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The Financial and Operating Performance of Newly Privatized Firms: an International Empirical Analysis

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Extracto

Este estudio compara el desempeño financiero y operativo, pre- y posprivatización para 61 compañías de 18 países y 32 industrias que experimentaron privatización total o parcial mediante ofertas públicas accionarias durante el período 1961 a 1990. Los resultados documentan fuertes mejoras de desempeño, las cuales se alcanzan sorprendentemente sin sacrificio de seguridad en el empleo. Especiíficamente, con posterioridad a ser privatizadas, las firmas incrementan sus ventas reales, se vuelven más rentables, aumentan su inversión de capital, mejoran su eficiencia operativa e incrementan sus fuerzas de trabajo. Más aun, esas empresas bajan significativamente sus niveles de deuda e incrementan sus pagos de dividendos. Finalmente, se documentan cambios significativos en el tamaño y composición de los directorios posteriormente a las privatizaciones.

Abstract

This study compares the pre- and postprivatization financial and operating performance of 61 companies from 18 countries and 32 industries that experiencie full or partial privatization through public share offerings during the period 1961 to 1990. Our results document strong performance improvements, achieved surprisingly without sacrificing employment security. Speciafically, after being privatized, firms increase real sales, become more profitable, increase their capital investment spending, improve their operating efficiency, and increase their capital investment spending, improve their operating efficiency, and increase their work forces. Furthermore, these companies significantly lower their debt levels and increase dividend payout. Finally, we document significant changes in the size and composition of corporate boards of directors after privatization.

The last fifteen years have witnessed a significant, global shift away from state socialism towards entrepreneurial capitalism. One of the most important and visible aspects of this trend has been the enthusiasm with which governments of all political persuasions have sold their state-owned enterprises (SOEs) to private investors in hopes that the generally unsatisfactory economic performance of these firms can be improved by the discipline of private ownership. This denationalization process, given its current title of "privatization" by the conservative government of Margaret Thatcher in 1979, has transformed the role of the state in the economy of industrialized nations such as Britain and France and of developing countries as diverse as Singapore, Chile, and Mexico.

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Other nations have experienced less profound, but equally dramatic, shifts in the balance of power between the state and private sectors after they adopted privatization programs. Indeed, a World Bank study by Kikeri, Nellis, and Shirley (1992, page iii) reports that, "more than 80 countries have launched ambitious efforts to privatize their state-owned enterprises. Since 1980, more than 2000 SOEs have been privatized in developing countries, 6,800 worldwide." Furthermore, Goodman, and Loveman (1991) report that, by 1990, the value of worldwide sales of state enterprises had topped $ 185 billion- and showed no sign of slowing.[1]

What we find most surprising about the privatization programs of the 1980s, however, is not their size or scope but the fact that they were adopted largely on faith. The academic literature available at the time these decisions were made offered precious little guidance as to the best method of divesting state-owned assets and only limited theoretical analysis of the predictable costs and benefits of privatizations. Furthermore, while the extant literature on the performance of SOEs was voluminous, the few empirical analyses of privatization itself that had been published were far from conclusive.[2] While authors such as Bailey (1986), Bishop and Kay (1989), and Pryke (1982) present arguments or evidence favoring privatization's role in promoting economic efficiency, the exact opposite view is put forward by Kay and Thompson (1986) and Wortzel and Wortzel (1989).

A problem common to most early empirical studies-such as those cited above and others by Yarrow (1986) and Caves (1990)-is that they examine only a small number of companies from a single country (usually Great Britain) and

[1]Impressive as these figures are, it seems clear that privatization's greatest impact on world economic history will occur in the years immediately ahead, as the newly-noncommunist nations of eastern Europe and the Commonwealth of Independent States make their painful transition from centrally planned to market-oriented economies. Even the Peoples Republic of China is taking tentative steps toward privatizing state-owned commercial enterprises, having already successfully allowed private ownership of agricultural land.

[2]Contemporary empirical studies of the relative performance of state-owned versus privately-owned firms include works by Atkinson and Halvorsen (1986), Boardman, Freedman, and Eckel (1986), Caves and Christensen (1980), Eckel and Vermaelen (1986), and Funkhouser and MacAvoy (1979). Widely cited earlier studies include Alchain (1965) and Peltzman (1971). For an excellent summary of this literature, see Boardman and Vining (1989), especially Table 1. For a detailed description of the goals of the SOE, see Wortzel and Wortzel (1989), Nellis and Kikeri (1989), and Austin, Wortzel, and Coburn (1986). Finally, Kornai (1988) examines the social and economic effects of reform of socialist economies.

generally lack statistical significance. To the extent that economists had reached a consensus by the mid-1980s concerning privatization's proper role in achieving socially beneficial aims, it was summed up in Yarrow (1986), who argued that competition and managerial accountability are more important than privatization, per se, in promoting economic efficiency.[3] This viewpoint was later echoed by Caves (1990), Goodman and Loveman (1991), and Shirley and Nellis (1991).

More recent theoretical and empirical studies have offered stronger support for the dual propositions that private firms outperform SOEs and that privatization itself increases the operating efficiency of the divested firms. The theoretical work of Boycko, Shleifer, and Vishny (1993) shows that privatization will lead to effective restructuring of SOEs-that are currently producing at inefficiently high levels in order to maximize employment-only if both cash flow rights and control rights pass from the government into private hands (particularly into managers' hands). Only then will the government be unable to "bribe" nanagers to produce at inefficient levels by offering them operating subsidies. In other words, cutting the "soft budget constraint" of SOEs is vital to improving performance.

Empirically, Boardman and Vining (1989) analyze the relative performance of the 500 largest non-U.S. mining and manufacturing companies in 1983 to determine whether privately owned firms outperform state-owned and mixed state and privately-owned companies (labeled mixed enterprises, MEs). After controlling for the regulatory/competitive environment in which each firm operates, they present very strong evidence that private corporations are both more profitable and more efficient (measured as sales per employee and per asset) than either SOEs or MEs.[4]

[3]The empirical findings of Caves and Christensen (1980) support this proposition. Moore (1992), on the other hand, argues that the act of privatization *itself* promotes both economic efficiency and public confidence in the system of industrial capitalism, and thus state-owned enterprises must be sold off (and sold off to individual investors) before efficiency gains can be realized.

[4]Another intriguing result that Boardman and Vining present is the finding that SOEs and MEs perform equally poorly, suggesting that merely having publicly traded stock is not enough to make a state-controlled firm operate efficiently. Instead, the company must be controlled by private investors.

Certainly the most thorough empirical analysis of privatization itself is the World Bank study by Galal, Jones, Tandon, and Vogelsang (1992). They analyze the postprivatization performance of twelve companies (mostly airlines and regulated utilities) in Britain, Chile, Malaysia, and Mexico to determine whether the transfer to private ownership increased efficiency- and, if so, how the costs and benefits of adjustment were allocated.[5] The authors document net welfare gains in eleven of the twelve cases and, on average, the present value of these gains equals 26 percent of the firm's predivestiture sales revenue. Furthermore, they document no case where workers as a class were made worse off and three cases where workers were made significantly better off.[6]

As rigorous as the World Bank study is, however, it examines only a small number of (mostly regulated) firms from four countries. Therefore it only partially overcomes the basic problem that has bedeviled all empirical privatization studies to date-the difficulty of obtaining truly comparable pre- and postprivatization data for a large, multinational, multi-industry sample of companies. Our study overcomes this problem by directly soliciting information from 149 companies listed as being privatized through public share issues prior to 1988 (or being privatized at the time of publication) in a World Bank study by Candoy-Sekse and Palmer (1988). Using the responses received-augmented by secondary sources such as the Disclosure databases and international business newspapers and magazines- we are able to compare the pre- and postprivatization performance of 61 companies from 18 countries (6 developing and 12 industrialized) and 32 different industries. We have ownership structure (board of director) change data for an additional 9 companies and 2 countries. Through followup contacts and research we are satisfied that we have overcome any sample selection bias that might favor responses only from "successful" privatizations, and feel that our sample reflects the actual experience of at least the largest and most important recent privatizations.

We find persuasive evidence that the mean and median profitability, real sales, operating efficiency, and capital investment spending of our sample firms

[5]The most important aspect of this study is the great care with which the authors try to isolate the effect of just the privatization itself. They compare the actual performance of the divested firm to what it could have been predicted to be if it had remained in state hands.

[6]Other recent empirical and/or normative papers on privatization include Hutchinson (1991), Jones, Tandon, and Vogelsang (1991), and Harrell and Sohl (1993).

increase significantly (in both statistical and economic terms) after privatization. We also document significantly lower leverage ratios and higher dividend payments for our firms after divestiture. Perhaps most surprisingly, we find no evidence that employment levels fall after privatization. Instead, we document an *increase* in mean and median employment, and find that a marginally significant 64 percent of our sample companies employ more workers after their transfer to private ownership than they did as SOEs. Our results are also quite robust to various partitions of the data into smaller sbsamples, such a full-versus-partial privatizations, industrialized-versus-developing country divestitures, and competitive-versus-regulated industry sales.

This article is organized as follows. Section I provides a brief history of the privatization programs that have been adopted around the world since 1961. The data we employ is described in Section II, while Section III presents our testable predictions and methodology. Section IV presents our empirical results, and Section V concludes the paper.

I. The History of Privatization Programs, 1961 to 1990

While modern privatization programs are usually associated with the Thatcher government in the United Kingdom, it was in fact the government of Konrad Adenauer, elected to power in the Federal Republic of Germany (FRG) in 1957, that launched the first large-scale, ideologically-motivated "denationalization" program of the postwar era. The first major sale occurred in 1961, when the FRG sold a majority stake in Volkswagen in a public share issue heavily tilted towards small investors, and four years later it orchestrated a similar, but even larger, secondary share issue for VEBA. These two issues increased the number of shareholders in Germany from approximately 500,000 to almost 3 million, but public enthusiasm for further issues cooled after VEBA's stock price declined -thereby prompting a rescue operation by the German government aimed at protecting small shareholders. Details of all the share issues made by firms in our sample that involve lowering state ownership in a firm are presented in Table I.

Table I

Sample Firms Privatized Through Public Share Offerings, 1961 to 1990

This table provides descriptive information for our sample of companies that were fully or partially privatized through public share offering during the period 1961 to 1990

Company Name	Industry	Issue Date	Issue Size (in millions)	U.S. $ Value of Issue (in millions)	Fraction[b] Secondary (%)	Government Shareholdings (%) Before Issue	Government Shareholdings (%) After Issue
Austria							
Laenderbank	Banking	Nov. 1987*[a]	Asch 42	3.7	100	60	53
		Sep. 1989	Asch 19.8	1.5	0	53	51
OMV AG	Petroleum	Dec. 1987[a]	Asch 1,320	117.3	100	100	85
		Sep. 1989	Asch 1,648	125.3	100	85	75
Verbund	Electric utility	Nov.1988	Asch 2,000	153	0	100	51
Canada							
Fishery Products International	Seafood and fish processing	Apr. 1987	C $177	133.5	100	100[c]	0
Air Canadá	Airline	Oct. 1988*	C $233.8	196	0	100	57
		July 1989	C $544.9	452	100	57	0
Petro Canada[d]	Petroleum	July 1991	C $546	478	0	100	80.5
Chile							
CAP S.A.	Steel and	Mar. 1985	US $82.4	82.4	0	100	53
de Inversiones	mining	1985-1987*			100	53	0
SQM	Mining	1983-1988[f]			100	100	0
Compañía Chilena Metropolitana de Distribución Eléctrica	Electricity production and destruction	1985-1987[g]			100	100	0
IANSA	Sugar production	1986-1988[g]			100	100	0
Laboratories de Chile	Pharmaceuticals	1986-1988[g]			100		
Denmark							
Kryolit Selskabet Oeresund	Consumer goods and mining	Dec. 1985				50	0

Table I - *Continued*

Company Name	Industry	Issue Date	Issue Size (in millions)	U.S. $ Value of Issue (in millions)	Fraction[b] Secondary (%)	Government Shareholdings (%) Before Issue	Government Shareholdings (%) After Issue
France							
Elf Acquitaine	Petroleum	Sep.1986	FF 3,300	493	100	66.8	55.8
St. Gobain	Glass, building materials	Nov. 1986	FF 13,500	2,091.4	100	100	0[h]
Paribas	Banking, financial institution	Jan.1987	FF 17,500	2,742	100	100	0[h]
Banque Industrielle & Mobiliere Privee (BIMP)	Banking	Mar. 1987	FF 360	59.9	100	100	0[i]
Sogenal	Banking, financial institution	Mar. 1987	FF 1,500	249.6	100	100[j]	0[h]
Banque de Batement et des Travaux Publics	Banking	Apr. 1987	FF 400[k]	66.5	100	100	0
Credit Commercial de France	Banking	Apr. 1987	FF 4,400	732	100	100	0[h]
Havas	Advertising and publishing	May 1987	FF 2,410	405	100	40.3[l]	0[v]
Compagnie Generale d'Electricite	Telecommunication equipment and electrical machinery	May 1987	FF 8,000	1,331	100	100	0[h]
Societé Generale	Banking, financial institution	July 1987	FF 21,500	3,577	100	100	0[h]
Compagnie Financiere Suez	Banking, financial institution	Oct. 1987	FF 15,641	2,929	100	100	0[h]

Table I - *Continued*

Company Name	Industry	Issue Date	Issue Size (in millions)	U.S. $ Value of Issue (in millions)	Fraction[b] Secondary (%)	Government Shareholdings (%) Before Issue	Government Shareholdings (%) After Issue
Germany							
Volkswagen	Automobiles	Mar. 1961*	DM 1,260	315	100	100[m]	20
		Mar. 1988	DM 1,140	672	100	16	0
VEBA AG	Mining and heavy industry	Apr. 1965*	DM 825	206	29	100	36
		Mar. 1987	DM 2,500	1,380	100	25.6	0
VIAG,	Utility and mining	June 1986*	DM 766	339	100	100	60
		May 1988	DM 1,475	877	100	60	0
Deutsche Verkehrs Kreditbank	Banking	Mar. 1988	DM 18.7	11	100	100	75
Deutsche Siedlungs & Landesrentenbank	Banking	Oct. 1989	DM 409,5	241	100	100	52
IVG	Property management	Oct. 1986	DM 163	84	100	100	55
Italy							≈80
Banca Commerciale Italiana (BCI)[d]	Banking	Mar. 1970n	Lit 12,000	19.1			
		Aug. 1985 *			100	≈80	67
		1986-1991			67	57	
Saipem S.p.A.	Petroleum	July 1984	Lit 124,500	73.6	0	100	80
Sirti[o]	Telecommunications	June 1985	Lit 201,000	110		95	55
Credito Fondiario	Financial institutions	July 1985	Lit 52,500	27.5	100	100	79
Aeritalia	Airplane manufacture	May 1986	Lit 100,000	58.5	100	100	84
Nuovo Pignone	Heavy machinery	Sep. 1986	Lit 89,250	59.9	100	100	82
Jamaica							
NCB Group	Banking	Nov. 1986	J 90	16.4	100	100	0
Caribbean Cement Co	Cement	June 1987	J 250	45.6	100	100	0

Table I - *Continued*

Company Name	Industry	Issue Date	Issue Size (in millions)	U.S. $ Value of Issue (in millions)	Fraction[b] Secondary (%)	Government Shareholdings (%) Before Issue	After Issue
Japan							
Japan Air Lines	Airlines	Dec. 1987	¥ 360,000	2,600	100	34.5[p]	0
Nippon Telegraph and Telephone	Telephone utility	Feb.1987*	¥ 2,340,000	15,097	100	100	87.5
		Nov. 1987	¥ 4,972,500	40,263	100	87.5	75
		Oct. 1988	¥ 3,300,000	22,400	100	75	65.4
Korea							
Pohang Iron & Steel	Integrated steel	June 1988	Won 2,500,000	3,400	0	100	>50
Malaysia							
Malaysian Airlines	Airline	Oct. 1985	M$ 189	77.9	100	100	73
Syarikat Telecom Malaysia Berhard[d]	Telephone utility	Oct. 1990	M$ 2,352.5	871.7	0	100	76
Mexico							
Telefonos de Mexico[d]	Telephone utility	Dec. 1990[q]	US $3,760	3,760	100	56	0
Netherlands							
KLM	Airline	Apr. 1986	DG 775	295	20	55	39
Naamloze Vennootschap DSM	Chemicals	Feb. 1989*	DG 1,300	630	100	100	65.7
		Oct. 1989	DG 1,440	686	100	65.7	31
New Zealand							
Air New Zealand[d]	Airline	Oct. 1989[r]	NZ $ 168	99.1	100	100	0
Oman							
Oman Flour Mills	Flour milling	1986			100	≈90	≈60
Singapore							
Neptune Orient Lines	Shipping	Apr. 1981*	S $140	66.4	0	100	67.7
		Apr. 1984			0	67.7	62.3
		Dec.1987	S $178	88	0	62.3	52.75
		Nov. 1988	S $300	154.1		52.75	30

Table I - *Continued*

Company Name	Industry	Issue Date	Issue Size (in millions)	U.S. $ Value of Issue (in millions)	Fraction[b] Secondary (%)	Government Shareholdings (%) Before Issue	Government Shareholdings (%) After Issue
Singapore International Airlines	Airline	Nov. 1985*	S $486.8	233	50	77	63
		Jun 1987	S $601	284	100	63	53.5
Singapore National Printers	Publishing	Feb. 1987*	S $7.0	3.3	29	100	63
		1987-1990			63	51	
Keppel Corporation	Shipbuilding	1988-1989			0[a]	68	≈30
Sembawang Shipyard	Shipbuilding and repair	Apr. 1973[t]			100	100	75
		1988-1989				75	≈30
Spain							
GESA	Gas and electric utility	Nov. 1986	Ps 8,300	61	100	94	56
Repsol	Oil and gas exploration	May 1989	Ps 135,580	1,140	100	100	73.4
Sweden							
Procordia	Pharmacy	Oct. 1987	SEK 1,050	165	0	100	81
Swedish Steel	Steel production	June 1989[u]			100	68.8	52.3
United Kingdom							
British Petroleum	Petroleum	June 1977	£ 564	972	100	66	51
		Nov. 1979[t]	£ 290	602	100	51	46
		Sep. 1983	£ 566	849	100	46	31.4
		Nov. 1987	£ 7,240	12,430	78.4	31.4	0
British Aerospace	Aerospace and avionics	Feb. 1981*	£ 150	339	33. 3	100	48.4
		May 1985	£ 551	714	65.9	48.4	0[v]
Cable and Wireless	Telecommunications equipment	Oct. 1981*	£ 224	466	47.5	100	50
		Dec. 1983	£ 274	416	100	45	23
Amersham Internatl.	Radioactive chemicals	Feb. 1982	£ 71	131	92	100	0[v]
Britoil[d]	Oil and gas exploration	Nov. 1982*	£ 549	911	100	100	49
		Aug. 1985	£ 449	582	100	49	0[v]

Table I - *Continued*

Company Name	Industry	Issue Date	Issue Size (in millions)	U.S. $ Value of Issue (in millions)	Fraction[b] Secondary (%)	Government Shareholdings (%) Before Issue	Government Shareholdings (%) After Issue
Associated British Ports	Ports management	Feb.1983*	£ 22[w]	33	100	100	48.5
		Apr. 1984	£ 52	70	100	48.5	0
Enterprise oil[d]	Petroleum exploration	June 1984	£392	524	100	100	0[v]
British Telecom	Telephone utility	Nov. 1984*	£ 3,916[x]	4,763	100	100	49.8[v]
		Dec. 1991	£ 5,350	9,774	100	47.7	22
British Gas	Gas distribution	Dec. 1986	£ 5,434[y]	8,012	100	100	0[v]
British Airways	Airline	Feb.1987	£ 900	1,327	100	100	0
Rolls Royce	Aero-engine manufacturer	May 1987	£ 1,363	2,234	79.2	100	0[v]
BAA p/c	Airport operation	July 1987	£ 1,281	2,028	100	100	0[v]
British Steel	Integrated steel	Dec. 1988	£ 2,500	4,524	100	100	0[v]
United States							
Conrail	Railroad	Feb.1987	$1,650	1,650	100	100	0
Total				166,680.2[z]			

*When there are more than one share issue per company, this indicates which issue we used in our empirical tests.

[a]Secondary sources indicate that an initial partial denationalization through public share issuance was executed in 1956, but specific details were unattainable.

[b]Fraction secondary refers to the percent of the total share issue that was strictly secondary in nature (sales of existing shares by the government) rather than actual new equity issues.

[c]Includes 11.29 percent held by Bank of Nova Scotia.

[d]Only board of director data used. Privatized too recently for financial comparisons of pre and postdivestiture performance or insufficient data.

[e]The remaining shares of the state were gradually sold off over a three-year period until the company was completely divested. This process allowed a strong employee participation: by 1987, employees owned approximately 30 percent of all shares.

[f]Beginning in 1983 several small tranches were sold. Government holdings dropped below 50 percent in 1986, and by 1988 all the state's holdings had been sold off.

[g]Privatization was effected through repeated sale of small tranches, leading to total divestment within three years. The initial year is used as the privatization date in our financial analysis.

[h]In all of these cases, the French government only sold 40 to 45 percent of its holdings directly to the French public. Another 20 to 25 percent was sold directly to large, typically corporate, investors and the remaining shares were sold to employees (usually 10 percent) and foreign investors (20 percent).

Table I - *Continued*

[j]Unlike most French privatizations, only 35 percent of the shares were offered to the public, while 51 percent was placed directly with core investors and 10 percent was sold to employees. Remaining shares were reserved as bonus shares.

[k]Only 47 percent of Sogenal was owned directly by the French government. The remaining shares were owned by Societe Generale (a state-owned enterprise). This firm was privatized in July 1987, at which time all Sogenal shares were privately held.

[k]This offer was 63 times oversubscribed.

[l]The government controlled Havas before privatization, even though it owned less than 50 percent of the stock. Upon divestiture, the government sold half its stake publicly and half to core investors, and it retained a "special share" giving it veto power over certain transactions.

[m]The remaining 20 percent was owned by the state of Lower Saxony, which was not selling its shares.

[n]Though a small stake was sold off in 1970, we have insufficient data to examine its impact.

[o]Only board of director data used. Accounting information is not comparable before and after partial privatization.

[p]Although the Japanese government owned only 34.5 percent of JAL's stock, it guaranteed the company's dept prior to divestment and exercised substantial influence.

[q]In December 1990 a 51 percent voting stake was sold directly to a group of foreign telephone companies (Southwestern Bell, France's Telecom, and Grupo Carso) for $1.76 billion. The remaining government shares were sold to Mexican and international investors in a public offering in April 1991 for $ 2.0 billion.

[r]Company was actually sold directly to a consortium lead by Bierley Investments Ltd. in April 1989, but only on condition that it later sell a fraction of Air New Zealand to the public. A 30 percent stake was sold in October.

[s]Public share issue acheived through conversion of company-issued convertible bonds.

[t]While this share issue meets our selection criterion, postissue financial data was unattainable. Therefore the 1988 issue was used as the privatization "issue date."

[u]In 1986, Swedish government bought Granges' share of Swedish Steel and then sold a 33 percent stake directly to a syndicate of private institutions. We use the public issue in 1989 as our privatization date, but only employ board of director data due to limited time since divestment.

[v]One "special share" retained by government giving it the right to veto certain activities (usually takeovers by foreign corporations).

[w]Government extinguished £56 million of debt simultaneously, so net proceeds to government were -£34 million.

[x]Of these total proceeds, £1.29 billion in debt was used to write off BT indebtedness (mostly unfunded pension liabilities).

[y]British Gas simultaneously incurred a £2.5 billion indebtedness to the British government, so the government's total proceeds were £7.72 billion.

[z]Contemporary US $ value of all issues for all countries, translated at the exchange rate in effect on the issue date. This equals $204.4 billion in July 1992 dollars.

A remarkable aspect of the official motivations expressed by the Adenauer government in launching its privatization program is how similar they are to the objetives expressed by the Thatcher government two decades later. In fact, almost every government that decides to follow the privatization route -regardless of its ideological basis- expresses similar objectives. All are ultimately based on disappointment with the actual performance of SOEs, and all perceive that the lure of financial incentives and the discipline of the capital markets will spur greater efficiency. The specific objectives of all tend to be very similar to those of the United Kingdom, as described in Price Waterhouse (1989a, page 10). These objectives are to: (1) raise revenue for the state; (2) promote increased efficiency; (3) reduce government interference in the economy; (4) promote wider share ownership,[7] (5) provide the opportunity to introduce competition; and (6) expose SOEs to market discipline. The other major objective mentioned by the British and other governments is the goal of developing the national capital market.

A. The Thatcher Privatization Program

When the new Thatcher government first experimented with privatization in the early 1980s there was great skepticism concerning the government's ability to successfully sell many of its SOEs and vehement political resistance to the entire notion of privatization by the Labour party. In fact, Labour threatened to renationalize several of the early Thatcher privatizations, such as British Aerospace and Cable and Wireless.

In spite of the opposition, however, the Thatcher government prevailed. The share issues themselves were enthusiastically received, and the recently privatized firms were widely perceived as being more efficiently run after

[7]The desire to promote wider share ownership typically has both a financial and political component. Financially, increasing the number of investors willing to purchase corporate equities increases the absorptive capacity of the nation's capital market, thereby either lowering the cost of capital for firms or increasing the number of companies able to raise capital at prevailing rates, or both. Politically, broadening share ownership is perceived to increase public willingness to back market-oriented economic policies and also tends to make it very difficult for subsequent governments to attempt to renationalize divested companies. Most governments actively stress both the political and economic virtues of "people's capitalism" when promoting privatization plans, and several governments have achieved great success in increasing share ownership. The Thatcher privatizations, for example, increased the fraction of the U.K. adult population holding shares from 7 percent in 1979 to 24 percent in 1990.

divestiture. Further, it soon became evident that the spur of "readying a company for privatization" served to overcome organizational inertia and focus the targeted SOE's employees on the task of improving efficiency and profitability. Finally, the government was able to dramatically lower its public sector borrowing requirement (PSBR) through the ongoing privatization share sales. When Margaret Thatcher won a second term in office in 1983, the future of privatization in Great Britain was secure.

It was the British Telecom (BT) issue in November 1984 that launched privatization programs on the world. This colossal share issue-by far the largest equity offering in history to that time-was met with strong demand by investors (including employees) both at home and abroad.[8] The £3.9 billion ($4.8 billion) issue created 2.25 million new shareholders in the U.K., and the response of Japanese and American investors to the tranches offered in Tokyo and New York proved that a global market for privatization share issues existed.[9] Furthermore, the regulatory process adopted for BT while necessarily a compromise, appeared workable and fair to consumers, BT's competitors, and its investors.[10] Most of all, the successful sale of BT showed that sheer size was not an impediment to privatization.

[8]As was the case with all but three of the British privatization issues (Enterprise Oil, Britoil, and the 1987 British Petroleum issues), the BT offering was many times oversubscribed, and the shares jumped to an immediate premium in the secondary market. This pattern was to be repeated for almost every country's program we examine (one issue was 63 times oversubscribed).

[9]International investors and underwriters played a key role in all large subsequent European privatization issues, as well as those in South Asia and Latin America (they were not allowed to participate in the NTT issue and were relatively unimportant in the Conrail offering). They were only seriously "burned" once -in the November 1987 British Petroleum issue-although this probably had more to do with the market crash of October 1987 than with the British Petroleum issue itself.

[10]The regulatory regime adopted for BT had two key features. First was adoption of the RPI-X pricing formula, whereby BT would be allowed to raise prices (on the full bundle of its services) according to the formula of the retail price index minus X percent (originally set at 3 percent, but reaching 7.5 percent in August 1993). The U.S. rate of return regulatory system was explicitly rejected as being both inefficient and unnecessarily bureaucratic. Along those lines, the second major regulatiry change was the establishment of the Office of Telecommunications (OFTEL), with a small staff and without direct statutory powers of regulatory intervention, as a regulator/monitor of a private BT. Although *The Economist* originally referred of OFTEL as the "watchpoodle" of BT, later assessments were more favorable and the RPI-X regulatory regime was subsequently adopted for British Gas, for the privatized electricity companies, and for Japan's NTT.

B. Non-U.K. Programs, 1985 to 1993

After BT, many different governments adopted privatization programs. We document 1985 divesting share issues by Denmark, Italy, Chile, Malaysia, and Singapore. Most of these, however, were rather limited sales of individual companies or natural evolutions of denationalization programs begun earlier. The next major country to adopt a large-scale privatization program, France, was also one of the most important and dramatic, since it marked such a sharp break with the country's *dirigiste* tradition of state intervention. The conservative Chirac government came to power in March 1986 committed not only to selling off the industrial and financial groups nationalized by the socialists during 1981 to 1982 (see Langohr and Viallet (1986)) but also to privatizing the large bank that Charles De Gaulle nationalized in 1945. True to its words, the Chirac government sold 22 major companies worth $12 billion in a 15-month period beginning in September 1986. When the socialists returned to power in 1988 they stopped the sales of further companies, but they did not attempt to renationalize those already sold.[11]

In addition to France, Austria, Belgium, Holland, Jamaica, Japan, Spain, Sweden, and the United States all executed significant privatizations through share issues during late 1986 and 1987. The Japanese sequential privatization of Nippon Telephone and Telegraph (NTT) is significant for several reasons. First, at ¥2.34 trillion ($15.1 billion), the initial tranche was by far the largest equity issue in history, and it yielded an implied initial market capitalization of $188 billion.[12] The second and third tranches-which raised ¥4.97 trillion ($40.3 billion) and ¥3.30 trillion ($22.4 billion)-were even larger. Furthermore, the Japanese government deliberately chose not to break up NTT before its sale (as

[11]In many ways, France represents the perfect test case for evaluating privatization's effectiveness since: (1), a new government was elected to power committed to divestiture and representing a sharp break with established policy; (2), numerous large companies were almost inmediately sold off, without a "preparatory" period, and the state typically sold 100 percent of its shares in one offering; and (3), immediately after privatization the policy environment reverted to what it had been before divestiture but the companies remanined in private hands. To examine this, we test French privatizations separately from all others. These results were qualitatively identical to the results we find for the primary sample and most major subsamples.

[12]The price-earnings ratio implied by these valuations was an astounding 162 using prospective year earnings, and over 200 using current-year earnings. Each share sold in the immediate aftermarket at approximately $12,000 (not yen), and this price was to rise to $18,000 after the issue was completed. At its peak market valuation in late 1987, NTT had a market value in excess of one-third trillion dollars.

was done to AT&T before it was deregulated), but instead adopted the British RPI-X regulatory regime for a partially privatized telephone monopoly. Finally, the first two share sales (which were several times oversubscribed) were restricted to Japanese investors only.

Somewhat surprisingly, the only major privatization through public share issue implemented by the U.S. government was also one of the most highly politicized of all the major divestitures of the late 1980s (see Baldwin and Battacharyya (1991) for an analysis). Even so, the $1.65 billion Conrail issue (also the largest share issue in U.S. history to that time) was successfully executed and well received.

After 1987, privatization programs spread rapidly around the world, particularly to the developing countries of South America, Africa, and South Asia. While most of these programs relied primarily on private sales (selling an SOE directly to another corporation), we document significant share issues in Bangladesh, Brazil, Chile, Gambia, Malaysia, Mexico, Nigeria, Sierra Leone, Singapore, and Venezuela. In fact, the successful privatization of Mexico's telephone utility, Telefonos de Mexico (through a combined private sale and $1.9 billion public share issue), helped make Mexico a magnet for foreign investment and greatly promoted its subsequent liberalization.

As the decade of the 1990s began, the "action" in privatizations shifted to eastern Europe and the former Soviet Union. As Shirley and Nellis (1991) of the World Bank make clear, the imperative in these countries is to create a market economy as quickly as possible, using all available methods, and almost regardless of the social cost entailed. To date, privatizations through public (cash) share issues have not figured prominently in these programs, but this could change in the future, and the net results of the various coupon and voucher schemes being proposed could well be the development of an active secondary market for corporate equity claims.

Finally, the mid-1990s are also witnessing an acceleration of privatization programs in the European Community. A political crisis in Italy has finally prompted divestiture of the huge state-owned conglomerates IRI and ENI, and the recent election of the conservative Balladur government in France promises an almost complete divestment of SOEs, including such previously sacrosanct companies as Air France, Aerospatiale, and Credit Lyonnaise. All told, Palmer (1993) reports that the sell-off of European state-owned assets will run at a $30 to 40 billion annual rate through the turn of the century.

II. Data

We limit our analysis to those companies that were sold to the public through a share issue, rather than through the much more frequently used privatization method of selling the SOE directly to another company (or other methods), because companies that are sold to the public remain independent and continue to generate comparable postissue financial and accounting data. While limiting a study to a relatively small subset of all candidate firms would normally yield a serious sample selection bias, we feel this is not the case here, for two reasons. First, the largest and most economically significant SOEs usually can only be privatized through public share issues, and companies so privatized account for easily the largest fraction of all the assets and employees transferred to the private sector during our study period. Second, companies sold publicly are by far the most visible and politically sensitive of all privatizations, and it is the public's perception of their postdivestment operating perfomance that will determine whether the entire privatization program is judged a success or a failure.[13]

Our sample of firms is drawn from the World Bank listing of privatized firms provided in Candoy-Sekse and Palmer (1988). In order to limit our study to firms likely to have at least two years of postprivatization data available we select as candidate firms 144 companies in the World Bank study that were listed as having their privatization either "completed" or "underway", rather than "planned", and which used share issues as the divestment technique. We also include an additional five companies listed as "planned" in the World Bank report that government documents or other secondary sources indicate were in fact privatized by year-end 1989. Therefore, a total of 149 companies met our selection criteria and were considered candidate firms. We then attempted to assemble as much information as possible about these firms' privatization share issues, as well as pre- and postdivestment financial and operating performance.

Our sample data collection procedure was to mail a request for information to each of these 149 companies during the summer and fall of 1991. We requested each firm to send us the offering prospectus from their divestment share issues, as well as the annual reports for the three years prior and

[13]As the referee pointed out, it is also probably true that our sample selection procedure works *against* our finding efficiency improvements. This is because we have the largest and most politically visible companies, which probably continue to be required to meet social objetives even after privatization. This would make effciency improvements smaller in these companies than in less visible companies that disappear from the government's eye.

subsequent to the share issue, as well as for the year of privatization itself (which we label year 0). This mailing was then supplemented by an intensive follow-up telephone survey in August 1992. The results of our data collection efforts are as follows: we generate a final sample of 61 companies with at least 2 years of both pre- and postprivatization accounting data that were in fact fully or partially divested through share issue before 1990. An additional 9 companies were either privatized too late (7 firms) or had noncomparable pre- and postdivestment data (2 firms), and thus could not be included in our financial and operating analyses, but were included in our study of board of director changes. We therefore include a total of seventy companies in either our performance analyses, or our ownership structure change analyses, or both.

Forty-three of the remaining seventy-nine companies were not included in our study for the following reasons: they were privatized after 1990 and no postprivatization data was available (18 companies); the postdivestment financial data for a privatized company was not comparable to its predivestment data because (a) the firm was broken up prior to sale, (b) there was a major accounting change during the transition period, which made the new and old accounting numbers fundamentally different, or (c) because the firm was acquired shortly after privatization (12 companies); the firm either had never been an SOE or was not an SOE during the late 1980s, and we were unable to document an earlier divestiture date (9 companies); the government only sold nonvoting shares to the public in the "privatization" share issue (2 companies), or company data was available in a language we could not read (2 companies).[14] This leaves only 36 of the 149 candidate firms for which we were unable to obtain sufficient information or were unable to reject as unsuitable based on information about the privatization itself. Eight of these appear to be relatively small, partial divestitures of Italian companies by IRI or ENI, the major state holding companies, and four are companies headquartered in other OECD countries. The remaining 29 companies all appear to be relatively small companies located in developing countries.

Given the obvious danger that only the most successful privatizations would promptly reply to our survey, we took great care to assemble the largest possible sample of firms. We are confident that the sample we have collected and are using in our analyses is representative of at least the largest and most economically important privatizations undertaken by governments in recent

[14]We were able to use financial information sent to us written in English, German, Spanish, Portuguese, Italian, and French.

years.[15] In fact, the share issues listed in Table I have a U.S. currency value (translated at contemporary exchange rates) of $166.7 billion, which is equal to $204.4 billion in July 1992 dollars.

Examination of the offering prospectuses of the firms listed as "share issue" privatizations in the Candoy-Sekse and Palmer study indicates that this definition encompasses four categories of share issues: (1) flotations where the government initially had majority or total share ownership and made an initial public offering of either its entire ownership stake or of a majority voting share; (2) offerings where the government had majority voting control of a company that also had publicly traded shares, and the state sold enough stock in a secondary offering to lower its stake below 50 percent; (3) the government had voting control and allowed the firm to make a primary share issue in which it did not participate, thereby losing voting control; and (4) the government had voting control both before and after the initial public share issue and simply sold a minority stake to private investors.

We refer to the first three types of share sales as "control privatizations" and call the last type "revenue privatizations", since the purpose of these share sales is typically just to raise revenue for the government without surrendering control. In the empirical results section we first group all four types of issues together and then examine control and revenue privatizations separately. These results are discussed in the text but, in the interest of space, a table is not provided in this paper but can be obtained from the authors.

A. Details of Privatization Share Issues

While our use of share-issue privatizations is dictated by the need to have comparable pre- and postoffering data, the share issues themselves are interesting in their own right, for several reason. First, these share issues often were immense, both in absolute size and relative to other share issues made in their respective national capital markets. We document 21 share issues that raised over $1 billion in local currency, and the British Gas, the 1987 British Petroleum and 1991 BT issues, and all three NTT issues each raised over $8 billion, easily dwarfing all nonprivatizing share offerings ever made, in any

[15]In many cases we supplemented financial statements sent to us with data from secondary sources (see Section III for a listing), and in some cases we were able to include a company by relying on secondary sources exclusively. A complete description of how we classified each of the firms in the World Bank listing is available from the authors.

country. Our research also indicates that privatizing offerings were the largest equity offerings ever made in the Austrian, British, Dutch, French, German, Italian, Japanese, Korean, Malaysian, Mexican, New Zealand, Singaporean, and Spanish capital markets. Even in the United States, the $1.65 billion Conrail offering was the largest share issue in history until it was surpassed by the $2.1 billion General Motors offering in May 1992. The share issues in our sample, plus others, are described more fully in Megginson, Nash, and Jones (1994).

A second feature common to most of the share offerings in our sample is that they typically were pure secondary sales, where the government simply sold off its stake and no capital flowed to the firm itself. Most of the British and German offerings, and all or almost all of the Austrian, French, Italian, Jamaican, Japanese, Mexican, and Spanish issues were pure secondary sales, as was the Conrail offering. Therefore, in these cases, any improvements in performance documented after divestment must be traced to changes in incentives, regulation, macroeconomic policy, or ownership structure rather than to cash injections into the firm from a new capital issue.[16]

Third, with the exception of the Japanese and U.S. privatizations, almost all the issues we document have significant, politically motivated features. These typically include: (1) share tranches reserved for sale to employees at reduced prices, or even free if the original shares were retained long enough; (2) restrictions on bloc purchase size designed to favor small savers over institutional investors;[17] (3) the use of fixed price rather than competitive bid share offers, with the offer price usually set low enough to assure great excess demand and an immediate trading profit for small shareholders favored with share allocations; and (4) aggressive advertising campaigns designed to overcome the reluctance of ordinary savers to invest in stock. In many cases, governments seemed much more intent on maximizing the number of shareholders-at least in part to make the privatization politically irreversible-than on maximizing sale proceeds.

A final characteristic common to almost every privatization except Conrail is a restriction on the fraction of the share issue that foreign investors

[16]In one case (British Airways) part of the government's proceeds was used to pay off a portion of the divested firm's publicly held debt.

[17]France and Mexico took a somewhat different tack in that both countries systematically designed in large "core" shareholders by selling stock privately to corporations willing to commit to holding their shares for several years. Other countries also pursued this strategy for individual companies, though not as a matter of policy.

could purchase.[18] The fractional tranche reserved for foreigners ranged from zero for Japan's first NTT issue to 50 percent for Holland's DSM Corporation, with most restrictions in the range of 20 to 25 percent.

III. Testable Predictions and Methodology

As stated in the introduction, most governments adopt privatization programs with concrete (and often very optimistic) objectives in mind. One such goal is to raise revenue, but generally the more important objective is to improve the operating and financial performance of the former SOE by exposing it to market forces. Specifically, almost all governments expect that privatization will: (1) increase the firm's profitability; (2) increase its operating efficiency; (3) cause (or allow) the firm to increase its capital investment spending; and (4) to increase its output. Further, they hope these goals can be accomplished (5) without lowering employment levels, but most governments actually expect employment to fall. The theoretical model of Boycko, Shleifer, and Vishny (1993) generally supports these predictions, except that their model predicts a decline in output following privatization. Given the stated objectives of the governments in our sample, we test whether these goals are in fact achieved. The specific testable predictions we examine, along with the impact governments expect privatizations to have on each proxy, are detailed in Table II. Note that we cannot unequivocally predict what will happen to real sales, since governments and the Boycko, Shleifer, and Vishny model yield conflicting predictions.

While government policy regarding privatization is primarily aimed at increasing the operating efficiency of former SOEs, it is also true that the switch from state ownership to private ownership should have a predictable impact on a firm's financial policies. Our data allow us to examine the impact of privatization on corporate capital structure and dividend policies. Based on the empirical results presented in Bradley, Jarrell, and Kim (1984), and others, we predict that the switch from public to private ownership will cause firms to decrease the proportion of debt in their capital structures both because the state's withdrawal of debt guarantees will increase the firm's cost of borrowing

[18]This is not to suggest that the Conrail issue was devoid of political intervention. The enabling regulations explicitly called for minority-owned investment banks to be given a place in the underwriting syndicate, so one woman-owned and five African-American-and Hispanic-owned firms were included as syndicate members.

and because the firm will have greatly enhanced (perhaps totally new) access to public equity markets, both at home and abroad.

While no strong theoretical or political arguments concerning expected dividend payments have been put forward, it seems rational to expect that payouts will increase-if only because the state never demanded dividends and private investors typically do.[19] The ownership structure of newly privatized firms also suggests that dividend payments can serve a useful bonding function. With the exception of those countries that deliberately create large "core" shareholders through private (and restricted disposal) stock sales, most divested firms complete their initial public offering with a large number (up to 3.8 million for France's Paribas) of small shareholders, none of whom have the proper incentive to monitor corporate management. Dividend payments are a classic response to such an atomized ownership structure. Table II also presents our testable predictions and empirical proxies for capital structure and dividend policy changes.

Our sample selection criteria allow us to test fairly cleanly whether performance changes after government divestiture, since we can employ a matched pairs methodology for comparing the pre- and postprivatization performance measures of our sample companies. To test our predictions, we first compute empirical proxies for every company for a seven-year period: three years before through three years after privatization. Thus, we develop a performance "time-line" that reflects operating results from the last three years of public ownership through the first years as a privatized entity. We then calculate the mean of each variable for each firm over the pre- and postprivatization windows (preprivatization: years -3 to -1 and postprivatization: years +1 to +3). For all firms, the year of privatization (year 0) includes both the public and private ownership phases of the enterprise. We therefore exclude year 0 from our mean calculations. The condition for any company to be included in the sample is that at least two observations be available for each window.

[19]The history of most SOEs is also consistent with this prediction. Since most of the companies in our sample became SOEs either by nationalization or by state creation (rather than following the rescue of a failing private firm), the government viewed them as investment vehicles through which to funnel cash rather than as financial assets expected to generate a monetary return.

Table II

Summary of Testable Predictions

This table details the economic characteristics we examine for changes resulting from privatization. We also present and define the preferred and alternative empirical proxies we employ in our analyses. In all cases with two or more proxies listed, we consider the one listed first to be our preferred and most reliable empirical variable, because it uses a current-dollar measure in either the numerator or the denominator, or both. Further, we detail the predicted changes in the economic characteristics after privatization based both on the avowed objectives of the governments launching privatization programs and the theoretical works cited in the text. The index symbols A and B in the predicted relationship column stand for after and before, respectively. Finally, sales efficiency uses inflation-adjusted sales figures divided by the number of employees each year. Deflated sales per employee is normalized to equal 1.000 in year 0 so other year figures are expressed as a fraction of per capita output in the year of divestment. Net income efficiency and real sales are computed similarly.

CHARACTERISTICS	PROXIES	PREDICTED RELATIONSHIP
P(1) Profitability	Return on Sales (ROS) = Net Income / Sales	$ROS_A > ROS_B$
	Return on Assets (ROA) = Net Income Total Assets	$ROA_A > ROA_B$
	Return on Equity (ROE) = Net Income / Equity	$ROE_A > ROE_B$
P(2) Operating efficiency	Sales Efficieney (SALEFF) = Sales / Number of Employees	$SALEFF_A > SALEFF_B$
	Net Income Efficiency (NIEFF) = Net Income / Number of Employees	$NIEFF_A > NIEFF_B$
P(3) Capital investment	Capital Expenditures to Sales (CESA) = Capital Expenditures / Sales	$CESA_A > CESA_B$
	Capital Expenditures to Assets (CETA) = Capital Expenditures / Total Assets	$CETA_A > CETA_B$
P(4) Output	Real Sales (SAL) = Nominal Sales / Consumer Price Index	$SAL_A > SAL_B$ (cannot predict)
P(5) Employment	Total Employment (EMPL) = Total Number of Employees	$EMPL_A < EMPL_B$
P(6) Leverage	Debt to Assets (LEV) = Total Debt / Total Assets	$LEV_A < LEV_B$
	Long-Term Debt to Equity (LEV2) = Long-Temm Debt / Equity	$LEV2_A < LEV2_B$
P(7) Payout	Dividends to Sales (DIVSAL) = Cash Dividends / Sales	$DIVSAL_A > DIVSAL_B$
	Dividend Payout (PAYOUT) = Cash Dividends Net Income	$PAYOUT_A > PAYOUT_B$

Having computed pre- and postprivatization means, we use the Wilcoxon signed-rank test as our principal method of testing for significant changes in the variables. This procedure tests whether the median difference in variable values between the pre and postprivatization samples is zero. We base our conclusions on the standardized test statistic Z, which for samples of at least ten follows approximately a standard normal distribution.[20] In addition to the Wilcoxon test we also use a proportion test to determine whether the proportion (p) of firms experiencing changes in a given direction is greater than would be expected by chance (typically testing whether $p = 0.5$). Given the wide variance in countries, firms, and industries, finding that an overwhelming proportion of firms changed performance in the same direction may be at least as informative as a finding concerning the median change in performance.

We compute proxies for performance using the data sent to us by the companies themselves, as well as using supplementary information from Guney and Perotti (1992), the Disclosure databases, Infotrac, Moody's International, the *Wall Street Journal,* the Economist, and the *Financial Times.* We typically obtain preprivatization data from the firm's offering prospectus, and post-privatization data from the annual reports. A word of caution about the data we have available is in order. Given the wide variety of countries, industries, and accounting systems represented in our sample, we have to settle for lowest-common-denominator data items such as sales, net income, total assets, total equity, and total debt-all of which are almost universally available-plus capital expenditures, dividend payments, and numbers of employees, which are available somewhat less frequently.

We employ local currency data in all our analyses, and, whenever possible, we compute ratios using nominal data in both the numerator and denominator. We also place greatest emphasis on those ratios computed using current-year, "flow" measures such as sales, capital expenditures, dividends, operating profits, and (to a lesser extent) net income. These "flow" values are less sensitive to inflation and to accounting conventions than are "stock" measures such as total assets and common equity. In computing real sales and sales efficiency (revenue per employee) we deflate the sales revenue data using the appropriate consumer price index (CPI) values taken from the International Monetary Fund's *International Financial Statistics* and, when aggregating

[20] For a detailed description of the Wilcoxon signed rank test, see Neter, Wasserman Whitmore (1988, pages 499 to 506).

across companies, we normalize each year's observation relative to real sales in year 0 (the year of privatization).[21] A similar procedure is employed to compute net income per employee.

V. Empirical Results

In the sections below, we present and discuss our empirical results concerning each of the government objectives and predicted financial changes described in Section III. We first present (in Table III) and discuss our results for the complete sample of all 61 fully and partially privatized firms. Then at the end of each section we discuss our results for the following subsamples of our data: privatizations of firms in competitive versus noncompetitive industries (Table IV);[22] full versus partial privatizations (Table V); and privatizations involving firms headquartered in developed (OECD) versus less developed countries (Table VI). For each of these partitions we examine and report (in the text and in Tables IV to VI) whether each subsample of firms experiences significant changes in the variable values after privatization. We also test whether the *difference between* the value changes for the two subsamples are significant (e.g., did fully privatized companies experience a greater change in profitability after divestiture than did partially privatized companies?). However, we do not report these difference tests in the text or in the body of the tables (they are reported in table footnotes), because they are only significant for two of the subsamples, and then only for the dividend and leverage measures.[23]

[21]For almost every country we examine, the CPI series shows higher inflation than do other series, such as the producer price index. Therefore, use of the CPI to deflate sales (even for industrial companies) imparts a conservative bias against our documenting significant increases in postprivatization sales growth or efficiency.

[22]We define a noncompetitive industry as one involving the sale of a highly regulated product and/or service that does not face significant foreign or domestic product market competition. In general, this limits noncompetitive industry firms to banks and electric and telephone utilities that remain closely regulated after privatization.

[23]Specifically, we find that competitive industry firms experience a significantly greater reduction in leverage and increase in payout than do noncompetitive (regulated) industry companies (see Table IV). We also document that firms undergoing full divestiture experience a significantly greater increase in dividend payout than do partially privatized companies (see Table V).

Table III

Summary of Results From Tests of Predictions for the Full Sample of All Privatized Firms

This table presents empirical results for our full sample of privatizad firms. The table presents, for each empirical proxy, the number of useable observations, the mean and median values of the proxy for the three-year periods prior and subsequent to privatization, the mean and median change in the proxy's value after versus before privatization, and a test of significance of the median change. We employ the Wilcoxon rank sum test (with its z-statistic) as our test for significance for the change in median values. The final two columns detail the percentage of firms whose proxy values change as predicted, as well as a test of significance of this change. In all cases with two or more proxies listed, we consider the one listed first to be our preferred and most reliable empirical variable because it uses a current-dollar measure in either the numerator or the denominator, or both. Finally, sales efficiency uses inflation-adjusted sales figures divided by the number of employees each year. Deflated sales per employee is normalized to equal 1.000 in year 0 so other year figures are expressed as a fraction of per capita output in the year of divestment. Net income efficiency and real sales are computed similarly.

VARIABLES	*N*	Mean Before (Median)	Mean After (Median)	Mean Change (Median)	Z-Statistic for Difference In Medians (After-Before)	Percentage of Firms That Changed As Predicted	Z-Statistic for Significance of Proportion Change
PROFITABILITY							
Return on sales	55	0.0551 (0.0442)	0.07991 (0.0611)	0.0249 (0.014)	3.146[a]	69.1	3.064[a]
Return on assets	51	0.0377 (0.0237)	0.0469 (0.03196)	0.0093 (0.00309)	1.87[c]	68.6	2.867[a]
Return on equity	55	0.1251 (0.1019)	0.1234 (0.1079)	0.00166 (0.0011)	0.599	55.0	0.406
EFFICIENCY							
Sales efficiency	35	0.956 (0.942)	1.062 (1.055)	0.1064 (0.1157)	3.66[a]	85.7	6.03[a]
Net income efficiency	33	0.7877 (0.7327)	1.039 (1.059)	0.2508 (0.1765)	1.733[c]	69.7	2.463[b]
INVESTMENT							
Capital expenditures to sales	43	0.1169 (0.0668)	0.1689 (0.1221)	0.0521 (0.0159)	2.349[b]	67.4	2.44 l[b]

Table III-*Continued*

VARIABLES	*N*	Mean Before (Median)	Mean After (Median)	Mean Change (Median)	Z-Statistic for Difference In Medians (After-Before)	Percentage of Firms That Changed As Predicted	Z-Statistic for Significance of Proportion Change
Capital expenditures to total assets	37	0.0818 (0.0579)	0.09214 (0.0717)	0.0135 (0.0113)	1.237	59.5	1.172
OUTPUT							
Real sales	57	0,899 (0.890)	1,140 (1.105)	0,241 (0.190)	4.767[a]	75.4	4.462[a]
EMPLOYMENT							
Total employment	39	40,850 (19,360)	43,200 (23,720)	2,346 (276)	0.956	64.1	1.836c
LEVERAGE							
Debt to assets	53	0.6622 (0.7039)	0.6379 (0.6618)	-0.0243 (-0.0234)	- 2.408[b]	71.7	3.507[a]
Long-term debt to equity	23	1.6585 (1.3177)	1.1297 (0.8541)	-0.5288 0.1668)	-2.54[b]	70.0	1.918[c]
DIVIDENDS							
Dividends to sales	39	0.0128 (0.00544)	0.0300 (0.0223)	0.0172 (0.01213)	4.626[a]	89.7	8.179[a]
Dividend payout	40	0.2331 (0.2009)	0.4587 (0.3758)	0.2255 (0.1248)	3.233[a]	70.0	2.76[a]

[a]Indicates significance at the 1 percent level.
[b]Indicates significance at the 5 percent level.
[c]Indicates significance at the 10 percent level.

Table IV

Comparisons of Performance Changes Following Privatization for Companies Operating in Competitive Industries Versus Those Operating in Noncompetitive (Regulated) Industries

This table presents comparisons of performance changes for companies operating in competitive industries (those that are subject to international product market competition and relatively little domestic regulation) and noncompetitive industries, defined as those industries (principally utilities) that are relatively free of product market competition and are subject to rigorous domestic regulation. The table presents, for each empirical proxy, the number of useable observations, the mean and median values of the proxy for the three-year periods prior and subsequent to privatization, the mean and median change in the proxy's value after versus before privatization, and a test of significance of the median change. We employ the Wilcoxon rank sum test (with its z-statistic) as our test for significance for the change in median values. The final two columns detail the percentage of firms whose proxy values change as predicted, as well as a test of significance of this change. The predicted direction of change is based upon the expectations that governments adopting privatization programs have regarding how the firm will change after it is privatized, as well as upon the theoretical models discussed in the text. Sales efficiency uses inflation-adjusted sales figures divided by the number of employees each year. Deflated sales per employee is normalized to equal 1.000 in year 0 so other year figures are expressed as a fraction of per-capita output in the year of divestment. Real sales levels are computed similarly.

Performance Variables and Subsamples Examined	*N*	Mean Before (Median)	Mean After (Median)	Mean Change (Median)	Z-Statistic for Difference In Medians (After-Before)	Percentage of Firms That Changed As Predicted	Z-Statistic for Significance of Proportion Change
(1) Return on sales							
Competitive industry firms	41	0.0512 (0.0427)	0.0809 (0.0583)	0.0296 (0.0164)	3.07[a]	70.7	2.92[a]
Noncompetitive industry firms	14	0.0663 (0.0620)	0.0771 (0.0715)	0.0108 (0.0057)	0.879	64.3	1.116
(2) Sales efficiency							
Competitive industry firms	25	0.9325 (0.9375)	1.069 (1.076)	0.1362 (0.1305)	3.875[a]	92.0	7.740[a]
Noncompetitive industry firms	10	1.014 (1.034)	1.046 (1.048)	0.0318 (0.0353)	0.612	70.0	6.230[a]
(3) Capital expenditures to sales							
Competitive industry firms	36	0.1145 (0.0644)	0.1751 (0.1226)	0.0606 (0.0192)	2.286[b]	69.4	2.532[b]
Noncompetitive industry firms	7	0.1290 (0.1206)	0.1372 (0.1217)	0.0081 (0.0012)	0.254	57.1	0.382

Table IV - *Continued*

Performance Variables and Subsamples Examined	*N*	Mean Before (Median)	Mean After (Median)	Mean Change (Median)	Z-Statistic for Difference In Medians (After-Before)	Percentage of Firms That Changed As Predicted	Z-Statistic for Significance of Proportion Change
(4) Real sales							
Competitive industry firms	39	0.8853 (0.8702)	1.130 (1.147)	0.2451 (0.2333)	4.124[a]	76.9	3.990[a]
Noncompetitive industry firms	18	0.9273 (0.9167)	1.161 (1.053)	0.2335 (0.1342)	2.308[b]	72.2	2.105[b]
(5) Total employment							
Competitive industry firms	26	41,310 (23,310)	43,650 (23,800)	2,336 (391)	0.381	61.5	1.210
Noncompetitive industry firms	13	39,940 (59,980)	42,300 (55,130)	2,367 (205)	1.048	69.2	1.502
(6) Debt to assets							
Competitive industry firms	36	0.6081 (0.6231)	0.5734 (0.5988)	-0.0347 (-0.0355)[d]	- 2.33[b]	69.4	2.532[b]
Noncompetitive industry firms	17	0.7768 (0.955)	0.7746 (0.9034)	-0.0022 (-0.0098)[d]	-1.325	76.5	2.5[b]
(7) Dividends to sales							
Competitive industry firms	30	0.0128 (0.0049)	0.0260 (0.0176)	0.0132 (0.0082)[d]	3.764[a]	86.7	5.91[a]
Noncompetitive industry firms	9	0.0130 (0.0057)	0.0435 (0.0434)	0.0305 (0.0310)[d]	2.606[d]	100.0	149.9[d]

[a]Indicates significance at the 1 percent level.
[b]Indicates significance at the 5 percent level.
[c]Indicates that the difference between the median changes in the competitive and non-competitive industry firms is significant at the 5 percent level.
[d]Insufficient number of observations for formal test of significance.

Table V

Comparison of Performance Changes Following Privatization for Full Versus Partial Government Disvestiture

This table presents comparisons of performance changes for companies undergoing full privatization (where the government sells off its entire ownership interest) versus those undergoing only partial privatization, where the government only sells off a fraction of the shares it owns. The table presents, for each empirical proxy, the number of useable observations, the mean and median values of the proxy for the three-year periods prior and subsequent to privatization, the mean and median change in the proxy's value after versus before privatization, and a test of significance of the median change. We employ the Wilcoxon rank sum test (with its z-statistic) as our test for significance for the change in median values. The final two columns detail the percentage of firms whose proxy values change as predicted, as well as a test of significance of this change. The predicted direction of change is based upon the expectations that governments adopting privatization programs have regarding how the firm will change after it is privatized, as well as upon the theoretical models discussed in the text. Sales efficiency uses inflation-adjusted sales figures divided by the number of employees each year. Deflated sales per employee is normalized to equal 1.000 in year 0 so other year figures are expressed as a fraction of per capita output in the year of divestment. Real sales levels are computed similarly.

Performance Variables and Subsamples Examined	Mean Before *N*	Mean After (Median)	Mean Change (Median)	Difference In Medians (Median)	Z-Statistic for of Firms That Changed (After-Before)	Percentage Significance of Proportion As Predicted	Z-Statistic for Change
(1) Return on Sales	23	0.0537	0.0765	0.0228	2.114[b]	78.3	3.286[a]
Full divestiture companies		(0.0538)	(0.0611)	(0.0164)			
Partial divestiture companies	32	0.0561	0.0824	0.0263	2.160[b]	62.5	1.461
		(0.0429)	(0.0594)	(0.0128)			
(2) Sales efficiency	14	0.9396	1.048	0.1082	3.010[a]	92.9	6.230[a]
Full divestiture companies		(0.9321)	(1.042)	(0.1110)			
Partial divestiture companies	21	0.9670	1.072	0.1052	2.360[b]	90.5	6.321[a]
		(0.9640)		(1.112)	(0.1305)		
(3) Capital expenditures to sales	16	0.0873	0.1997	0.1124	2.82[a]	87.5	4.536[a]
Full divestiture companies		(0.0612)	(0.1071)	(0.0226)			
Partial divestiture companies	27	0.1344	0.1507	0.0163	1.045	55.5	0.575
		(0.0823)	(0.1350)	(0.0130)			

Table V - *Continued*

Performance Variables and Subsamples Examined	*N*	Mean Before (Median)	Mean After (Median)	Mean Change (Median)	Z-Statistic for Difference In Medians (After-Before)	Percentage of Firms That Changed As Predicted	Z-Statistic for Significance of Proportion Change
(4) Real sales							
Full divestiture companies	23	0.8759 (0.8624)	1.188 (1.158)	0.3120 (0.2333)	3.726[a]	87.0	5.264[a]
Partial divestiture companies	34	0.9140 (0.8996)	1.108 (1.100)	0.1937 (0.1689)	3.026[a]	67.7	2.200[b]
(5) Total employment							
Full divestiture companies	15	44,520 (37,870)	50,710 (45,730).	6,188 (1,754)	1.164	73.3	2.043[b]
Partial divestiture companies	24	38,560 (14,360)	38,510 (15,000)	- 55 (37)	0.071	58.3	0.828
(6) Debt to assets							
Full divestiture companies	22	0.6940 (0.7640)	0.6753 (0.7071)	-0.0187 (-0.0233)	- 1.558	72.7	2.394[a]
Partial divestiture companies	31	0.6396 (0.6240)	0.6114 (0.0634)	-0.0283 (-0.0234)	- 1.793[c]	71.0	2.572[a]
(7) Dividends to sales							
Full divestiture companies	14	0.0049 (0.0010)	0.0321 (0.0242)	0.0272 (0.0190)[d]	3.200[a]	92.9	6.228[a]
Partial divestiture companies	25	0.0173 (0.0086)	0.0289 (0.0177)	0.0116 (0.0086)	3.363[a]	88.0	5.847[a]

[a]Indicates significance at the 1 percent level.
[b]Indicates significance at the 5 percent level.
[c]Indicates significance at the 10 percent level.
[d]Indicates that the difference between the median changes in dividend policy for companies undergoing full privatization is significantly larger than for firms undergoing partial privatization, at the 10 percent significance level.

Table VI

Comparison of Performance Changes Following Privatization for Companies Headquartered in OECD Countries (Industrialized Countries) Versus Non-OECD (Developing) Countries

This table present comparisons of performance changes for companies headquartered in industrialized countries that are members of the Organization for Economic Cooperation and Development (OECD) versus companies headquartered in developing (Non-OECD) countries. The table presents, for each empirical proxy, the number of useable observations, the mean and median values of the proxy for the three year periods prior and subsequent to privatization, the mean and median change in the proxy's value after versus before privatization, and a test of significance of the median change. We employ the Wilcoxon rank sum test (with its z-statistic) as our test for significance for the change in median values. The final two columns detail the percentage of firms whose proxy values change as predicted, as well as a test of significance of this change. The predicted direction of change is based upon the expectations that governments adopting privatization programs have regarding how the firm will change after it is privatized, as well as upon the theoretical models discussed in the text. Sales efficiency uses inflation-adjusted sales figures divided by the number of employees each year. Deflated sales per employee is normalized to equal 1.000 in year 0 so other year figures are expressed as a fraction of per-capita output in the year of divestment. Real sales levels are computed similarly.

Performance Variables and Subsamples Examined	*N*	Mean Before (Median)	Mean After (Median)	Mean Change (Median)	Z-Statistic for Difference In Medians (After-Before)	Percentage of Firms That Changed As Predicted	Z-Statistic for Significance of Proportion Change
(1) Return on sales							
OECD country firms	44	0.0510 (0.0405)	0.0699 (0.0542)	0.0189 (0.0137)	2.130[b]	65.9	2.226[b]
Non-OECD country firms	11	0.0714 (0.0637)	0.1201 (0.0949)	0.0487 (0.0292)	2.445[b]	81.8	2.736[a]
(2) Sales efficiency							
OECD country firms	32	0.9560 (0.9401)	1.0660 (1.065)	0.1099 (0.1128)	3.656[a]	87.5	6.414[a]
Non-OECD country firms	3	0.9580 (1.0280)	1.0270 (1.0260)	0.0689 (0.1305)	0.267	66.7	0.613
(3) Capital expenditures to sales							
OECD country firms	36	0.1134 (0.0728)	0.1336 (0.1226)	0.0202 (0.0133)	1.877[c]	66.7	2.122[b]
Non-OECD country firms	7	0.1347 (0.0460)	0.3507 (0.1148)	0.2161 (0.0551)	1.099	71.4	1.255

Table VI - *Continued*

Performance Variables and Subsamples Examined	*N*	Mean Before (Median)	Mean After (Median)	Mean Change (Median)	Z-Statistic for Difference In Medians (After-Before)	Percentage of Firms That Changed As Predicted	Z-Statistic for Significance of Proportion Change
(4) Real sales							
OECD country firms	47	0.9049	1.126	0.2213	3.963[a]	72.3	3.424[a]
		(0.8808)	(1.078)	(0.1883)			
Non-OECD country firms	10	0.8690	1.205	0.3360	2.650[b]	90.0	4.216[a]
		(0.9179)	(1.198)	(0.2774)			
(5) Total employment							
OECD country firms	36	43,400	45,750	2,344	0.668	61.1	1.367
		(21,360)	(24,380)	(168)			
Non-OECD country firms	3	10,280	12,650	2,369	1.336	100.0	86.59[d]
		(10,270)	(11,440)	(1,167)			
(6) Debt to assets							
OECD country firms	41	0.7036	0.6904	-0.0133	- 1.361	65.9	2140[b]
		(0.7334)	(0.6693)	(-0.0203)			
Non-OECD country firms	12	0.5207	0.4587	-0.0620	- 2.628[b]	91.7	5.224[a]
		(0.4719)	(0.4312)	(-0.0278)			
(7) Dividends to sales							
OECD country firms	29	0.0076	0.0255	0.0179	4.281[a]	89.7	7.014[a]
		(0.0044)	(0.0169)	(0.0093)			
Non-OECD country firms	10	0.0280	0.0431	0.0151	1.835[c]	90.0	4.216[a]
		(0.0088)	(0.0304)	(0.0177)			

[a]Indicates significance at the 1 percent level.
[b]Indicates significance at the 5 percent level.
[c]Indicates significance at the 10 percent level.
[d]Insufficient number of observations for formal test of significance.

A. Profitability Changes

State-owned enterprises are often chronically unprofitable, at least in part because they are often charged with objectives such as maximizing employment and developing backward regions (see Boycko, Shleifer, and Vishny (1993)). In order to "bribe" SOE managers to provide these nonmarket benefits, governments provide SOEs with a variety of (usually) indirect subsidies, such as reduced prices on inputs and implicit guarantees to cover operating losses. Privatization is designed to substitute the single objective of profit maximization for these other objectives, and exposure to the benefits and penalties of capital market monitoring is expected to focus employees on the task of raising revenues and lowering costs. Also, governments almost invariably withdraw their guarantees of the SOE's debt after privatization and explicitly promise not to cover operating losses (thereby cutting the "soft budget constraint" so often observed in SOE financing).[24] The newly private firms therefore are (at least theoretically) exposed to a real threat of bankruptcy, which should also promote greater attention to firm profitability. Whether a government would actually allow a former SOE to go bankrupt is a question that none of the governments in our sample has yet had to face.

We measure profitability using three ratios: return on sales (ROS), return on assets (ROA), and return on equity (ROE). Since ROS is a ratio of

[24]Given the theoretical importance of the soft-budget constraint of SOEs (particularly in the Boycko, Shleifer, and Vishny (1993) article), we took great pains to examine the empirical significance of direct subsidies for our sample firms. We did this in two principal ways. First, we wrote back to 28 of our sample firms (those for which we had an individual executive's name) asking them (a), whether their firm had been receiving subsidies before or after privatization, (b), whether the terms of divestiture mandated that the firm maintain employment levels (or retain certain employees) after sale, and (c), whether the firm had promised the government to follow a certain pricing policy after privatization. We received fourteen responses to this inquiry, and in no cases were subsidies employed either before or after privatization. Our second test for subsidies involved an intensive follow-up analysis of 41 prospectuses and an additional 8 annual reports, where we specifically searched for evidence of subsidies, employment guarantees, or pricing agreements. We documented only one case of a firm (GESA of Spain) that disclosed an explicit subsidy, but even here the subsidy was small and did not change after privatization. On the other hand, there were several cases where governments provided direct cash infusions into their SOEs either to fund capital expenditures (including research and development) or to cover operating losses during the years prior to divestment, but we found no cases of subsidies being paid after privatization. We discuss this issue in more depth later in this section.

two current dollar, flow measures, it is the ratio we focus on.[25] As most governments expected, profitability increases significantly after privatization according to ROS and ROA, and the results for ROS (our benchmark) are the strongest of all. The mean (median) increase in ROS after divestiture is 2.49 percentage points (1.40 points), and 69.1 percent of all firms experience expanding profit margins after privatization. These test statistics are all significant at the 1 percent level.

The profitability results for our various subsamples also document consistent improvements in ROS. Profitability significantly (at the 5 or 1 percent level) increases for firms operating in competitive industries, for both fully and partially privatized firms, for both control and revenue privatizations, and for both OECD and developing country firms. Only for firms divested into noncompetitive industries (regulated industries such as utilities and banking) is the increase in ROS insignificant, and even here 9 of the 14 companies experienced profitability increases.

B. Efficiency Changes

By throwing an SOE into market competition, governments clearly hope that these firms will employ their human, financial, and technological resources more efficiently. The shareholders (including employees) in a private company capture most of the benefits of efficiency improvements, but they also suffer most if efficiency is not improved. In many ways, the efficiency measures are the least controversial of all the performance measures we examine, since almost everyone would prefer a company to produce more output for a given level of input. In removing the noneconomic objectives from their SOEs, governments

[25]We compute our profitability ratios using net income as the profit measure in the numerator of all three ratios. As a check on the robustness of this measure, we also are able to collect operating profit (profit before taxes) for 47 companies, and use this in the numerator of an alternative return on sales ratio. We obtain virtually identical profitability results for ROS using either net income or operating profit-both measures show dramatic profitability increases after privatization, and both are significant at the one percent level for the differences in median test and the proportion test. Since the two measures are so highly correlated we focus on ROS computed using net income in all subsequent analyses. The alternative results are available from the authors upon request.

explicitly state that the trade-off they expect is increased operating and financial efficiency.[26]

Both of the efficiency measures we employ, inflation-adjusted sales per employee (SALEFF) and net income per employee (NIEFF), show significant median increases following privatization for the full sample. Sales per employee goes from an average (median) 95.6 percent (94.2 percent) of the year 0 value during the -3 to -1 year preprivatization period to 106.2 percent (105.5 percent) of year 0 output in the postprivatization period. Net income per employee increases even more, by a mean (median) 25.1 percentage points (17.7 percentage points), though higher variability in the change lowers the level of the significance of this improvement. Further, SALEFF and NIEFF increase in 85.7 and 69.7 percent of all cases, significant at the 1 and 5 percent levels, respectively.

Efficiency improvements are also the norm for most of our subsamples. The median increase in SALEFF is significant for competitive industry firms, for full and partial privatizations, for control (but not for revenue) privatizations, and for companies headquartered in OECD countries. The proportion of firms experiencing increased output per employee is significant for all except non-OECD companies, and the fraction of these firms experiencing increased efficiency ranges from 70.0 to 92.9 percent.[27]

[26]We should point out that the threat of disciplinary takeover, so popular as a motivational tool in corporate finance theory, has almost no relevance here. For the firms in our sample it is inconceivable that the government would allow a hostile takeover to be mounted (particularly by foreigners), and in many cases the government retains a special share giving it the right to veto takeover attempts.

[27]The possibility exists, of course, that we are not documenting increased efficiency (physical output per unit of labor input) but rather increased price per unit of product sold. If newly privatized firms have a degree of market power after divestiture, they could increase revenue merely by raising prices. We believe this is not true (at least not generally so) for our sample firms, for three reasons: (1), our extensive news collection documents no instance of this occurring for a major company; (2), all of the newly privatized utilities (who would have the greatest market power) were immediately and effectively placed under a new regulatory regime, typically an RPI-X regime; and (3), almost three-quarters of our firms operate in internationally competitive industries such as mining, petroleum, airlines, and manufacturing, where they would be unlikely to enjoy enough market power to unilaterally raise their product prices. Our follow-up mailing and analysis of prospectuses, detailed in footnote 25, also supports this conclusion. None of the firms that answered our query mentioned a significant change in pricing policy after privatization, and none of the prospectuses mentioned any attempt to "catch up" on pricing after being divested. While it seems plausible that firms might want to surreptitiously raise prices, the size and importance of our sample firms means the local press would almost surely have caught and reported any such attempt.

C. Changes in Capital Investment Spending

A theoretical case can be made that SOEs should invest more than private firms, since they were typically started (or nationalized) in part to provide the government with an investment vehicle, and because they (at least theoretically) have the resources and borrowing power of the government supporting them. The Boycko, Shleifer, and Vishny (1993) article also suggests that governments would be willing and able to subsidize inefficiently high output (or to produce goods-such as weaponry-of dubious economic value) in SOEs in order to maximize employment or achieve some other socially desirable goal. Contemporary news reports, however, indicate that the SOEs in our sample rarely overinvested. In fact, they typically ran large operating losses (or at least they had low levels of profitability) that precluded them from funding capital investments with internally generated cash flows, and most governments kept their SOEs on a very tight cash budget-both because that was one of the few effective methods of exercising control over the SOES, and because the government's own PSBR was so large already.

There are other reasons to expect that privatized firms will increase capital spending after divestiture, besides no longer being tied to the government's PSBR. First, after their initial public offering these firms have far greater access to private debt and especially equity markets than most SOEs ever have. Second, if privatization is accompanied by deregulation and market opening (as often occurs), the former SOEs will face very large investment spending needs in order to become competitive with other private firms.[28] Third, almost by their nature, SOEs tend to stress labor over capital inputs in their production processes, and the power of politicians, labor unions, and other interest groups tends to leave SOEs employee rich and capital poor. In addition, years of financial stress often lead firms to defer routine maintenance, which must also be made good after privatization. Fourth, removal of government control of the SOE also reduces or eliminates the government's ability to bribe or force SOE managers to overproduce politically attractive but economically

[28]As a corollary to this point, privatization may also remove the requirement that these firms purchase specific types of equipment (e.g., domestically produced goods). If forced purchase of such equipment had put the firm at a technological disadvantage, there may be a serious need for "catch up" investment in the "right" equipment. During the 1970s, for example, BA was forced to purchase British-made Tridents, Concordes, and other aircraft instead of only Boeing airplanes, as it preferred. During the 1980s, BA's reequipment plans were driven at least in part by the need to replace these noncompetitive airplanes with more modern aircraft.

wasteful goods. The resources freed up in this way can be reallocated to higher valued uses. Finally, to the extent that privatization promotes entrepreneurship, former SOEs will have the incentive and the means to invest in growth options (such as launching new products and services, or pursuing acquisitions) both at home and abroad.

We compute investment intensity using two proxies, capital expenditures divided by sales (CESA) and capital expenditures divided by total assets (CETA). The CETA measure is insignificant according to both the Wilcoxon and proportion tests, but our preferred measure, CESA, shows significant increases on both tests. On average (median), our sample firms increase capital investment relative to sales by 5.21 percentage points (1.59 percentage points), from 11.69 percent of sales (6.68 percent) before divestiture to 16.89 percent (12.21 percent) after, and 67.4 percent of all our firms increase CESA following privatization. The Wilcoxon and proportion test statistics (2.35 and 2.44) are significant at the five percent level.

For the first time, splitting our firms into subsamples yields substantial differences between groupings concerning the effect of privatization on capital investment. CESA increases significantly for firms in competitive industries, for full divestitures, for control privatizations, and for companies headquartered in OECD countries. The increase in CESA is smaller, and insignificant, for firms in noncompetitive industries, for partial divestitures and for revenue privatizations. With only seven observations for CESA for companies in developing countries, we are unable to draw strong conclusions regarding privatization's impact on investment spending, except to say that it does not decrease.

D. Changes in Output

For all the reasons discussed above -better incentives, more flexible financing opportunities, increased competition, and greater scope for entrepreneurial initiative-governments hope and expect that real sales will increase after privatization. On the other hand, Boycko, Shleifer, and Vishny (1993) argue that effective privatization will lead to a *reduction* in output, since the government can no longer entice managers (through subsidies) to maintain inefficiently high output levels. We test these competing predictions by computing the average inflation-adjusted sales level for the period -3 to -1 (the

preprivatization period) and comparing it to the three-year average level for the post privatization period, +1 to +3. Both the Wilcoxon and proportion tests show that real sales increase after privatization, and the change is significant at the one percent level under both measures.[29] The mean (median) increase in real sales from the average level during the three years prior to divestiture to the average level afterwards is 24.14 percentage points (19.02 points), and 75.4 percent of our firms experience increases. Prior to divestment, our sample firms had deflated sales levels that were on average (median) 89.9 percent (89.0 percent) of year 0 (the year of privatization) levels. After privatization, real sales increases to 114.0 percent (110.5 percent) of year 0 levels. All of our subsamples also show significant changes in output after privatization.[30]

E. Employment Changes

The great fear of all governments contemplating privatization programs, of course, is that efficiency and profitability will be achieved only at the cost of large-scale job losses. In other words, governments expect large declines in employment levels following privatization. We examine this by computing average employment levels for the three-year periods -3 to -1 and +1 to +3, and seeing if employment falls after divestiture.

In perhaps our most surprising and important results, we find that employment actually *increases* by an average (median) 2,346 employees (276 employees) after privatization. While the Wilcoxon test is not significant at conventional levels, the proportion test is significant at the 10 percent level and

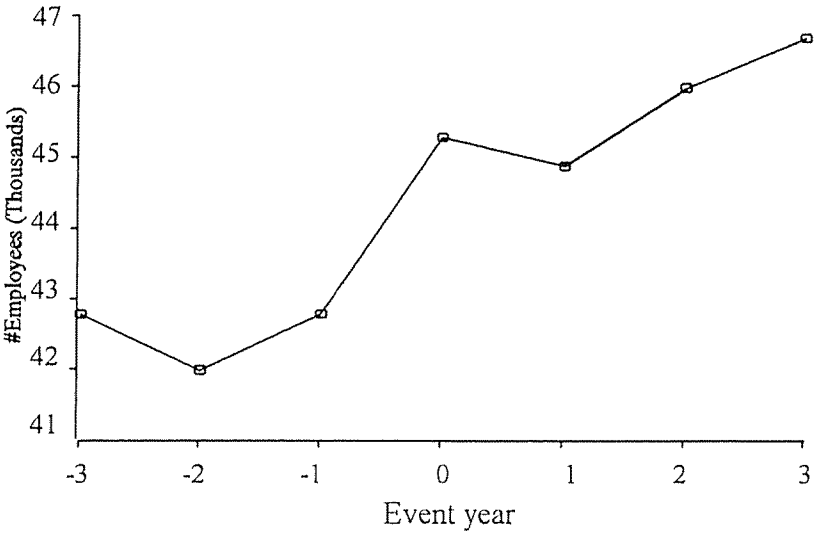
[29]It also bears repeating that our inflation adjustment probably imports a bias against finding statistical significance. In many cases, the CPI index we use shows as much as 15 percent higher inflation than does the comparable PPI measure, and this would work against showing increases in deflated sales after divestiture.

[30]We should point out that, in prior drafts of our article, we examined whether the real output *growth rate* increased after privatization, rather than whether the three-year average real sales increased from the pre- to postprivatization period. This measured whether growth accelerated alter privatization, and we found that it did not. For the full sample, the mean (median) real output growth rate was 5.51 percent (4.92 percent) per year over the period year -3 to year 0, and it increased (insignificantly) to 8 percent (6.11 percent) per year over the period year 0 to year +3. We feel that our current measure of output change is more comparable to our other empirical proxies, all of which test whether a given variable changed from its average value in the preprivatization period to its value after divestiture. Our earlier results, however, raise an intriguing question, about which we can at present only speculate-why were real sales growing so rapidly (5.51 percent per year) during the immediate preprivatization period?

the fact remains that employment levels increase in almost two-thirds (64.1 percent) of all our cases.[31]

As an additional examination of the temporal pattern of employment changes we plotted the path of mean and median employment for those 30 companies with seven full years of data. These data are graphed in Figures 1 and 2. We were expecting to find a "U-shaped" pattern with employment falling continuously prior to devestiture-as firm were "trimmed down" in preparation for devestiture-and then rising sharply after year 0. Instead we find an almost continuous increase from year -3 to year +3 for both mean and median employment. A listing of employment changes over the -3 to +3 period for sample companies listed in *Moody's International Manual* is provided in the Appendix.

Figure 1
Average number of employees for the seven-year period surrounding privatization

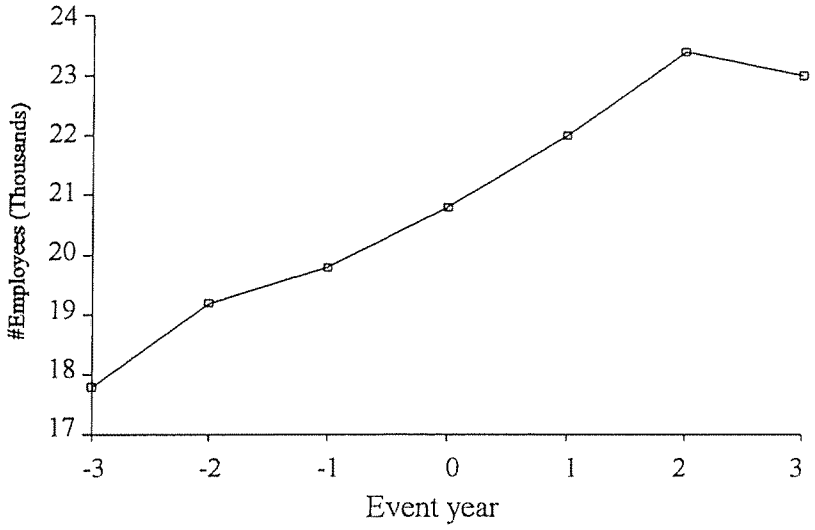


This figure presents the mean number of employees for 30 sample companies with complete employment data for the seven-year period begining three years before the year of privatization (t = -3) and ending three years after divestiture (t = +3).

[31]In the interest of full disclosure, we should point out that there were at least two cases (British Steel and BA) where employment was cut by at least one-third during a period that preceded our -3 to -1 year test period. In both cases, however, there was severe overstaffing, which probably could not have been sustained in any case.

Figure 2

Median number of employees for the seven-year period surrounding privatization



This figure presents the median number of employees for sample companies with complete employment data for the seven-year period begining three years before the year of privatization (t = -3) and ending three years after divestiture (t = +3).

Given our results that employment does not, on average, decline after privatization, we have often been asked to explain why union leaders around the world almost always vehemently oppose denationalization programs. While we cannot, of course, completely answer this question, three possible reasons for union opposition suggest themselves. First, there are numerous real examples of large-scale job losses before and after privatization. As examples, BT, British Gas, St. Gobain, and NTT all lost at least 5,000 workers after privatization, and British Steel Corporation's total employment declined from 166,000 workers in 1979 to only 55,000 employees in the year it was denationalized. Second, labor unions invariably face the prospect of converting from public sector to private sector unions, with all that implied about their power to influence SOE policy and to extract wage concessions from companies backed by the taxing power of a national government. Finally, where privatization coincided with industry deregulation (as often occurred) the result is often to put severe competitive cost pressures on corporate managements, who respond by pressuring their work force either for wage concessions, or work rule changes, or both.

F. Changes in Leverage

While most governments do not place great priority on improving the financial soundness of the newly private firms, most do expect leverage ratios to drop after divestiture, for several reasons. For one thing, SOEs traditionally have extremely high debt levels, at least in part because they cannot sell equity to private investors, and thus the only forms of "equity" available to the firm are capital injections from the government and retained earnings.[32]

Given the "mushiness" of the equity accounts of both SOEs and newly privatized firms, we rely primarily on a total leverage measure, total debt to total assets (LEV), although we also compute a long term debt-to-equity (LEV2) measure.[33] As predicted, we document a significant decline in leverage for both ratios. The average (median) absolute declines in LEV, 2.43 percentage points (2.34 percentage points), and in LEV2, 52.88 percentage points (16.68 points), represent substantial capital structure changes. At least 70 percent of our firms decrease their leverage ratios after privatization.[34]

These leverage changes also appear to be pervasive across our subsamples. We document a significant decline in LEV (using the Wilcoxon or proportion statistic, or both) for every one of our subsamples, though in several

[32]One intriguing feature we document about the privatization process in almost all the countries we study (including the United States), is the fact that a necessary precursor to divestment is the passage of legislation converting the SOE into a public limited company. Most of the early British privatizations, in fact, had to be individually authorized by Parliament. The French government, on the other hand, relied on a standard, incorporation/privatization law to prepare its SOEs for divestment. The U.S. Congress had to explicitly pass legislation preparing Conrail for sale.

[33]We also examine whether the accounting treatment of divestiture artificially inflates corporate assets or equity after privatization by examining the financial statements and notes in the prospectuses. We find no evidence of this occurring. Assets are not "written up" after privatization and the change from "government equity" to "private equity" leaves the total book value of the stockholders equity account unchanged.

[34]To test whether these results are being driven by privatizations where the company itself sells shares to the public for cash (primary issues), we separate pure secondary privatization share sales from those that are at least partially primary issues. Not surprisingly, LEV drops by 7.37 percentage points (t = -2.57) for the primary issue subsample of fourteen firms versus only a 0.66 percentage point drop (t = -0.97) for the 39 pure secondary issues. Both subsamples, however, show significant leverage decreases (at the 1 percent level) based on the proportion test. Exactly two-thirds (66.7 percent) of the secondary issue firms experience a drop in LEV after privatization versus 85.7 percent of the primary issue firms. Based on these results, we conclude that privatization itself (government divestment of existing shares without new capital being raised by the firm) yields a marginally significant decline in total firm leverage after divestment. All other operating and financial results for these two subsamples are very similar to those for the primary sample.

cases-for noncompetitive industry firms, for control privatizations, and for OECD countries-the decline is relatively small.

G. Changes in Dividend Payouts

As a final test, we examine whether dividend payouts, measured as total dividend payments divided by net income (PAYOUT) and dividends divided by sales (DIVSAL), increase following privatization. The average (median) dividend payout (PAYOUT) of our sample firms increases from 23.31 percent (20.09 percent) of profits to 45.87 percent (37.58 percent) after divestiture, and the mean (median) increase in payout of 22.55 percentage points (12.48 points) is significant at the one percent level, as is the proportion test, since PAYOUT increases in 70.0 percent of all cases. Because the second dividend measure, DIVSAL, is the ratio of two current-dollar, accounting-insensitive flow measures we feel it is a better measure of payout, and the results using this measure are even stronger than before. The mean (median) increase in dividends as a fraction of sales, 1.72 percentage points (1.21 points), is significant at the 0.001 percent level ($t = 4.63$), and fully 89.7 percent of our companies increase DIVSAL after privatization.

This very strong evidence of dividend increases after privatization is also found in our subsamples. Without exception, DIVSAL increases substantially and significantly after divestiture regardless of industry structure, privatization method, or stage of national development. Clearly, becoming a private but publicly traded company implies a sharp increase (or initiation) in cash dividend payments.[35]

[35]For completeness, we reran all of the tests described above for those eleven companies for which we have absolutely comprehensive operating and financial data for the full seven-year study period. While the results are generally insignificant due to the small sample size, they were qualitatively similar to those described for the full sample and for the major subsamples. We also examine whether our results are simply driven by the improvements in the macroeconomic environment that occurred for most countries during the 1980s. We do this by computing, for the country corresponding to each observation in our sample, the average GNP growth rate, inflation rate, and change in the industrial production index for the three years prior and subsequent to privatization. We document that, for OECD countries, inflation remains essentially unchanged, while the GNP growth rate and the growth rate in industrial production increase by about one percentage point. Changes for non-OECD countries are much more variable, but it seems clear that our results are not being driven solely (or even largely) by improving global economies. In fact, it could well be that the macroeconomic improvements we do find are the *result* of adopting privatization and other market-opening programs.

H. Ownership Structure (Board of Director) Changes

In addition to the significant changes in their operating and financial characteristics, many recently privatized firms undergo marked turnover among their boards of directors and top managers. Table VII presents a list of 50 companies that provided information about board membership and CEOs for one or more years before and after privatization. The list provides, for each firm, the date of privatization, the number of board members for the years compared, the government's shareholdings before and after divestiture, and the fraction of the postprivatization board represented by continuing directors. We also identify the firms that replace their chief executive officers. Although data availability limits any meaningful statistical analysis, the following preliminary observations concerning their turnover appear consistent with theoretical predictions and may offer interesting avenues for future research.

Overall, the mean of the fraction of the new boards composed of continuing directors is 54.0 percent, which represents a considerable change. Additionally, board size was frequently changed; among the 50 companies, 17 elected larger boards following privatization while 12 downsized their board membership. As indicated in Table VII, 7 of the 50 companies replaced their CEO after privatization. This represents a 14 percent turnover and almost surely understates the true turnover of CEOS, since many new top officers were brought into the company during the preparatory period (this was particularly common in the United Kingdom).

As a final empirical test, we divide our sample of firms with board of director data into two groups-one that experiences 50 percent or greater turnover in directors after privatization (high director change) and one group that experiences less than 50 percent change (low director change). We then perform the same analyses for these two groups as we performed for our other subsamples. The results of these tests are detailed in Table VIII.

Table VII

Changes in Board of Director Size and Composition After Privatization

The following companies provided information about their boards of directors both before and after privatization. We examine these boards to document whether board size and composition changed after the firms was privatized. An asterisk (*) indicates that the company was headed by a new chief executive officer after being divested, though the reason for the executive change generally cannot be determined. Since we do not always have the annual reports for the years immediately preceding and subsequent to divestment, we also document the report years we use for this analysis.

		Board Composition Before Privatization			Board Composition After Privatization			Directors Continuing on New Board	
Company Name	Date Privatized	Year Used	No. of Directors	Government Holdings (%)	Year Used	No. of Directors	Government Holdings (%)	Number	Percentage
Aeritalia	May 1986	1986	14	100	1988	14	84	10	71
Agence Havas	May 1987	1985	20	50.3	1987	15	0	4	26
Air Canada	Oct. 1988	1987	14	100	1989	15	57	5	33
Air New Zealand*	Apr. 1989	1987	8	100	1989	9	0	0	0
Amersham International	Feb.1982	1982	9	100	1983	11	0	7	64
Banca Commerciale Italiana	Aug. 1985	1984	11	88	1986	11	67	9	82
Banque Industrielle Mobiliere Privee*	Mar. 1987	1987	15	100	1988	7	0	1	14
Banque Paribas*	Jan. 1987	1985	15	100	1987	13	0	1	8
BAA-British Airports Authority	July 1987	1987	10	100	1990	13	0	7	54
British Aerospace	Feb.1981	1980	15	100	1983	14	48	10	71
British Airways	Feb. 1987	1986	8	100	1991	9	0	3	33
British Gas	Dec. 1986	1986	12	100	1987	11	0	11	100
British Steel	Dec. 1988	1988	14	100	1990	17	0	13	76
British Telecom	Nov. 1984	1984	14	100	1988	14	49.8	7	50
CAP (Chile)	1985-1987	1984	7	100	1988	7	0	1	14
Caribbean Cement Company	June 1987	1986	7	100	1988	10	0	4	40
Compagnie Financiere de Suez	Oct. 1987	1987	14	100	1988	16	0	3	19

Table VII-*Continued*

Company Name	Date Privatized	Board Composition Before Privatization			Board Composition After Privatization			Directors Continuing on New Board	
		Year Used	No. of Directors	Government Holdings (%)	Year Used	No. of Directors	Government Holdings (%)	Number	Percentage
Conrail	Feb.1987	1986	13	85	1988	12	0	4	33
Credit Commerciale de France	Apr. 1987	1987	15	100	1988	20	0	6	30
Credito Fondiario	July 1985	1985	11	100	1987	11	79	7	64
Deutsche Siedlungs & Landesrentenbank*	Oct. 1989	1989	3	100	1989	6	52	2	33
Deutsche Verkehrs Kreditbank	Mar. 1988	1988	11	100	1989	11	75	11	100
DSM	Feb.1989	1989	12	100	1990	10	31	9	90
Elf Acquitaine	Sep.1986	1985	18	66.8	1988	18	55.8	15	83
Fishery Products International	Apr. 1987	1986	15	100	1988	15	0	15	100
IANSA	1986-1988	1986	7	100	1988	7	0	0	0
IVG	Oct. 1986	1986	20	100	1987	22	55	20	91
Japan Airlines	Feb.1987	1985	18	34.5	1987	17	0	11	64
KLM*	Apr. 1986	1986	10	55	1989	10	39	5	50
Kryolit Selskabet Oeresund	Dec. 1985	1985	19	59	1986	9	0	5	56
NCB Group Ltd.	Nov.1986	1986	7	100	1989	12	0	2	17
Nuovo Pignone	Sept. 1986	1986	11	100	1987	11	86	11	100
OMV	Dec. 1987	1987	10	100	1989	10	75	9	90
Petro Canada	July 1991	1991	11	100	1992	11	80.5	11	100
Pohang Iron & Steel	June 1988	1987	14	100	1990	30	50	7	23
Rolls Royce	May 1987	1986	12	100	1988	14	0	10	71
Saipem [Italy]	July 1984	1984	5	100	1985	4	80	4	100
Saint Gobain*	Nov. 1986	1985	18	100	1987	15	0	0	0
Singapore Airlines	Nov 1985	1985	7	77	1990	6	54	6	100
Singapore National Printers	Feb.1987	1987	7	100	1990	7	51	5	71

Table VII-*Continued*

Company Name	Date Privatized	Board Composition Before Privatization: Year Used	No. of Directors	Government Holdings (%)	Board Composition After Privatization: Year Used	No. of Directors	Government Holdings (%)	Directors Continuing on New Board: Number	Percentage
Sirti [Italy]	June 1986	1986	14	95	1990	14	55	2	14
Societé Generale	July 1987	1986	18		1988	16		5	31
Sogenal	Mar. 1987	1987	15	100	1988	14	0	9	64
Swedish Steel	June 1989	1989	14	68.8	1990	14	52.3	9	64
Syarikat Telekom Malaysia Berhard	Oct. 1990	1990	11	100	1991	12	76	7	58
Telefonos de Mexico*	Dec. 1990	1990	n.a.	51	1991	19	0	2	11
VEBA	Apr. 1965	1965	19	100	1966	32	36	16	50
Verbund	Nov.1988	1988	24	100	1990	28	51	19	68
VIAG	1986-1987	1986	20		1989	20		12	60
Volkswagen	Mar. 1961	1960	15	100	1962	17	20	10	59
AVERAGE			12.9	92.3		13.6	30.8	7.4	54.0

Table VIII

Comparison of Performance Changes Following Privatization for Companies Experiencing 50 Percent or Greater Change in Board of Director Composition Versus Those with Less than 50 Percent Change in Director Composition

This table presents comparisons of performance changes for companies that experience 50 percent or greater change in board of director composition (high director change firms) after divestiture versus those companies that experience less than 50 percent change in director composition (low director change firms). The table presents, for each empirical proxy, the number of useable observations, the mean and median values of the proxy for the three-year periods prior and subsequent to privatization, the mean and median change in the proxy's value after versus before privatization, and a test of significance of the median change. We employ the Wilcoxon rank sum test (with its z-statistic) as our test for significance for the change in median values. The final two columns detail the percentage of firms whose proxy values change as predicted, as well as a test of significance of this change. The predicted direction of change is based upon the expectations that governments adopting privatization programs have regarding how the firm will change after it is privatized, as well as upon the theoretical models discussed in the text. Sales efficiency uses inflation-adjusted sales figures divided by the number of employees each year. Deflated sales per employee is normalized to equal 1.000 in year 0 so other year figures are expressed as a fraction of per-capita output in the year of divestment. Net income efficiency and real sales levels are computed similarly.

Performance Variables and Subsamples Examined	*N*	Mean Before (Median)	Mean After (Median)	Mean Change (Median)	Z-Statistic for Difference In Medians (After-Before)	Percentage of Firms That Changed As Predicted	Z-Statistic for Significance of Proportion Change
(1) Return on sales							
High director change firms	17	0.0434 (0.0393)	0.0680 (0.0584)	0.0246 (0.0106)	1.325	70	1.799[c]
Low director change firms	23	0.0600 (0.0533)	0.0723 (0.0437)	0.0124 (0.0088)	1.141	61	1.082
(2) Sales Efficiency							
High director change firms	10	0.964 (0.9487)	1.074 (1.042)	0.1091 (0.1161)	3.870[a]	90	4.216[a]
Low director change firms	16	0.9427 (0.951)	1.057 (1.064)	0.1141 (0.0864)	2.141[b]	88	4.677[a]
(3) Capital Expenditures to Sales							
High director change firms	13	0.1226 (0.0627)	0.2665 (0.1531)	0.1438 (0.0226)	1.817[c]	69	1.481
Low director change firms	20	0.1338 (0.0898)	0.1325 (0.1207)	0.0139 (0.0038)	0.317	60	0.913

Table VIII - *Continued*

Performance Variables and Subsamples Examined	*N*	Mean Before (Median)	Mean After (Median)	Mean Change (Median)	Z-Statistic for Difference In Medians (After-Before)	Percentage of Firms That Changed As Predicted	Z-Statistic for Significance of Proportion Change
(4) Real sales							
High director change firms	17	0.8927 (0.9239)	1.222 (1.115)	0.3293 (0.2333)	3.172[a]	82	3.499[a]
Low director change firms	40	0.9011 (0.8852)	1.105 (1.087)	0.2041 (0.1813)	3.569[a]	73	3.187[a]
(5) Total Employment							
High director change firms	11	31,690 (19,360)	36,170 (26,470)	4,483 (3,598)	1.289	73	1.718c
Low director change firms	17	32,500 (22,170)	34,570 (22,300)	2,074 (47)	0.568	65	1.297
(6) Debt to Assets							
High director change firms	17	0.7493 (0.7600)	0.7135 (0.7039)	- 0.0358 (-0.0408)	- 2.414[b]	88	4.821[a]
Low director change firms	22	0.6521 (0.7004)	0.6315 (0.6570)	-0.0206 (-0.02143)	-0.844	64	1.368
(7) Dividends to Sales							
High director change firms	12	0.00607 (0.004)	0.0305 (0.01738)	0.02439 (0.01035)	2.471[b]	83	3.043[a]
Low director change firms	16	0.00693 (0.00407)	0.02297 (0.01985)	0.01604 (0.01312)	3.490[a]	100	20.000[a]

[a]Indicates significance at the 1 percent level.
[b]Indicates significance at the 5 percent level.
[c]Indicates significance at the 10 percent level.

In general, our results for the high director change group mirror those for the full sample of companies and most of the earlier subsamples. These companies experience significant (either for the median or proportion tests, or both) increases in profitability, output per employee, capital investment spending, employment, and dividend payout, as well as a significant decrease in leverage, after they are privatized. On the other hand, the low director change group only experiences significant changes (both increases) in output per employee and dividend payout. Since none of the differences between these groups are significant, we will not overinterpret our results, but it seems that the greater the change in a firm's control structure the greater the improvement in its operating performance after privatization. Changes in the firm's ownership and control structure, rather than mere government divestiture or cash infusions into the firm from share issues, clearly seem to be the driving force in explaining all of the results we document in this study.

I. Government Subsidies Before and After Privatization

Since our results indicate that privatization often "works," we have frequently been asked to explain exactly how denationalization promotes enhanced performance. While a full discussion of this extremely important topic is beyond the scope of this paper, we can efficiently address one key issue -the direct role of government in subsidizing and intervening in nationalized firm operations before and after privatization. Based on a thorough search of public information sources such as *The Economist,* the *Wall Street Journal,* the *Financial Times, and Euromoney,* we develop case histories for most of our sample companies over a period of approximately ten years before to five years after privatization. We record all references to (1) direct government cash subsidies to SOEs, whether these were meant to cover operating losses, fund capital expenditures, develop new products, or improve the firm's capital base, and (2) direct government intervention in the managerial, production, personnel, or investment policies of its state-owned companies either before or after denationalization. While we summarize our findings below, an appendix detailing our evidence is available upon request.

With the exception of the French companies nationalized by the Mitterand government in 1981 (and privatized by the Chirac government in 1986 to 1987), we find little evidence of direct government subsidies to, or

intervention in, our sample companies *during* the -3 to +3 year period surrounding privatization that we examine. In other words, governments rarely subsidize SOEs while they are being prepared for privatization, and we found no significant examples of subsidies being paid after divestment. If we look farther back, however, we often find very large cash subsidies being paid by the government to SOEs, usually to cover operating losses. For example, various British governments paid over £6 billion to British Steel Corporation during the period 1975 to 1984 to cover the nationalized firm's immense operating losses, and at least as much was given to other British SOEs during the same period.

The Socialist Mitterand government of France, of course, was elected on a nationalization platform, and it embarked on a massive program of investment subsidies during the early 1980s. During the period 1981 to 1985, the Mitterand government directly injected over FFr 40 billion into its newly nationalized and existing SOEs. After returning to power in 1988, the Socialists continued subsidizing France's remaining nationalized companies (albeit on a far smaller scale), but the newly privatized firms were forced to finance all of their own operations. As with the majority of the denationalized companies we examine, the privatized French companies prospered anyway.

V. Summary and Conclusions

We examine the firm-level effects of privatization using a large sample of companies from both developing and industrialized countries. For our full sample, we document significant increases in profitability, output per employee (adjusted for inflation), capital spending, and total employment. We also find that the financial policies of these former SOEs begin to resemble the lower leverage and higher dividend payout ratios typically associated with private, entrepreneurial companies. Additionally, our results are generally robust when we partition our data into various subsamples. We document very strong performance improvements following both full and partial government divestment. Our results are also unchanged when we compare firms operating in competitive versus noncompetitive (regulated and/or protected) industries, when we examine privatizations where the government surrenders control and contrast these with "revenue" privatizations where the purpose of share sales is primarily to raise cash, and when we compare industrialized (OECD) and developing country privatizations. When we partition our data based on the

fraction of a firm's board of directors, however, we document greater performance improvement for the group of firms that experience 50 percent or greater turnover in directors than for the group of companies experiencing less dramatic change in directors after privatization.

Our data do not allow us to precisely document the causes of these performance improvements after divestiture, but we are able to rule out price increases as at least a frequent source of profitabllity increases. In fact, the very pervasiveness of these improvements and the fact that most share sales did not raise cash for the firm suggest that privatization itself -the involvement of private investors in a firm's ownership structure- critically impacts a firm's operating and financial performance. We feel the most likely explanation for these changes is that (even partial) private ownership allows the internalization of the benefits of performance improvements, and publicly listed shares allow these benefits to be capitalized into the price of the firm's stock. Changes in executive and employee compensation policies may provide incentives for the firm's workers to be more productive, but we are unable to document these changes with our data. We can only show that, for whatever reason, newly privatized firms benefit from improved operating and financial performance while maintaining total employment.

Appendix

Total Employment Data for Privatizing Companies For Three Years Before to Three Years After Divestiture Collected From Publicly Available Information Sources

This appendix details changes in total employment for our sample of privatizing companies for the period - 3 to +3 years relative to privatization year (year 0). This appendix lists only companies with two or more years of comparable data in *Moody's International Manual* supplemented with information from international annual reports filed with the U.S. Securities and Exchange Commission and information from *Hoover's Handbook of World Business, 1993*. Change in total employment is measured either as the average employment in years +1 to +3 minus the average for years - 3 to - 1, or as the average period relative to the first or last year of data, depending upon data availability. Year 0 is defined as the information date closest to the date of privatization.

Company Name	Privatization Date	Total Employment for Years - 3 Through + 3 Relative to Privatization							Change in total Employment After Privatization
		Year - 3	Year - 2	Year - 1	Year 0	Year + 1	Year + 2	Year + 3	
Air Canada	Oct. 1988	22,134	22,200	22,200	22,640	23,247	21,371	20,593	-441
Air New Zealand	Oct. 1989	7,768	8,046	8,621	9,194	-[a]	-	-	NM
Amersham International	Feb. 1982	-	-	-	2,088	2,148	2,498	2,742	+375
Banca Commerciale de Italiana	Aug. 1985	19,792	19,354	-	22,000	21,651	19,250	21,220	+1,134
British Aerospace	Feb.1981	-	-	-	-	78,990	77,980	75,998	NM
British Airways	Feb.1987	35,977[b]	37,000	38,939	39,498	42,709	48,760	52,054	+10,536
British Gas	Dec.1986	97,200	93,118	89,747	86,096	82,300	79,400	80,481	-12,628
British Petroleum	Nov.1979	78,000	81,000	108,700	113,000	118,200	153,250	143,350	+49,033
British Steel	Dec.1988	62,000[c,d]	57,000[d]	55,000[d]	55,100	53,300	-	56,100	-3,300
British Telecom	Nov.1984	-	-	241,000	235,178	235,988	234,400	237,205	-5,136
Cable & Wireless	Oct.1981	-	-	11,975	10,750	10,674	23,285	23,905	+7,313
Compagnie Generale d'Electricite	May1987	148,700	-	153,800	149,000	219,500	204,100	210,300	+60,050
Deutsche Siedlungs & Landesrentenbank	Oct.1989	745	791	808	810	785	745	-	-16
Deutshe Verkehrs Kreditbank	Mar.1988	-	-	992	899	933	972	985	-29
Japan Airlines	Dec.1987	20,458	20,367	20,486	20,830	20,891	21,047	21,156	+594
Keppel Corporation	1988-1989	5,539	4,879	5,282	6,382	7,667	8,954	9,311	+3,411
KLM Airlines	Apr. 1986	18,811	-	19,193	20,262	21,235	22,257	23,599	+3,362
Malaysian Airlines	Oct. 1985	-	-	10,632	10,798	11,136	11,249	11,928	+806

Appendix-*Continued*

Company Name	Privatization Date	Total Employment for Years - 3 Through + 3 Relative to Privatization							Change in total Employment After Privatization
		Year - 3	Year - 2	Year - 1	Year 0	Year + 1	Year + 2	Year + 3	
Naamloze Vennootschap DSM	Feb.1989	26,615	27,315	27,920	28,625	29,500	24,850	25,170	-777
Nippon Telepraph and Telephone	Feb.1987	318,000	314,000	304,000	297,596	291,142	283,294	272,903	- 29,554
OMV A.G.	Dec.1987	7,297	7,038	6,803	6,440	5,944	13,496	13,017	+3,773
Petro-Canada	July1991	7,373	6,468	9,806	9,524	-	-	-	NM
Procordia	Oct.1987	24,392	24,349	23,490	24,840	21,139	27,844	45,193	+7,315
Repsol S.A.	May1989	-	-	-	19,077	19,171	21,284	20,848	+ 1,357
Rolls-Royce	May1987	42,300	40,900	41,700	40,900	42,000	40,900	64,900	+ 7,633
Cie. de St. Gobain	Nov.1986	125,830	117,443	142,390	140,071	131,324	84,689	87,816	- 27,278
Singapore International Airlines	Nov.1985	10,213	9,715	10,144	-	15,686	16,063	17,168	+6,282
Societé Generale	July1987	35,201	44,122	43,665	35,155	45,462	32,998	45,776	+ 416
SOGENAL	Mar.1987	2,530	2,757	3,023	3,083	2,911	2,224	2,728	- 149
Societe Nationale Elf Acquitaine	Sep.1986	77,600	76,200	73,377	71,350	69,350	72,200	72,700	-4,309
Swedish Steel	June1989	15,354	14,352	12,801	12,153	12,014	2,224	-	-2,461
Telefonos de Mexico	Dec.1990	-	49,995	49,207	65,195	63,580	11,403	-	+ 13,979
Volkswagen	Mar.1961	-	54,120	64,139	-	78,000	80,426	-	+ 20,084
Viag	June1986	-	20,979	21,985	21,964	32,733	33,427	34,657	+ 12,123
Total (Net)									+ 123,498
Average									+ 4,116
Median									+ 700

[a]Specific information on employment was unavailable after 1989, but the 1991 annual report stated that employment had been "reduced significantly" during the year.
[b]In 1979, employment peaked at 59,000 before beginning a steep decline.
[c]In 1978, employment peaked at almost 200,000 workers. By 1983, the level had been reduced to 78,400.
[d]Approximate-interpreted from a graph of number of employees.

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