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The Financial and Operating Performance of Privatized Firms during the 1990s

JULIET D'SOUZA and WILLIAM L. MEGGINSON*

ABSTRACT

This study compares the pre- and postprivatization financial and operating performance of 85 companies from 28 industrialized countries that were privatized through public share offerings for the period from 1990 through 1996. We document significant increases in profitability, output, operating efficiency, and dividend payments—and significant decreases in leverage ratios—for our full sample of firms after privatization, and for most subsamples examined. Capital expenditures increase significantly in absolute terms, but not relative to sales. Employment declines, but insignificantly. Combined with results from two previous, directly comparable studies, these findings strongly suggest that privatization yields significant performance improvements.

DURING THE PAST TWO DECADES, the privatization of state-owned enterprises has moved from being a radical, almost desperate, policy initiative of the Thatcher government in Britain to being an accepted economic policy for governments of all ideological stripes. According to Gibbon (1998), \$860 billion has been raised by governments worldwide through privatizations, with the bulk of this total coming since 1987, and at least one commentator (Roche (1996)) predicts that no less than \$6 trillion will be raised through privatizations over the next two decades. In 1997 alone, sales of public enterprises totaled a record \$161 billion worldwide, with more than \$110 billion of the total coming during the second half of the year, and 1998's total of almost \$140 billion indicates that the pace shows no sign of slackening as we approach a new millennium.

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Although the greatest academic and practitioner attention has been directed toward voucher (mass) privatizations in eastern Europe and the former Soviet Union (see Boycko, Shleifer, and Vishny (1994)), by far the largest fraction of total proceeds raised by governments has been through share issue privatizations. As Perotti and Gunev (1993), Perotti (1995), Shafik (1996), and Jones et al. (1999) all make clear, governments and their investment bankers have become extremely adept at manipulating the offer pricing and share and control allocation terms of these offers to achieve multiple, often competing, political and economic objectives. Existing studies of the effect of privatization on the financial and operating performance of firms privatized through share offerings through the early 1990s—particularly the works of Megginson, Nash, and van Randenborgh (1994) and Boubakri and Cosset (1998)—clearly indicate that transferring a state-owned enterprise (SOE) to private ownership significantly improves its performance.

The primary objective of this study is to determine whether share issue privatizations executed between 1990 and 1996 yield the same operating performance improvements documented for divestitures during the 1980s and before. There are several reasons to believe that privatization programs launched this decade differ significantly from those launched earlier. For one thing, governments can now point to a sizable body of empirical evidence—both in academic journals and in research reports published by multilateral organizations, research firms, and investment banks—to support their push for more rapid divestment, on economic as well as financial grounds. As discussed in Megginson et al. (1994), governments launching privatization programs during the 1980s were doing so without solid empirical backing for their actions, whereas recent theoretical and empirical studies (cited at length in Section I below) now strongly support the proposition that privatization increases the operating efficiency of the divested firms. This literature is summarized in Megginson and Netter (1998).¹ Additionally, governments might well have learned how to design privatization programs and specific offerings more effectively during the 1990s, which should also cause this period to differ from previous ones.

The 1990s have also seen an important shift both in the industries being privatized and in the number of countries participating. For example, we now see more privatizations in highly regulated industries, such as banking and telecommunications and electric utilities, in both developed and developing economies, and privatization programs are clearly spreading throughout the developing world.² Finally, the new-found orthodoxy of privatization means that it has been embraced as an instrument of political economy by

¹ Current versions of this survey paper can be obtained by accessing either the NYSE's website at www.nyse.com/public/thenyse/1e/1e4/wp98-05.htm or the "Privatization Papers" section of the second author's site at cbaweb.ou.edu/~wmegginns.

² According to Cook and Kirkpatrick (1995), 94 percent of the privatizations in 1988 took place in developed countries, but this percentage drops to 58 percent in 1992. For an overview of the recent performance of privatizations in the developing and transition economies, see Nellis (1999).

governments of all political stripes, and thus is now being used in circumstances that would have been unimaginable in previous decades. This is especially true in western Europe, which has for several years led the world in the number of large privatizations executed, despite the fact that 13 of the 15 European Union countries have left-of-center governments.

This study examines the success of share issue privatization programs in developing and industrialized economies during the period from 1990 to 1996. Our sample includes 85 companies from 28 countries (13 nonindustrialized and 15 industrialized). Using information obtained from prospectuses, annual reports, and secondary sources, we examine whether the operating and financial performance of these companies improves after they are privatized. Since we employ the same methodology used in Megginson et al. (1994) and Boubakhri and Cosset (1998), we also directly compare our results to those presented in these two studies.

To more closely examine the sources of any privatization-induced performance changes, we also partition the full sample into five matching pairs of subsamples: (1) noncompetitive firms (regulated firms from the telecommunications and utilities industries) versus firms from industries open to domestic and international competition, (2) "control privatizations," where the government's divestment lowers its fractional shareholding to less than 50 percent, versus "revenue privatizations," where the government retains majority voting control, (3) firms headquartered in industrialized (OECD) countries versus those headquartered in nonindustrialized (developing) countries, (4) firms in which less than 50 percent of the preprivatization board of directors is replaced versus firms with at least 50 percent postprivatization board changes, and (5) firms in which a new CEO is appointed after privatization versus those in which the old CEO is retained. We also examine whether significant differences in postprivatization profitability, output, operating efficiency, leverage, capital investment, and employment exist between the groups in each of the subsamples.

We find persuasive evidence that the mean and median levels of profitability, real sales, operating efficiency, and payout of our full-sample firms increase significantly (in both statistical and economic terms) after privatization. In fact, the significance levels of the profitability, output, and efficiency variables are much greater (z values are much higher) than the previous study conducted by Megginson et al. (1994), and are similar to those in Boubakri and Cosset (1998). We also document significantly lower leverage ratios for our firms after divestiture. In contrast to Megginson et al., we find insignificant changes in employment (as do Boubakri and Cosset) and in capital spending as a fraction of sales after privatization—though the absolute level of capital spending does increase significantly.

The subsample analyses also yield important results. Output, operating efficiency, and dividend payments increase significantly for every subsample, and profitability increases and leverage decreases significantly in all but three cases. Employment decreases significantly only for firms that retain their CEOs and for industrialized-country firms. Although capital in-

vestment spending as a fraction of sales generally remains statistically unchanged, it decreases significantly for firms with less than 50 percent change in their board of directors. Additionally, we test for significant differences between each dichotomous subsample pair using Kruskal–Wallis tests, and these reveal that performance improves significantly when voting control is relinquished by a divesting government and for firms in noncompetitive industries, but that employment declines significantly for companies headquartered in developed countries.

We also contrast our results with those of two previous studies that employed the same methodologies and sample selection criteria. The three studies collectively examine 211 companies from more than 50 industries—with the combined sample approximately equally split between developed and developing countries. All three studies strongly suggest that privatization is a powerful tool for improving the financial and operating performance of former state-owned enterprises in many different institutional settings. We conclude by presenting indirect evidence that the performance improvements documented in these three studies are not the result of postprivatization price increases or the exploitation of market power, but are instead the result of efficiency gains resulting from improved incentives.

This study is organized as follows. Section I provides a summary of the recent theoretical and empirical research on privatization. The data we employ are described in Section II. Section III presents our testable predictions and methodology, and Section IV presents our empirical results for the full sample and all subsamples. Section V contrasts the results of our study with those of MNR and BC. Section VI concludes.

I. Has Privatization Improved the Performance of Divested Firms?

Privatization has been part of government policy toolkits for almost two decades now—enough time to allow academic researchers to generate a wide range of empirical studies examining the effect of divestment on the postprivatization operating performance of former SOEs. We identify 14 such papers, eight of which examine either a single industry or a single country, and six of which use a multinational, multi-industry sample of firms. We briefly review each group of studies in turn, beginning with the industry and/or country-specific studies. Three of these works study the British privatization program, two focus on individual firm divestitures, and two examine how privatization has affected a specific industry.

A. Single-Industry and Single-Country Empirical Studies

Martin and Parker (1995) examine whether 11 British firms privatized from 1981 to 1988 improve profitability (measured as return on invested capital) and efficiency (annual growth in value added per employee-hour) after being divested. They find mixed results. After adjusting for business

cycle effects, fewer than half of the firms perform better after being privatized. Continuing the theme of ambiguous British results, Newbery and Pollitt (1997) perform a social cost-benefit analysis of the 1990 restructuring and privatization of the Central Electricity Generating Board (CEGB). The authors conclude that CEGB's restructuring and privatization was in fact "worth it," but that these steps could have been implemented more efficiently and with greater concern for the public's welfare.³ The third study using U.K. data finds strong evidence that privatization improves performance. Eckel, Eckel, and Singal (1997) examine the effect of British Airways' 1987 privatization on *competitors'* stock prices and on fares charged in those routes where BA competes directly with foreign airlines. They find that the stock prices of U.S. competitors fall, on average, by a significant 7 percent upon BA's privatization, implying that stock traders anticipated that a much more competitive BA would result from the divestiture.

The fourth and fifth studies examine the privatization experiences of two eastern European countries. Barberis et al. (1996) study postsale performance changes in a sample of 452 Russian (retail) shops divested during the early 1990s. The authors document that the presence of new owners and managers raises the likelihood of a value-maximizing restructuring, but that offering equity incentives to existing workers does not—suggesting the importance of new human capital in effecting economic transformation. Claessens, Djankov, and Pohl (1997) examine the cross-sectional determinants of performance improvements during 1992 to 1995 for a sample of 706 Czech firms involved in the mass privatizations during 1991 and 1992. Using a Tobins-*q* measure, they document that privatized firms do prosper, primarily because of the concentrated ownership structures that result from privatization.

The sixth empirical study, LaPorta and López-de-Silanes (1997), tests whether the performance of a sample of 218 Mexican SOEs privatized through June 1992 improves after divestiture. The authors compare the profitability, employment, and efficiency levels of the privatized firms to an industry-matched control group, and find that the former SOEs rapidly close the yawning performance gap that had existed prior to divestment. Output increases 54.3 percent (in spite of a reduced level of investment spending), sales per employee roughly double, and privatized firms reduce blue- and white-collar employment by half.

Seventh, Ramamurti (1997) examines the 1990 restructuring and privatization of Ferrocarrilla Argentinos, the Argentine national freight and passenger railway system, and documents an incredible 370 percent improvement

³ The privatization and liberalization of the British electricity industry is also discussed at length in Newbery (1997) and Vickers and Yarrow (1991), and the regulatory regime adopted for earlier utility privatizations is described in Beesley and Littlechild (1989). None of these works showers the Thatcher government with praise for its policy decisions, though Beesley and Littlechild do find the RPI-X price regulation system adopted in the United Kingdom to be much superior to the U.S. rate of return regulatory regime.

in labor productivity and an equally striking (and not unrelated) 78.7 percent decline in employment—from 92,000 to 18,682 workers. He concludes that these performance improvements could not have been achieved without privatization.

The final focused empirical study, D'Souza and Megginson (1998), examines performance changes following the privatization by share offering of 17 national telecommunications companies for the period from 1981 through 1994. They find persuasive evidence that profitability, output, operating efficiency, capital investment spending, the number of access lines (a proxy for units of physical output), and average salary per employee all increase significantly after privatization. Leverage declines significantly, and employment declines insignificantly.⁴

B. Multi-Industry and Multinational Empirical Studies

Any empirical privatization study must make an explicit trade-off between depth and breadth of coverage. Though a researcher performing a study limited to a single country or industry usually has access to consistent data and extensive coverage of the events in secondary news media, researchers seeking to make international and interindustry comparisons almost inevitably must settle for lowest-common-denominator data that are universally available. Additionally, due to the necessity of obtaining comparable pre-versus postprivatization financial data, most of the studies covered here examine firms that are privatized via public share offering rather than via vouchers or direct sales.⁵ The principal benefit of multinational and multi-industry studies is, of course, the generalizability of the empirical conclusions drawn from the analyses. With this caveat in mind, we now turn to a discussion of six broad-coverage empirical studies.

The first study we examine is also one of the most influential, partly because of the rigor of its methodology and partly because it was sponsored by the World Bank. Galal et al. (1992) compare the actual postprivatization performance of 12 large firms—mostly airlines and regulated utilities—in

⁴ In addition to these eight empirical studies, several other papers survey extant research for a region (Ramamurti (1996), McDonald (1993), Bennell (1997), and Molz and Hafsi (1997)), for a country (Caves (1990) and Dyck (1997)), for an industry (Wasserfallen and Müller (1998) and Bortolotti, Fantini, and Siniscalco (1998)), or for the entire developing world (Kikeri, Nellis, and Shirley (1992) and Nellis (1999)). With the exception of the first two U.K. studies discussed above (Martin and Parker (1995) and Newbery and Pollitt (1997)) and the Caves overview piece, all of the country-/industry-specific empirical studies and the survey articles strongly support the conclusion that privatization significantly improves the operating and financial performance of divested firms—and does so in a remarkably short time frame after ownership is transferred from state to private hands. The sources of this performance improvement, for U.K. firms, are examined in Cragg and Dyck (1998, 1999).

⁵ For an empirical analysis of the reasons why governments choose to privatize a particular firm via share offering versus through an asset (direct) sale, see Bortolotti, Fantini, Siniscalco, and Vitalini (1998) and Megginson et al. (1997).

Britain, Chile, Malaysia, and Mexico to the predicted performance of these firms had they not been divested. The authors document net welfare gains in 11 of the 12 cases considered which equal, on average, 26 percent of the firm's predivestiture sales.

Two studies examine the privatization experiences of central and eastern Europe. Frydman et al. (1998) compare the performance of a sample of 128 privatized and 90 state-owned firms in the Czech Republic, Hungary, and Poland during the years after privatization began in 1990 to 1993. They find that, on average, privatization increases performance, with the main effects being immediate increases in revenue and productivity of firms privatized to outside owners. Pohl et al. (1997) compare the extent of restructuring achieved by more than 6,300 private and state-owned firms in seven eastern European countries between 1992 and 1995. They find that privatization dramatically increases the likelihood of restructuring and the probability that it will be successful.

Fourth, Dewenter and Malatesta (1998) compare the pre- versus postprivatization performance of 63 large, high-information companies divested during the period from 1981 to 1993. These authors examine performance changes over both a short time frame around privatization, comparing event years (-3 to -1) with ($+1$ to $+3$), as well as examining a longer time period, comparing event years (-10 to -1) with ($+1$ to $+5$). They document significant postprivatization increases in profitability (using net income) and significant decreases in leverage and labor intensity (employees/sales) over the period immediately preceding privatization and the period after privatization; however they also find that operating profits increase *prior to* divestiture and may actually decrease somewhat afterward.

We examine the last two studies as a set because their sampling and testing methodologies are similar. Megginson et al. (1994) compare three-year average postprivatization financial and operating performance measures with the same three-year preprivatization performance measures for 61 companies from 18 countries and 32 industries that were divested in the period from 1961 through 1989. Boubakri and Cosset (1998) use the same methodology in their analysis of 79 companies from 21 developing countries and 32 industries divested during the period 1980 to 1992. Both studies document statistically and economically significant increases in output, efficiency, profitability, capital investment spending, and dividend payments after privatization, as well as decreased leverage ratios. Additionally, both studies document that total employment *increases* after divestiture, though the increase is (marginally) significant using only one of the two principal test statistics in each case. We compare the current study's results with these two studies in Section V below.

Taken together, the 14 empirical studies surveyed in this section document very strong performance improvements as a result of privatizations executed through the early years of this decade. Collectively, these papers examine several thousand companies from approximately 50 countries and virtually every imaginable industry, and speak with a consistent voice docu-

menting privatization-induced output, efficiency, and profitability increases. Further, those studies that examine the sources of performance improvement (particularly LaPorta and López-de-Silanes (1997), Ramamurti (1997), and Frydman et al. (1998)) almost unanimously conclude that they are related to efficiency improvements rather than the exploitation of market power. Most also find that capital investment spending increases and leverage declines after a firm is transferred to private ownership. Finally, although the evidence on privatization-related changes in employment levels is ambiguous, it is fair to say that in those cases where employment is indeed cut there is invariably a major offsetting performance improvement. Our study examines whether these results continue to hold for privatizations executed during the period 1990 to 1996.

II. Data

We limit our analysis to those companies that are fully or partially sold to private investors through a public share offering, primarily because companies that are privatized in this way continue to generate post-issue financial and accounting data that are directly comparable to predivestiture data. We select firms that have their initial public offering of shares during the years 1990 to 1996 and have at least one annual observation in the years -3 to -1 and in the period $+1$ to $+3$, where the year of privatization is defined as year 0.⁶ In all cases, we solicit directly from the privatized firms: (1) the offering prospectus for their initial offer, which invariably presents multiple years of preprivatization financial data, as well as details about the offering itself, and (2) annual reports from the postprivatization periods. Approximately two-thirds of the companies we approached fully or partially complied with our requests. One of the empirical luxuries of examining this most recent period, however, is that much of the key data in the prospectuses and (especially) the annual reports are now available from secondary sources such as Datastream, World Scope Disclosure, *Moody's International Manuals*, and the Laser Disclosure file of documents from all registered security offerings on U.S. capital markets after 1989. Since many of these offerings have an American tranche (usually ADRs), data availability is far less of a problem than was true for prior studies, and we have less reason to think our sample suffers from a serious selection bias.

These selection criteria yield a sample of 85 companies from 28 countries and 21 industries, with 58 of the firms being from 15 industrialized countries and 27 from 13 developing countries.⁷ The most heavily represented industries in this sample are electric utilities (20 firms—16 from Great Britain),

⁶ We also analyze data with a two-year minimum data screen; the results are very similar to those presented in this paper.

⁷ In order to be consistent with Boubakri and Cosset (1998), we use their definition of developing versus industrialized countries, as given in the IMF's *International Financial Statistics*.

banking (15), telecommunications (15), and petroleum (4). All the share issues made by firms in our sample that involve lowering state ownership in a firm are presented in the Appendix.

III. Testable Predictions and Methodology

Since our primary objective in this paper is to test whether the economic impact of privatization programs has changed during the 1990s, we examine the same variables used in Megginson et al. (1994) (hereafter MNR) and Boubakri and Cosset (1998) (hereafter BC). We also test the same hypotheses. As MNR discuss, virtually all governments launching privatization programs have specific, and generally very optimistic, expectations about what these programs will yield. Governments expect that privatized firms will increase total sales, become significantly more efficient and profitable, increase their capital spending, and become financially healthier; yet all governments fear these benefits will come at the economically (and politically) painful cost of reduced employment in the privatized firms.⁸ As do MNR and BC, we test whether this in fact occurs. Specifically, we test the hypotheses that privatization (1) increases a firm's profitability, (2) increases its operating efficiency, (3) increases its capital investment spending, (4) increases its output, (5) decreases employment, (6) decreases leverage, and (7) increases dividend payments. Table I presents our testable predictions and the empirical proxies we employ.

To test these predictions, we first compute empirical proxies for every company for a seven-year period: three years before through three years after privatization. We then calculate the mean of each variable for each firm over the pre- and postprivatization windows (preprivatization = years -3 to -1 ; postprivatization = years $+1$ to $+3$). Since the year of privatization (year 0) includes both the public and private ownership phases for all firms, it is excluded from our analyses.

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 10 follows approximately a standard normal distribution. In addition to the Wilcoxon test, we use a (binomial) 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.

⁸ In addition to MNR, the goals of privatizing governments are discussed in Price Waterhouse (1989a, 1989b) and Menyah and Paudyal (1996).

Table I
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 the 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 1.0 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
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/ Total equity	$ROE_A > ROE_B$
Operating efficiency	Sales efficiency (SALEFF) = Sales/Total employment	$SALEFF_A > SALEFF_B$
	Net income efficiency (NIEFF) = Net income/Total employment	$NIEFF_A > NIEFF_B$
Capital investment	Capital expenditure to sales (CESA) = Capital expenditure/Sales	$CESA_A > CESA_B$
	Capital expenditure to total assets (CETA) = Capital expenditure/Total assets	$CETA_A > CETA_B$
Output	Real sales (SAL) = Nominal sales/Consumer price index	$SAL_A > SAL_B$
Employment	Total employment (EMPL) = Total number of employees	$EMPL_A < EMPL_B$
Leverage	Debt to assets (TDTA) = Total debt/Total assets	$TDTA_A < TDTA_B$
Dividend to sales	DIVSAL = Dividend/Sales	$DIVSAL_A > DIVSAL_B$

We employ local currency data in all our analyses and, whenever possible, we compute ratios using nominal data in both the numerator and denominator. 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*. A similar procedure is employed to compute net income per employee. Real sales, sales efficiency, and net income efficiency measures for year 0 (the year of privatization) are defined as having an index value of 1.00, with other years being expressed relative to unity in this year.

A. Subsample Analyses

In addition to analyzing the full sample of privatized companies, we perform similar tests for the following five subsamples.

1. *Competitive versus noncompetitive analyses.* The rationale for splitting the sample into competitive versus noncompetitive industries is straightforward. Privatization of enterprises in competitive industries such as airlines, retail operations, or manufacturing is likely to yield solid and rapid economic benefits as long as there are no economy-wide distortions that hinder competition. Even with such distortions, privatization can have the benefit of reducing the fiscal burden of SOE subsidies. For the sale of enterprises in noncompetitive sectors, the steps are more numerous and the process is more complex. Successful privatization of natural monopolies requires a regulatory framework that separates out potentially competitive activities, establishes the tariff regime, clarifies service goals, develops cost minimization targets, and creates or strengthens an agency to supervise the process. We define competitive firms as those that are subject to international product market competition, and noncompetitive firms as those that are relatively free of product market competition. Hence, firms from the telecommunications and utilities industries are included in the noncompetitive sample, and all other firms in the competitive sample.
2. *Control versus revenue privatization analyses.* In control privatizations the government sells voting control (it sells enough shares to bring its holdings below 50 percent); in revenue privatizations the government retains a majority stake. The fundamental implication of the Boycko, Shleifer, and Vishny (1996) analysis is that the closer the shareholders' tastes are to those of the politicians, the less likely restructuring is to occur. When these shareholders have control rights, it is relatively cheaper for politicians to convince them not to restructure through the use of subsidies. Similar logic also suggests that, from the point of view of restructuring, control by outside shareholders—who are unlikely to care about employment—is superior to control by managers, who care about it more. Additionally, outside investors (unlike managers), need not be cash constrained, and hence can, in aggregate, afford a larger ownership stake. This logic suggests that selling voting control to outside investors is most conducive to efficiency improvements, and we thus expect control privatizations to yield more substantive performance improvements than do revenue privatizations.
3. *Firms in industrialized versus nonindustrialized countries.* Developing economies, in general, have thin capital markets, hence it may not be as easy to privatize as it is in more developed economies. Nonindustrialized countries also typically have weaker regulatory and legal institutions than do industrialized nations, and therefore may lack the social infrastructure needed to obtain maximum performance improvements from privatized firms. We define industrialized firms as those

headquartered in countries defined as industrialized in the IMF's International Financial Statistics database, and we define all other companies in the sample as nonindustrialized firms.

4. *Change in the composition of boards of directors.* In addition to the significant changes in the operating and financial characteristics, many recently privatized firms undergo marked turnover among their boards of directors. These changes are documented in Table VIII. A large (50 percent or greater) turnover in a privatized firm's board represents both a powerful signal of a desire to change firm direction and a willingness to remove potential human capital constraints on the transformation process. We thus expect the high-board-change subsample to yield greater performance improvements than the subsample with less than 50 percent board change.
5. *Change in CEO.* In addition to substantial changes in the composition of boards of directors after privatization, we also observe numerous postprivatization changes in a firm's CEO. Of the 27 firms for which we have CEO and board of directors data, 11 firms (40 percent) change CEOs after privatization. Given the frequently cited importance of enlisting new human capital for the process of firm transformation, we expect that firms which change CEOs improve performance more after privatization than firms that do not change CEOs.

MNR also examine the first four of these subsamples, and BC study subsamples of competitive versus noncompetitive firms and control versus revenue privatizations.⁹ Since BC only examine developing countries, they do not separate their firms into industrialized versus nonindustrialized subsamples, though they do study high-income versus low- and middle-income developing countries. In addition to the Wilcoxon and proportion tests, we also perform a Kruskal–Wallis test to examine whether significant differences exist between the subsample groups.

IV. Empirical Results

In this section we present and discuss our empirical results for the full sample of all privatized firms, and for the five subsamples. The full sample results are presented in Table II, and similar subsample results are presented in Tables III to VII.

A. Profitability Changes

We measure profitability using three ratios: return on sales (ROS), return on assets (ROA), and return on equity (ROE). We compute our profitability ratios using net income as the profit measure in the numerator of all three

⁹ In unreported tests, BC also examine firms with 50 percent or greater board of director change versus those with less than 50 percent change, and find results very similar to those we report.

ratios. Since ROS is a ratio of two current-dollar flow measures, it is the ratio on which we focus. As most governments expect, profitability increases significantly after privatization according to ROS and ROA for the full sample of 85 companies. The mean (median) increase in ROS after divestiture is 3.0 percentage points (3.0 points), from 14 to 17 percent of sales, and 71 percent of all firms experience expanding profit margins after privatization. Wilcoxon tests show that ROS and ROA increase significantly (at the 1 percent level) after privatization, and the changes in ROE are insignificant.

Most of the subsamples also demonstrate significant postprivatization increases in profitability. Seven of the 10 median increases are significant based on the Wilcoxon test, and eight of the 10 proportion test statistics are significantly positive. Profitability increases significantly, according to one or both measures, for every subsample except competitive industry firms and those privatized in nonindustrialized countries. The Kruskal–Wallis tests, presented for all subsamples in Table IX, indicate that the 30 firms operating in noncompetitive industries—half of which are telecoms and the other half electric utilities—experience a significantly greater increase (six percent mean, four percent median) in return on sales than do the 48 firms from competitive industries (one percent mean, two percent median).

B. Efficiency Changes

To measure efficiency, we employ inflation-adjusted sales per employee (SALEFF) and net income per employee (NIEFF). Both SALEFF and NIEFF show significant median increases following privatization for the full sample. Sales per employee increase from an average (median) 102 percent (87 percent) of the year 0 value during the –3 to –1 year preprivatization period to 123 percent (116 percent) of year 0 output in the postprivatization period. Net income per employee also increases from a mean (median) 62 percent (71 percent) of year 0 levels before privatization to 132 percent (137 percent) afterward, an increase of 70 (66) percentage points. Further, SALEFF and NIEFF increase in 79 and 76 percent of all cases, both significant at the 1 percent level. Clearly, these represent very dramatic postprivatization efficiency gains.

All of the subsamples show significant efficiency improvements after privatization, with eight of the 10 median changes—and all of the proportion changes—significant at the 1 percent level. This is a truly remarkable result: Regardless of industry, stage of national development, fraction of the firm divested, or the degree of personnel change after divestment, privatization yields significantly higher real output per worker. However, this is not to say that all subsamples experience identical efficiency improvements. The Kruskal–Wallis tests indicate that noncompetitive industry firms experience greater efficiency gains than do firms in competitive industries, and that control privatizations improve efficiency more than do revenue privatizations.

Table II
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 privatized firms. For each empirical proxy we give 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 signed rank 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. Sales efficiency uses inflation-adjusted sales divided by the number of employees each year. Deflated sales per employee is normalized to equal 1.0 in year 0 so other figures are expressed as a fraction of per capita output in this year. Net income efficiency and real sales are computed similarly.

Variables	<i>N</i>	Mean Before (median)	Mean After (median)	Mean Change (median)	<i>Z</i> -Statistic for Difference in Medians (after - before)	Percentage of Firms that Changed as Predicted	<i>Z</i> -Statistic for Significance of Proportion Change
<i>Profitability</i>							
Return on sales (ROS)	85	0.14 (0.05)	0.17 (0.08)	0.03 (0.03)	3.92***	0.71	4.17***
Return on assets (ROA)	83	0.06 (0.04)	0.07 (0.07)	0.01 (0.03)	2.83***	0.65	2.88***
Return on equity (ROE)	79	0.18 (0.12)	0.19 (0.13)	0.01 (0.01)	1.06	0.52	0.34

<i>Efficiency</i>								
Sales efficiency (SALEFF)	63	1.02 (0.87)	1.23 (1.16)	0.21 (0.29)	4.87***	0.79	5.76***	
Net income efficiency (NIEFF)	59	0.62 (0.71)	1.32 (1.37)	0.70 (0.67)	4.34***	0.76	4.74***	
<i>Capital Investment</i>								
Capital investment to sales (CESA)	69	0.18 (0.11)	0.17 (0.10)	-0.01 (-0.01)	-0.80	0.55	0.85	
Capital investment to total assets (CETA)	68	0.11 (0.09)	0.10 (0.09)	-0.01 (-0.00)	-0.03	0.51	0.24	
<i>Output</i>								
Real sales (OUTPUT)	85	0.93 (0.76)	2.70 (1.86)	1.76 (1.11)	7.30***	0.88	10.94***	
<i>Employment</i>								
Total employment (EMPL)	66	22941 (9876)	22136 (9106)	-805 (-770)	-1.62	0.64	2.31**	
<i>Leverage</i>								
Total debt to total assets (TDTA)	72	0.29 (0.26)	0.23 (0.18)	-0.06 (-0.08)	-3.08***	0.67	3.0***	
<i>Dividends</i>								
Dividend to sales (DIVSAL)	51	0.015 (0.00)	0.04 (0.02)	0.025 (0.02)	4.975***	0.79	5.24***	

***, **, * Significant at the 1, 5, and 10 percent levels, respectively.

Table III
Performance Changes following Competitive Industry versus
Noncompetitive Industry Privatizations

This table presents comparisons of performance changes for companies operating in competitive industries (those that are subject to international product market competition) and noncompetitive industries, defined as those industries (principally utilities) that are relatively free of product market competition. For each empirical proxy we give the number of useable observations, the mean and median values of the proxy for the three-year periods prior and subsequent to privatization, 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 signed rank 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. Sales efficiency uses inflation-adjusted sales figures divided by the number of employees each year. Deflated sales per employee is normalized to equal 1.0 in year 0 so other year figures are expressed as a fraction of per capita output in this year.

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
Return on sales Competitive	48	0.18 (0.05)	0.19 (0.07)	0.01 (0.02)	1.43	0.60	1.47
Noncompetitive	30	0.07 (0.05)	0.13 (0.09)	0.06 (0.04)	4.25***	0.90	7.30***
Sales efficiency Competitive	34	0.87 (0.74)	2.10 (1.54)	1.23 (0.80)	3.96***	0.85	5.81***
Noncompetitive	27	1.22 (1.30)	3.54 (3.52)	2.32 (2.22)	4.42***	0.93	8.45***

Capital investment to sales									
Competitive	34	0.11 (0.08)	0.12 (0.08)	0.01 (0.00)	0.50	0.53	0.34		
Noncompetitive	31	0.23 (0.11)	0.21 (0.13)	-0.02 (0.02)	1.18	0.61	1.29		
Real sales									
Competitive	46	0.85 (0.70)	2.18 (1.68)	1.33 (0.98)	4.97***	0.80	5.20***		
Noncompetitive	28	1.10 (1.15)	3.42 (3.26)	2.32 (2.11)	4.37***	0.93	8.81***		
Employment									
Competitive	35	19073 (10060)	18593 (10745)	-480 (-685)	-1.14	0.60	1.21		
Noncompetitive	26	17708 (8470)	17802 (8276)	94 (-194)	-1.20	0.69	2.12**		
Total debt to total assets									
Competitive	40	0.28 (0.25)	0.25 (0.19)	-0.03 (-0.06)	-1.40	0.66	1.63		
Noncompetitive	30	0.30 (0.26)	0.19 (0.17)	-0.11 (-0.09)	-2.79***	0.73	2.89**		
Dividend to sales									
Competitive	24	0.018 (0.003)	0.052 (0.013)	0.033 (0.009)	2.557**	0.70	2.24**		
Noncompetitive	29	0.011 (0.00)	0.042 (0.03)	0.03 (0.03)	3.979***	0.93	9.16***		

***, **, * Significant at the 1, 5, and 10 percent levels, respectively.

Table IV
Performance Changes following Control versus Revenue Privatizations

This table presents comparisons of performance changes for Control privatizations (where governments reduce their stockholdings to below 50 percent) and Revenue privatizations (where governments retain majority ownership). For each empirical proxy we give 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 signed rank 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. Finally, sales efficiency uses inflation-adjusted sales figures divided by the number of employees each year. Deflated sales per employee is normalized to equal 1.0 in year 0 so other year figures are expressed as a fraction of per capita output in the year of divestment. Real sales is computed similarly.

Variables	<i>N</i>	Mean Before (median)	Mean After (median)	Mean Change (median)	<i>Z</i> -Statistic for Difference in Medians (after – before)	Percentage of Firms that Changed as Predicted	<i>Z</i> -Statistic for Significance of Proportion Change
Return on sales							
Control	34	0.13 (0.05)	0.14 (0.09)	0.01 (0.04)	3.73***	0.82	4.95***
Revenue	37	0.07 (0.05)	0.10 (0.07)	0.03 (0.02)	2.10**	0.65	1.89*
Sales efficiency							
Control	28	1.15 (0.96)	2.93 (3.52)	1.78 (2.57)	4.55***	0.93	8.81***
Revenue	30	0.87 (0.76)	2.67 (1.61)	1.79 (0.85)	3.92***	0.87	5.91***

Capital investment to sales							
Control	33	0.16 (0.06)	0.12 (0.09)	-0.04 (0.03)	0.72	0.58	0.88
Revenue	29	0.18 (0.16)	0.21 (0.17)	0.03 (0.01)	0.64	0.52	0.19
Real sales							
Control	35	0.94 (0.76)	2.89 (3.05)	1.95 (2.29)	5.03***	0.92	8.76***
Revenue	35	0.94 (0.78)	2.53 (1.66)	1.59 (0.87)	3.93***	0.80	4.44***
Employment							
Control	27	11020 (7498)	10730 (7027)	-290 (-471)	-0.91	0.63	1.39
Revenue	31	25308 (11597)	25324 (10787)	16 (-810)	-0.80	0.61	1.29
Total debt to total assets							
Control	31	0.25 (0.25)	0.19 (0.17)	-0.06 (-0.08)	-1.59	0.61	1.29
Revenue	34	0.34 (0.33)	0.26 (0.20)	-0.08 (-0.13)	-2.37**	0.70	2.63***
Dividend to sales							
Control	26	0.008 (0.00)	0.053 (0.022)	0.045 (0.022)	4.089***	0.84	4.89***
Revenue	28	0.022 (0.006)	0.04 (0.023)	0.017 (0.016)	2.676***	0.78	3.68***

***, **, * Significant at the 1, 5, and 10 percent levels, respectively.

Table V
Performance Changes following Industrialized Country versus
Nonindustrialized Country Privatizations

This table presents comparisons of performance changes for companies operating in industrialized countries versus companies operating in nonindustrialized countries. For each empirical proxy we give 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 signed rank 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. Finally, sales efficiency uses inflation-adjusted sales figures divided by the number of employees each year. Deflated sales per employee is normalized to equal 1.0 in year 0 so other year figures are expressed as a fraction of per capita output in the year of divestment. Real sales is 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
Return on sales Industrialized	60	0.08 (0.04)	0.11 (0.08)	0.03 (0.04)	4.20***	0.78	5.32***
Nonindustrialized	18	0.32 (0.12)	0.37 (0.13)	0.05 (0.01)	0.81	0.50	0
Sales efficiency Industrialized	50	1.06 (0.83)	2.90 (1.99)	1.84 (1.16)	5.69***	0.9	9.42***
Nonindustrialized	11	0.88 (0.68)	1.97 (1.62)	1.09 (0.74)	2.13**	0.9	2.74***

Capital investment to sales	Industrialized	50	0.11 (0.07)	0.12 (0.09)	0.01 (0.02)	1.35	0.58	1.15
	Nonindustrialized	15	0.36 (0.24)	0.31 (0.33)	-0.05 (0.09)	0.40	0.53	0.26
Real sales	Industrialized	59	0.98 (0.80)	2.75 (1.86)	1.77 (1.06)	6.18***	0.88	9.05***
	Nonindustrialized	15	0.81 (0.62)	2.26 (1.66)	1.45 (1.04)	2.38**	0.73	2.04**
Employment	Industrialized	47	16914 (8199)	16159 (8155)	-755 (-44)	-2.19**	0.66	2.31**
	Nonindustrialized	13	23911 (16538)	25985 (20348)	2078 (3810)	0.99	0.54	0.28
Total debt to total assets	Industrialized	53	0.29 (0.26)	0.23 (0.17)	-0.06 (-0.09)	-2.79***	0.66	2.46**
	Nonindustrialized	15	0.30 (0.18)	0.21 (0.14)	-0.09 (-0.04)	-2.16**	0.80	2.90***
Dividend to sales	Industrialized	42	0.007 (0.00)	0.044 (0.018)	0.037 (0.018)	5.089***	0.85	6.61***
	Nonindustrialized	11	0.043 (0.017)	0.053 (0.045)	0.01 (0.027)	0.934	0.72	1.69*

***, **, * Significant at the 1, 5, and 10 percent levels, respectively.

Table VI
Performance Changes following Privatizations of Low-Board-Change
versus High-Board-Change Companies

This table presents comparisons of performance changes for companies with less than 50 percent change in Board of Directors and companies with greater than or equal to 50 percent change in Board of Directors. For each empirical proxy we give 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 signed rank 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. Finally, sales efficiency uses inflation-adjusted sales figures divided by the number of employees each year. Deflated sales per employee is normalized to equal 1.0 in year 0 so other year figures are expressed as a fraction of per capita output in the year of divestment. Real sales is computed similarly.

Variables	<i>N</i>	Mean Before (median)	Mean After (median)	Mean Change (median)	<i>Z</i> -Statistic for Difference in Medians (after – before)	Percentage of Firms that Changed as Predicted	<i>Z</i> -Statistic for Significance of Proportion Change
Return on sales							
<50% change	15	0.03 (0.05)	0.09 (0.10)	0.06 (0.05)	2.41**	0.87	4.18***
≥50% change	11	0.06 (0.05)	0.09 (0.07)	0.03 (0.02)	1.56	0.72	1.69**
Sales efficiency							
<50% change	12	0.94 (0.88)	1.17 (1.21)	0.23 (0.33)	2.94***	0.92	5.22***
≥50% change	9	0.82 (0.86)	1.43 (1.15)	0.61 (0.28)	2.61***	1.00	

Capital investment to sales	15	0.17 (0.13)	0.14 (0.11)	-0.03 (-0.02)	-2.13**	0.27	-2.04**
	11	0.18 (0.13)	0.19 (0.10)	0.01 (-0.03)	-0.13	0.55	0.30
Real sales							
<50% change	15	1.00 (0.98)	3.80 (0.86)	2.80 (0.87)	3.38***	1.00	
≥50% change	11	0.72 (0.56)	2.48 (2.97)	1.77 (2.41)	2.80***	0.91	4.72***
Employment							
<50% change	13	7931 (8165)	7737 (8398)	-196 (233)	0.56	0.61	0.85
≥50% change	10	26998 (9628)	26564 (8728)	-434 (-900)	-1.63	0.80	2.37**
Total debt to total assets							
<50% change	15	0.35 (0.30)	0.25 (0.19)	-0.10 (-0.11)	-1.90*	0.73	2.04**
≥50% change	8	0.29 (0.27)	0.21 (0.18)	-0.08 (-0.09)	-1.75*	0.75	1.63
Dividend to sales							
<50% change	12	0.016 (0.0013)	0.079 (0.02)	0.062 (0.018)	3.020***	1.00	n/a
≥50% change	9	0.015 (0.004)	0.043 (0.024)	0.027 (0.019)	2.014**	.77	2.00**

***, **, * Significant at the 1, 5, and 10 percent levels, respectively.

Table VII
Performance Changes following Privatizations of CEO-Change versus non-CEO-Change Companies

This table presents comparisons of performance changes for companies where the CEO changed following privatization and companies where the CEO did not change following privatization. For each empirical proxy we give 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 signed rank 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. Finally, sales efficiency uses inflation-adjusted sales figures divided by the number of employees each year. Deflated sales per employee is normalized to equal 1.0 in year 0 so other year figures are expressed as a fraction of per capita output in the year of divestment. Real sales is 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
Return on sales							
No change in CEO	11	0.06 (0.05)	0.10 (0.10)	0.04 (0.05)	2.36**	0.91	4.72***
Change in CEO	15	0.03 (0.05)	0.09 (0.07)	0.06 (0.02)	1.79*	0.73	2.04**
Sales efficiency							
No change in CEO	8	0.86 (0.87)	1.41 (1.19)	0.56 (0.33)	2.45**	1.00	
Change in CEO	13	0.90 (0.89)	1.21 (1.14)	0.30 (0.26)	3.08***	0.92	5.72***

Capital expenditure to sales							
No change in CEO	11	0.15 (0.13)	0.12 (0.08)	-0.03 (-0.05)	-1.20	0.45	-0.30
Change in CEO	15	0.19 (0.13)	0.00 (0.13)	1.11 (0.00)	0.33	-1.36	
Real sales							
No change in CEO	11	0.83 (0.78)	2.94 (2.28)	2.11 (1.50)	2.80***	0.91	4.72***
Change in CEO	15	0.91 (0.77)	3.47 (2.35)	2.55 (1.58)	3.38***	1.00	
Employment							
No change in CEO	9	8692 (7765)	7892 (7580)	-799 (-184)	2.25**	0.89	3.71***
Change in CEO	14	21062 (9061)	21084 (8451)	22.82 (-610)	-0.63	0.57	0.54
Total debt to total assets							
No change in CEO	10	0.39 (0.28)	0.25 (0.24)	-0.13 (-0.04)	-2.24**	0.80	2.37**
Change in CEO	13	0.28 (0.27)	0.23 (0.19)	-0.05 (-0.09)	-1.33	0.70	1.50
Dividend to sales							
No change in CEO	10	0.02 (0.00)	0.1 (0.049)	0.08 (0.05)	2.344**	0.9	4.21***
Change in CEO	11	0.01 (0.006)	0.03 (0.02)	0.018 (0.015)	2.712***	0.9	4.71***

***, **, * Significant at the 1, 5, and 10 percent levels, respectively.

Table VIII
Changes in Board of Director Size and Composition after Privatization

Each company listed provides information about its board of directors both before and after privatization. We examine these boards to document whether board size and composition changes after the firm is privatized. An asterisk (*) indicates that the company is headed by a new chief executive officer after being divested. Since we do not always have the annual reports for the years immediately preceding and subsequent to divestment, we also document the report years used for this analysis.

Company	Year Privatized	Board Composition Before Privatization			Board Composition After Privatization			Directors Continuing on New Board	
		Year Used	No. of Directors	Govt. Holding	Year Used	No. of Directors	Govt. Holding	Number	Percentage
CSL	1994	1991	9	100	1994	10	0	7	70
Qantas	1995	1994	10	100	1996	13	75	11	85
Tabcorp Holdings	1994	1992	6	100	1994	6	0	1	17
Flughafen Wien Ag	1992	1990	16	100	1992	11	73	10	91
Nova Scotia Power Corp	1992	1989	13	100	1992	12	68.5	2	17
Petro Canada*	1991	1988	17	100	1991	11	80.5	8	73
Telus	1990	1987	10	100	1991	15	40	12	80
Finnair*	1992	1991	7	100	1994	6	0	0	0
Kemira Oy	1994	1991	7	100	1994	6	71.4	0	0
Rautarurkki Oy*	1989	1986	7	99.3	1989	8	86.8	4	50
P.T. Telekom*	1995	1992	4	100	1996	5	81	2	40
Northern Ireland	1993	1991	12	100	1995	9	0	6	67
Japan Tobacco	1994	1993	14	100	1994	15	80.6	5	33
Korea Telecom*	1993	1991	8	100	1996	8	71.2	0	0
Koninklijke PTT	1994	1993	11	100	1994	10	68.75	10	100
Telecom Corpn. of New Zealand*	1991	1988	10	100	1991	9	0	2	22
Stalexport	1994	1991	9	100	1994	9	40	9	100
Svenkt Stal Ab	1992	1989	14	47.8	1992	15	0	15	100
Thai Airways*	1992	1990	11	100	1991	15	94.7	12	80
TOFAS	1994	1992	9	100	1995	10	79	3	30
East Midlands Electricity*	1990	1990	13	100	1992	11	0	10	91
Forth Ports Authority	1992	1991	6	100	1992	7	10*	6	86
Midland	1990	1987	9	100	1990	10	0	3	30
Northern Electric*	1990	1987	9	100	1990	7	0	2	29
Powergen*	1991	1989	10	100	1991	11	40	4	36
Scottish Power*	1991	1988	10	100	1992	12	0	7	58

Table IX
Summary Results for Performance Changes between the Groups in Each Subsample

This table presents empirical results for testing significant differences between the groups in each of the subsamples. For each empirical proxy we give the number of useable observations, the mean rank for each subsample, the Kruskal-Wallis test statistic for testing significant differences in postprivatization profitability, output, operating efficiency, leverage, capital investment and employment between the groups in each of the subsamples and the *p*-value using chi-squared approximation.

Variable	Non-competitive	Competitive	Control	Revenue	Industrialized	Non-industrialized	CEO Change	No CEO Change	BoD <50% Change	BoD ≥50% Change
Return on sales										
N	30	48	34	37	60	18	15	11	15	11
Mean rank	48.2	34.1	38.4	33.8	40.7	35.6	13.2	13.9	13.8	13.1
K-W statistic	7.258***		0.896		0.684		0.055		0.055	
Real Sales										
N	28	46	35	35	59	15	15	11	15	11
Mean rank	46.8	31.8	42.0	29.0	38.3	34.2	13	14.2	13.3	13.8
K-W statistic	8.431***		7.205***		0.434		0.152		0.033	
Employment										
N	26	36	27	31	47	13	14	9	13	10
Mean rank	30.0	32.6	30.0	29.0	28.0	39.4	12.1	11.8	13.5	10.1
K-W statistic	0.326		0.051		4.296**		0.016		1.389	
Sales efficiency										
N	27	34	28	30	50	11	13	8	12	9
Mean rank	38.0	25.5	35.1	24.3	31.9	26.7	10.5	11.7	9.3	13.3
K-W statistic	7.453***		5.893**		0.794		0.189		2.227	
Capital expenditure/Sales										
N	31	34	33	29	50	15	15	11	15	11
Mean rank	34.7	31.4	31.6	31.4	32.5	34.6	13.6	13.4	12.5	14.9
K-W statistic	0.505		0.002		0.146		0.006		0.647	
Total debt/Total assets										
N	30	40	31	34	53	15	13	10	15	8
Mean rank	29.9	39.7	34.5	31.6	35.3	31.5	13.5	10.1	11.6	12.7
K-W statistic	4.004**		0.373		0.4338		1.389		0.150	
Dividend/Sales										
N	29	24	26	28	42	11	11	10	12	9
Mean rank	32.5	20.4	32.0	23.3	28.1	22.8	10.3	11.8	111.3	10.6
K-W statistic	8.0718***		4.068**		1.0178		0.3174		0.0808	

***, **, * Significant at the 1, 5, and 10 percent levels, respectively.

C. Changes in Capital Investment Spending

We compute investment intensity using two proxies, capital expenditures divided by sales (CESA) and capital expenditures divided by total assets (CETA). Though capital spending is found to consistently decrease, neither CESA nor CETA is significant according to either the Wilcoxon or proportion tests. All but one of the subsample results (industrialized country firms) are also insignificant. These are our first results that differ materially from MNR and BC. On the other hand, when we analyse capital spending changes using real capital expenditure growth (inflation-adjusted actual capital expenditures), normalized to its level in year 0, we find a significant (at the 1 percent level) increase in capital investment spending after privatization. Hence the insignificant results for CESA and CETA are completely due to sales and total assets increasing at a faster rate than capital expenditures.

D. Changes in Output

We test for changes in output by computing the average inflation-adjusted sales level for the preprivatization period and comparing it to the three-year average level for the postprivatization period. Both the Wilcoxon and proportion tests show that real sales increase after privatization, and the change is significant at the 1 percent level under both measures. The mean (median) increase in real sales from the average level during the three years prior to divestiture to the average level afterward is 176 percentage points (111 points), and 88 percent of our firms experience increased real sales. Prior to divestment, our sample firms have deflated sales levels that are on average (median) 93.0 percent (76.0 percent) of year 0 levels. By the year of privatization, output increases slightly (to an index level of 100), before surging spectacularly to 270.0 percent (186 percent) of year 0 levels. The Wilcoxon and proportion tests are both significant at the 1 percent level.

As is the case for efficiency improvements, every one of our subsamples experiences a significant increase in real sales, according to both the Wilcoxon (median) and proportion tests, and 18 of the 20 test statistics are significant at the 1 percent level. Our comparison of sales gains between subsamples also yields findings similar to those for efficiency changes. The same two subsamples—noncompetitive firms and control privatizations—experience significantly greater sales increases compared to their matching subsamples of competitive firms and control privatizations. Therefore, we conclude that output and efficiency increase more during the 1990s when a government either sells voting control of a firm or divests a company in a noncompetitive industry than when a sale leaves the government with voting control of a firm or when the firm being divested operates in a competitive industry. BC document a similarly greater increase in efficiency for control than for revenue privatizations, but find insignificant differences between competitive and noncompetitive firms. MNR do not find any significant differences in performance changes between subsamples.

E. Employment Changes

In general, governments expect large declines in employment levels following privatization. Therefore, we make that prediction our null hypothesis, and we examine it by computing average employment levels for the three-year periods -3 to -1 and $+1$ to $+3$, and then testing whether employment falls after divestiture. The Wilcoxon test shows an insignificant average (median) decrease in employment of 805 employees (770 employees) after privatization, from 22,941 (9,876) to 22,136 workers (9,106). The proportion test statistic, on the other hand, shows that employment declines significantly at the 5 percent level, with 64 percent of the firms experiencing declining employment levels. In contrast, the results of MNR, BC, and Galal et al. (1992) all show employment increases significantly—according to at least one measure. The reason for the difference between the results in this paper and those in other empirical studies could be the fact that firms from regulated utilities (electricity and telecommunication firms) represent more than one-third of our sample but only 13 percent of both MNR's and BC's samples.

In perhaps our most important difference with the results of MNR and BC, we find that the five subsamples experience significant *declines* in employment following privatization, according to one or both test statistics. The Wilcoxon tests indicate significant declines for industrialized country firms and for companies that do not change CEOs after privatization, and the proportion tests show significant employment reductions for noncompetitive industry firms, for industrialized countries, for companies with a 50 percent or greater change in their directorships, and for firms that do not change CEOs. In only one case is there a significant difference between subsamples. Privatized firms from industrialized countries reduce employment more than do firms from nonindustrialized countries.

F. Changes in Leverage

We examine changes in leverage by observing changes in total debt to total assets (TDTA). As predicted, we document a significant decline in leverage for the full sample of privatized companies. The average (median) decline in TDTA is 6.0 percentage points (8.0 percentage points), and 67 percent of all firms decrease their TDTA after privatization. The Wilcoxon and proportion test statistics are both significant at the 1 percent level.

All of the subsamples also experience declines in leverage, and this decline is statistically significant in seven of 10 cases according to the Wilcoxon test, and in six of 10 cases based on the proportion tests. At least one of the test statistics is significant for every subsample except for competitive firms, control privatizations, and in cases where the CEO is replaced after privatization. Once more, privatizations of noncompetitive firms yield significantly greater performance improvements (leverage reductions) than do privatizations involving firms in competitive industries.

G. Changes in Dividend Payouts

As a final test, we examine whether dividend payments, measured as cash dividends divided by sales revenue (DIVSAL), increase following privatization. The average (median) dividend payment increases from 1.5 percent (zero percent) of sales before divestiture to four percent (two percent) afterward, and the mean (median) increase in payments of 2.5 percent (two percent) is significant at the 1 percent level, as is the proportion test, since DIVSAL increases in 79 percent of the cases.¹⁰

Our subsample tests reveal that dividend increases are pervasive. Nine of 10 Wilcoxon tests and all 10 proportion tests are significant; only the Wilcoxon test for our nonindustrialized firm subsample is insignificant. Finally, the Kruskal–Wallis tests indicate that dividend payments increase significantly for noncompetitive than for competitive firms, and also significantly for control than for revenue privatizations.

H. Discussion and Analysis

Certainly the most intriguing results we document are the multiple, significant differences in performance improvements between competitive and noncompetitive firms. Although MNR and BC find generally insignificant differences between these subsamples—and when differences are found, the competitive firms generally improve more—we find that firms in noncompetitive industries have significantly greater increases in profitability, efficiency, output, and dividends, plus significantly greater reductions in leverage, than do competitive industry firms.¹¹ The operating environment for electric utilities and telecommunications firms has thus changed rather dramatically during the 1990s, and these companies are experiencing substantial performance improvements in virtually all countries.

With this dataset we cannot determine whether these rapid performance improvements are the result of privatization or whether privatization is made possible by the performance enhancements resulting from more profound technological developments and a worldwide swing toward deregulation. Our reading of supplementary anecdotal and empirical evidence suggests that all three factors—massive technological change, a worldwide trend toward deregulation of utilities, and a desire among policymakers to privatize and modernize these suddenly dynamic and increasingly vital industries—

¹⁰ Very similar results are observed when dividend payments are expressed in terms of payout—as dividends divided by net income. Payout increases significantly, at the 1 percent level, from a mean (median) of 16 percent (zero percent) of profits before divestiture to 39 percent (28 percent) afterward, and a significant 82 percent of all firms experience increased payouts.

¹¹ Menyah and Paudyal (1996) also show higher abnormal stock returns for investors buying the stock of regulated utilities. The regulated utilities offer statistically significant cumulative excess returns of 112 percent to secondary market buyers in four years and the unregulated firms offer only 11.82 percent (statistically not different from zero) during the same period. Megginson et al. (1998) present similar long-run findings.

contribute both to the heavy representation of electric and telecom utilities in a 1990s privatization sample and to their remarkable performance improvements. It also seems clear that the profitability increases we document for telecoms and electric utilities are not primarily the result of price increases or exploitation of market power, because prices of these services have been falling rapidly in virtually every country examined, and the newly real threat of market entry (especially in the EU) effectively precludes monopolistic behavior.

In contrast to the utility results, our findings that control privatizations yield greater performance improvements (significantly greater increases in efficiency, output, and dividend payments) than do revenue privatizations are solidly in the empirical mainstream. BC also document significant performance improvements and MNR find that performance generally (though not significantly) improves more for control than for revenue privatizations. Finally, the results documented by Boardman and Vining (1989)—that mixed state-owned and privately owned firms underperform strictly private companies—also indicate that performance improves most when the state's voting control over a company is eliminated.

Section V directly compares the full-sample results of the current study with those presented in MNR and BC. As mentioned earlier, these three studies employ identical sample selection criteria, and employ the same empirical proxies and testing methodologies, so the three studies' results can be aggregated into a single analysis of the effect of privatization on the operating and financial performance of divested firms.

V. A Direct Comparison of Three Empirical Privatization Studies

The combined results of this study (hereafter DM), plus those of the MNR and BC analyses, are presented in Table X. Since the papers examine differing time periods (1961 to 1989 for MNR, 1980 to 1992 for BC, and 1990 to 1996 for DM), and BC only study developing countries, there is very little sample overlap between the studies, which collectively examine 211 companies from 42 countries and no fewer than 56 different industries. Approximately one-half (103) of these firms are from 26 developing countries, and the other half (108) are from 16 industrialized nations. The four countries with the greatest representation in the combined sample are Great Britain (28 firms), France and Portugal (16 each), and Turkey (15 companies), and the following industries are represented by at least 10 firms: banking and finance (36 companies), electric utilities (30), telecommunication utilities (22), petroleum (18), steel (14), and airlines (11). The combined sample thus spans a wide variety of industries and stages of national development, and represents the broadest and most comprehensive multinational study of privatization's impact yet produced.¹²

¹² A table detailing the breakdown of combined sample firms by industry, and between industrialized and developing countries, is available upon request from the second author (wmegginson@ou.edu).

Table X
Summarized Results from Three Empirical Studies of the Financial and Operating Performance of Newly Privatized Firms (Compared to Their Performance as State-Owned Enterprises)

This table summarizes the empirical results of three directly comparable academic studies comparing the three-year average operating and financial performance of a combined sample of 211 newly privatized firms with the average performance of those same firms during their last three years as state-owned enterprises (SOEs). For each study and for each empirical proxy, we give the number of useable observations, the mean (median) values of the proxy for the three-year periods prior to and subsequent to privatization, the mean (median) change in the proxy's value after versus before privatization, and a test of significance of the median change. Weighted averages of the mean pre- and postprivatization values, as well as the mean change, are also presented. All three studies employ the Wilcoxon rank sum test (with its Z-statistic) as the test of significance for the change in median value. The final two columns detail, for each study and for each proxy, the percentage of firms whose performance improved after privatization. All three studies employ multiple proxies for most of the economic variables being measured; in this table we summarize only one proxy per topic, and emphasize the one highlighted in the studies (almost always the variable that uses either physical measures—such as number of employees—or financial ratios using current-dollar measures in the numerator or denominator, or both). Profitability, investment, leverage, and dividend measures are in percent. Efficiency and output measures are index values, where the value during the year of privatization is defined as 1.0, and inflation-adjusted sales figures are used in the efficiency and output ratios. The number of observations exceeds 211 because of overlapping firms in different samples. The studies covered are Megginson, William L., Robert C. Nash, and Matthias van Randenborgh, 1994, The financial and operating performance of newly privatized firms: An international empirical analysis, *Journal of Finance* 49, 403–452; Boubakri, Narjess, and Jean-Claude Cosset, 1998, The financial and operating performance of newly privatized firms: Evidence from developing countries, *Journal of Finance* 53, 1081–1110, and D'Souza, Juliet, and William L. Megginson, 1999, The financial and operating performance of newly privatized firms during the 1990s, *Journal of Finance* 54 (this article).

Variables and Studies Cited	Number of Observations	Mean Value before Privatization	Mean Value after Privatization	Mean Change due to Privatization	Z-Statistic for Difference in Performance	Percentage of Firms with Improved Performance	Z-Statistic Percentage Change in Performance
Profitability (Net income ÷ Sales)							
Megginson, Nash, and van Randenborgh (1994)	55	0.0552 (0.0442)	0.0799 (0.0611)	0.0249 (0.0140)	3.15***	69.1	3.06***
Boubakri & Cosset (1998)	78	0.0493 (0.0460)	0.1098 (0.0799)	0.0605 (0.0181)	3.16***	62.8	2.29**
D'Souza & Megginson (1999)	85	0.14 (0.05)	0.17 (0.08)	0.03 (0.03)	3.92***	71	4.17***
Weighted average	218	0.0862	0.1257	0.0396		67.6	

Table X—Continued

Variables and Studies Cited	Number of Observations	Mean Value before Privatization	Mean Value after Privatization	Mean Change due to Privatization	Z-Statistic for Difference in Performance	Percentage of Firms with Improved Performance	Z-Statistic Percentage Change in Performance
Leverage (Total debt ÷ Total assets)							
Megginsin, Nash, and van Randenborgh (1994)	53	0.6622 (0.7039)	0.6379 (0.6618)	-0.0243 (-0.0234)	-2.41**	71.7	3.51***
Boubakri & Cosset (1998)	65	0.5495 (0.5575)	0.4986 (0.4789)	-0.0508 (-0.0162)	-2.48**	63.1	2.11**
D'Souza & Megginsin (1999)	72	0.29 (0.26)	0.23 (0.18)	-0.06 (-0.08)	-3.08***	67	3.05***
<i>Weighted average</i>	190	0.4826	0.4357	-0.0469		67.0	
Dividends (Cash dividends ÷ Sales)							
Megginsin, Nash, and van Randenborgh (1994)	39	0.0128 (0.0054)	0.0300 (0.0223)	0.0172 (0.0121)	4.63***	89.7	8.18***
Boubakri & Cosset (1998)	67	0.0284 (0.0089)	0.0528 (0.0305)	0.0244 (0.0130)	4.37***	76.1	4.28***
D'Souza & Megginsin (1999)	51	0.015 (0.00)	0.040 (0.02)	0.025 (0.02)	4.975***	79	5.24***
<i>Weighted average</i>	157	0.0202	0.0655	0.0228		80.4	

***, **, * Significant at the 1, 5, and 10 percent levels, respectively.

The three studies yield remarkably consistent findings regarding the impact of privatization on firm profitability, efficiency, output, leverage, and dividend payments. All show highly significant performance improvements according to both the Wilcoxon (median) and binomial (proportion) test statistics. Profitability, defined as net income divided by sales, increases from an average value of 8.6 percent before privatization to 12.6 percent after privatization, and 63 to 71 percent of the firms in each sample experience increased profitability.¹³ Five of the six test statistics in the three studies are significant at the 1 percent level or higher, and the remaining statistic is significant at the 5 percent level.

Efficiency, defined as real (inflation-adjusted) sales per employee, increases from an average level of 96.9 percent of year 0 (the year of privatization) sales during years -3 to -1 to an average level of 116.0 percent during the +1 to +3 postprivatization period. Although the scale of this increase is driven by the DM finding of a 21 percentage point productivity leap, all three studies find efficiency improvements that are significant at the 1 percent level or better, and 79 to 86 percent of the firms experience output-per-worker increases.

The overall increase in output for privatized firms in the three samples is astonishingly large and statistically significant at beyond the 1 percent level according to all the test statistics. On average, real sales revenues rise from 93.6 percent of year 0 levels prior to divestment to 177.1 percent thereafter, a near doubling of real output in a three-year period. Once again, a 176 percentage point increase found by DM drives the magnitude of this result, but the output increase is significant at the 1 percent level in all three studies, and 75 to 85 percent of all firms increase sales.

The two financial variables (leverage and dividends) studied are only of secondary interest to most governments—though they are naturally of greater concern to firm managers and stockholders. All three studies find that leverage, defined as total debt divided by total assets, declines significantly (at the 5 or 1 percent levels) after privatization, and 63 to 72 percent of all firms experience reduced debt levels. On average, the debt-to-asset ratio falls from 0.483 prior to divestiture to 0.436 afterward. Additionally, the three studies also document significant, and fairly dramatic, increases in dividend payments after privatization. On average, cash dividend payments more than triple as a fraction of revenues, from 2.0 percent of sales during the preprivatization period to 6.6 percent of sales after divestiture, and between 76 and 90 percent of the firms in the three samples increase dividend payments. All of these test statistics are significant at the 1 percent level or higher.

¹³ Although all three studies compute most of the performance ratios using a variety of measures, whenever possible the authors focus on ratios of current-dollar flow measures (i.e., net income ÷ sales), rather than balance-sheet stock measures (property, plant and equipment ÷ total assets) in order to minimize inflation-induced valuation errors and to finesse the impact of different national accounting standards. The other measures generally yield qualitatively similar results.

All three studies document postprivatization increases in capital investment spending as a fraction of sales, but only in the MNR and BC papers are the increases significant. On average, capital spending rises from 12.3 percent of sales prior to divestment to 18.7 percent afterwards, and between 59 and 67 percent of all firms raise investment outlays. It bears repeating, however, that DM also find a large increase in the level of capital spending, but because sales and assets increase even faster, CESA is insignificant. These capital investment increases help explain the dramatic jumps in output (inflation-adjusted sales revenue) that all three papers document.

The most politically charged performance measure is, of course, how privatization impacts employment levels in divested SOEs, and here the three studies diverge somewhat. MNR and BC document employment increases and DM find that the work force declines after divestiture. Note that, for ease of presentation, the fractional change column in Table X is labeled "Percentage of Firms with Improved Performance," rather than "Percentage of Firms That Change as Predicted," so the DM result is entered as 36 percent rather than 64 percent, as in Table II. The three studies collectively find that average employment in an SOE being privatized increases from 21,065 predivestiture to 21,613 afterward, and 83 of the 164 firms (50.7 percent) examined show an increase in total employment.

One of the most difficult-to-refute challenges leveled at privatization studies showing performance improvements is the assertion that these improvements (particularly profitability increases) may represent nothing other than price increases and/or the exploitation of market power by newly privatized firms. After all, governments face a real financial temptation to sell off SOEs as private monopolies because this maximizes the price private investors are willing to pay for shares. None of the three studies summarized here directly examines this question, but all attempt to offer indirect evidence that the performance gains documented are socially beneficial and are not primarily (or even partially) the result of market power exploitation. MNR examine each firm divested, and find no evidence that product prices were increased or that governments increased cash subsidies after divestiture. Quite the reverse; in every case where governments were subsidizing firms beforehand, these arrangements were explicitly terminated after privatization. All three studies also document that governments invariably adopted regulatory schemes for newly privatized utilities, and evidence from supplementary sources indicates that most of these schemes worked effectively once they were fully implemented. Furthermore, all three studies include firms operating in internationally competitive industries, and all three find that these firms experienced performance improvements comparable to their counterparts in noncompetitive industries.

Additionally, the three studies consistently document that output, efficiency, and capital spending increase—and leverage decreases—dramatically, and usually at high significance levels. Unlike profitability, these are all unambiguously socially beneficial outcomes, since they imply that privatized firms use resources more productively and also become financially health-

ier. That these benefits are achieved without systematic employment reductions also suggests that privatization yields important social benefits. In sum, the weight of evidence in these three studies—as well as most of the other empirical studies cited earlier—clearly suggests: (1) that privatization improves the operating and financial performance of newly divested firms, (2) that these improvements are the result of socially beneficial improvements in productive efficiency and entrepreneurial effort, and (3) that privatization “works” in a wide variety of countries, industries, and competitive environments.

VI. Summary and Conclusions

This study compares the pre- and postprivatization financial and operating performance of 85 companies from 28 countries (15 industrialized and 13 nonindustrialized) that experience full or partial privatization through public share offerings during the period from 1990 to 1996. The sample of companies being privatized in the 1990s is quite different from the sample that was privatized prior to 1990, particularly with respect to the much heavier representation of firms from the utility and telecommunication industries. We document significant increases in the mean and median levels of profitability, real sales, operating efficiency, and dividend payout for our full sample firms after privatization. We also find significant decreases in mean and median leverage ratios, insignificant decreases in the mean and median employment levels, and insignificant decreases in mean and median capital investment ratios. The profitability, output, operating efficiency, dividend payout, and leverage results of this paper are similar to results found in Megginson, Nash, and van Randenborgh (1994) and Boubakri and Cosset (1998), though we document much larger increases in real sales and sales efficiency. Perhaps as a result, we find that total employment at best remains unchanged, and by the proportion test declines significantly, after privatization. Many previous empirical studies document *increases* in employment after privatization, and these are generally significant by at least one empirical measure.

We also cut our full sample into several dichotomous subsamples, based on whether the firm is headquartered in an industrialized or developing country, whether voting control is sold or retained by the divesting government, whether the divested firm operates in a competitive or noncompetitive industry (telecommunications or utility companies), whether there is large-scale (at least 50 percent) turnover in the firm’s board of directors after privatization, and whether the firm’s CEO is retained or replaced after privatization. Our results for the subsample analyses indicate that output, operating efficiency, and dividend payout increase significantly for every subsample, and profitability increases and leverage decreases significantly in all but three of the subsamples. In general, there are no striking patterns in performance changes based on specific ownership structure changes (regarding board composition or CEO retention), though we do find that per-

formance improves more when governments surrender (versus retain) voting control and for noncompetitive (versus competitive) industries, and that employment declines more after privatization in industrialized than in developing countries.

To summarize, the full sample of privatized firms, as well as essentially all the subsamples, experience significant performance improvements after being privatized, and these improvements typically are highly significant in both statistical and economic terms. These findings are but the latest in a string of recently published studies documenting performance improvements following government divestiture. Privatization "works," and it works in almost every institutional setting examined.

Appendix

Table A1

Sample Firms Privatized through Public Share Offerings, 1990–1996

Table A1 provides descriptive information for our sample of companies that were fully or partially privatized through public share offering during 1990–1996.

Country	Name of Company	Industry	Issue Date	Issue Size (US\$ millions)	Government Holding	
					Before	After
Argentina	YPF Sociedad Anonima	Oil	Jul-93	2660	100	54.7
Australia	Commonwealth Bank of Australia	Banking	Jul-91	1017	100	70.25
	CSL	Pharmaceuticals	Mar-94		100	0
	Qantas	Airline	Jun-95	1070	100	75
	Tabcorp Holdings	Gambling	Aug-94	504	100	0
	Austria Mikro System Intl. AG	Semiconductors	Jul-93	25	26	0
Austria	Flughafen Wien AG	Airport	Jun-92	162	100	73
	VA Technologies	Industrial	May-94	655	51	0
	Vöest-Alpine AG	Steel & machinery	Dec-92		100	51
Canada	Alberta Energy Co. Ltd.	Electricity	May-93	355	100	0
	Cameco Corporation	Radium Production	Jul-91	610	100*	58*
	Nova Scotia Power Corporation	Electricity	Aug-92	675	100	68.5
	Potash Corporation of Saskatchewan Inc.	Potash Soda	Nov-89	197	100	
	Suncor Inc.	Crude Oil	Mar-92	151		
	Telus**	Telecommunication	Oct-90	835	100	40
	Telus	Telecommunication	Nov-91	745	38	0
	Petro Canada	Petroleum	Jul-91	478	100	80.5
China	Brilliance China Automotive Holdings Ltd.	Automotive	Oct-92	86	91.5	68.2
Denmark	TeleDanmark	Telecommunication	May-94	2894	89.9	51
Finland	Finnair	Airline	Feb-92	33		
	Kemira O.Y.	Paint	Nov-94	240	100*	71*
	Rautarurkki O.Y.	Metals	Jun-89	101	99.3	86.8
	Valmet O.Y.**	Industrial	Aug-88	188	100*	80*
	Valmet O.Y.	Industrial	Jun-94	146	80*	68*

Table A1—Continued

Country	Name of Company	Industry	Issue Date	Issue Size (US\$ millions)	Government Holding	
					Before	After
France	Banque Nationale De Paris SA	Banking	Oct-93	4920	100	40
	Credit Local De France SA	Banking	Nov-91	340	72.5	50.5
	Renault S.A.	Automotive	Nov-94	2340	80.1	50.1
	Total SA	Petroleum	Jul-92	906	34	15
	Rhone-Poulenc SA	Pharmaceutical	Jan-93	564	77.5	67
Germany	Deutsche Pfandbrief & Hypothekenbank	Banking	Mar-91	1340	100*	53*
	Deutsche Telecom	Telecommunication	Nov-96	13300	100	
Indonesia	Indosat	Telecommunication	Oct-94	1060	100	68
	P.T. Telekom	Telecommunication	Nov-95	1590	100	81
Ireland	Northern Ireland	Electricity	Jun-93		100	0
	Greencore Group plc	Sugar	Apr-91	136	100	49
Italy	Banco Di Napoli	Banking	Nov-91	323	58.8	49.5
	Credito Italiano Spa	Banking	Nov-91	140	65	58
	Istituto Bancario San Paolo D'Torino Spa	Banking	Mar-92	709	100	80
	STET	Telecommunication	Jul-91			
Japan	Japan Tobacco Ltd.	Cigarettes	Oct-94	3400	100	80.6
Korea	Dacom Corporation	Telecommunication	May-94			
	Korea Telecom	Telecommunication	Nov-93		100	71.2
Malaysia	Telekom Malaysia	Telecommunication	Oct-90	872	100	76
	Tenaga Nasional Berhad	Electricity	Mar-92	837	100	76
Mexico	Grupo Financiero Banamex	Banking				
	Grupo Financiero Serfin	Banking	Dec-93	420		
	Telefonos De Mexico	Telecommunication	May-91	2170	29.8	15
Netherland	Koninklijke PTT Nederland N.V.	Telecommunication	Jun-94	3868	100	68.75
New Zealand	Telecom Corporation of New Zealand	Telecommunication	Jul-91	819	100*	69*
Peru	Telefonica De Peru	Telecommunication	1994			
Poland	Polifarb-Cieszyn	Chemicals	May-93			
	Polifarb-Wroclaw	Paint	May-94	30	100	25
	T.C.Debica	Tire	Sep-94	56	100	51.3
Portugal	Banco Espirito Santo & Commercial	Banking	Jul-91	385	100	60
	Banco Internacional Do Funchal S.A.	Banking	Nov-92	70		
	Banco Portugues Do Atlantico S.A.	Banking	Dec-90	382	100	67
	Banco Totta & Acores	Banking	Jul-89	195	100	51
	Companhia De Seguros Tranquilidade	Insurance	Dec-89	172	100*	51*
	Portugal Telecom	Telecommunication	Apr-95	988	100	74
	Uniao De Bancos Portuguese S.A.	Banking	Dec-92	167	100	38.9
	Singapore Telecommunications Ltd.	Telecommunication	Oct-93	1950	100	92.8
Singapore	Argentaria	Banking	1993	850	100	75
Sweden	Assi-Domain	Paper	Mar-94	962	100	51
	Celsius	Defense	Jul-93	144	100*	53*
	Pharmacia AB	Pharmaceutical	Jun-94	1040	57.5	10.1
Taiwan	Svenkt Stal AB (SSAB)	Blast furnace	Jun-92	364	47.8	0
	China Steel Corporation	Steel	Apr-91	195	100	91.1

Table A1—Continued

Country	Name of Company	Industry	Issue Date	Issue Size (US\$ millions)	Government Holding	
					Before	After
Thailand	Thai Airways	Airline	Mar-92	225	100	0.947
Turkey	Northern Elektrik	Telecommunication	Dec-93	60		
	Telekommunikasyon (NETAS)	equipment				
	Turk Otomobil Fabrikasi AS (TOFAS)	Vehicle	May-94	333	100*	79
U.K.	East Midlands Electricity plc	Electricity	Dec-90	1010	100	0
	Eastern Electricity plc	Electricity	Dec-90	1249	100	0
	Forths Port Authority	Marine	Mar-92	45	100	10
	London Electricity	Electricity	Dec-90	1010	100	0
	Manweb plc	Electricity	Dec-90	550	100	0
	Midland	Electricity	Dec-90	969	100	0
	National Power	Electricity	Mar-91	2278	100	40
	Northern Electric	Electricity	Dec-90	570	100	0
	Norweb	Electricity	Dec-90	800	100	0
	Powergen	Electricity	Mar-91	1395	100	40
	Scottish Hydro-Electric plc	Electricity	Mar-91	1380	100	0
	Scottish Power plc	Electricity	Mar-91	2933	100	0
	Seaboard plc	Electricity	Dec-90	589	100	0
	South Wales Electricity plc	Electricity	Dec-90	470	100	0
	South Western Electricity plc	Electricity	Dec-90	570	100	0
	Southern Electric plc	Electricity	Dec-90	1249	100	0
	Yorkshire Electricity Group plc	Electricity	Dec-90	959	100	0

* Percentages of government holding implied based on the data from *Privatization International*.

** When two issues are listed, the earlier date is used as the privatization year 0.

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