statistic for Significance of % Change
Profitability (%) net income ÷ sales							
Megginson, Nash, and van Randenborgh 1994	55	0.0552 (0.0442)	0.0799 (0.0611)	0.249 (0.0140)	3.15***	69.1	3.06***
Boubakri and Cosset 1998	78	0.0493 (0.0460)	0.1098 (0.0799)	0.0605 (0.0181)	3.16***	62.8	2.29**
D'Souza and Megginson 1999	78	0.14 (0.05)	0.17 (0.08)	0.03 (0.03)	3.92***	71	4.17***
Weighted Average	*218*[a]	*0.0862*	*0.1257*	*0.0396*		*67.6*	
Efficiency (real sales per employee)							
Megginson, Nash, and van Randenborgh 1994	51	0.956 (0.942)	1.062 (1.055)	0.1064 (0.1157)	3.66***	85.7	6.03***
Boubakri and Cosset 1998	56	0.9224 (0.9056)	1.1703 (1.1265)	0.2479 (0.2414)	4.79***	80.4	4.60***
D'Souza and Megginson 1999	63	1.02 (0.87)	1.23 (1.16)	0.21 (0.29)	4.87***	79	5.76***
Weighted Average	*170*	*0.9733*	*1.1599*	*0.1914*		*81.5*	
Investment (%) capital expenditures ÷ sales							
Megginson, Nash, and van Randenborgh 1994	43	0.1169 (0.0668)	0.1689 (0.1221)	0.0521 (0.0159)	2.35**	67.4	2.44**
Boubakri and Cosset 1998	48	0.1052 (0.0649)	0.2375 (0.1043)	0.1322 (0.0137)	2.28**	62.5	1.74*
D'Souza and Megginson 1999	66	0.18 (0.11)	0.17 (0.10)	–0.01 (–0.01)	0.80	55	0.81
Weighted Average	*154*	*0.1405*	*0.1900*	*0.0493*		*60.6*	
Output (real sales, adjusted by cpi)							
Megginson, Nash, and van Randenborgh 1994	57	0.899 (0.890)	1.140 (1.105)	0.241 (0.190)	4.77***	75.4	4.46***
Boubakri and Cosset 1998	78	0.9691 (0.9165)	1.220 (1.123)	0.2530 (0.1892)	5.19***	75.6	4.58***
D'Souza and Megginson 1999	85	0.93 (0.76)	2.70 (1.86)	1.76 (1.11)	7.30***	88	10.94***
Weighted Average	*209*[a]	*0.9358*	*1.7211*	*0.8321*		*80.3*	
Employment (total employees)							
Megginson, Nash, and van Randenborgh 1994	39	40,850 (19,360)	43,200 (23,720)	2,346 (276)	0.96	64.1	1.84*
Boubakri and Cosset 1998	57	10,672 (3,388)	10,811 (3,745)	139 (104)	1.48	57.9	1.19
D'Souza and Megginson 1999	66	22,941 (9,876)	22,136 (9,106)	–805 (–770)	–1.62	36	–2.14**
Weighted Average	*162*	*22,936*	*23,222*	*286*		*49.5*	

TABLE 5 *(Cont.)*

Variables and Studies Cited	Number of Observations	Mean Value before Privatization	Mean Value after Privatization	Mean Change due to Privatization	Z-Statistic for Difference in Performance	% of Firms with Improved Performance	Z-Statistic for Significance of % Change
Leverage (%)							
total debt ÷ total assets							
Megginson, Nash and van Randenborgh 1994	53	0.6622 (0.7039)	0.6379 (0.6618)	–0.0243 (–0.0234)	–2.41**	71.7	3.51***
Boubakri and Cosset 1998	65	0.5495 (0.5575)	0.4986 (0.4789)	–0.508 (–0.0162	–2.48**	73.1	2.11**
D'Souza and Megginson 1999	72	0.29 (0.26)	0.23 (0.18)	–0.06 (–0.08)	–3.08***	67	3.05***
Weighted Average	*188*	*0.4826*	*0.4357*	*–0.0469*		*67.0*	
Dividends (%)							
cash dividends ÷ sales							
Megginson, Nash and van Randenborgh 1994	39	0.0128 (0.0054)	0.0300 (0.0223)	0.0172 (0.0121)	4.63***	89.7	8.18***
Boubakri and Cosset 1998	67	0.0284 (0.0089)	0.0528 (0.0305)	0.0244 (0.0130)	4.37***	76.1	4.28***
D'Souza and Megginson 1999	51	0.015 (0.00)	0.04 (0.02)	0.025 (0.02)	4.98***	79	5.24***
Weighted Average	*106*	*0.0202*	*0.0655*	*0.0228*		*80.4*	

[a] Number exceeds 211 because of overlapping firms in different samples.
*** Indicates significance at the 1 percent level
** Indicates significance at the 5 percent level
* Indicates significance at the 10 percent level

5.1.3 *Summary and Analysis*

These 22 studies from non-transition economies offer at least limited support for the proposition that privatization is associated with improvements in the operating and financial performance of divested firms. Several of the studies offer strong support for this proposition, and only Martin and Parker (1995) document outright performance declines (for six of eleven British firms) after privatization. Almost all studies that examine post-privatization changes in output, efficiency, profitability, capital investment spending, and leverage document significant increases in the first four and significant declines in leverage.

The studies examined here are far less unanimous regarding the impact of privatization on employment levels in privatized firms. All governments fear that privatization will cause former SOEs to shed workers, and the key question in virtually every case is whether the divested firm's sales will increase enough after privatization to offset the dramatically higher levels of per-worker productivity. Three studies document significant *increases* in employment (Galal et al. 1994; Megginson, Nash, and van Randenborgh 1994; and Boubakri and Cosset 1998), two find insignificant changes (Macquieira and Zurita 1996; and D'Souza and Megginson 2000) while the remaining five document significant—sometimes massive—employment declines (Ramamurti 1997; La Porta and López-de-Silanes 1999; Laurin and Bozec 2000; D'Souza and Megginson 1999; and Boardman, Laurin, and Vining 2000). These conflicting results

could be due to differences in methodology, sample size and make-up, or omitted factors. However, it is more likely that the studies reflect real differences in post-privatization employment changes between countries and between industries. In other words, there is no "standard" outcome. Perhaps the safest conclusion we can assert is that privatization does not automatically mean employment reductions in divested firms—though this will likely occur unless sales can increase fast enough after divestiture to offset very large productivity gains.

In our opinion, the Galal et al. (1994), La Porta and López-de-Silanes (1999), Dewenter and Malatesta (2001), and the three articles summarized in D'Souza and Megginson (1999) are the most persuasive studies examined in this section. As mentioned, the main strength of Galal et al. is its construction and use of a clear "counterfactual" that (virtually uniquely) allows both the financial and welfare gains from privatization to be measured. La Porta and López-de-Silanes execute what we consider the best single-country study, since it examines almost the entire population of Mexican privatizations and compares performance changes to industry-matched private firms. Dewenter and Malatesta both contrast the performance of private-sector and state-owned firms over three non-overlapping periods and study how the performance of privatized firms changes over an extended time period. Finally, D'Souza and Megginson's summary and comparison of three studies that use the same methodology—but non-overlapping samples—provides compelling evidence that the operating and financial gains to privatization are pervasive.

Since the empirical studies discussed in this section generally document performance improvements after privatization, a natural follow-on question is to ask *why* performance improves. As we will discuss in the next section, a key determinant of performance improvement in transition economies is bringing in new managers after privatization. No study explicitly documents systematic evidence of this occurring in non-transition economies, but Catherine Wolfram (1998) and Michael Cragg and I. J. Alexander Dyck (1999a,b) show that the compensation and pay-performance sensitivity of managers of privatized U.K. firms increases significantly after divestment. The only study that explicitly addresses the sources of post-privatization performance improvement using data from multiple non-transition economies, D'Souza et al. (2000), finds stronger efficiency gains for firms in developing countries, in regulated industries, in firms that restructure operations after privatization, and in countries providing greater amounts of shareholder protection.

We now turn to an examination of research findings about privatization's impact in transition economies. Privatization is both more difficult and more all-encompassing in these countries than it is in either industrialized or non-transition developing countries. This is because in transition economies, privatization is only part of the massive changes in the economy as countries move from communism to more market oriented methods of allocating resources and organizing production.

5.2 *Privatization in Transition Economies*

We categorize the empirical studies that examine privatization in transition economies into more manageable groups. Both direct observation and the findings of these studies suggest that a logical classification scheme is to evaluate separately studies that examine

firms privatized in central and eastern Europe and those which study the privatization programs of Russia and the other republics of the former Soviet Union. These categories are evaluated in sections 5.2.1 and 5.2.2, respectively. We then conclude section 5 with a brief overview of China's liberalization and privatization program.

Note that testing for the effects of privatization on firm performance is even more difficult in transition economies than in non-transition economies. As mentioned above, privatization in these countries occurs at the same time as, and is part of, other massive economy-wide changes. Thus, isolating the effects of privatization itself is problematic. Further, as discussed by Djankov and Murrell (2000b, p. 9) "mis-reporting and accounting difficulties are rife in transition economies." In general, the data from transition economies is much worse and much more limited than from non-transition economies. Finally, the transition economies are undergoing many other major changes in their political and economic environments. The number of firms privatized in some way in transition is much greater than in non-transition economies (Djankov and Murrell 2000a report over 150,000 large firms in 27 transition economies faced the revolutionary changes of transition). However, we do not have good data or even any data on many of these firms. The data that do exist often come from surveys rather than mandated disclosure. Thus, the studies of privatization in transition economies has greater problems with significant selection bias, as well as omitted variables, than in the studies of non-transition economies.

5.2.1 *Privatization in Central and Eastern Europe*

The empirical studies that examine privatization programs in central and eastern Europe are summarized in table 6. These countries employed varying methods of privatizing SOEs, including asset sales (Hungary and eastern Germany), voucher privatizations (the Czech Republic and early Polish divestitures), "spontaneous privatizations" (Slovenia), share offerings (later Polish sales), or a combination of techniques. The studies also cover differing event periods during the 1990s, employ differing empirical methodologies, and ask somewhat different questions—though all directly or indirectly ask how privatization impacts firm-level operating performance. Additionally, all of these studies must contend with the fact that output typically fell dramatically in every central and eastern European country during the period immediately after the collapse of socialism in 1989–91, though in most cases output later snapped back smartly.[31] These studies must therefore examine whether, for example, the output of privatized firms contracted less than did the output of firms that remained state-owned. These and other econometric challenges that must be faced in disentangling the effects of privatization, ownership structure changes, and other influences on the post-divestment performance of privatized firms in transition settings are discussed at length in Andrew Weiss and Georgiy Nikitin (1998) and Frydman, Gray, Hessel, and Rapaczynski—hereafter FGHR—(1999).

In spite of all the caveats spelled out above, the studies summarized in table 6 yield surprisingly consistent results

[31] This "U-shape" pattern of aggregate output in 26 transition economies is documented and examined econometrically in Andrew Berg, Eduardo Borensztein, Ratna Sahay and Jeromin Zettelmeyer (1999). They find that structural reforms—including privatization—are critically important in promoting rapid recovery from the initial economic decline. Taken as a whole, their results strongly support a "radical" approach to reforms.

TABLE 6
SUMMARY OF EMPIRICAL STUDIES OF PRIVATIZATION IN TRANSITION ECONOMIES: CENTRAL AND EASTERN EUROPE

Study	Sample description, study period, and methodology	Summary of empirical findings and conclusions
Claessens, Djankov, and Pohl 1997	Examines determinants of performance improvements for 706 Czech firms privatized during 1992–95. Using Tobins-Q, tests whether concentrated ownership structure or outside monitor (bank or investment fund) improves Q more than dispersed ownership.	Privatized firms do prosper, primarily because of resulting concentrated ownership structure. The more concentrated the post-privatization ownership structure the higher the firm's profitability and market valuation. Large stakes owned by bank-sponsored funds and strategic investors are particularly value-enhancing.
Pohl, Anderson, Claessens, and Djankov 1997	Compares extent of restructuring of over 6,300 private and state-owned firms in 7 east European countries during 1992–95. Uses 6 measures to examine which strategies improve performance the most.	Privatization dramatically increases restructuring likelihood and success. Firms privatized for 4 years will increase productivity 3–5 times more than similar SOEs. Little difference in performance based on method of privatization, but ownership and financing effects impact restructuring.
Smith, Cin and Vodopivec 1997	Using a sample with 22,735 firm-years of data drawn from period of "spontaneous privatization" in Slovenia (1989–92), examines impact of foreign and employee ownership on firms.	Percentage point increase in foreign ownership is associated with a 3.9% increase in value added, and for employee ownership with a 1.4% increase. Firms with higher revenues, profits, and exports are more likely to exhibit foreign and employee ownership.
Dyck 1997	Develops and tests an adverse selection model to explain Treuhand's role in restructuring and privatizing east Germany's SOEs. In less than 5 years, Treuhand privatized more than 13,800 firms and parts of firms and, uniquely, had resources to pay for restructuring itself—but almost never chose to do so. Instead, it emphasized speed and sales to existing western firms over giveaways and sales to capital funds. Paper rationalizes Treuhand's approach.	Privatized east German firms were more likely to put western (usually German) managers in key positions than were companies that remained state-owned. Treuhand emphasized sales open to all buyers rather than favoring east Germans. Principal message: privatization programs must carefully consider when and how to affect managerial replacement in firms. Plans open to western buyers and which allow management change are most likely to improve firm performance.
Frydman, Gray, Hessel and Rapaczynski 1999	Compares performance of privatized and state-owned firms in central European transition economies, and asks "when does privatization work?" Examines influence of ownership structure on performance using a sample of 90 state-owned and 128 privatized companies in Czech Republic, Hungary, and Poland. Employs panel data regression methods to isolate ownership effects.	Privatization "works," but only when firm is controlled by outside owners (other than managers or employees). Privatization adds over 18 percentage points to annual growth rate of firm sold to domestic financial firm, and 12 percentage points when sold to a foreign buyer. Privatization to an outside owner also adds about 9 percentage points to productivity growth. Gain does not come at expense of higher unemployment; insider controlled firms are less likely to restructure, but outsider-controlled firms grow faster. Shows the importance of entrepreneurship in reviving sales growth.
Weiss and Nikitin 1998	Analyzes effects of ownership by investment funds on performance of 125 privatized Czech firms during 1993–95. Assesses these effects by measuring relationship between changes in performance and in composition of ownership at the start of privatization. Uses robust estimation techniques, in addition to OLS, since data strongly reject normality.	Ownership concentration and composition jointly affect performance of privatized firms. Concentration in the hands of a large shareholder, other than an investment fund or company, is associated with significant improvements for all measures of performance. Concentrated ownership by funds did not improve performance. Preliminary post-1996 data suggests changes in investment fund legislation may improve their performance.
Claessens and Djankov 1999a	Studies effect of management turnover on changes in financial and operating performance of 706 privatized Czech firms over the period 1993–97. Examines changes in profitability and labor productivity.	Finds that the appointment of new managers is associated with significant improvements in profit margins and labor productivity, particularly if the managers are selected by private owners. New managers appointed by the National Property Fund also improve performance, though not by as much.

TABLE 6 *(Cont.)*

Study	Sample description, study period, and methodology	Summary of empirical findings and conclusions
Claessens and Djankov 1999b	Examines the relationship between ownership concentration and corporate performance for 706 privatized Czech firms during the period 1992–97. Use profitability and labor productivity as indicators of corporate performance.	Finds that concentrated ownership is associated with higher profitability and labor productivity. Also finds that foreign strategic owners and non-bank-sponsored investment funds improve performance more than bank-sponsored funds.
Frydman, Gray, Hessel and Rapaczynski 2000	Examines whether the imposition of hard budget constraints is alone sufficient to improve corporate performance in the Czech Republic, Hungary, and Poland. Employs a sample of 216 firms, split between state-owned (31%), privatized (43%), and private (26%) firms.	Finds privatization alone added nearly 10 percentage points to the revenue growth of a firm sold to outside owners. Most importantly, finds that the threat of hard budget constraints for poorly performing SOEs falters, since governments are unwilling to allow these firms to fail. The brunt of SOEs' lower creditworthiness falls on state creditors.
Frydman, Hessel and Rapaczynski 2000	Examines whether privatized central European firms controlled by outside investors are more entrepreneurial—in terms of ability to increase revenues—than firms controlled by insiders or the state. Study employs survey data from a sample of 506 manufacturing firms in the Czech Republic, Hungary, and Poland.	Documents that all state and privatized firms engage in similar types of restructuring, but that product restructuring by firms owned by outside investors is significantly more effiective, in terms of revenue generation, than by firms with other types of ownership. Concludes the more entrepreneurial behavior of outsider-owned firms is due to incentive effects, rather than human capital effects, of privatization—specifically greater readiness to take risks.
Harper 2000	Examines the effects of privatization on the financial and operating performance of 174 firms privatized in the first—and 380 firms divested in the second—wave of the Czech Republic's voucher privatizations of 1992 and 1994. Compares results for privatized firms to those which remain state-owned. Employs Megginson, Nash and van Randenborgh methodology and variables to measure changes.	Finds that the first wave of privatization yielded disappointing results. Real sales, profitability, efficiency and employment all declined dramatically (and significantly). However, second wave firms experienced significant increases in efficiency and profitability and the decline in employment—though still significant—was much less drastic than after first wave (–17% vs –41%).
Lizal, Singer, and Svejnar 2000	Examines the performance effects of the wave of break-ups of Czechoslovak SOEs on the subsequent performance of the master firm and the spin-offs. The regressions use data for 373 firms in 1991 and 262 firms in 1992.	There was an immediate (in 1991) positive effect on the efficiency and profitability of small and medium size firms (both master and spin-offs) and negative for the larger firms. The results for 1992 are similar but not statistically significant.

regarding the impact of privatization on the performance of divested central and eastern European firms. This is especially true of the five studies—Dyck (1997), Weiss and Nikitin (1998), Claessens and Djankov (1999b), Lubomir Lizal, Miroslav Singer, Jan Svejnar (2000), and Frydman, Hessel, and Rapaczynski (2000)—we consider the most persuasive due to sample size, period of coverage and/or methodological rigor. All but one (Joel Harper 2000) of the studies detailed in table 6 explicitly test whether the type of ownership structure that emerges from the process is related to post-privatization performance, and these studies document consistent and significant relationships. Other things equal:

i) Private ownership is associated with better firm-level performance than is continued state ownership. Concentrated private ownership is associated with greater improvement than is diffuse ownership.
ii) Foreign ownership, where allowed, is associated with greater post-privatization performance improvement than is purely domestic

ownership.[32] Majority ownership by outside (non-employee) investors is associated with significantly greater improvement than is any form of insider control.

iii) Firm-level restructuring is associated with significant (sometimes dramatic) post-privatization performance improvements, and this is a key advantage of outsider control—firms controlled by non-employee investors are much more likely to restructure.

iv) Most studies document that performance improves more when new managers are brought in to run a firm after it is privatized than when the original managers are retained. The precise reason for this is unclear, though FGHR (2000) find that the more entrepreneurial behavior of outsider-owned firms is due to incentive rather than human capital effects.

v) The role of investment funds in promoting efficiency improvements in privatized Czech firms is ambiguous. FGHR (1999) find selling an SOE to a domestic financial company significantly increases the growth rate of the enterprise, while Weiss and Nikitin (1998) find that concentrated ownership by investment funds is not associated with improvement. Claessens and Djankov (1999b) document greater improvement for companies controlled by non-bank-sponsored investment funds than by bank-sponsored funds.

vi) There is evidence that while performance improves especially for smaller firms, the performance improvement declines over time. Lizal, Singer, and Svejnar (2000) find that for Czech firms there is an improvement in performance among SOE firms that are broken up, which declines over time—perhaps due to increased competition or managers siphoning off profits.

vii) The impact of privatization on employment is also ambiguous, primarily because employment falls for virtually all firms in transition economies after reforms are initiated. Harper (2000) documents employment declines following the first Czech mass privatization wave in 1992, but not after the second wave in 1994. FGHR (1999) is the only study that explicitly examined employment changes—after accounting for ownership structure changes—and found that sales grow fast enough in outsider-controlled firms to offset the significant increase in labor productivity.

viii) There is little evidence that governments have been able to impose hard budget constraints on firms that remain state-owned after reforms begin. FGHR (2000) find that the threat of hard budget constraints falters for poorly performing SOEs, since governments are unwilling to allow these firms to fail. However, both FGHR and Mark Schaffer (1998) show that the burden of lower SOE creditworthiness falls on the state (as deferred taxes) or on state creditors, rather than on private creditors or suppliers.

5.2.2 *Privatization in the Former Soviet Union*

Table 7 summarizes the results of six empirical studies that examine

[32] In his analysis of the reasons why Hungary's privatization program has proven to be so much more successful than those in most other central and eastern European countries, Peter Mihályi (2000) emphasizes the importance of selling SOEs directly to western transnational companies, and thus plugging them into the global trading system. Other countries stressed domestic over foreign ownership, and thus missed out on the opportunity of using privatization as a way of attracting foreign direct investment.

TABLE 7
SUMMARY OF EMPIRICAL STUDIES OF PRIVATIZATION IN TRANSITION ECONOMIES: RUSSIA AND FORMER SOVIET REPUBLICS

Study	Sample description, study period, and methodology	Summary of empirical findings and conclusions
Barberis, Boycko, Shleifer, and Tsukanova 1996	Surveys 452 Russian shops sold in early 1990s to measure importance of alternative channels through which privatization promotes restructuring.	Documents that new owners and managers raise likelihood of value-increasing restructuring. Finds equity incentives do not improve performance; instead points to importance of new human capital in economic transformation.
Earle 1998	Investigates impact of ownership structure on (labor) productivity of Russian industrial firms. Using 1994 survey data, examines differential impact of insider, outsider, or state ownership on performance of 430 firms, of which 86 remained 100% state-owned, 299 were partially privatized, and 45 were newly created. Adjusts empirical methods to account for tendency of insiders to claim dominant ownership in the best firms being divested.	OLS regressions show positive impact of private (relative to state) share ownership on labor productivity, primarily due to managerial ownership. After adjusting for selection bias, finds that only outsider ownership is significantly associated with productivity improvements. Stresses that leaving insiders in control of firms, while politically expedient, has negative long-term implications for restructuring of Russian industry.
Earle and Estrin 1998	Using a sample similar to that used by Earle (1998), examines whether privatization, competition and hardening budget constraints enhance efficiency in Russia.	Finds a 10 percentage-point increase in private share ownership raises real sales per employee by 3–5%. Subsidies (soft budget constraints) reduce pace of restructuring in SOEs, but the effect is small and often insignificant.
Djankov 1999a	Investigates relation between ownership structure and enterprise restructuring for 960 firms privatized in 6 newly independent states between 1995–97. Employs survey data collected by World Bank in late 1997 from Georgia, Kazakhstan, Kyrgyz Republic, Moldova, Russia, and Ukraine.	Shows that foreign ownership is positively associated with enterprise restructuring at high ownership levels (>30%), while managerial ownership is positively related to restructuring at low (<10%) or high levels, but negative at intermediate levels. Employee ownership is beneficial to labor productivity at low ownership levels, but is otherwise insignificant.
Djankov 1999b	Using same survey data as Djankov (1999a), studies effects of different privatization modalities on restructuring process in Georgia (92 firms) and Moldova (149 firms). Georgia employed voucher privatization, while the majority of Moldovan firms were acquired by investment funds—and numerous others were sold to managers for cash.	Privatization through management buy-outs is positively associated with enterprise restructuring, while voucher privatized firms do not restructure more rapidly than state-owned firms. Implies that managers who gain ownership for free may have less incentive to restructure, as their income is not solely based on success of the enterprise.
Black, Kraakman, and Tarassova 2000	Surveys the history of privatization in Russia. While mostly descriptive, several case studies are analyzed.	Authors conclude that Russian privatization has created a "kleptocracy" and has essentially failed. Stresses importance of minimizing incentives for self-dealing in design of privatization programs.

privatization programs in Russia and the other republics of the former Soviet Union. It is very difficult to reach a simple conclusion regarding privatization's impact in the former Soviet Union in general, and Russia in particular, for four principal reasons. First, the transition from socialism to capitalism was much more difficult and painful in the former Soviet Union republics than anywhere else in the world, both because these republics were under communist rule the longest and because the transition to capitalism also coincided with dissolution of the Soviet Union. Breaking up any continental-scale nation would likely prove traumatic; breaking up a country that was also an economic system proved doubly so. Second, the contraction in output that occurred in the former Soviet Union after 1991 was far greater than anywhere

else—and there is as yet no upturn—making it very difficult to document any kind of relative performance improvement, or to assign causality to any improvement that is found. Third, it seems clear that the former Soviet Union republics—especially Russia—took a decided turn for the worse economically after 1997, so competently executed studies examining privatization's impact in the same country, but at different times, might well reach radically different conclusions. Finally, all five studies that examine Russia's experience rely either on survey data or anecdotal evidence, so the "raw material" for empirical analysis is of much poorer quality here than in other regions. For these reasons, we believe that no truly persuasive empirical study of privatization in the former Soviet Union has yet been performed, nor is one likely until these economies stabilize and several years of reliable accounting (not survey) data become available.

In spite of the difficulties (and caveats) spelled out above, the studies summarized in table 7 do yield consistent conclusions. Certainly the most important result all these studies find is that insider privatization has been a failure throughout the former Soviet Union, especially in Russia, and that the concentrated managerial ownership structure that characterizes almost all privatized firms will likely hamper these economies for many years. As described in Bornstein (1994), John Earle (1998), Earle and Saul Estrin (1998), and Bernard Black, Reinier Kraakman, and Anna Tarassova (2000), Russian reformers considered rapid privatization to be an imperative, and for this reason they opted for the politically expedient technique of favoring incumbent managers and employees with allocations of controlling shareholdings during the initial mass privatization waves of 1992–93. The investment funds created during this program proved ineffective, due primarily to insider control and poor legal protection of (outside) shareholder voting rights. In spite of this, Nicholas Barberis, Boycko, Shleifer, and Natalia Tsukanova (1996), Earle (1998), and Earle and Estrin (1998) document that privatization was associated with performance improvements in firms that were divested during the mass privatization program of the early 1990s. However, all three studies, as well as Djankov (1999a,b), find that post-privatization performance improves the most (or only) for firms that are outsider controlled, and all the studies stress the importance of bringing in new management. Additionally, Djankov (1999a) finds that foreign share ownership is associated with significantly greater performance improvement than is purely domestic ownership, and Djankov (1999b) shows that managers who actually pay for divested firms (through management buy-outs) improve performance more than do managers who are effectively given control (through voucher schemes).

Russia provides an example of what can go wrong with privatizations in the 1995 "loans for shares" scheme, which transferred control of twelve natural resource firms to a small group of "oligarchs" at very low prices. Black et al. (2000) argue this was a corrupt and nontransparent transfer of assets that precipitated widespread insider expropriation. Further, it contributed to the political unpopularity of privatization in Russia. It provides a cautionary note that privatization is not an economic panacea.[33]

[33] The Czech Republic's market collapse of 1997, described in Jack Coffee (1999), and the Lithuanian government's tortuous privatization of the Mazheikiu Nafta refinery in early 2000, described by Val Samonis (2000), are also examples of what can go wrong in privatization programs.

Black et al. also argue that a poorly designed privatization program is worse than none at all. However, Nellis (1999) and other commentators point out that many of Russia's problems resulted from a collapse of central governmental authority and would thus not likely be solved by renationalization. Perhaps the best long-term hope for economic revitalization in the former Soviet Union republics is the type of *de novo* private development described in Havrylyshyn and McGettigan (2000).

5.2.3 *Summary of Evidence*

Review articles by Djankov and Murrell (2000a,b) and a macroeconomic study by Jeffrey Sachs, Clifford Zinnes, and Yair Eilat (2000) examine the effects of privatization in transition economies. Djankov and Murrell review the empirical results of studies of privatization in transition economies and attempt to synthesize the results across the studies. They conclude that the evidence shows that: in most countries, privately owned firms perform better than state-owned firms, usually significantly better statistically; there is little evidence privatization has hurt firm performance even in Russia and other Commonwealth of Independent States (CIS) countries; much better outcomes occur when the new owners are concentrated; and privatization has had a larger positive impact in non-CIS countries, eastern and central Europe, and the Baltic states than in the CIS countries. They interpret the last result to be caused by institutional factors, including the choice of privatization method. They suggest the best empirical proxy for how well the institutions performed was the length of time the country had spent under communism—the shorter the time the better the performance of the institutions.

Empirically, at a macro level, Sachs, Zinnes, and Eilat (2000) examine the relationship between privatization, institutional reforms, and overall economic performance (measured by change in GDP from before transition, foreign direct investment, and exports) in transition economies. They find that change in ownership is not enough to improve macroeconomic performance. The gains from privatization come from change in ownership combined with other reforms such as institutions to address incentive and contracting issues, hardened budget constraints, removal of barriers to entry, and an effective legal and regulatory framework. While this is a macroeconomic study, the changes they report must come from the operations of individual firms.

Our reading of the evidence from transition economies is very similar. Privatization improves performance but various factors impact the success of the privatization. Most important is that allowing incumbent managers to gain control of privatized firms, through whatever means, will yield disappointing results. Whenever possible, firms should be privatized, for cash, in as transparent a method as possible, and through an auction or sale process that is open to the broadest possible cross-section of potential buyers (including foreigners). Finally, institutional factors matter, and we discuss their implications in a later section.

5.2.4 *Economic Reform in China*

China, one of the most important transition economies, has been vigorously pursuing economic reform since 1978. It has dramatically increased the total factor productivity (Li 1997) of Chinese SOEs, largely by improving incentives (Groves, Hong, McMillan, and Naughton 1994, 1995) and decentralizing economic decision making (Yuanzheng Cao, Yingyi Qian, and Barry

Weingast 1999; Lawrence Lau, Qian, and Gerard Roland 2000). Lau, Qian, and Roland (2000) show theoretically and empirically that the Chinese have successfully followed a dual-track approach to market liberalization, as a method of implementing an efficient Pareto-improving reform. The idea was to continually enforce the existing plan, while liberalizing the market to make implicit transfers to compensate losers under reform.

The Chinese Communist Party recently committed the country to a massive privatization program (Lin 2000) under the slogan "seize the large, release the small," which roughly translates as privatizing all but the largest 300 or so SOEs. Assuming this plan is even partially implemented, the result will be a privatization program of unprecedented scale. Furthermore, the World Trade Organization accord negotiated between China and the United States in November 1999 (and subsequently with the European Union in early 2000) may ultimately lead to China's accession to the WTO. If this occurs, broad swathes of heretofore protected Chinese industry—including telecommunications, automobile production, and financial services—will be opened to international competition for the first time. This process will almost certainly increase the pressure on China to fully privatize its industry.

On the other hand, there are reasons to believe that China's "privatization" program will do little to lessen the state's role in economic decision making, either at the macro- or microeconomic levels. For one thing, the ownership structure of Chinese stock companies is unique. As described by Xiaonian Xu and Yang Wang (1997), Tian (2000), and Lin (2000), only one-third of the stock in China's publicly listed former SOEs can be owned by individuals; the remaining two-thirds of a company's shares must be owned by the state and by domestic (usually financial) institutions—which are invariably state-owned. So-called "A-shares" may be owned and traded only by Chinese citizens, while B-shares are stocks listed in Shanghai or Shenzhen that may be owned and traded only by foreigners. Other shares are listed in Hong Kong (H-shares) or New York (N-shares), and these are also restricted to foreigners. The net effect of this fractionalization of ownership is that, even in publicly listed former SOEs, control is never really contestable, and the long-term financial performance of "privatized" Chinese companies has been quite poor. This is particularly true for the "Red Chip" (PRC-controlled companies incorporated and listed in Hong Kong) and H-shares sold in Hong Kong.[34]

These ownership restrictions could, however, be rescinded by government fiat at any time. Perhaps the key constraint on privatization in China is the fact that SOEs, rather than the government itself, serve as the country's social safety net. As described in Bai, Li, and Wang (1997) and Lin, Cai, and Li (1998), Chinese SOEs are burdened with many social welfare responsibilities. Thus it is difficult to imagine the government adopting a privatization program that would either grant these firms discretion over staffing levels or subject them to truly enterprise-threatening competition. In sum, the long-term prognosis for privatization in China is unclear; there is great scope for such a program to have a dramatic impact, coupled with great danger of social turmoil if handled (or sequenced) incorrectly.

[34] We thank Cyril Lin, Samuel Huang, and George Tian for helping us understand Chinese listing procedures. See *http://www.csrc.gov.cn/CSRCsite/eng/elaws/elaws.htm* for an English-language summary of Chinese securities laws.

We now shift our emphasis from transition economies to examining whether investors who participate in share issue privatizations have, on average, benefited from these investments—both initially (first day) and longer term (up to five years).

6. *Do Investors Benefit from Privatization?*

6.1 *Initial Returns from SIPs*

As noted earlier, governments generally rely on share offerings as the best method of privatizing large state-owned enterprises, and they routinely adopt highly politicized offer terms in order to achieve political objectives. Offering terms that differ fundamentally from those observed in private-sector offerings, plus the very large average size of privatization issues, have motivated many researchers to examine the initial and long-term returns earned by SIP investors. Table 8 summarizes the results of ten studies examining initial returns. Most of these studies evaluate whether investors who purchase privatization initial public offerings (PIPOs) at the offering price, and then sell these shares on the first day of open market trading, earn returns that are significantly different from zero. These studies test whether PIPOs are "underpriced." A few also test whether PIPOs yield initial returns that are materially different from the significantly positive first-day returns earned by investors in private-sector IPOs, as documented in a vast number of articles using both U.S. and international data. The U.S. market experience is summarized in Roger Ibbotson, Jody Sindelar, and Jay Ritter (1994), and international IPO underpricing studies are surveyed in Tim Loughran, Ritter, and Kristian Rydqvist (1994).

Five of the studies in table 8 examine PIPO returns from individual countries. All five studies document significant, often massive, average levels of underpricing, ranging from 39.6 percent for the forty British PIPOs studied by Menyah and Paudyal (1996) to *940 percent* for the 308 Chinese PIPOs Class A issues (domestic issuance) examined by Dongwei Su and Belton Fleisher (1999). Menyah and Paudyal, and Paudyal, B. Saadouni, and R. Briston (1998) find that U.K. and Malaysian PIPOs are significantly more underpriced than their private-sector counterparts, and Wolfgang Ausenegg (2000) finds the same result for Polish PIPOs. Hungarian PIPOs are also more underpriced than private IPOs, but the difference is not significant (Ranko Jelic and Richard Briston 2000b). Since there are as yet few truly comparable private-sector IPOs in China, Su and Fleisher cannot test whether private offerings also have the incredible underpricing they document for PIPOs. They do find that Class B shares, issued internationally, are much less underpriced (37 percent mean initial return). Unlike almost any comparable group of IPOs, over 90 percent of Chinese PIPOs do in fact execute seasoned equity offerings within a short time after the PIPO. Further, the probability of a seasoned offer occurring is positively related to the level of the initial offer underpricing, which is consistent with various signalling models, including Ivo Welch (1989).

The other five studies in table 8 examine multinational samples of PIPOs, generally using offering data from *Privatisation International* and stock returns from *Datastream*. The number of countries studied ranges from eight in Dewenter and Malatesta (1997) to 61 in Alexander Ljungqvist, Tim Jenkinson, and William Wilhelm (2000), though the studies' main results are similar. All these studies document economically

TABLE 8

SUMMARY OF EMPIRICAL STUDIES EXAMINING INITIAL RETURNS TO INVESTORS IN SHARE ISSUE PRIVATIZATION

(Return earned by investors who buy shares in SIPs at the offer price and sell the shares immediately after trading begins.)

Study	Sample description, study period, and methodology	Summary of empirical findings and conclusions
Menyah and Paudyal 1996	Examines initial and long-term returns for 40 UK privatization IPOs (PIPOs) and 75 private-sector IPOs on London Stock Exchange between 1981–91.	PIPOs offer a market-adjusted initial return of 39.6%, compared to private sector IPO initial return of 3.5%. Regression analysis explains up to 64% of variation in PIPO initial returns.
Dewenter and Malatesta 1997	Tests whether privatization IPOs (PIPOs) are more or less underpriced than private sector IPOs in 8 countries. Compares actual initial returns for 109 companies from Canada, France, Hungary, Japan, Malaysia, Poland, Thailand and UK with national average initial returns reported in Loughran, Ritter, and Rydqvist 1994.	Mixed results. Initial returns to privatization issues are higher than to private sector IPOs in unregulated industries and in UK. Privatization IPOs are lower than private offers in Canada and Malaysia; but there is no systematic tendency to underprice PIPOs on the part of all governments.
Huang and Levich 1998	Studies offering terms and initial returns to investors in 507 privatization share offerings from 39 countries during 1979–96; tests alternative explanations for observed underpricing.	Average initial returns of 32.2% for PIPOs and 7.17% for seasoned privatization offerings. SIPs from non-OECD countries are more underpriced than OECD offers, but there is no evidence PIPOs are underpriced more than private IPOs.
Paudyal, Saadouni, and Briston 1998	Examines initial and long-term returns offered to investors in 18 PIPOs and 77 private sector IPOs in Malaysia from 1984–95. Provides details of offering terms and share allocation patterns.	Malaysia PIPOs offer market-adjusted initial returns of 103.5% (median 79.9%), significantly greater than the private sector IPO initial returns of 52.5% (29.4%).
Jones, Megginson, Nash, and Netter 1999	Examines how political and economic factors influence initial returns, and share and control allocation patterns, for a sample of 630 SIPs from 59 countries during 1977–97.	Governments deliberately underprice both PIPOs (mean 34.1%, median 12.4%) and seasoned SIPs (9.4% and 3.3%). Share and control allocation patterns are best explained by political factors. Support predictions of Biais and Perotti (2000) theoretical model.
Su and Fleisher 1999	Studies cross-sectional pattern of underpricing of 308 Chinese PIPOs from 1987–95. Tests whether observed underpricing for domestic shares can be explained using a signalling model.	Massive underpricing, with average initial return of 940% on A shares (issued domestically). Findings consistent with a signalling model, since 91% of all firms subsequently execute seasoned equity offerings. Less underpricing for B shares (international).
Jelic and Briston 2000b	Examines initial and long-term returns for 25 PIPOs and 24 other IPOs in Hungary during 1990–98.	PIPOs are much larger and have higher market-adjusted initial returns than other IPOs (44% mean and 9% median vs 40% and 5%, respectively), but return differences are insignificant.
Jelic and Briston 2000a	Examines initial and long-term returns for 55 PIPOs and 110 other IPOs in Poland during 1990–98.	Using first-day opening prices (not offer prices), finds small, significant positive mean abnormal initial returns (1.16%) for PIPOs and insignificant mean abnormal initial returns (0.22%) for other IPOs. The difference is insignificant.
Ausenegg 2000	Examines initial and long-term returns for 52 PIPOs and 107 other IPOs in Poland during 1990–98.	Significantly positive initial abnormal return for PIPOs (60.4% mean, 19.8% median) and other IPOs (19.8% and 12.9%), though difference is insignificant. Without Bank Slaski, mean PIPO initial return cut roughly in half.
Choi and Nam 2000	Compares initial returns of 185 PIPOs from 30 countries during 1981–97 to those of private sector IPOs from same countries, using mean national initial returns reported in Loughran, Ritter, and Rydqvist 1994.	PIPOs tend to be more underpriced than private sector IPOs (mean 31% vs 24.6%), and underpricing for PIPOs is positively related to the stake sold and to degree of uncertainty in ex-ante value of newly privatized firms.
Ljungqvist, Jenkinson, and Wilhelm 2000	Analyzes direct and indirect costs (associated with underpricing) of 2,051 IPOs, including 185 PIPOs, in 61 non-US markets during 1992–99. Primarily a private-sector, underwriting study.	PIPOs are significantly more underpriced (by about 9 percentage points) than are private-sector IPOs, and underwriter spreads are a significant 61 basis points lower.

and statistically significant underpricing of PIPOs, averaging about 30 percent in the large-sample studies. The two that examine seasoned SIPs (Huang and Levich 1998; and Jones, Megginson, Nash, and Netter 1999) find these are significantly underpriced as well, though much less so than are PIPOs. Four of these studies—Dewenter and Malatesta (1997), Huang and Levich (1998), Seung-Doo Choi and Sang-Koo Nam (2000), and Ljungqvist et al. (2000)—also test whether PIPOs are significantly more underpriced than private-sector IPOs. The first three studies find no systematic evidence that PIPOs are significantly more or less underpriced than private IPOs; instead all three suggest that results vary by country. However, the Ljungqvist et al. study performs the most convincing analysis of the relative underpricing of IPOs and PIPOs, since they use regression methodology and a privatization dummy variable to examine underpricing for a sample of 2,051 IPOs—including 185 PIPOs—from 61 non-U.S. markets. They document that PIPOs are significantly more underpriced (by about 9 percentage points) than are private sector IPOs. They also find that the underwriting spreads on PIPOs are significantly lower (by a mean 61 basis points) than on IPOs.

The principal objective of the Jones et al. (1999) study differs from the others in that it tests whether government issuers are attempting to maximize SIP offering proceeds or are instead trying to achieve multiple political and economic objectives, even at the cost of revenue maximization. Jones et al. (1999) test the underpricing models of Perotti (1995) and Biais and Perotti (2000). Both models predict that governments that are ideologically committed to privatization and economic reform will deliberately underprice SIPs and will privatize in stages, to signal their commitment to protecting investor property rights. "Populist" governments pursuing privatization strictly as a means of raising revenue will be unwilling to underprice as much as will committed governments. Populist governments will also try to sell larger stakes in SOEs. Jones et al. (1999) find that initial returns (underpricing) are significantly positively related to the fraction of the firm's capital sold and to the degree of income inequality (Gini coefficient) in a country. They also find that initial returns are negatively related to the level of government spending as a fraction of GDP (a proxy for how socialist a society is) and to a dummy variable indicating that more than 50 percent of a company's stock is being sold. Collectively, these findings strongly support the predictions of Perotti (1995) and Biais and Perotti (2000).

6.2 *Long-Run Returns from SIPs*

Since the seminal article by Jay Ritter (1991), financial economists have paid close attention to estimating the long-run returns earned by investors who purchase unseasoned and seasoned issues. Most of these papers find significantly negative long-term returns, whether they examine U.S. offerings or international stock issues, though a few studies document insignificantly positive long-term performance.[35]

There is a major debate in the empirical finance literature on methodological issues in estimating long-run

[35] Early long-run return studies, using both U.S. and international data, are summarized in Loughran, Ritter, and Rydqvist (1994). Later studies employing U.S. data and finding negative long-run returns include Tim Loughran and Ritter (1995, 1997), Katherine Spiess and John Affleck-Graves (1995), and Richard Carter, Frederick Dark, and Ajai Singh (1998). Only a few U.S. studies, including Alon Brav and Paul Gompers (1997), find (insignificantly) positive long-term returns.

returns. This is not surprising, since findings of significant negative (or positive) long-run returns can be interpreted as evidence contradicting the efficient market hypothesis, a fundamental concept in finance. The debate centers on how to calculate long-run returns and how to construct test statistics. For example, Mark Mitchell and Erik Stafford (2000) argue that most corporate actions are not random events. They contend that after controlling for cross-correlation of abnormal returns, most statistical evidence of abnormal performance disappears. John Lyon, Brad Barber, and Chih-Ling Tsai (1999), drawing on the work of S. P. Kothari and Jerold Warner (1997) and Barber and Lyon (1997), note five reasons for misspecification in test statistics designed to detect long-run returns. There are three sources of bias—a new listing bias, a rebalancing bias, and a skewness bias—as well as cross-sectional dependence in sample observations and a poorly specified asset-pricing model. Lyon, Barber, and Tsai, among others, suggest several methods to control for misspecification, but there is no one correct method. They conclude that the "analysis of long-run returns is treacherous." Linda Canina, Roni Michaely, Richard Thaler, and Kent Womack (1998) present another approach to dealing with long-run returns, and Fama (1998) argues bad model problems are "unavoidable . . . and more serious in tests on long-term returns." Two other papers that do an excellent job of analyzing the problems with estimating long-run returns are Alon Brav, Christopher Geczy, and Paul Gompers (2000), and B. Espen Eckbo, Ronald Masulis, and Øyvind Norli (2000).

Since the methodological problems identified with estimates of long-run returns have not been resolved for U.S. firms, they have not been resolved for privatizations that are subject to the additional problems of scarce data and the lack of liquid markets. Nevertheless, the fact that most of the studies of long-run returns following privatizations—using different methodologies and focusing on different countries—find similar results lessens some of the methodological concerns.

We discuss fifteen studies that examine the returns earned by investors who buy and hold privatization share issues, and the number of such studies appears to be growing rapidly. The papers are summarized in table 9. Eight of these focus on either a single country or a single market for issues, and the other seven examine multinational samples. Mario Levis (1993) and Menyah, Paudyal, and Inganyete (1995) examine the British experience, and both document significantly positive long-run abnormal returns for SIP investors. However, Reena Aggarwal, Ricardo Leal, and Leonardo Hernandez (1993) find the opposite result for their sample of nine Chilean SIPs. Ranko Jelic and Richard Briston (2000b) find that 25 Hungarian PIPOs yield large but insignificantly positive long-run returns (peaking at 21.3 percent in month 15), though they do find that these cumulative returns are significantly higher than the highly negative returns (reaching –70 percent by month 30) earned on 24 private-sector IPOs. Jelic and Briston (2000a) document significantly positive one-, three-, and five-year excess returns for Polish PIPOs, but Ausenegg (2000) finds insignificant long-term returns for essentially the same sample. Given the differing estimation methodologies employed in these two studies, it is not clear whether Polish PIPOs earn significantly higher long-run returns than IPOs. Stephen Foerster and G. Andrew Karolyi (2000) find insignificant long-run

TABLE 9
EMPIRICAL STUDIES OF LONG-RUN RETURNS TO INVESTORS IN SHARE ISSUE PRIVATIZATIONS
1–5 year returns earned by investors who buy and hold offerings. Unless otherwise noted, long-run return excludes first-day return to issue date.

Study	Sample description, study period, and methodology	Summary of empirical findings and conclusions
Levis 1993	Examines long-run return to 806 British IPOs from 1980–88. Sample includes 12 PIPOs, accounting for 76% of total IPO value.	Private sector IPOs underperformed the market by +10% over 3 years, PIPOs outperformed the market by +15%.
Aggarwal, Leal and Hernandez 1993	Examines long-run (1-year) returns for Latin American IPOs, including 9 Chilean PIPOs from 1982–90.	Using returns from offer price, finds significant negative 1-year market-adjusted returns for PIPOs averaging –29.9% (median –32.4%) vs –9.8% (–23.0%) for private sector IPOs.
Menyah, Paudyal and Inganyete 1995	Examines initial and long-term returns for 40 British PIPOs and 75 private sector IPOs executed on London Stock Exchange 1981–91.	Significant positive 33% market-adjusted 400-day (80-week) return for PIPO vs insignificant 3.5% return for private sector IPOs.
Davidson 1998	Studies 1, 3, 5, and 10-year market adjusted returns for SIPs from 5 European countries (Austria, France, Italy, Spain, UK) through March 1997.	After long period of underperformance, averaging 1–1.5% per year, finds SIPs outperformed European market averages in previous 12 months.
Foerster and Karolyi 2000	Examines long-run return for 333 non-US firms that list stock on US markets in the form of ADRs in 1982–96. Compares returns for 77 SIPs (38 IPOs, 39 seasoned offers) with private offers.	Insignificantly positive 4.1% 3-year abnormal returns for SIPs vs insignificantly negative returns of –1.7% for full sample.
Paudyal, Saadouni, and Briston 1998	Examines initial and long-term returns offered to investors in 18 PIPOs and 77 private sector IPOs in Malaysia 1984–95. Provides details of offering terms and share allocation patterns.	PIPOs and private sector IPOs yield normal returns (insignificantly different from overall market) over 1, 3, and 5-year holding periods.
Boubakri and Cosset 2000	Evaluates long-term returns to investors in 120 SIPs from 26 developing countries during 1982–95.	Significant 3-year raw returns (112% mean, 30% median), but insignificant mean (37–46%) and median (–7% to 13%) market-adjusted returns, due to weighting of SIPs in stock market indices. Significant positive long-run returns after adjusting for impact of SIP size on index.
Jelic and Briston 2000	Examines initial and long-term returns for 25 PIPOs and 24 other IPOs in Hungary during 1990–98.	PIPOs yield insignificantly positive market-adjusted returns over 1, 2, and 3-year holding periods, peaking at 21.3% in month 15; private-sector IPOs yield significantly negative returns.
Jelic and Briston 2000b	Examines initial and long-term returns for 55 PIPOs and 110 other IPOs in Poland during 1990–98.	PIPO investors earn positive 1, 3, and 5-year market-adjusted returns; other IPO investors earn negative returns. Significant differences for most holding periods.
Ausenegg 1000	Examines initial and long-term returns for 52 PIPOs and 107 other IPOs in Poland during 1990–99.	PIPO and private-sector IPO investors earn negative—often significant—abnormal returns over 1, 3, and 5-year holding periods.
Perotti and Oijen 2000	Develops a theoretical model suggesting that long-run returns to investors in developing-country SIPs will earn excess returns if/when political risk is resolved. Tests the model using data from 22 countries with active privatization programs during 1988–95.	Their proxy for political risk declines by an annual average of 3.6% during the course of a privatization program, and stock markets develop rapidly. Decline in risk leads to positive excess returns for SIPs of about 6% per year.
Choi, Nam, and Ryu 2000	Computes buy-and-hold returns of 204 PIPOs from 37 countries in 1977–97.	Significantly positive market-adjusted returns to SIPs over 1, 3, and 5-year holding periods.
Megginson, Nash, Netter, and Schwartz 2000	Examines long-run (1, 3, and 5-yr.) returns for 158 PIPOs from 33 countries from 1981–97. Computes local-currency and $ returns vs national and international indices, and vs matching firms.	Economically and statistically positive holding-period returns in both local currency and $, and vs all market indices. 5-year excess returns exceeding 80% are found for most comparisons.

TABLE 9 *(Cont.)*

Study	Sample description, study period, and methodology	Summary of empirical findings and conclusions
Dewenter and Malatesta 2001	Examines long-run returns to investors in 102 SIPs from developed and developing countries over 1981–94. Examines long-run stock returns of privatized firms and compares relative performance of large sample (1,500 firm-years) of state- and privately owned firms in 1975, 1985, and 1995.	Significant positive long-term (1–5 years) abnormal stock returns, mostly concentrated in Hungary, Poland, and UK.
Boardman and Laurin 2000	Examines factors influencing long-run returns of 99 SIPs in 1980–95. Tests effect of relative size, fraction retained (by government), presence of golden share, initial return, and timing on 3-year buy-and-hold returns. Examines whether UK utility SIPs earned "excessive" returns.	Significant positive abnormal returns to all SIPs over 1 (9.2%), 2 (13.5%) and 3-year (37.4%) holding periods. UK SIPs are higher than non-UK issues, and UK utilities have highest returns (60.6% 3-year excess returns), but 3-year non-UK SIP returns also significant. Excess returns are positively related to fraction retained and initial period return; negatively related to relative size and presence of golden share.

returns for privatization stocks listing in the United States in the form of American depository receipts (ADRs) compared to local benchmarks. The returns are significantly negative compared to U.S. benchmarks. Paudyal, Saadouni, and Briston (1998) find that investors earn insignificant long-term returns on eighteen Malaysian PIPOs, as well as on 77 private-sector IPOs.

Two of the multinational studies described in table 9 focus on long-run returns earned by investors in SIPs from developing countries. A third examines only western European offerings. Narjess Boubakri and Jean-Claude Cosset (2000) study returns from 120 SIPs from 26 developing countries, while Enrico Perotti and Pieter Oijen (2000) develop and test a model of long-term returns using data from twenty developing nations. Both studies document large, highly significant long-run returns, though the mean 112 percent three-year return found by Boubakri and Cosset is not significant once the returns from national markets over the corresponding time periods are subtracted (the absolute returns are converted into market-adjusted or excess returns). This is primarily due to the extremely large weightings that SIPs themselves have in most developing-country national stock market indices. Once these size biases are accounted for, SIPs significantly outperform most national market indices. Perotti and Oijen document significantly positive market-adjusted returns, and argue that this results from a progressive resolution of political risk as governments refrain from expropriating investors' wealth in privatized firms, which had been feared. Their proxy for political risk declines by an average of 3.6 percent annually during the course of a privatization program, and this leads to positive excess returns for SIPs of about 6 percent per year. Richard Davidson (1998) documents that large European SIPs began to outperform market indices in five countries during the mid-1990s. However, these SIPs did so only after an extended period of sub-par performance.

The remaining four long-run return studies employ multinational samples that cover a large number of countries and regions. For this reason, and because all the studies are recent enough to employ state-of-the-art techniques for computing net-of-market returns,

we consider these the most persuasive evidence on long-term excess returns earned by SIP investors. Megginson, Nash, Netter, and Adam Schwartz (2000) examine the long-run buy-and-hold returns earned by domestic, international, and U.S. investors who purchase shares at the first open-market price in 158 SIPs from 33 countries during the period 1981–97. They use several benchmarks and compute one, three, and five-year local currency and U.S. dollar net returns with respect to domestic, international, U.S. market indices, and industry-matched comparison samples. They find statistically significant positive net returns for the 158 unseasoned SIPs for all holding periods and versus all benchmarks. Boardman and Laurin (2000), Choi, Nam, and Gui-Youl Ryu (2000), and Dewenter and Malatesta (2000) find similar results. All four studies document significantly positive market-adjusted returns over holding periods of up to five years. In general, British privatizations yield higher long-run returns than do non-U.K. initial and seasoned SIPs, and British utilities yield the highest returns among the U.K. offerings. However, the net return is significantly positive for most non-U.K. subsamples as well.

These studies, and those cited earlier, support the conclusion that the average long-term, market-adjusted return earned by international investors in share issue privatizations is economically and significantly positive. Apart from Perotti and Oijen, however, few of these studies can offer any convincing explanation of precisely *why* SIP issues outperform over time, and isolating one or more specific cause-and-effect relationships is likely to prove extremely difficult. Most likely, these excess returns result from a gradual resolution of uncertainty on the part of investors regarding both the microeconomic success of privatization programs and the ability of governments to resist the temptation to expropriate shareholder wealth in privatized firms through direct intervention or targeted regulation or taxation. If so, an important implication is that returns on SIPs are likely to be much lower in the future than they have been historically, since investors will no longer demand a political risk premium to purchase shares. The determinants of the long-run returns will be an interesting source of future research.

7. *Privatization's Impact on Financial Market Development*

7.1 *Stock Market Capitalization and Trading*

There is no doubt that privatization has had a major impact on capital markets. Table 10 describes the growth in the total market capitalization, and in the value of shares traded, on the world's stock exchanges from 1983 to 1999. This was a period of rapid growth in the capitalization of markets in every country except Japan, which suffered a four-year, 70 percent decline in total market capitalization after reaching a value of $4.4 trillion in 1989. At year-end 1999, Japan's market was eight times as valuable in dollar terms (and less than four times as valuable in yen terms) as it was in 1983. By contrast, total world market capitalization increased over tenfold (to $35.0 trillion) between 1983 and 1999, and the total capitalization of the U.S. market increased almost ninefold (from $1.9 trillion to $16.6 trillion) over the same period. The growth in markets outside the United States was even greater. It is also in these markets that privatization's impact has been greatest, since there have been only two significant SIPs in the United States in the modern era (Conrail in 1987 and U.S. Enrichment

TABLE 10
THE GROWTH OF WORLD STOCK MARKET CAPITALIZATION AND TRADING VOLUME, 1983–99

Aggregate market capitalization and trading volume in $US millions

	1983	1986	1989	1992	1995	1998	1999
Market Capitalization[a]							
Developed countries	3,301,117	6,378,234	10,957,463	9,921,841	15,842,152	24,530,692	32,820,474
United States	1,898,063	2,636,598	3,505,686	4,485,040	6,857,622	12,926,177	16,642,462
Japan	565,164	1,841,785	4,392,597	2,399,004	3,667,292	2,495,757	4,554,886
United Kingdom	225,800	439,500	826,598	927,129	1,407,737	2,372,738	2,855,351
Developing countries	83,222	135,056	755,210	1,000,014	1,939,919	1,908,258	2,184,899
Total World	3,384,339	6,513,290	11,712,673	10,921,855	17,782,071	26,519,773	35,005,373
World, ex. US	1,486,276	3,876,692	8,206,987	6,436,815	10,924,449	13,593,596	18,362,911
US as % of world	56.1%	40.5%	29.9%	41.1%	38.6%	48.7%	47.5%
Trading Volume[b]							
Developed countries	1,202,546	3,495,708	6,297,069	4,151,573	9,169,761	20,917,462	35,187,632
United States	797,123	1,795,998	2,015,544	2,081,658	5,108,591	13,148,480	19,993,439
Japan	230,906	1,145,615	2,800,695	635,261	1,231,552	948,522	1,891,654
United Kingdom	42,544	132,912	320,268	382,996	510,131	1,167,382	3,399,381
Developing countries	25,215	77,972	1,170,928	631,277	1,046,546	1,956,858	2,320,891
Total world	1,227,761	3,573,680	7,467,997	4,782,850	10,216,307	22,874,320	37,508,523
World, ex. US	430,638	1,777,682	5,452,453	2,701,192	5,107,716	9,725,840	17,515,084
US as % of world	64.9%	50.3%	27.0%	43.5%	50.0%	57.5%	53.3%

Sources: Data sources: 1983–98, the World Bank's *Emerging Markets Fact Book* (various issues); 1999 data from Statistics section of the International Federation of Stock Exchange's website (*www.fibv.com*).
[a] Year-end values, translated from local currencies into US$ at the contemporaneous exchange rate.
[b] Total value of all trades executed during the year.

Corporation in 1999). Between 1983 and 1999, the total capitalization of non-U.S. stock markets increased from $1.49 trillion to $18.36 trillion. The total market capitalization of developing country stock exchanges increased by 26 times during these sixteen years, even after declining significantly from 1997's peak value of $2.5 trillion to $2.2 trillion in 1999.

Though the rise in market capitalization has been impressive, trading volumes have increased even more. The total value of shares traded worldwide between 1983 and 1999 rose from $1.2 trillion to more than $37.5 trillion. As before, non-U.S. markets experienced the greatest increases. The value of shares traded on markets in developing countries rose from $25 billion in 1983 to more than $2.3 trillion in 1999. This rise in market liquidity was probably due in large part to the increasing popularity of "emerging market" investing among western investors, particularly institutional investors such as pension and mutual funds.

What role has privatization played in this remarkable growth in market capitalization and trading volume? At the end of 1983, the total market capitalization of the handful of British, Chilean, and Singaporean firms that had been privatized was less than $50 billion. By the middle of 2000, the 152 privatized firms listed in either the *Business Week* "Global 1000" ranking of the most valuable companies in developed-nation stock markets or the *Business Week* "Top 200 Emerging Market Companies" ranking had a total market capitalization of $3.31 trillion. This equals approximately 13 percent of the combined market capitalization of the firms

TABLE 11
MARKET VALUES OF 25 LARGEST PUBLICLY TRADED PRIVATIZED FIRMS

Company	Country	Global 1000 Rank	Country Rank	Market Value US $mil[c]	Market Value as % of National Market Capitalization
NTT DoCoMo	Japan	8	1	247,237	5.4
BP Amoco	UK	12	2	207,506	7.3
Nippon Telegraph & Telephone	Japan	15	2	189,156	4.2
Deutsche Telekom	Germany	16	1	187,247	13.1
France Telecom	France	25	1	148,711	9.9
TotalFinaElf	France	33	2	116,318	7.7
China Telecom	China	42[a]	1	102,464	16.8[b]
British Telecom	UK	45	4	93,701	3.3
Telecom Italia	Italy	54	1	85,258	11.7
TIM (Telecom Italia Mobiliare)	Italy	60	2	75,917	10.4
Telefonica	Spain	72	1	66,571	15.4
ING Groep	Netherlands	92	3	57,474	8.3
ENEL	Italy	98	3	53,418	7.3
STMicroelectronics	France	101	6	51,324	3.4
Telstra	Australia	108	1	49,915	11.7
Cable & Wireless	UK	121	10	45,941	1.6
Banco Bilbao Vizcaya Argentaria	Spain	127	2	43,359	10.1
ENI	Italy	128	4	43,058	5.9
BNP Paribas	France	139	10	40,390	2.7
Sonera	Finland	147	2	37,199	10.6
Telefonos de Mexico	Mexico	151[a]	1	36,383	23.6
CGNU	UK	164	14	33,957	1.2
SK Telecom	Korea	186	2	30,388	9.9
Cable & Wireless HKT	Hong Kong	195	2	27,780	4.6
Swisscom	Switzerland	206	8	25,732	3.7

Source: Data are from Morgan Stanley Capital International, as reported in "The Business Week Global 1000," *Business Week* (July 10, 2000). Global 1000 Rank refers to a company's global ranking based on market valuation, while Country Rank refers to its relative position among firms from its country on the Global 1000 List.

[a] These firms are from a companion "Top 200 Emerging-Market Companies" ranking in the same *Business Week* issue, and they are given the rankings they would have if this list was included in the "Global 1000" list.

[b] Expressed as a percentage of the Hong Kong market's total capitalization.

[c] Stock market value, total sales, and total profits (in US $mil. translated at contemporaneous exchange rate) of the 25 most valuable publicly traded privatized firms as of May 31, 2000.

on the two lists, and is more than 27 percent of the non-U.S. total. (American firms accounted for 484 of the "Global 1000" firms, and $13.1 trillion of the $23.9 trillion "Global 1000" total capitalization.)

An examination of the historical evolution of non-U.S. stock markets since 1980 suggests that large SIPs played a key role in the growth of capital markets almost everywhere, especially because they are generally among the largest firms in national markets. Using the *Business Week* 2000 "Global 1000" and "Top 200" data, table 11 details the total market value and relative size of the world's 25 most valuable privatized firms. Columns 1 and 2 give the company names and domicile countries.

Column 3 shows each firm's ranking in the "Global 1000" list (firms from the "Top 200 Emerging Markets" list are given the ranking they would have if included in the "Global 1000" ranking). Column 4 gives the firm's ranking within its home market, and column 5 lists the firm's total market capitalization. Column 6 expresses the single firm's market capitalization as a percentage of the entire national market's year-end 1999 capitalization.

Table 11 plus data reported in Maria Boutchkova and Megginson (2000) reveal the relative importance of SIPs in most non-U.S. stock exchanges. Privatized firms are the most valuable companies in Japan, Germany, France, Italy, Spain, Australia, Mexico, Singapore, China, Denmark, New Zealand, Portugal, Russia, Argentina, Brazil, Greece, Malaysia, Poland, the Czech Republic, Hungary, Turkey, Indonesia, Egypt, and Peru. They are the second-most valuable firms in many other countries, including Britain, Finland, Hong Kong, Korea, Chile, and the Philippines. Privatized companies are the first and second-most valuable companies in Japan, France, Spain, Argentina, and Indonesia, and they occupy the three top slots in Italy, Portugal, Russia, and Greece. Table 11 shows that the largest privatized firms often account for sizeable fractions of the total capitalization of national stock markets, even in advanced countries such as Germany (13.1 percent), Italy (11.7 percent), Spain (15.4 percent), and Australia (11.7 percent). In developing countries such as Korea (9.9 percent) and Mexico (23.6 percent), individual privatized firms also account for large fractions of the total market capitalization.

Another way to measure the impact of privatized firms on capital market development is to see how important SIPs have been as security offerings, and here the impact is even greater. As table 12 shows, the ten largest, and thirty of the 35 largest, share offerings in history have been privatizations. Ten SIPs have been larger than the biggest U.S. share offering, the $10.6 billion AT&T Wireless tracking stock offering in April 2000. Jones, Megginson, Nash, and Netter (1999) show that, between 1984 and 1997, 112 SIPs raised at least $1 billion, a stock offering size rarely observed in the United States. Twenty-five SIPs have raised more than $7 billion, a feat no private-sector issuer achieved prior to April 2000, and governments have raised a total of more than $700 billion through some 750 public share offerings since 1977. Outside of the entire U.S. corporate sector, this is an unprecedented volume of common equity issuance, and it has fundamentally changed the nature of global stock market trading and investment.

Why should we care about privatization's impact on the development of capital markets? Obviously, new share listings can directly create some net new wealth and a handful of new (albeit well-paying) jobs, but the principal economic payoff from increasingly efficient and liquid capital markets comes from the financing opportunities and monitoring possibilities they provide. Several studies (Ross Levine 1997; Asli Demirgüç-Kunt and Yojislav Maksimovic 1998; Levine and Sara Zervos 1998; Rajan and Luigi Zingales 1998; Avandhar Subrahmanyam and Sheridan Titman 1999; Thorsten Beck, Levine, and Norman Loayza 2000; Geert Bekaert and Campbell Harvey 2000; Jeffrey Wurgler 2000; and Peter Blair Henry 2000a,b) document that efficient capital markets promote economic growth and allow individual firms to fund investment opportunities they otherwise would have to forgo. Therefore, privatization

TABLE 12
WORLD'S LARGEST SHARE OFFERING
Share offerings raising over $5 billion as of August 15, 2000. Offers reported in nominal amounts (not inflation-adjusted), and translated into millions of US dollars using the contemporaneous exchange rate.

Date	Company	Country	Amount ($mil)	IPO[a]/SEO[b]
Nov 87	Nippon Telegraph & Telephone	Japan	40,260	SEO
Oct 88	Nippon Telegraph & Telephone	Japan	22,400	SEO
Nov 99	ENEL	Italy	18,900	IPO
Oct 98	NTT DoCoMo	Japan	18,000	IPO
Oct 97	Telecom Italia	Italy	15,500	SEO
Feb 87	Nippon Telegraph & Telephone	Japan	15,097	IPO
Nov 99	Nippon Telegraph & Telephone	Japan	15,000	SEO
Jun 00	Deutsche Telekom	Germany	14,760	SEO
Nov 96	Deutsche Telekom	Germany	13,300	IPO
Oct 87	British Petroleum	United Kingdom	12,430	SEO
Apr 00	ATT Wireless (tracking stock)[c]	United States	10,600	IPO
Nov 98	France Telecom	France	10,500	SEO
Nov 97	Telstra	Australia	10,530	IPO
Oct 99	Telstra	Australia	10,400	SEO
Jun 99	Deutsche Telekom	Germany	10,200	SEO
Dec 90	Regional Electricity Companies[d]	United Kingdom	9,995	IPO
Dec 91	British Telecom	United Kingdom	9,927	SEO
Jun 00	Telia	Sweden	8,800	IPO
Dec 89	UK Water Authorities[d]	United Kingdom	8,679	IPO
Dec 86	British Gas	United Kingdom	8,012	IPO
Jun 98	Endesa	Spain	8,000	SEO
Jul 97	ENI	Italy	7,800	SEO
Apr 00	Oracle Japan[c]	Japan	7,500	IPO
Jul 93	British Telecom	United Kingdom	7,360	SEO
Oct 93	Japan Railroad East	Japan	7,312	IPO
Dec 98	Nippon Telegraph & Telephone	Japan	7,300	SEO
Oct 97	France Telecom	France	7,080	IPO
Jul 99	Credit Lyonnais	France	6,960	IPO
Feb 94	Elf Acquitaine	France	6,823	SEO
Jun 97	Halifax Building Society[c]	United Kingdom	6,813	IPO
Jun 98	ENI	Italy	6,740	SEO
May 94	Autoliv Sverige[c]	Sweden	5,818	IPO
Oct 96	ENI	Italy	5,864	SEO
Oct 98	Swisscom	Switzerland	5,600	IPO
Jul 99	United Parcel Service[c]	USA	5,500	IPO

Amounts reported for share issue privatization (SIP) offers are as described in the *Financial Times* at the time of the issue.
[a] initial public offering.
[b] seasoned equity offering.
[c] private-sector offering; amounts are from the Securities Data Corporation file.
[d] group offering of multiple companies that trade separately after the IPO.

deserves credit for whatever direct role it has played in promoting stock market development (through new share offerings), and for the indirect role it has played in bond market development. This catalytic role can be assumed because several of the aforementioned studies find development of one market also promotes development of related markets.

8. *Privatization's Impact on International Corporate Governance Practices*

It would be an understatement to assert that interest in corporate governance issues has been growing recently among policy makers and academic economists. A nation's corporate governance system can be defined as the set of laws, institutions, practices, and regulations that determine how limited-liability companies will be run, and in whose interest. Evidence of the professional interest in corporate governance is not hard to find. Several countries and multilateral agencies have recently published "codes" or "principles" of good corporate governance practices, such as OECD (1999). In the academic arena, one of the recent growth areas in corporate finance has been the interaction between law and finance, highlighted by cross-sectional studies of the determinants and effects of international differences in securities law and corporate governance. Studies have examined governance practices in developed countries (Shleifer and Vishny 1997; LaPorta, López-de-Silanes, Shleifer, and Vishny 1997, 1998, 1999, 2000b,c; Maria Maher and Thomas Andersson 1999; and Dyck 2000b); transition economies (Berglof and von Thadden 1999; Coffee 1999; and Dyck 2000a); and individual countries such as Russia (Black, Kraakman, and Tarassova 2000) and China (Xu and Wang 1997; and Lin 2000). However, the study of the impact of law and corporate finance has been expanded into studies of their effects on macroeconomics (such as currency crisis), investment, innovation, and financing (Rajan 2000 discusses these areas of study).

While a survey of this research is outside the scope of this paper (Megginson 2000 is a more complete survey of the effects of corporate governance), we need to mention several findings because they impact the interpretation of the effects of privatization. There are several reasons analysis of international patterns in corporate governance and securities laws has become increasingly important. These include the large increase in the total value of security issues on global capital markets, and a comparable increase in the total value of mergers and acquisitions worldwide.[36] Until recently, relying on securities markets for corporate financing and resorting to (often hostile) public takeovers to effect changes in control of corporate assets were American practices, but both trends have now "gone global." In particular, the adoption of the euro in January 1999 has been accompanied by the value of European mergers and acquisitions roughly doubling to $1.22 trillion in 1999 versus 1998 (itself a record year). Another reason for the interest in corporate governance today is the important role that poor governance practices are perceived to have played in the East Asian economic contraction that began in July 1997 (Claessens, Djankov, S. Fan, and Larry Lang 2000; and Simon Johnson, Peter Boone, Alasdair Breach, and Eric Friedman 2000).

Finally, academic research by La Porta, López-de-Silanes, and Shleifer (1999), and La Porta, López-de-Silanes, Shleifer, and Vishny (1997, 1998, 1999, 2000a,c) presents evidence that corporate governance generally, and corporate legal systems specifically, significantly influence capital market size, ownership structure, and efficiency. Most importantly, La Porta et al. argue in their articles that there are differences

[36] The data are taken from the *Investment Dealers Digest*. Each January, *IDD* details the prior year's total worldwide security issuance and mergers and acquisitions volume.

between countries in the degree to which the legal system protects investors, which in turn affects the development and operation of external capital markets. It appears that capital markets have developed better in countries where the legal system had a common law origin than in countries with a civil law basis. Rajan (2000), however, suggests that some other factor that is correlated with the origin of the legal system likely explains the above findings. In any event, the framework and operation of a country's legal system impacts the operation of financial markets and corporate governance in that country.

Similarly, the structure and operation of a country's legal system will affect the impact of privatization. Privatization is a major change in the governance structure of a firm. Thus, how well the legal system protects investors is presumably a determinant of the success of privatization in improving firm performance (Sachs, Zinnes, and Eilat 2000; and Djankov and Murrell 2000a,b present evidence this is the case in transition economies). Further, privatization usually accompanies changes in a country's legal system. For example, industrialized-country governments that implement large-scale SIP programs often need to significantly change their corporate governance systems, while governments from the transition economies of China and central and eastern Europe must create such a system almost from scratch. As we mentioned above, this has an implication for most of the studies we discuss in this paper. Since the privatizations are occurring at the same time as other major changes, including the legal system, it is impossible to completely isolate the impact of privatization on firm operations from the other changes affecting the firm.

In addition, privatization impacts the patterns of the changes in the legal system in many countries. One of the distinctive aspects of SIP programs is the tendency of governments to sell shares to large numbers of citizens, often one million or more. Democratic governments are usually acutely aware of the political fallout that could result if small investors suffer losses on their SIP investments because of inadequate shareholder protection or insider dealings. Thus, at the same time they launch the first large SIPs, most governments establish (or augment) a regulatory body similar to the U.S. Securities and Exchange Commission. Since utilities comprise many of the important privatizations and since many utilities are natural monopolies, most privatizing governments establish regulatory bodies for these firms as well. In addition, national stock exchanges are often illiquid and nontransparent at the beginning of large SIP programs. Governments must establish the listing and other regulations that will assure potential investors that the market is a reputable place in which to invest and trade.

There is some literature that examines the actual corporate governance provisions of privatized firms. In their study of SIPs, Jones, Megginson, Nash, and Netter (1999) find that governments tend to retain some sort of decisive voting rights in privatized firms even after a majority of the income rights have been sold. In many countries, the government retains a golden share (90 percent of U.K. SIPs have such a feature). This special share held by the government enables it to veto mergers, liquidations, asset sales, and other major corporate events. An alternative method of retaining ultimate control is for the government to insert some control restrictions directly into the SIP's charter.

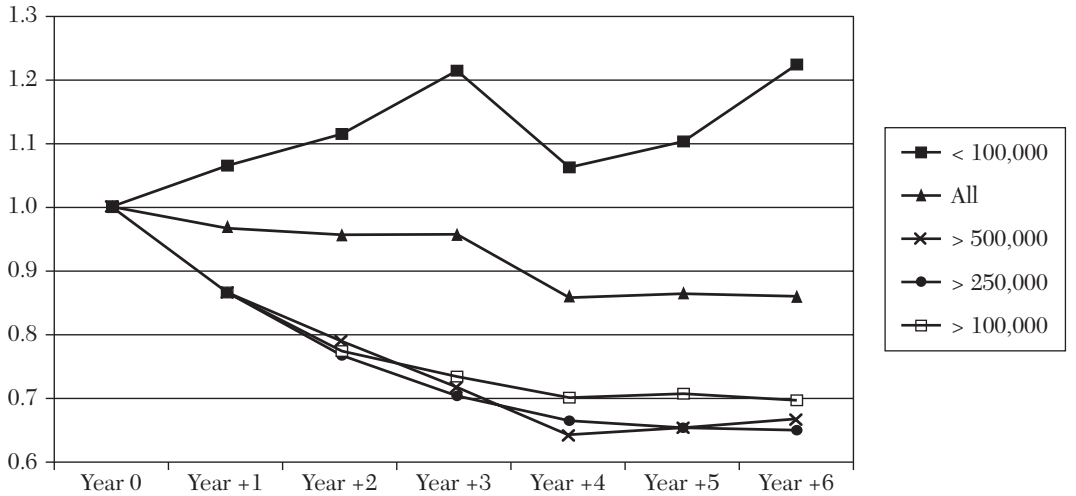

Figure 3. Changes in the Number of Shareholders in Privatized Firms over Years +1 to +6

Notes: This figure represents the dynamics of share ownership of a sample of privatized firms, where the number of shareholders in Year 0 is normalized to 1 and in subsequent years shows the change with respect to Year 0. The companies with less than 100,000 initial shareholders exhibit increasing numbers of shareholders, and the companies with more than 100,000, more than 250,000 and more than 500,000 initial shareholders exhibit strong declines that pull the whole sample to a significant decrease in the number of shareholders over the whole period.

8.1 *Individual Share Ownership in Privatized Companies*

Boutchkova and Megginson (2000) study the evolution of share ownership in large SIPs. They look at how many individual stockholders are created in a sample of large privatization share offerings, as well as how these highly atomistic ownership structures evolve over time. They compare the numbers of stockholders in the privatized firms in the 1999 *Business Week* "Global 1000" and "Top 200 Emerging Markets" lists to capitalization-matched private sector firms from the same markets, obtaining useable data for 97 of the 153 privatized companies and for 99 of the matching privately owned firms. For most of the cases with data available for both the privatized and the matching firm, the privatized company has a larger number of shareholders. This result holds despite the fact that in most cases governments retain sizable stakes in these firms, thus reducing their effective total capitalization since these stakes have not yet been sold to private investors. Boutchkova and Megginson conclude that the number of shareholders in the privatized companies is significantly higher than the number of shareholders in the matching private-sector (non-privatized) sample companies.

Boutchkova and Megginson (2000) also examine how the total number of shareholders in a company evolves during the years subsequent to an SIP. They demonstrate that the extremely large numbers of shareholders created by many SIPs are not a stable pattern of corporate ownership. Figure 3 shows the dynamics in share ownership in privatized firms. For SIPs with less than 100,000 initial investors, the number of shareholders increases steadily from one year to four years after the privatization. However, for the 39 SIPs that initially have more than 100,000

shareholders, the total number of shareholders declines steadily. In the largest privatizations (those with 500,000 or more initial investors) the total number of shareholders declines by 33 percent within five years of the share offering.

The implications of this finding for government efforts to develop an effective corporate governance system or equity culture are unclear. Many new stockholders do not retain the shares they purchase. Other evidence suggests that retail investors in privatizations generally own only that one stock, hardly indicative of a class of well-diversified stockholders. On the other hand, since the long-run returns to investors in SIPs are generally positive, the first experience of these new retail investors in stock market trading is a positive one. Furthermore, the fact that governments are able to entice large numbers of investors to return for subsequent share offerings suggests that these programs are indeed creating (at least minimally) effective governance systems and stock markets capable of absorbing large new stock issues.

9. *The "Lessons" of Privatization Research*

9.1 *Some Thoughts on the Current Literature*

Our reading of the extant literature on privatization suggests the following conclusions:

1. The privatization programs of the last twenty years have significantly reduced the role of state-owned enterprises in the economic life of most countries. Most of this reduction has happened in developing countries only during the 1990s. The SOE share of "global GDP" has declined from more than 10 percent in 1979 to less than 6 percent today.[37]
2. Research now supports the proposition that privately owned firms are more efficient and more profitable than otherwise-comparable state-owned firms. There is limited empirical evidence, especially from China, that suggests that non-privatizing reform measures, such as price deregulation, market liberalization, and increased use of incentives, can improve the efficiency of SOEs, but it also seems likely that these reforms would be even more effective if coupled with privatization.
3. Governments use three basic techniques to privatize their SOEs: share issue privatizations (SIPs), asset sales, and voucher or mass privatizations. We are beginning to understand the determinants of the method selected in specific circumstances. However, there is great variation within all the techniques, because privatization is a complex process involving a host of political and economic factors. Voucher privatizations are the least economically productive divestment technique, but those governments that use it generally have few other realistic options.
4. Governments attempt to craft the offering terms of SIPs to balance competing economic, political, and financial objectives. Most governments underprice share offerings (particularly initial offerings) and then use targeted share allocations to favor domestic over foreign investors. SOE employees are particularly favored, receiving preferential allocations in 91 percent of offers. Governments

[37] These figures are based on the study findings discussed in section 2, and on the observation that OECD countries represent about three-quarters of world GDP and developing countries account for the remaining 25 percent.

frequently retain golden shares that give them veto power over certain control changes, and also insert various other control restrictions into the corporate charters of privatized firms.

5. We know that privatization "works," in the sense that divested firms almost always become more efficient, more profitable, and financially healthier, and increase their capital investment spending. These results hold for both transition and non-transition economies, though the results vary more in the transition economies. The question of whether privatization generally costs at least some SOE workers their jobs is still unresolved. The answer is ultimately based on whether sales increase faster than productivity in privatized firms. Most studies find that employment in privatized firms usually does fall, though three large-sample studies document employment increases. What is clear is that whenever employment is cut, there is almost invariably a large compensating performance improvement. Several studies also highlight the need to bring new entrepreneurial management into privatized firms to maximize performance improvements. However, there is little empirical evidence on how privatization affects consumers.
6. Investors who purchase initial SIP shares at the offering price and then sell those shares at the first post-issue trading price earn significantly positive excess (market-adjusted) returns. Additionally, there is now convincing evidence that initial returns on privatization IPOs are significantly higher than the initial returns earned on private-sector IPOs. Investors who purchase privatization IPO shares at their first post-offer trading price, and then retain those shares for one-, three-, or five-year holding periods, also earn significantly positive net returns.
7. Though it is difficult to pinpoint causality, it appears that countries that have launched large-scale SIP programs have experienced rapid growth in their national stock market capitalization and trading volume. Countries (other than the United States) that have either not launched major privatization programs or have emphasized asset sales and vouchers over public share offerings appear to lag behind in market development. Privatized firms are one of the two or three most valuable companies in most non-U.S. markets, and the ten largest (and thirty of the 35 largest) share issues in financial history have all been privatizations.
8. Emerging (largely anecdotal) evidence suggests that adopting a large-scale SIP program is often a major spur to modernizing a nation's corporate governance system. Transition economies that launch privatization programs must create such systems largely from scratch, and the record of success here is decidedly mixed. Many governments try to develop an equity culture among their citizenry through SIP programs, also with mixed results. Share ownership has dramatically increased in most non-transition countries over the past fifteen years, but the share ownership patterns that are created when SIPs are sold to large numbers of investors (often one million or more) are not stable. However, it seems clear that privatization programs lead to significant improvements in securities market regulation, information disclosure rules, and other required components of modern financial systems.

9.2 *Avenues for Further Research*

While much has indeed been learned about the effectiveness of privatization as a political and economic policy, there are several important areas that need further research. We believe that, in particular, there are three aspects of privatization that need to be understood much better for public policy reasons. First, researchers need to more closely examine the sequencing and staging of privatization, and conclusively document whether reforms other than government divestiture can effectively serve as a substitute (or precursor) for privatization. Responsible policy makers are understandably reluctant to "bet their economies" on a rapid, and essentially irreversible, privatization program without some assurance that all necessary prerequisite policies have been put into place. Until these policies are identified, and the interactions between various policy options are established, launching large-scale privatization programs will remain a leap of faith.

The second vital area of research is to conclusively document the labor economics of privatization programs. Do most such programs actually cost SOE workers jobs? Are there gender-specific impacts relating to the total commercialization of state-owned enterprises, as might happen if privatization caused SOEs to shut down child care or other social services? Are worker training/retraining programs effective methods of dealing with worker redundancies, or should governments emphasize lump-sum severance packages when lay-offs are required? Do privatization programs create more jobs economy-wide than they destroy? These questions are not only vitally important to policy makers, they are inherently interesting in their own right.

Finally, what role can privatization play in equipping companies and countries to meet the challenges posed by major economic forces such as globalization and the rapid growth of information-based business? Technological breakthroughs have transformed the global telecommunications industry during the past decade, and privatized telecom companies have been at the forefront of this revolution. Indeed, it is unlikely that this most dynamic of industries would have been able to grow nearly as rapidly under the former state ownership model. But how important will privatization be for the global oil and gas industry's development in the future, and for the energy-based utilities that are now being impacted by technological and regulatory changes similar to those that hit telecommunications during the 1990s? How can developing countries structure privatization programs to most effectively attract foreign direct investment from multinational companies? How will privatization impact the worldwide shift from commercial bank-based systems of corporate finance to capital market-based finance? All of these questions can, and should, be answered using the tools of economic analysis, and it is hard to imagine an area of research more intrinsically interesting to economists than analyzing the optimal role of government in the business of nations.

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