Selling the family silver to pay the grocer's bill?

The case of privatization in India

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Abstract

Using data on Indian government-owned firms, we investigate the effect of privatization on the performance of these firms. Our results suggest that privatization is positively associated with the profitability and efficiency of of government-owned firms. Despite the small number of transactions, selling majority equity stakes to private owners has an economically significant impact on firm performance. Moreover, privatization is not associated with layoffs or a decline in employee compensation. These results are robust to controlling for the observable and unobservable characteristics of firms selected for privatization, and industry and country level reforms.

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1 Introduction

Government-owned firms occupy an important position in the Indian economy. Federal government-owned firms contributed more than 11 percent of GDP in 2005 (Economic Survey, 2006-07), and just 47 listed government-owned firms constituted 22% of the total market capitalization of the Bombay Stock Exchange as of February 28, 2011 (Bombay Stock Exchange Disinvestments Database, March 2011). However, government-owned firms are highly inefficient due to surplus employment, rent-seeking activities by politicians, protection from competitive forces, and the absence of market-based incentives for workers. For example, while158 federal government-owned firms reported positive profits, another 59 firms reported cumulative losses of approximately Rs. 158 billion in 2009 (Public Enterprise Survey, 2009-10).

Following a balance of payments crisis in 1991, the Indian government undertook wide-ranging economic reforms to reduce the role of the government in the economy, including delicensing, foreign investment and trade liberalization, financial sector reforms, and privatization. Since 1991, the government has raised approximately Rs. 960 billion from privatization sales (Bombay Stock Exchange Disinvestments Database, March 2011). Of the 249 non-financial firms owned by the federal government, successive governments have sold partial equity stakes on the stock market without transferring management control in 47 firms, and have sold majority stakes and transferred management control in 14 firms.

The two privatization methods, partial and majority sales, adopted by

the Indian government offer us insight into the long-standing debate over why government-owned firms perform poorly. First, the *managerial* view, based on agency theory, is that government-owned firms have difficulty monitoring managers because there is neither an individual owner with strong incentives to monitor managers nor a public share price to provide information about manager actions as judged by stock market participants (Laffont and Tirole (1993)). Partial privatization, where the shares of the firm are traded on the stock market while the firm remains under government control and subject to political interference, offers a test of this theory. Using data on all partial privatizations undertaken between 1991 and 1999 in India, Gupta (2005) finds that, consistent with the managerial view, the sale of partial equity stakes increases the sale revenues, profitability, and labor productivity of government-owned firms.[1]

According to the *political view* of government ownership, governments pursue objectives in addition to and in conflict with profit maximization and the resulting political interference may distort the objectives and constraints faced by managers (Shleifer and Vishny (1994)). For example, Fan, Wong, and Zhang (2007) find that Chinese partially privatized firms with politically connected CEOs are more likely to underperform, and appoint less professionally qualified but politically connected board members. Therefore, only the outright transfer of firms to private owners will lead to performance improvements. India's privatization experience is useful in this regard because the Indian government undertook both partial privatizations as well as the

[1] The majority of privatization studies show that privatization has a positive effect on firm performance. For a recent survey see Megginson and Netter (2001).

sale of majority stakes with the transfer of management control, which allows us to investigate the political view. In particular, we examine the effect of privatizing majority stakes and transferring management control on the performance of government-owned firms that have been partially privatized and are trading on the stock market.

The literature has shown that governments are likely to selectively choose firms for privatization based on observable and unobservable characteristics. For example, Gupta, Ham and Svejnar (2008) show that profitable firms are more likely to be privatized, while Dinc and Gupta (2010) find that firm-level characteristics are likely to affect the selection of firms for privatization. To address the potential endogeneity of privatization to firm performance we estimate a firm fixed effects specification that addresses selection bias that may arise if more profitable or larger firms are selected for privatization. To address dynamic selection bias, which may arise if the government selects firms for privatization based on unobservable time-varying characteristics, we use the approach suggested by Frydman et al. (1999). In particular, they argue that firms that are selected for privatization are likely to share similar characteristics, so comparing privatized firms to a control group of firms that have also been selected for privatization but have not yet been sold should address this selection bias. Since privatization is distributed over several years in our data, in any given year we also observe firms privatized in later years that form the control group. To minimize the possibility of simultaneity between privatization and performance, we use the lagged share of private ownership. The specifications also include firm-specific controls such as firm size and the industry Herfindahl index to control for the effect

of industry level reforms that may affect the performance of firms. Lastly, we include year dummies to control for contemporaneous macroeconomic shocks.

Using data on all privatizations undertaken since the start of the process in 1991 until 2009, we find that performance improvements are significantly and positively related to the fraction of equity sold. For example, comparing privatized firms to firms that have been selected for privatization but have not yet sold any equity, we find that a 10 percentage point increase in the level of private equity would increase annual sales by 3.3%, returns to sales by 3.8%, and net worth to sales by 17% on average. Our results also suggest that privatization is not associated with a decline in employment. These results are robust to controlling for firm fixed effects, average firm size, industry characteristics, and contemporaneous reforms at the country level.

Our results also suggest that the sale of majority equity stakes has an economically significant impact on firm performance. Compared to partially privatized firms, sales and returns to sales increase by 23% and 21% respectively on average when firms sell majority equity stakes and transfer management control to private owners. Moreoever, the sale of majority equity stakes are not accompanied by layoffs. In fact, employment appears to increase significantly following privatization.

Despite the inefficiency of government-owned firms, public support for privatization in India remains low, as suggested by the fact that it is officially referred to as "disinvestment".[2] The prevailing argument against

[2] Ahmed and Varshney (2008) note that privatization has been more difficult to implement than other policies such as stock market liberalization: "Within economic policy... some issues are more likely to arouse mass contestation than others. Privatization, a

privatization is best captured by a recent quote from a Member of Parliament: "Disinvestment of the public sector is nothing but selling the family silver to meet the grocer's bill," (*Times of India*, June 9, 2009, "DMK puts spoke in disinvestment plans"). However, our results suggest that privatization is associated with significant improvements in the performance of government-owned firms, and these effects are robust to the pre-privatization characteristics of firms, indicating that profitable firms also benefit from privatization.

Examining the role of politics in India's privatization program, Dinc and Gupta (2010) show that firms located in electoral districts where the governing party is in a close race with opposition parties, and firms located in the home state of cabinet ministers, are much less likely to be privatized.[3] Acknowledging the political cost of privatization one Prime Minister noted, "If you face immediate political problems - elections in four states - it is hard to push ahead... We had to worry about the prospects of unemployment if public sector units faced closure," (Asia Times, April 8, 1997, "India's Reform Architect Looks On From The Sidelines"). However, fears of layoffs following privatization may be exaggerated since our results sug-

change in labor laws, withdrawal of agricultural subsidies... Either a large number of people are negatively affected in the short run (agriculture), or those so affected, even when not in large numbers, are well organized in unions (privatization and labor laws). It should now be clear why India's decision makers have... achieved limited privatization" (page 22).

[3] There is a growing literature on the political economy of privatization. For example, Jones et al. (1999) show that governments adopt terms of sale that are consistent with political objectives; Clarke and Cull (2002) find that the political affiliation of the government does not have a robust impact on the probability of bank privatization in Argentina; Bortolotti and Pinotti (2008) show that privatization is delayed in democracies with proportional electoral systems; and, Dastidar, Fisman, and Khanna (2009) show that there is policy irreversibility in the privatization process in India

gest that government-owned firms that do not privatize reduce workforce size on average compared to privatized firms.

In Section 2 below we describe the background to government ownership and privatization in India, Section 3 describes the data, Section 4 describes the regression results, and Section 5 concludes.

2 Government-ownership and privatization

2.1 Government-owned firms

The first prime minister of post-independence India, Pandit Jawaharlal Nehru envisaged the role of government-owned firms as the "commanding heights" of the economy, on the grounds that the nascent private sector would not undertake projects requiring large investments with long gestation periods. The Industrial Policy Resolution of 1956, stated, "The State will progressively assume predominance and direct responsibility for setting up new industrial undertakings and for developing transport facilities." While on the eve of the First Five Year Plan in 1951 there were 5 federal government-owned firms with a total investment of Rs. 290 million, in 2010, there were 249 firms with a total investment of Rs.5,799.2 billion and employing 1.5 million non-casual workers (Public Enterprise Survey, 2009-10). We focus on firms owned by the federal government, which account for about 85% of the total assets of all government-owned companies (Gupta (2005)), and operate in a large number of manufacturing, service, and infrastructure industries, including steel, cement and chemicals; capital goods; electricity and gas; as well as services such as technology, telecom-

munications, trade, tourism, and warehousing, among others. The banking, insurance, and financial services sectors are also heavily dominated by federal and state-government owned firms.

The influence of the government on India's economy was described by Prime Minister Manmohan Singh as follows: "In the initial stages of India's development central planning was a positive factor for development of promoting industrialization, of building industries which would never have [been] built...But the real problem starts after 15 or 20 years, because the central-planning system that we have evolved and [that] other countries have evolved lack an effective incentive system to modernize on a progressive basis, to improve productivity, to bring new technology," (PBS Interview for Commanding Heights, February 6, 2001).

Federal government-owned firms typically underperform in comparison to private firms in the same industry (Department of Disinvestment (2001)). For example, between 1990 and 1998 the ratio of profits after tax to sales averaged -4.4% for government-owned manufacturing firms, and 6.7% among private firms (Department of Disinvestment (2001)). In 2009, 158 firms reported cumulative profits of about Rs. 1, 084.4 billion, while 59 firms reported accumulated losses of Rs. 158 billion (Public Enterprise Survey, 2009-10). These firms are typically overstaffed, and the average wages of government-firm workers are twice as high as in the private sector (Panagariya (2008)), which may explain why government firm workers typically oppose privatization. Describing this opposition a news article reported: "Over 25,000 ONGC [Oil and Natural Gas Commission] staff observed 'black day' and their union leaders went on hunger strike to mark their protest over

the privatisation move," (The Financial Times, 1993).

Central government-owned firms are also large. As of February 2011, the total market capitalization of the 47 firms listed on the country's largest stock exchange, the Bombay Stock Exchange (BSE) was about Rs. 14 trillion, accounting for 22% of the total market capitalization of the 4942 listed companies on the BSE. Taking into account government-owned banks and regional government owned firms increases the share of market capitalization of all government-owned firms to 28.8% of total market capitalization (Bombay Stock Exchange Disinvestments Database, March 2011).

2.2 Evolving privatization policy

In response to a balance of payments crisis in 1991, India undertook sweeping economic reforms that included deregulation and privatization. Outlining the economic reforms, the Industrial Policy Resolution of 1991 argued for partial divestiture in government-owned firms "in order to provide further market discipline to the performance of public enterprises" (paragraph 34). Between 1991 and 2004, nearly every government's annual budget declared that the privatization goal is to reduce government ownership to 26% of equity, the minimum equity holding necessary for certain voting powers, in all government-owned firms not in the defense, atomic energy, and railway sectors. However, until 1999, successive governments sold only minority stakes, sometimes as little as 0.1%, without transferring management control. Partial privatization proved to be a lucrative source of revenues without the accompanying political controversy of transferring control of government-owned assets to private owners.

In Table 1 we list the number of privatization transactions and the amounts received from privatization sales for each year since the start of the program and until 2009. Out of about 250 non-financial firms owned by the federal government, 55 firms have sold partial and majority equity stakes between the fiscal years 1991 and 2009, some in multiple tranches. Since 2010, the Indian government has sold minority equity stakes in another six firms, three of which were initial public offerings (Coal India, Manganese Ore India Limited, and Satluj Jal Vidyut Nigam).[4] The privatization program was initiated by the Congress government in 1991, and after a brief hiatus was continued by the BJP government elected in 1999. However, the program stalled when the BJP-led government was defeated in 2004, until it was resurrected by the reelected Congress government in 2009 with the sale of minority equity stakes in 5 firms. Between 1991 and 2010, total revenues raised from privatization sales was about Rs. 960 billion. In Figure 1, we describe the annual breakdown of revenues raised from privatization sales in India between 1991 and 2010.

Starting in 1991, the ideologically center-left Congress government partially privatized 39 firms, some of which sold equity multiple times. Following the defeat of this government in 1996, the privatization program remained in hiatus until 1999. The incoming government led by the conservative Bharatiya Janata Party (BJP) continued the practice of minority equity sales on financial markets, but also sold majority stakes and transferred management control in 14 firms. Although privatization revenues

[4] The maximum amount raised in any year from privatization through public offerings is Rs. 228 billion in 2010 (Bombay Stock Exchange, Disinvestments Database).

from strategic sales were only a small fraction of the amounts raised through partial privatizations (Department of Disinvestment, 2010), this represented a major shift in policy from previous governments. The companies privatized through majority sales are listed in Table 2 along with the names of the acquiring firms.

Political considerations may explain why so few privatizations were undertaken by the BJP. In fact, attributing the defeat of the BJP-led National Democratic Alliance government in the 2004 elections to its disinvestment [privatization] program, a major newspaper's editorial opined, "The Indian voters... were rejecting the National Democratic Alliance [NDA] government, which, as one poll slogan had it, stood for the "National Disinvestment Agency" (The Hindu, 2004).

The privatization program came to a halt after the defeat of the BJP government in 2004, which saw the election of the Congress party and its coalition partners (UPA). Since 2004, the UPA government, which was reelected in 2009, has sold only minority equity stakes in 11 firms. The Economic Survey (Ministry of Finance, 2008-09) describes the current government's policy as follows: (1) Generate at least Rs. 250 billion per year from privatization sales. (2) Sell 5-10% equity in previously identified profit making firms that are not one of the "navratnas", or nine most prestigious firms. (3) List all unlisted firms and sell a minimum of 10% of equity to the public, and (4) Auction all loss making firms that cannot be revived.

In February 2010, the government resurrected its stalled privatization program with a secondary offering of shares in National Thermal Power Corporation Ltd (NTPC), which owns 20% of India's power generation ca-

pacity. However, the *Wall Street Journal* noted that the sale of minority equity stakes "makes this a fund-raising exercise rather than a meaningful shift toward less state control," ("In India, offers fall well short of P-word," February 4, 2010, *The Wall Street Journal*). Since then the government has continued the practice of selling minority equity stakes, while retaining majority government ownership and management control of firms.

The lack of meaningful progress in privatization is mainly due to the fact that successive coalition governments have required the support of multiple coalition partners to maintain a parliamentary majority. For example, during the current government's regime, the privatization of Neyveli Lignite located in Tamil Nadu was delayed because of opposition from a coalition member, the DMK party, which is based in Tamil Nadu. And the privatization of firms located in West Bengal has been delayed due to opposition from the West Bengal based Trinamool Congress party. As noted in a newspaper editorial, "It is not that the DMK and the Trinamool Congress have any deep ideological opposition to disinvestment... these parties' concern over disinvestment will stem from its likely impact on the mood of voters in the next Assembly elections...No political party will like to be associated with any proposal that results in obvious job losses or relocation of employees and then lose votes in the elections." (Business Standard, June 3, 2009, "Disinvestment, There is many a slip").

The literature supports the anecdotal evidence. Examining the role of politics in India's privatization program, Dinc and Gupta (2010) find that successive Indian governments have been reluctant to privatize because of a potential electoral backlash. For example, firms located in electoral districts

where the governing party is in a close race with opposition parties, and firms located in the home state of the Cabinet Minister, are much less likely to be privatized.

3 Data

We observe financial data annually for 213 manufacturing and non-financial service sector companies owned by the federal government of India. To avoid attrition bias we do not require the panel to be balanced. The data are collected by the Centre for Monitoring the Indian Economy (CMIE) from company annual reports. The data start in fiscal year 1988, prior to the launch of the economic reforms of 1991, and end in fiscal year 2008, hence we include all privatization transactions conducted until the end of 2008-09. Data on privatization transactions were obtained from the Disinvestment Commission of the Government of India and the Disinvestments Database of the Bombay Stock Exchange.

Comparing the pre-privatization characteristics of privatized firms to firms that remain fully government-owned, we note several differences. In Table 3 we report that compared to fully government-owned firms, firms selected for partial privatization are nearly four times as large in terms of sales and gross fixed assets, and employ twice as many workers. Firms that are partially privatized are also more profitable and efficient (higher profits, return on sales, and networth), borrow more, and have lower compensation relative to size. Firms that eventually sell majority equity stakes have higher sales, lower assets, higher return on sales, fewer employees, and

lower levels of employee compensation compared to firms that remain fully government-owned. Partially privatized firms are also significantly larger compared to majority sale firms. In the regression analysis we control for the pre-privatization characteristics of firms.

Table 4 presents before-after statistics for selected performance measures for partially privatized firms. Specifically, using the sample of partially privatized firms, we compare average performance in the years following the first public offering to the average performance of firms in the years before they sell any equity. We find that firms experience a significant increase in average sales, gross fixed assets, profits, net worth, and cash profits after partial privatization.

In Table 5 we describe before-after statistics for selected performance measures for firms that have sold majority equity stakes and transferred control to private owners. The average effects suggest that these firms experience a significant increase in sales, asset size, profits, net worth, and cash profits following the sale of majority equity stakes and the transfer of management control to private owners. Unlike partially privatized firms, firms that have transferred control to private owners appear to experience a significant decrease in employment following ownership change. Below we describe the results from the regression analysis.

4 Regression results

A. Effect of Private Ownership

We start out by investigating the average effect of selling partial and

majority equity stakes on firm performance, by estimating the following firm fixed effects specification for the years 1989-2008:

$$y_{it} = \alpha_i + \alpha_1 Fraction\ of\ Equity\ Sold_{it-1} + \alpha_2 X_{it-1} + \alpha_t Year_t + \varepsilon_{it}, \quad (1)$$

where y_{it} is the firm performance measure and the X_{it-1} variables are firm-specific factors that explain the outcomes. The main variable of interest is *Fraction of Equity Sold*, which ranges in value from 0 to 100. The control group is restricted to government-owned firms that have been selected for privatization but have not yet been privatized. The specification in (1) includes a firm-specific fixed effect, α_i, which reflects differences across firms that are constant but unobserved over time, year dummies that would capture contemporaneous correlation, and a random unobserved component, ε_{it}, that reflects unobserved shocks affecting the performance of firms.

To control for other factors that may explain firm performance we include firm size as measured by gross fixed assets, and the Herfindahl index at the three-digit industry level. The latter variable will also control for confounding effects that may arise due to contemporaneous reforms at the industry level that affect firm performance. Firm level performance measures and all variables used in the analysis are described in Appendix Table 1. We note that all the level variables, with the exception of $Fraction\ of\ Equity\ Sold$ and the $Herfindahl\ Index$ are in logarithms.

The results from estimating equation (1) are presented in Table 6. We find that the share of privately owned equity has a positive and statistically

significant impact on next period sales, return on sales (ratio of profit before taxes and depreciation to sales), net worth to sales, cash profits to sales, total borrowing, and employment. From the first two columns of Table 6 we observe that a 10 percentage point increase in the level of private equity would increase annual sales by about 3.3%, returns to sales by 3.8%, and net worth to sales by 17% on average. Firms also experience a significant increase in access to loans, which suggests that privatized firms may be better able to finance growth opportunities compared to firms that remain fully government-owned. Further, these results suggest that selling equity to private owners does not cause the government to abandon the political objective of maintaining surplus employment, and average compensation also does not appear to be affected by privatization. These results are robust to controlling for average firm size and industry competitiveness.

Prior research suggests that governments are likely to selectively choose firms for privatization based on observable and unobservable characteristics. For example, Gupta, Ham and Svejnar (2008) show that profitable firms are more likely to be privatized. We take a number of steps to address the potential endogeneity of privatization to firm performance. First, we estimate a firm fixed effects specification that addresses selection bias that may arise if more profitable or larger firms are selected for privatization. However, fixed effects will not address dynamic selection bias, which may arise if the government selects firms for privatization based on unobservable time-varying characteristics. To address this, we use the approach suggested by Frydman et al. (1999), who argue that firms that are selected for privatization are likely to share similar characteristics, so comparing privatized firms to

a control group of firms that have also been selected for privatization but have not yet been sold should address this potential selection bias. Since privatization is distributed over several years in our data, in any given year we also observe firms privatized in later years that form the control group.

To minimize the possibility of simultaneity between privatization and performance, we use the lagged share of private ownership. The specifications also include firm-specific controls such as firm size and the industry Herfindahl index to control for the effect of industry level reforms that may affect the performance of firms. Lastly, we include year dummies to control for contemporaneous macroeconomic shocks.

B. Effect of Majority Sales

We investigate the marginal effect of selling majority equity stakes with the transfer of management control to private owners by comparing majority sale firms to partially privatized firms. We estimate the following firm fixed effects specification for the years 1989-2008,

$$y_{it} = \alpha_i + \alpha_1 Majority\ Sale_{it-1} + \alpha_2 X_{it-1} + \alpha_t Year_t + \varepsilon_{it}, \qquad (2)$$

where $Majority\ Sale$ is a dummy variable that is equal to one when a firm has sold majority equity stakes and transferred management control to a private owner. The control group is partially privatized firms that have sold minority equity stakes and are listed on the stock market. The remaining variables are as described in equation (1). From the first two columns of Table 7 we note that sales and returns to sales increase by 23%

and 21% respectively on average when firms transfer management control to private owners. Hence, compared to partially privatized firms that are publicly traded on the stock market but are still controlled by the government, the sale of majority equity stakes with the transfer of management control has an economically significant impact on the sales and profitability of government-owned firms. Moreoever, this increase in revenues and profits is not accompanied by a decline in employment or wages. While wages are not significantly affected by ownership change, employment appears to increase significantly, perhaps in response to the increase in profitability following privatization.

Despite the small number of majority sales, our results suggest that transferring control to private owners may result in significant performance improvements compared to publicly listed firms that remain under government control. A potential explanation is that firms that have been sold to private owners are no longer subject to political interference, and managers of these firms are provided incentives to align their objectives with that of shareholders. For example, Fan, Wong, and Zhang (2007) show that partially privatized firms in China with politically connected CEOs underperform those without politically connected CEOs, and are more likely to appoint bureaucrats rather than qualified board members.

C. Evaluating the Long-run Impact of Privatization

So far, we have considered the effect of privatization on firm performance in the following year. However, the effects of privatization, due to decisions made by new owners in the case of majority sales, or due to improved corporate governance and increased investor scrutiny in the case of public offer-

ings, may not be immediate. Or, it may be the case that some performance effects are not persistent, such as the observed increase in employment following privatization. To capture the long-run effects of privatization, we consider three-year averages of firm performance including the three years following the year in which the firm privatizes partial and majority equity stakes. The results are reported in Table 8. In Panel A of Table 8, we consider the effect of selling partial and majority equity stakes. The results are similar to those reported in Table 6. We find that in the three years following privatization, firms that have sold partial and majority equity stakes experience significant improvements in average sales, profitability, net worth, and total borrowing, relative to firms that have not yet privatized. The main difference from the previously reported results is that wages as a fraction of sales appears to decrease in privatized firms, suggesting that average wages do not increase at the same rate as average sales following privatization. We also find that average employment increases significantly in the three years following privatization.

In Panel B, we examine the impact of majority equity sales, where majority ownership and management control is transferred from the government to private owners. We note that the results are substantively similar to Table 7. Firms that sell majority stakes experience a significant increase in sales and profitability, a decline in averages wages as a share of sales, and an increase in employment. The statistical significance of the other dependent variables is slightly lower because of the smaller sample size since we restrict the sample to firms with at least three years of performance data following privatization. Overall, our results suggest that the effects of privatization

are persistent rather than short-run.

D. Evaluating the Impact of Varying Ownership Stakes

Our results suggest that firm performance is positively related to the fraction of equity sold by government-owned firms. We also find that transferring management control to private owners has an economically significant impact on firm performance. It may however be the case that ownership has a non-linear impact on firm performance. For example, performance improvements may occur only when a sufficiently large share of the firm is privately-owned. In Table 9 we report the results from estimating firm fixed-effects specifications that describe the relationship between firm performance and the privatization of 10%, 25% and 50% or more equity stakes. The results suggest that compared to firms that have not yet been privatized, selling 10% or more equity in a firm is associated with a significant increase in sales, net worth, and employment. In comparison, selling majority stakes or 50% or more equity is associated with both an increase in sales and net worth, as well as an increase in external borrowings and employment. The effects also appear to be significant for firms that have sold 25% or more equity. In sum, these effects are consistent with our results so far suggesting that both partial privatization, as well as the sale of majority equity stakes have a significant impact on the performance of government-owned firms.

We also estimate but do not report results using a dummy variable for firms that have sold 5% or more equity. The results are less statistically significant. In particular, firms that have sold 5% or more equity experience a significant increase in employment relative to firms that are not yet privatized, but there is no significant association with the profitability and other

performance measures.

E. Comparing privatized firms to fully government-owned firms

As a robustness check we also investigate the impact of privatization on firm performance where the control group includes firms that have never been privatized and are fully government-owned. The results reported in Table 10 are similar to what we observe when the control group is restricted to firms that are selected for privatization, but less statistically significant. In particular, compared to firms that remain 100% government-owned, a 10 percentage point decrease in government-ownership is associated with an 8% increase in sales, 4% increase in total borrowing, and 6% increase in employment, on average.

5 Conclusion

Privatization in India has encountered numerous roadblocks over the last two decades. Opponents argue that it will lead to widespread layoffs and a redistribution of wealth in favor of the politically connected. It has also been argued that selling profitable firms to raise revenues for general government expenditures does not make economic sense. However, our results suggest that selling both partial and majority equity stakes is associated with significant improvements in the profitability and efficiency of government-owned firms. These effects are robust to the pre-privatization characteristics of firms, suggesting that profitable firms also benefit from privatization. Interestingly, privatized firms appear to increase employment compared to firms that have not yet been privatized, while average compensation is not affected

by privatization. Hence, the improvement in profitability following privatization is not accompanied by layoffs or a decline in worker compensation.

We find that the sale of majority equity stakes accompanied by the transfer of management control from the government to private owners has an economically significant impact on performance. This result suggests that full privatization may have a greater impact on the profitability of firms, without requiring layoffs or a decline in worker compensation.

Despite these observed benefits, privatization remains a politically contentious issue in India. Our results suggest that fears regarding employment loss may be exaggerated. Indeed, government-owned firms that do not privatize appear to be reducing workforce size on average compared to privatized firms. While there is a potential redistribution of wealth from the government to private investors, this argument ignores the cost of subsidies to government-owned firms. However, since the costs of giving up control will be borne by organized labor and politicians, while the benefits, such as more efficient firms and lower subsidies, are distributed across the population, political economy theory suggests that privatization will continue to generate opposition from organized interests who benefit from maintaining government ownership.

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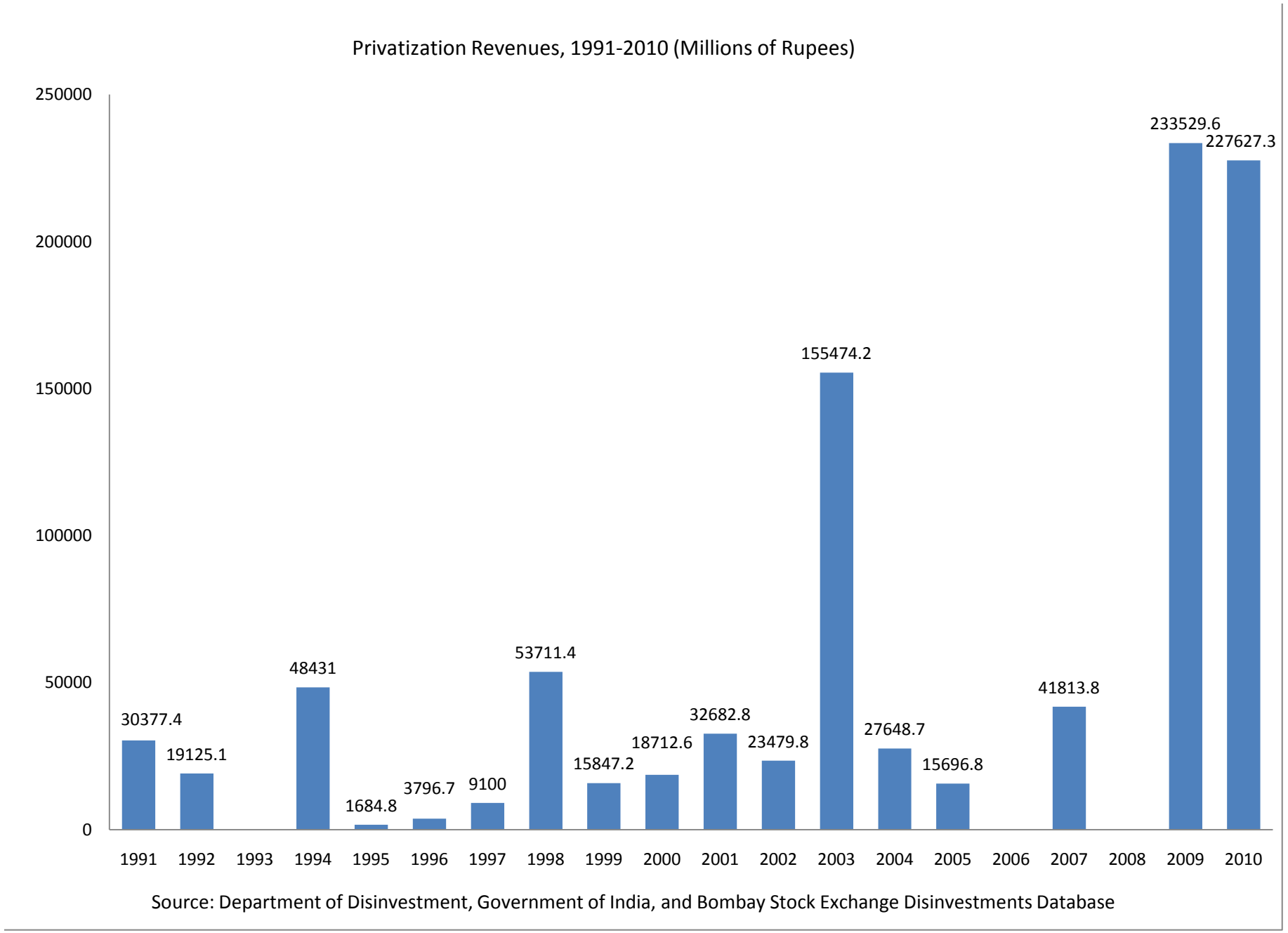
Privatization Revenues, 1991-2010 (Millions of Rupees)
250000
200000
150000
100000
50000
0
30377.4
19125.1
48431
1684.8
3796.7
9100
53711.4
15847.2
18712.6
32682.8
23479.8
155474.2
27648.7
15696.8
41813.8
233529.6
227627.3
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
Source: Department of Disinvestment, Government of India, and Bombay Stock Exchange Disinvestments Database

Appendix Table 1: Variable Descriptions

Variable	Description	Source
Fraction of equity sold	Percentage of private ownership. Ranges in value from 0% to 100%.	Disinvestment Commission, Government of India and Bombay Stock Exchange
Majority Sale	Dummy variable equal to one if the firm has sold majority equity stakes and transferred management control to private owners	Same as above
Fraction of equity sold > 25%	Dummy variable equal to one if the firm has privatized more than 25% of equity stake.	Same as above
Fraction of equity sold > 50%	Dummy variable equal to one if the firm has privatized more than 50% of equity stake.	Same as above
Assets	Gross fixed assets.	Prowess Database, CMIE
Industry Herfindahl	Herfindahl index.	Same as above
Sales	Revenues received from main activity.	Same as above
Profit	Excess of income over all expenses except tax, depreciation, rent, and interest.	Same as above
Return on Sales	Profit/Sales.	Same as above
PAT	Excess of income over all expenses.	Same as above
Net Worth	Excess of assets over liabilities.	Same as above
Cash Profits	Excess of income over all costs, except depreciation and amortization.	Same as above
Total Borrowings	All debt, interest bearing and otherwise.	Same as above
Wages	Total expenses incurred by the company on all employees.	Same as above
Labor	Number of workers.	Same as above

Table 1: Privatization by year

Year	Number of Privatization Transactions	Privatization Revenues (Millions of Indian Rupees)*
1991	47	30377.4
1992	35	19125.1
1993		
1994	13	48431
1995	5	1684.8
1996	1	3796.7
1997	1	9100
1998	5	53711.4
1999	4	15847.2
2000	4	18712.6
2001	9	32682.8
2002	6	23479.8
2003	10	155474.2
2004	3	27648.7
2005	1	15696.8
2006	0	
2007	3	41813.8
2008	0	
2009	5	233529.6
2010	6	227627.3

Source: Disinvestment Commission of India, Government of India, *Disinvestment until Now*

Table 2: Majority Sales to Private Owners

Company Name	Year of Sale	Name of Buyer	% Stake Sold	% Government Equity
BHARAT ALUMINIUM CO.LTD.	2000-01	STERLITE INDUSTRIES (INDIA) LTD.	51	49
CMC LTD.	2001-02	TATA CONSULTANCY SERVICES LTD.	51	32.31
HINDUSTAN TELEPRINTERS LTD.	2001-02	HIMACHAL FUTURISTIC COMMUNICATION LTD.	74	26
HINDUSTAN ZINC LTD.	2002-03	STERLITE OPPORTUNITIES & VENTURES LTD.	22.07	49.93
HOTEL CORP.OF INDIA LTD.*	2002-03	BATRA HOSPITALITY PVT.LTD.	100	0
,,	2001-02	INPAC TRAVELS (INDIA) PVT.LTD.	100	0
,,	2001-02	TULIP HOSPITALITY PVT.LTD.	100	0
ICI INDIA LTD.	2003-04	ASIAN PAINTS (INDIA) LTD.	9.2	0
INDIA TOURISM DEVELOPMENT CORP.LTD.*	2002-03	BRIGHT ENTERPRISES PVT.LTD.& CONSORTIUM	89.97	0
,,	2002-03	M FAR HOTELS LTD.	89.97	0
,,	2002-03	LOKSANGAM HOTELS & RESORTS PVT.LTD.& CONSORTIUM	89.97	0
,,	2002-03	AUTO IMPEX LTD.	89.97	0
,,	2002-03	BHARAT HOTELS LTD.	89.97	0
,,	2002-03	CONSORTIUM OF RAMNATH HOTELS PVT.LTD.	89.97	0
,,	2002-03	COMMERCIAL PVT.LTD.	89.97	0
,,	2002-03	NEHRU PLACE HOTELS LTD.	89.97	0
,,	2002-03	MORAL TRADING & INVESTMENT LTD.	89.97	0
,,	2002-03	TAJGVK HOTELS & RESORTS LTD.	100	0
,,	2001-02	MALNAD HOTELS& RESORTS PVT.LTD.	89.97	0
,,	2001-02	LOTUS NIKKO HOTELS	89.97	0
,,	2001-02	SANGU CHAKRA HOTELS PVT.LTD.	89.97	0
,,	2001-02	G.R.THANGA MALIGAI PVT.LTD.	89.97	0
,,	2001-02	MOHAN SINGH	89.97	0
,,	2001-02	BHARAT HOTELS LTD.	89.97	0
,,	2001-02	CONSORTIUM OF SUSHIL GUPTA & OTHERS	89.97	0
,,	2001-02	SILVERLINK HOLDINGS LTD.& CONSORTIUM	89.97	0
INDIAN PETROCHEMICALS CORP.LTD.	2002-03	RELIANCE PETRO INVESTMENTS LTD.	26	33.95
JESSOP & CO.LTD.	2003-04	INDO WAGON ENGINEERING LTD.	72	27
KOCHI REFINERIES LTD.	2000-01	BHARAT PETROLEUM CORP.LTD.	55.04	0
LAGAN JUTE MACHINERY CO.LTD.,THE	2000-01	MURALIDHAR RATANLAL EXPORTS LTD.	74	26
MADRAS REFINERIES LTD.	2000-01	INDIAN OIL CORP.LTD.	51.81	0
MARUTI UDYOG LTD.	2003-04		27.51	18.28
MODERN FOOD INDUSTRIES (INDIA) LTD.	1999-00	HINDUSTAN LEVER LTD.	74	26
PARADEEP PHOSPHATES LTD.	2001-02	ZUARI MAROC PHOSPHATES PVT.LTD.	74	26
VIDESH SANCHAR NIGAM LTD.	2001-02	PANATONE FINVEST LTD.(A TATA GROUP CO.)	25	26.12

Notes: * Sale of hotels owned by these companies

Source: Bombay Stock Exchange Disinvestments Database

Table 3: Describing Government-Owned Firms

This table reports the mean and standard deviation for the variables defined in Appendix Table 1 for the fiscal years 1989-2008. Fully Government-Owned are firms that have not privatized any equity; Partially Privatized are firms that have sold partial equity stakes without transferring management control; Majority Sale are firms that have sold majority equity stakes and transferred management control. The average values of the variables for the partially and majority privatized firms are calculated for the years prior to privatization.

	Fully Government-Owned	Partially Privatized	Majority Sale
Sales	708.678	2845.367	960.530
	(2964.530)	(5027.113)	(1534.319)
Observations	3434	184	120
Assets	967.9225	5119.361	388.5783
	5922.774	9644.651	475.1771
	3463	184	119
Profits	188.423	999.779	77.822
	(1018.703)	(1635.273)	(107.370)
Observations	2447	143	107
Return on Sales	-0.106	3.629	0.092
	(36.698)	(23.446)	(0.301)
Observations	2303	139	107
Net worth/Sales	-98.823	6.200	-0.009
	(2240.821)	(43.549)	(1.734)
Observations	3050	179	119
Total Borrowings	552.453	3226.547	191.838
	(2022.717)	(5094.346)	(229.280)
Observations	3463	184	119
Wages/Sales	1.549	0.098	0.158
	(16.561)	(0.108)	(0.184)
Observations	3296	180	120
Labor	6933.244	14664.720	4348.369
	(20951.080)	(27568.400)	(5476.173)
Observations	3325	187	111

Table 4: Comparing Partially Privatized Firms Before and After Privatization

This table describes the characteristics of government-owned firms before and after partial privatization for the fiscal years 1989-2008. The variables are described in Appendix Table 1. Partially privatized firms are firms that have sold minority equity stakes without transferring management control.

	Average Before Partial Privatization	Average After Partial Privatization	% Change	p-values	
Sales	2845.367	10805.99	279.775	0.000	***
	(5027.113)	(29806.370)			
	184	584			
Assets	5119.361	6811.988	33.063	0.075	*
	9644.651	(14937.440)			
	184	582			
Profits	999.7792	1468.172	46.850	0.069	*
	(1635.273)	(3683.147)			
	143	555			
Net Worth	2959.167	3880.826	31.146	0.099	*
	5800.712	(9135.844)			
	184	582			
Cash Profits	603.285	1024.316	69.790	0.036	**
	1199.385	(2965.332)			
	170	581			
Total Borrowing	3226.547	2247.512	-30.343	0.017	**
	(5094.346)	(5592.648)			
	184	582			
Wages/Sales	0.09835	0.13655	38.835	0.005	***
	(0.108)	(0.191)			
	180	582			
Labor	14664.72	15973.35	8.924	0.296	
	(27568.400)	(29615.930)			
	187	584			

Table 5: Comparing Majority Sale Firms Before and After Privatization

This table describes the characteristics of government-owned firms before and after the sale of majority stakes for the fiscal years 1989-2008. The variables are described in Appendix Table 1. Majority Sale firms have sold majority equity stakes and have transferred management control to private owners.

	Average before majority Sales	Average after majority sales	% Change	p-values
Sales	1990.199	3527.601	77.249	0.001 ***
	(3007.656)	(4910.548)		
	188	89		
Assets	1069.983	1890.675	76.701	0.001 ***
	1739.087	(2682.178)		
	187	88		
Profits	275.3154	640.045	132.477	0.000 ***
	(474.550)	(1203.438)		
	174	84		
Net Worth	702.833	1656.713	135.719	0.000 ***
	1255.697	(2863.319)		
	187	87		
Cash Profits	166.059	451.923	172.146	0.000 ***
	317.7558	(848.587)		
	184	87		
Total Borrowing	372.256	450.7316	21.081	0.214
	(795.576)	(678.146)		
	187	87		
Wages/Sales	0.1314	0.1466	11.621	0.293
	(0.160)	(0.304)		
	188	87		
Labor	4712.59	2369.126	-49.728	0.000 ***
	(5178.654)	(3010.993)		
	178	87		

Table 6: Privatization and Firm Performance

This table reports results from firm level fixed effects (within) regressions for the fiscal years 1989-2008 to estimate the impact of private ownership with privatized firms as the treatment group and firms that are selected for privatization and sell equity in later years as the control group. The variables are described in Appendix Table 1. The firm-specific right hand side variables are lagged one year. *Annual Sales*, *Total Borrowing*, *Labor*, and *Assets* are measured in logs. All regressions include firm and year fixed effects. The standard errors are reported in parentheses.

	Sales	Return on Sales	PAT/Sales	Net worth/Sales	Cash Profits/Sales	Total Borrowing	Wages/ Sales	Labor
Fraction of equity	.0033***	.0387*	0.0144*	0.1775***	0.0126*	0.009***	-0.0003	0.0058***
sold (t-1)	(0.001)	(0.021)	(0.008)	(0.055)	(0.007)	(0.003)	(0.000)	(0.001)
Assets (t-1)	.4845***	`-1.6549***	0.2906	-2.1831	0.2965	0.5439***	-0.0202*:	.2831***
	(0.037)	(0.549)	(0.211)	(1.395)	(0.194)	(0.070)	0.009	(0.018)
Industry	-0.0897	` -5.0757***	-0.2852	-16.2715	-0.16944	0.9391	-0.0046	`-0.2842***
Herfindahl (t-1)	(0.119)	(1.739)	(0.666)	(4.483)	(0.601)	(0.674)	0.0283	(0.059)
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	982	907	907	976	958	919	981	857
Number of firms	52	51	51	52	52	51	52	52
R-squared	0.5367	0.0394	0.0289	0.0472	0.0283	0.1026	0.0313	0.4384

Notes: * significant at 10% level; ** significant at 5% level; *** significant at 1% level.

Table 7: Privatizing Majority Stakes

This table reports results from firm level fixed effects (within) regressions for the fiscal years 1989-2008 to estimate the impact of selling majority equity stakes, with firms that sell majority stakes as the treatment group and partially privatized firms that have sold partial equity stakes as the control group. The variables are described in Appendix Table 1. The firm-specific right hand side variables are lagged one year. *Annual Sales, Total Borrowing, Labor,* and *Assets* are measured in logs. All regressions include firm and year fixed effects. The standard errors are reported in parentheses.

	Sales	Return on Sales	PAT/Sales	Net worth/Sales	Cash Profits/Sales	Total Borrowing	Wages/ Sales	Labor
Majority Sale (t-1)	0.2299*	0.2118***	1.1452*	6.7463*	1.0594*	0.1831	-0.0313	0.2811***
	(0.122)	(0.080)	(0.603)	(3.713)	(0.548)	(0.249)	(0.035)	(0.050)
Assets (t-1)	0.6424***	0.0688*	0.6279**	3.8863**	0.6133**	0.6738***	-0.0153	0.4836***
	(0.062)	(0.040)	(0.302)	(1.882)	(0.278)	(0.130)	0.018	(0.024)
Industry	`-0.2811**	0.3057***	`-1.2637	`-9.0424**	`-1.1559*	0.9022	0.001	0.0442
Herfindahl	(0.139)	(0.091)	(0.688)	(4.252)	(0.627)	(0.803)	0.0392	(0.055)
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	733	698	698	729	728	681	732	636
Number of firms	52	51	51	52	52	51	52	49
R-squared	0.4484	0.0762	0.0503	0.0493	0.0515	0.0597	0.0293	0.6027

Notes: * significant at 10% level; ** significant at 5% level; *** significant at 1% level.

Table 8: Long-run impact of privatization

This table reports results from firm level fixed effects (within) regressions for the fiscal years 1989-2008 to estimate the impact of private ownership with privatized firms as the treatment group and firms that are selected for privatization and sell equity in later years as the control group. The dependent variables are measured as 3-year moving averages over the three years following the year of privatization, or t, t+1, and t+2, where t is the year in which the firm privatizes. The variables are described in Appendix Table 1. The firm-specific right hand side variables are lagged one year. Annual Sales, Total Borrowing, Labor, and Assets are measured in logs. All regressions include firm and year fixed effects. The standard errors are reported in parentheses.

Panel A: Partial and majority privatization

	Sales	Return on Sales	PAT/Sales	Net worth/Sales	Cash Profits/Sales	Total Borrowing	Wages/Sales	Labor
Fraction of equity	0.005**	0.002*	0.018***	0.115***	0.015***	0.006***	`-0.001***	0.005***
sold (t-1)	(0.001)	(0.001)	(0.007)	(0.046)	(0.006)	(0.003)	(0.000)	(0.001)
Assets (t-1)	0.321***	0.005	0.099	-1.036	0.099	0.281***	-0.002	0.334***
	(0.029)	(0.021)	(0.163)	(1.102)	(0.145)	(0.062)	0.005	(0.020)
Industry	`-0.555**	0.603***	-0.408	-14.557	-0.617	`-1.143*	`-0.151***	`-0.673***
Herfindahl (t-1)	(0.282)	(0.208)	(1.632)	(10.760)	(1.432)	(0.664)	(0.046)	(0.161)
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	875	753	753	863	830	796	872	674
Number of firms	52	51	51	52	52	52	52	52
R-squared	0.6108	0.0424	0.0342	0.0353	0.0353	0.0666	0.1005	0.5302

Panel B: Majority privatization

	Sales	Return on Sales	PAT/Sales	Net worth/Sales	Cash Profits/Sales	Total Borrowing	Wages/Sales	Labor
Fraction of equity	0.241***	0.199***	0.923	5.201	0.831	0.132	`-0.033*	0.346***
sold (t-1)	(0.095)	(0.050)	(0.685)	(3.966)	(0.577)	(0.219)	(0.018)	(0.058)
Assets (t-1)	0.499***	0.007	0.434	2.624	0.407	0.347***	0.013	0.429***
	(0.049)	(0.024)	(0.333)	(2.034)	(0.296)	(0.115)	(0.009)	(0.027)
Industry	-0.402	0.620***	-0.539	-8.5731	-0.73	-1.063	`-0.176***	-0.195
Herfindahl (t-1)	(0.299)	(0.150)	(2.073)	(12.442)	(1.811)	(0.795)	(0.056)	(0.160)
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	679	603	603	674	666	619	678	522
Number of firms	50	49	49	50	50	49	50	47
R-squared	0.5601	0.1169	0.0362	0.036	0.0377	0.0368	0.1111	0.6137

Notes: * significant at 10% level; ** significant at 5% level; *** significant at 1% level.

Table 9: Evaluating the Impact of Varying Ownership Stakes

This table reports results from firm level fixed effects (within) regressions for the fiscal years 1989-2008 to estimate the impact of private ownership with privatized firms as the treatment group and firms that are selected for privatization and sell equity in later years as the control group. The variables are described in Appendix Table 1. The firm-specific right hand side variables are lagged one year. *Annual Sales, Total Borrowing, Labor* , and *Assets* are measured in logs. All regressions include firm and year fixed effects. The standard errors are reported in parentheses.

	Sales			Return on Sales			Net worth/Sales		
Fraction of equity sold	0.1897**			0.9563			5.9761**		
>= 10% (t-1)	(0.079)			(1.155)			(2.959)		
Fraction of equity sold		0.1461*			1.9633*			8.2309***	
> 25% (t-1)		(0.076)			(1.083)			(2.854)	
Fraction of equity sold			.1690*			1.4427			7.5920**
> 50% (t-1)			(0.095)			(1.356)			(3.578)
Assets (t-1)	0.4759***	0.4728***	0.4780***	`-1.4666***	`-1.5662***	`-1.4933***	-1.6781	-2.0675	-1.6935
	(0.037)	(0.038)	(0.037)	(0.553)	(0.556)	(0.554)	(1.418)	(1.426)	(1.417)
Industry	-0.3912	-0.4673	`-0.5269	-6.1603	`-6.9287	-7.3177	`-22.6779*	`-26.415**	`-28.4471**
Herfindahl	(0.329)	(0.331)	(0.336)	(4.908)	(4.899)	(4.970)	(12.470)	(12.463)	(12.649)
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	982	982	982	907	907	907	976	976	976
Number of firms	52	52	52	51	51	51	52	52	52
R-squared	0.5379	0.5368	0.5366	0.0308	0.0339	0.0314	0.0355	0.04	0.0359

Table 9 continued

	Total Borrowing			Labor		
Fraction of equity sold	0.0435			0.1658***		
>= 10% (t-1)	(0.147)			(0.041)		
Fraction of equity sold		0.0441			0.2503***	
> 25% (t-1)		(0.143)			(0.039)	
Fraction of equity sold			0.7729***			0.2031***
> 50% (t-1)			(0.175)			(0.526)
Assets (t-1)	0.5460***	0.5441***	0.5225***	0.2857***	0.2719***	0.2835***
	(0.071)	(0.072)	(0.071)	(0.018)	(0.018)	(0.018)
Industry	1.2857**	1.2534*	0.6946	`0.7335***	`-0.8557***	`-0.8995***
Herfindahl	(0.658)	(0.661)	(0.663)	(0.162)	(0.160)	(0.165)
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	920	920	920	857	857	857
Number of firms	52	52	52	52	52	52
R-squared	0.0869	0.0869	0.1075	0.4215	0.4394	0.4204

Notes: * significant at 10% level; ** significant at 5% level; *** significant at 1% level.

Table 10: Comparing Privatized Firms to Fully Government-Owned Firms

This table reports results from firm level fixed effects (within) regressions for the fiscal years 1989-2008 to estimate the impact of private ownership with privatized firms as the treatment group and firms that remain fully government-owned as well as firms that sell equity in later years as the control group. The variables are described in Appendix Table 1. The firm-specific right hand side variables are lagged one year. *Annual Sales, Total Borrowings, Labor,* and *Assets* are measured in logs. All regressions include firm and year fixed effects. The standard errors are reported in parentheses.

	Sales	Return on Sales	Net worth/Sales	Total Borrowing	Wages/Sales	Labor
Fraction of equity	0.0075***	0.0386	2.5175	0.0044**	-0.0109	0.0055***
sold (t-1)	(0.002)	(0.062)	(3.742)	(0.002)	(0.026)	(0.001)
Assets (t-1)	0.4811***	`-2.2011***	125.9256***	0.2972***	-0.2328	0.2638***
	(0.019)	(0.820)	(46.561)	(0.023)	(0.320)	(0.013)
Industry	`-0.6499***	`-9.8313***	17.8529*	0.4240*	1.3355	`-0.1953***
Herfindahl	(0.072)	(3.235)	(182.438)	(0.235)	(1.199)	(0.050)
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3937	3039	3706	3688	3935	3180
Number of firms	276	247	275	270	276	253
R-squared	0.3304	0.018	0.009	0.0744	0.007	0.2312

Notes: * significant at 10% level; ** significant at 5% level; *** significant at 1% level.