METU Studies in Development, 32 (June), 2005, 59-101

The financial and operating performance of privatized companies in the Turkish cement industry*

Alövsat Müslümov
Department of Economics-Finance, Doğuş University, Acıbadem 34722, İstanbul

Abstract

This paper examines the post-privatization performance of privatized companies in the Turkish cement industry. The findings indicate that, when performance criteria for both the state and private enterprises are considered, privatization in the cement industry results in significant performance deterioration. Total value added and the return on investment declines significantly after privatization. This decrease mainly stems from deterioration in asset productivity. The decline in asset productivity, however, is not caused by an increase in capital investment, since post-privatization capital investment did not change significantly. Significant contraction in total employment and an increase in financial leverage after privatization are among the key research findings. Privatization through public offering, gradual privatization and domestic ownership are found to stimulate the financial and operating performance of firms following privatization.

1. Introduction

This study is an examination of the impact of privatization on the financial and operating performance of privatized enterprises in the

* An earlier draft of this study was presented at the 58th Congress of the International Institute of Public Finance, in Helsinki, August 2002. I am grateful to Özer Ertuna, Cudi Tuncer Gürsoy, Mübariz Hasanov, Cenktan Özyıldırım and the anonymous referees for their useful comments and suggestions. I thank Tülay Aktaş from the State Privatization Office of Turkey for her help in data collection, and Harun Akbaş, Sinan Aktan, Cem Emre Buruş, Mahmut Özkararbuber, Nuray Tezcan and Fehmi Yücer for their excellent research assistance.

Turkish cement industry. Privatization in the cement industry constituted an important part of the privatization program in Turkey, since it was one of the unique industries where the state sold out all of its shares. The privatization program covered state shares in 33 state enterprises in the cement industry and the privatization process was finalized in 1998.

The current study is on the financial consequences of privatization and complements the study of Saygılı and Taymaz (1995, 2001), which focused instead on the technical efficiency consequences of privatizations in Turkish Cement industry. Using the stochastic production frontier approach they found that privatization in Turkish cement industry did not have a significant impact on the technical efficiency of privatized enterprises. My study produces results comparable with previous privatization studies (such as Megginson, Nash and Van Randenborgh, 1994; Boubakri and Cosset, 1998; D'Souza and Megginson, 1999; D'Souza, Megginson and Nash, 2001; Boubakri, Cosset, and Guedhami, 2004) and shares a common methodological framework, while trying to improve some of the problems of the previous studies.

The first problem encountered in these studies is a sample bias, since their sample space consists of firms privatized by share offerings only. However, firms privatized through share offering have to meet listing requirements of the stock exchanges, such as being large and profitable enterprises. Thus by examining a narrower section of privatization cases in which privatized enterprises have higher potential in terms of performance improvements will lead to the spurious results and sample bias. In this study, I overcome the sample bias problem by analyzing the whole space of the privatization cases in the Turkish Cement industry, excluding only four privatized companies whose financial statements pertaining to the pre- and post-privatization windows were unavailable.

Another most frequently encountered problem in the above-cited studies is the measurement of post-privatization performance changes only in terms of performance criterion for private companies, such as profitability. However, privatization benefits may also result from the wealth transfer to shareholders from other stakeholders. This is the reason for the discordance between the usually positive empirical evidence for privatization and the usually negative public perception of privatization. In order to consider the inconsistencies between objective functions of private and state firms, I measure post-privatization performance improvements using performance criteria for both private and state enterprises.

The remainder of the paper is organized as follows. Section 2 discusses previous theoretical and empirical literature. Section 3 describes the sample and data used in the study, and discusses the research design. Section 4 and 5 reports on the research findings for the

full sample and subsamples respectively. Section 6 gives a brief conclusion.

2. Theory and evidence on privatization

2.1. Theoretical framework

The arguments for the efficiency enhancing nature of privatization benefit from the arguments of the efficiency superiority of private ownership. However, is private ownership more efficient than state ownership? If the answer is yes, it would be logical to argue that privatization, which is the transfer of ownership from the state to the private sector, will eventually lead to corporate performance improvements. The theoretical economic literature provides two sets of complementary arguments, which imply that private ownership is creating incentives for the more efficient management and operation. The first set of incentive arguments is based on product market competition (Kay and Thompson, 1986; Vickers and Yarrow, 1988, 1991; Birdsall and Nellis, 2003), whereas the second set of incentive arguments is based on information (Sappington and Stiglitz, 1987; Vickers and Yarrow, 1988; Shapiro and Willig, 1990; Laffont and Tirole, 1991).

According to the product market competition argument, a private firm in a competitive product market has incentives to improve production efficiency. Competition between firms in the market effectively regulates private company behavior and provides reasonably good incentives for production efficiency. But managers of state enterprises may not have sufficient incentives to control costs and achieve production efficiency, since they know that the government is likely to provide subsidies to offset any cost overruns. However, the idea that private ownership has more incentives to increase production efficiency has been challenged. For example, De Fraja (1993) argues that in the good state of the world, state ownership always results in a higher degree of production efficiency. It is even argued that under a market economy "even if the economy is well described by the competitive equilibrium model, the outcome may not be efficient because of externalities" (Atkinson and Stiglitz, 1980: 8).

Nevertheless, in the case of monopolistic market conditions, state ownership is likely to outweigh private ownership. Private monopolies are more undesirable since they have incentives to cut down output and increase prices above the socially optimal level above the marginal cost. If the market regulation practices are weak, the improved production efficiency may not compensate for the deterioration in allocational efficiency (Yarrow, 1986). Analyzing the relative performance of private regulated firms and state enterprises, Pint (1991) argues that both

organizational forms are inefficient, but the bias is towards an excessive use of labor in the state enterprises, and an excessive use of capital in the private regulated firms. Moreover, Willner (1996) argues that privatization would be likely to reduce welfare. Comprising alternative theories, Vickers and Yarrow (1988: 44) write: "Where product markets are competitive, it is more likely that the benefits of private-monitoring systems (e.g., improved internal efficiency) will exceed any accompanying detriments (e.g., worsened allocative efficiency) … In the absence of vigorous product market competition, however, the balance of advantage is less clear cut and much depends upon the effectiveness of regulatory policy."

The information argument rests on the informational asymmetries between principals and agents. Two interrelated theories; public choice theory (Niskanen, 1971; Buchanan, 1972) and property rights theory (Coase, 1960; Alchian, 1965; De Alessi, 1980) are based on the agency problem theory and imply that agents (managers) have more incentives to maximize their utilities at the expense of the principals (shareholders) under state ownership. These theories suggest that bureaucrats are interested in more pay, power and prestige. Although private sector managers are also interested in these 'three P's', the 'agency' relationship is less complex under private ownership (Demsetz, 1988). Moreover, the control of principals, the discipline of capital markets and bankruptcy threat helps to overcome informational asymmetries between principal-agents, and enforce agents (managers) to maximize principals' (shareholders) wealth. These mechanisms are supposed to prevent deviations from efficiency rules.

Shareholders' control over the management is exercised through their voting power. Inappropriate behavior by management may cause the termination of their relation with the company. These threats create incentives for managers to maximize shareholders' interest under private ownership. According to portfolio theory, however, under conditions of highly dispersed shareholding no shareholders would have much incentive to monitor management's performance (Fama, 1977). In addition, costs associated with obtaining information about the performance of the management team may not leave an incentive for shareholders to control management's performance (Stiglitz, 1985).

The deviation from the efficiency rules may also be solved through the discipline implemented by the capital markets for those companies whose shares are actively traded in the stock exchanges (Jensen and Ruback, 1983). The shareholders cast their votes on the management of the companies through their purchase or selling decisions in the stock exchanges. If shareholders realize the existence of the agency problem within the company, they might sell the shares, which would inevitably

lead to depressed share prices. These depressed share prices allow competing management teams to make a takeover bid for getting rights to manage corporate resources. When the bidding management team acquires the target firm, the existing management team is usually fired. Therefore, the threat of takeover deters management to pursue their interests instead of shareholders'. However, there are some points that constitute a drawback in the functioning of the takeover mechanism. First of all, the informational asymmetry between potential takeover bidders and management may weaken the incentives for making a takeover bid. Second, management may pursue a set of strategic actions (such as poison pills and golden parachutes) to avoid being taken over.

A third mechanism that threatens private-sector management is the reality of running out of capital if they do not improve efficiency. Inefficient firms are destined to face difficulties in raising additional capital and increasing the probability of bankruptcy. However, as mentioned above, state-owned firms usually have access to state-funds, which distort their incentives to be efficient. Nevertheless, bankruptcy discipline also has severe limitations. If management thinks that their decisions do not have an effect on bankruptcy, they will follow their interest-maximizing strategy.

Most of the above-stated theories have been developed in the strong governance context of developed economies. Developed economies have been characterized by effective internal and/or external governance mechanisms that may substitute for each other and effectively resolve agency problems (Rediker and Seth, 1995). In the relatively recent literature (La Porta *et al*. 1997, 1998, 1999, 2000), it is stated that the corporate governance context plays an important role in the determination of cross-country differences in ownership structure. For example, the weak governance context of emerging economies results in the expropriation of minority shareholders. Expropriation occurs when minority shareholders are deprived of their right of appropriate returns on their investments by major or large shareholders. This expropriation problem, unique to emerging countries, creates distorted incentives in the private sector (Dharwadkar *et al*., 2000). Going further, Dyck (2001: 59) claims that "unless developing countries embrace a corporate governance perspective, privatization is unlikely to provide the benefits of improved performance with accountability".

Moreover, capital markets often do not constitute a strong discipline mechanism over private sector in emerging economies. The first reason is that capital markets in emerging markets are not well developed and often illiquid. On the other hand, the existence of severe asymmetric information problems in emerging economies impedes efficient functioning of capital markets (Mishkin, 1997). Third, most of the private

sector companies in emerging markets do not have actively traded shares in stock exchanges and often privatizations are realized by block sales that keep them out of the capital markets. Moreover, a weak market, competition and regulation structure, frequent failures of markets, political interventions, unequal income distribution, high levels of unemployment, regional imbalances, and relations with richer countries all affect the relative efficiency of private sector in emerging economies and makes them different from developed economies.

Comprising theories about private-state ownership and privatization, it can be concluded that there is no consensus, especially in emerging economies, about the superiority of private or state ownership in the theoretical literature. Perhaps, much depends on "complex interactions between ownership, market structure, regulatory and political variables" (Vickers and Yarrow, 1991: 130). In order to see the actual impact of privatization on corporate performance, we turn to the empirical evidence.

2.2. Empirical evidence

One stream of the empirical literature has focused on the effects of privatization on the financial and operating performance of privatized firms. These studies can be classified into cross-sectional studies covering both developed and developing countries, as well as country studies of emerging and transition economies.

Cross-sectional studies generally conclude that privatization leads to corporate performance improvements, since there are statistically significant post-privatization improvements in profitability, output, operating efficiency, and dividend payment variables (Megginson, Nash and Van Randenborgh, 1994; Boubakri and Cosset, 1998; D'Souza and Megginson, 1999; D'Souza, Megginson and Nash, 2001)[1]. However, the methodology of these studies can be criticized, since these studies bear sample bias, by selecting firms sold by share offering. Firms privatized through share offering have to meet listing requirements of the stock exchanges, such as being large and profitable enterprises. Thus examining a narrower section of privatization cases where privatized enterprises have higher potential will lead to spurious results and sample bias. For example, in their study of developing countries Boubakri and Cosset (1998) include 14 Turkish companies in their sample space. However, these companies were among the most profitable and largest

[1] Most recent and thorough survey of empirical studies on privatization can be found in Megginson and Netter (2001).

privatized enterprises in Turkey[2]. On the other hand, more than 50% of the shares in three companies in this sample space (Arçelik, Migros, Tofaş) belonged to the private sector immediately before the sale of state shares. Moreover, the state has retained more than 90% of shares after privatization in three cases (Tüpraş, Petrol Ofisi and Petkim). Therefore, the results of this study cannot be generalized to the whole privatization population. The second important problem in these cross-sectional studies is trying to compare accounting information across different countries and at different time frames. This comparison may also lead to spurious findings.

Country studies based on the sample of privatization cases in developing countries mostly agree that privatization improves corporate performance. Examining data for all 218 non-financial privatizations that took place in Mexico between 1983 and 1991, La Porta and Lopez-de-Silanes (1999) find that the output of privatized firms increases by 54.3%, whereas the operating income margin increases by 24%. The gains in profitability is roughly decomposed as 10% percentage points due to higher product prices, 33 percentage points due to a transfer from laid-off workers, and residual 57 percentage points due to productivity gains. Studies on Brazil (Macedo, 2000), Malaysia (Galal *et al*., 1994; Sun and Tong, 2002), sub-Saharan Africa (Campbell-White and Bhatia, 1998), and Asian countries (Boubakri, Cosset, and Guedhami, 2004) suggest that privatization had a positive impact on firm performance, whereas a study on Egypt (Omran, 2004) did not find any significant performance improvements.

Djankov and Murrell (2000)[3], reviewing 125 empirical studies of transition economies, conclude that privatization is strongly associated with more enterprise restructuring, where enterprise restructuring is defined as changes that prepare a firm to survive and thrive in a competitive market. However, the authors find varying results for countries in Central and Eastern Europe including the Baltic States (CEE) and those of the former Soviet Union (FSU). The privatization effect is found statistically significant for CEE countries and statistically insignificant for FSU countries. This contradiction is explained by different privatization methods, institutional development level and policy approaches with respect to new entry and hard budget constraints.

---

[2] These cases include Adana Çimento, Arçelik, Bolu Çimento, Çukurova Elektrik, Çelik Halat, Ereğli Demir, Gima, Kepez Elektrik, Migros, Oysa Niğde Çimento, Petkim, Petrol Ofisi, Tofaş, Tüpraş.

[3] Another comprehensive review of privatization studies in transition economies can be found in Havrylyshyn and McGettigan (1999).

3. Research design

3.1. Sample and data

The first state-owned cement plants were established in Turkey following the formation of the Republic and many of them were mostly established in the East, South East and Central Anatolia regions in order to assist the development of less developed regions of Turkey. After World War II, the entrance of the private sector into the cement industry made the industry more dynamic. At the same time, state-owned cement plants were merged under the state conglomerate, Turkish Cement Industry (ÇISAN) whose name was later changed to ÇITOSAN. High-speed urbanization and massive infrastructure projects in the 1960s increased domestic demand considerably. By increasing production capacity, the domestic cement industry was only able to meet domestic demand completely by the 1970s. Starting from 1983, domestic demand continuously increased (excluding the periods of crisis) and plants tried to meet increasing demand by modernizing their facilities and increasing their capacities. Privatization in the Turkish cement industry began to be implemented in 1989 with the sale of five state-owned enterprises to Ciments Français. The privatization program covered public state shares in 33 state enterprises in the cement industry and the privatization process was finalized in 1998. Today, all of the 57 factories (39 of them are integrated facilities and 18 are grinding and packaging facilities) operating in the industry are private enterprises, and the industry also has foreign capital investments.

The analysis of the industrial breakdown of the completed privatizations in Turkey within 1986-1998 period (Table 1) shows that privatized companies in the cement industry constitute 21% of all completed privatizations in Turkey over the 1986-1998 period. The privatization proceeds from the cement industry companies equalled $1.043 million, which compromises 23% of all privatization revenues over 1986-1998.

This study is based on a database of financial statements of all privatized cement industry companies in Turkey except four companies—Sivas Çimento, Çorum Çimento, Çimhol and Karadeniz Çimento—whose financial statements pertaining to pre- and post-privatization phases were unavailable. One of the privatized companies, Gümüşhane Çimento stopped its operations after privatization. However, since this occurred outside of the three-year post-privatization window, I have included this case in the research sample. Summary statistics for aggregate, average, and median privatization deal size and total number of privatizations in the cement industry according to calendar years are reported in Table 2.

Table 1
Industrial Breakdown of the Completed Privatizations in Turkey, 1986-1998

Industry	Number of Privatizations	Percentage of Total (%)
Cement Industry	33	21 %
Automobiles, Machinery and Technology Industry	22	14 %
Food Industry	21	13 %
Mining and Metal Processing Industry	18	12 %
Agriculture	17	11 %
Financial Industry	14	9 %
Chemicals, Oil Products and Energy Industry	14	9 %
Trading	6	4 %
Transporting, Service and Construction	6	4 %
Other Industries	5	3 %
Total	156	100 %

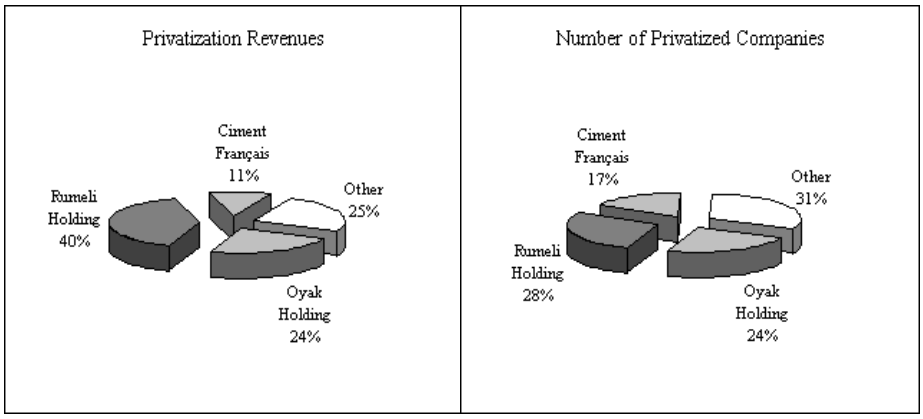
Table 2
Aggregate, Average, and Median Deal Size and Total Number of Privatizations according to Calendar Years in 29 Privatization Cases in the Turkish Cement Industry, 1989-1998.

Year	Total Number of Privatizations	Aggregate Deal Size (million dollars)	Average Deal Size (million dollars)	Median Deal Size (million dollars)
1989	5	116	23	25
1990	4	111	28	25
1991	2	70	35	35
1992	4	217	54	57
1993	4	167	42	44
1994	0	0	0	0
1995	1	53	53	53
1996	5	204	41	25
1997	3	77	26	18
1998	1	28	28	28
Total	29	1 043	36	28

The average deal size of the privatizations in the research sample is $36 million, whereas the median deal size is $28 million. These statistics suggest that the study is focused on medium-sized privatizations.

In the appendix, I report a detailed description of the basic sample, including the name of the buyer company, privatization year, government holdings before privatization, and the total size of privatization deals. The examination of privatization revenues in terms of privatization method shows that revenues from block sales constitute 84% of total revenues, whereas the remaining 16% of revenues are collected through public offerings. Figure 1 shows that three companies Rumeli Holding[4], Oyak Holding, and the foreign-owned Ciment Françaiz have bought out 20 companies (69%), and paid out 77% of total privatization revenues. Considering the fact that cement companies in Turkey have local monopoly power and holding companies have bought out nearby cement companies[5], it becomes apparent that privatization in the cement industry has served to create private regional cement monopolies in Turkey.

Figure 1
The Composition of Privatization Revenues and the Sample of Privatized Firms in terms of Buyer Companies.



[4] The state has implicitly retaken over the control of the cement companies sold to the Rumeli Holding through the Deposit Insurance Fund in the beginning of 2004. The reason for the takeover was the 7.5 trillion TL (nearly $ 5.5 billion) debt of the bankrupted Imar Bank owned by the Uzan family, owners of Rumeli Holding.

[5] For example, Ciments Français have bought out companies in Middle Anatolia and the Aegean region, while Rumeli Holding preferred cement factories in the Black Sea region and South-Eastern Anatolia. For further discussions, see Saygılı and Taymaz (1995).

In this study, I rely on several data sources in order to compile the financial statements database of privatized companies. The financial statements of companies privatized through public offerings are collected from the İstanbul Stock Exchange (ISE) and Capital Market Board of Turkey, whereas the financial statements of companies privatized through block sales are collected from the files of the Privatization Administration of the Prime Ministry and from company reports of privatized companies.

3.2. Performance measurement

In this study, my primary objective is to test whether there are any performance improvements after privatization. Private companies are trying to maximize their shareholders' wealth, which is equal to the present value of cash flows to shareholders (net income + non-cash expenditures). However, state ownership is more focused on the maximization of the net present value of total value added, which consists of wages, consumer surplus, interest cost, taxes, and net income. The inconsistencies in the objective functions of private and state companies may blur the outcomes of the privatization if it results in the transfer of wealth to shareholders from other stakeholders (labor, debtors, consumers and government). At the same time, private ownership may be focused on serving a limited and profitable market, which will leave other sectors unattended. This will reduce the total value added of privatized firms, although profitability will increase. Therefore to get consistent results I measure post-privatization performance improvements in terms of the performance criterion for both private and state-owned enterprises.

First, I investigate the changes in total value added after privatization. The total value added variable is measured by the value added on assets ratio (*VATA*), which is measured by wages plus earnings before interest, tax and depreciation (*EBIT*), indirect taxes and rent as a percentage of total assets. This variable represents the actual economic benefits generated by the assets. Any improvements or deteriorations in *VATA* can be traced to changes in two different variables; value added on the sales ratio (*VAS*) and asset turnover (*AT*), since the product of these two variables equals the *VATA* ratio.

Total value added on the assets ratio can be also decomposed into the sum of two different variables. The first variable is wages, interest cost, depreciation and tax divided by the total assets (*XVATA*), which represents returns to stakeholders other than that generated by total assets. The second variable is net income divided by total assets (*ROA*), which represents the return to shareholders generated by total assets.

The combination of *ROA* with financial leverage ratio (*FL*), which is the ratio of total debts to total assets gives return on equity (*ROE*)[6], gives the performance criterion for private companies and represents benefits to shareholders generated by their equity. Any increase in the return on equity may come from two sources: an increase in *ROA* or an increase in *FL*.

If there are changes in *ROA* in the post-privatization period, it can arise from two sources. These include changes in net income margins and greater asset productivity. The net income margin (*ROS*), which is the net income on sales, measures net income generated per sales dollar. Asset turnover (*AT*) measures the sales dollars generated from each dollar of investment in assets. The variables are defined so that their product equals the *ROA*.

Operating efficiency variables primarily deal with the increased use of labor to produce more output. Value added efficiency measured by value added on total employment (*VALEFF*) and net income efficiency measured by net income on total employment (*NIEFF*) provide a measure to test the improvements in operating efficiency. I have adjusted the value added and net income figures for inflation using the Wholesale Prices Index (1987=100) computed by the State Institute of Statistics.

The benefits of the privatizations may stem from the lowered labor costs. Because I am unable to obtain sufficient data on wages directly, I examine the number of employers (*EMP*) in order to analyze changes in labor costs in the years surrounding the privatization.

Net income can also be increased by focusing on short-term performance improvements at the expense of the long-term viability of the firm. To assess whether the privatized firms focus on short-term performance improvements at the expense of long-term investments, I examine their capital investments. Two empirical proxies are employed to measure capital investments; net fixed asset changes to average net sales (*FAS*) and net fixed asset changes to average total assets (*FATA*). Focusing on the net fixed asset changes instead of the net fixed asset level gives a better idea about the privatized firm's investments behavior.

3.3. Research design

I use two different approaches to test the effects of privatization on the performance of firms. The first approach exploits the unadjusted variable data for privatized companies over the pre- and post-privatization windows. I first compute empirical proxies for every company for a six-year period: three years before through three years

[6] ROE can be expressed in terms of ROA and FL using the following formula:
ROE = ROA/(1 - FL)

after privatization. I then calculate the median of each variable for each firm over the pre- and post-privatization windows (pre-privatization = years –3 to –1; postprivatization = years +1 to +3). Year 0, the year of the privatization, is excluded from the analysis since the variable values for this year are not comparable.

Having computed unadjusted pre- and post-privatization medians, I use the nonparametric *Wilcoxon Signed-Rank Test* as my principal method of testing for significant changes in the variable values. Since financial ratios do not follow a normal distribution, the interpretation of the findings of the parametric analysis becomes difficult. This leads to the selection of nonparametric tests as a suitable method for testing the post-privatization performance improvements. I base my 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, I 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 $p=0.5$).

The second approach exploits industry-adjusted variable values. If I focus exclusively upon the ownership variable and fail to take proper account of the effects on performance of changes in market structure, regulation, and other relevant economic factors, it will be misleading to state that performance improvements or deteriorations are due to the privatization. Economic factors have much effect on the post-privatization performance of the privatized firms and some of the difference between the pre-privatization and post-privatization performance could be due to the changes in economy-wide and industry factors, prior to a continuation of firm-specific performance before the privatization. Hence, I use industry-adjusted performance of the privatized firms over the pre- and post-privatization windows as my primary benchmark to evaluate post-privatization performance.

Industry data are collected from the company accounts database compiled by the İstanbul Chamber of Industry. This database provides industry data starting from 1980 (the oldest industrial dataset in Turkey) and includes precious data on total value added that is not reported elsewhere. One of the main drawbacks of this database is the lack of net income data. Therefore, I use pre-tax income data as a substitute and calculate unadjusted variable values also using pre-tax income. As will be shown in the empirical findings, ratios calculated using pre-tax income and net income render the same results. Industry-adjusted performance is calculated by subtracting the industry average value calculated from the aggregated accounts of private firms operating in the same industry from the sample firm value for each year and firm. Here again, Wilcoxon

Signed-Rank Test and the (binomial) proportion test are used for testing for significant changes in the variable values.

3.4. Subsample analysis

Another important question is how the privatization method (block sales or share offerings), the degree of government control prior to the privatization and ownership structure (foreign or domestic) affect the outcomes of privatization.

In addition to analyzing the full sample of privatized companies in order to answer this question, I perform similar tests for subsamples. The number and percentage distribution of the subsamples are provided in Table 3.

1. Privatization Method Subsamples: The choice of privatization method simply depends on where the government gets the best price. However, public offering is sometimes viewed as a tool for promoting local stock exchanges especially in emerging economies such as Turkey. Privatization through public offering also promotes corporate governance structure, which creates hopes for better post-privatization performance. Moreover, as reported in Megginson *et al*. (2004) larger and more profitable state-owned enterprises are more likely to be privatized through public offering. These privatized enterprises have higher

Table 3
Distribution of Subsamples

	BUYER COMPANY				
	Oyak Holding	Rumeli Holding	Ciment Français	Other	Total
Privatization Method					
Block Sales Only	2	8	4	8	22 (76 %)
Block Sales and Public Offerings	5	0	1	1	7 (24 %)
Degree of Government Ownership Prior to Privatization					
100 %	1	6	0	7	14 (48 %)
90% - 100 %	2	2	5	1	10 (35 %)
Less than 50 %	4	0	0	1	5 (17 %)
Ownership Type					
Foreign	0	0	5	1	6 (21 %)
Domestic	7	8	0	8	23 (79 %)

Note: This table details the distribution of subsamples defined in the body part of the text.

potential to achieve better post-privatization financial and operating performance. The sample space of this study includes 7 companies (24%) privatized through public offering and block sales together, whereas Oyak Holding has bought out 5 of them. The remaining 21 companies (76%) were privatized through block sales only.

2. Government Ownership Degree Prior to the Privatization Subsamples: The degree of government shareholding prior to privatization is frequently cited as an important factor in the ultimate success of the privatization. Gradual privatizations are assumed to render better performance improvements, since the privatized company gradually absorbs the shocks of operating under a completely different ownership structure. The analysis of government shareholding prior to the privatization has identified three significant patterns in our research sample. Government has owned either more than 90% or less than 50% of the shares in privatized company, while the former can be divided into 100% and the range of 90-100% categories. Sample analysis shows that 14 companies (48%) belong to the 100% subset, 10 companies (35%) to the 90-100% subset and only 5 companies (17%) to the less than 50% subset.

3. Ownership Type Subsamples: With the abolishment of protectionism-based economic policies, the bidding of foreign-owned enterprises for privatized companies were welcomed by governments who hoped to get foreign investment flows, although doubts over their incentive structures remained. Usually, foreign-owned companies are more inclined to maximize their profitability rather than the total value added. But the existence of informational asymmetries may harm their performance worse than domestic-owned firms. In the empirical literature, a number of studies have addressed the relationship between performance and the presence of foreign owners. Using 118 privatized companies from 29 countries, D'Souza, Megginson, and Nash (2001) report that foreign ownership is associated with greater efficiency gains, whereas Boubakri, Cosset, and Guedhami (2001) confirm this result for the sample of 189 privatized companies in 32 emerging economies. Hingorani, Lehn and Makhija (1997) report that share prices are positively correlated with foreign ownership using the sample of 988 newly-privatized Czech firms and conclude that foreign ownership mitigates agency problems through incentives that align the interests of managers and investors. Similarly, Claessens and Djankov (1999) report the positive correlation between profitability and existence of foreign investors using a sample of 706 privatized Czech firms. In order to test the effects of foreign ownership on the financial and operating performance of privatized firms, I divide the research sample into two subsets based on the ownership type. Sample analysis show that 23 (79%)

out of 29 privatized companies are bought by domestic companies, whereas remaining 6 companies (21%) are bought by foreign companies.

4. Empirical results

In this section I present and discuss my empirical results for unadjusted data (Table 4) and industry-adjusted data (Table 5).

4.1. Changes in value added

Figure 2 shows the interquartile range and median value added on the assets ratio (VATA) for 7 years beginning with the third fiscal year before the privatization (-3) through the third fiscal year after the privatization (+3). An arrow marks the interquartile range and a square highlights the median. *VATA* declined over the years and reached its minimum level in year +3. Another striking finding is that the interquartile range widened in that year. Although median *VATA* over the pre-privatization window fluctuated between 0.66 and 0.69, a continuous decline was observed for the post-privatization years decreasing from 0.66 to 0.46 between years +1 and +3.

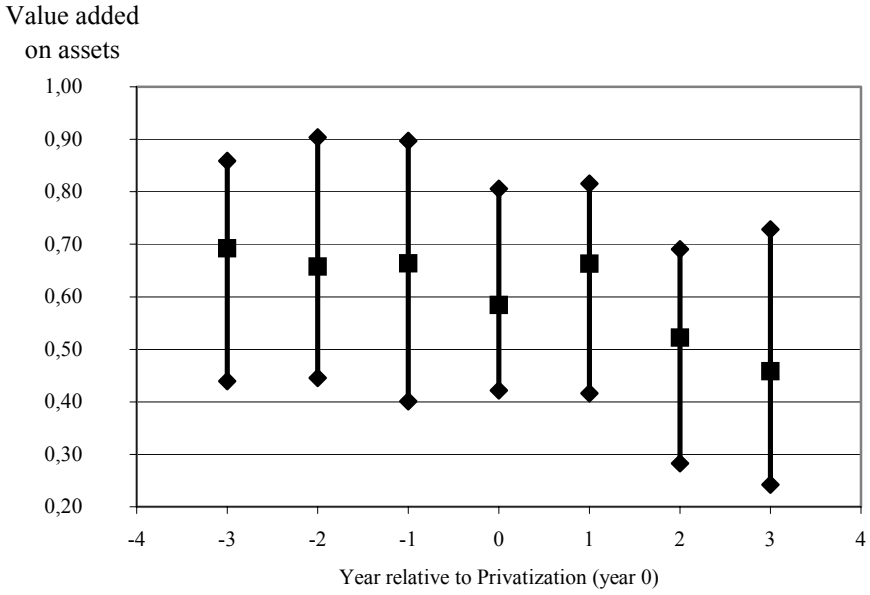
The examination of unadjusted pre- and post-privatization values (Table 4) shows that *VATA* decreases on median 30 percentage points after privatization and the difference between pre- and post-privatization *VATA* values are statistically significant at the 5% level. 80% of all firms experience decreasing *VATA*, and this statistic is also statistically significant at the 5% level.

To control for variation in *VATA*—that is, to see whether *VATA* decreases can be attributed to the industrial trend—I use industry-adjusted values (Table 5). I find that pre-privatizion *VATA* is on average (median) 25 percentage points (28 percentage points) higher than private companies that belong to the same industry. However, the post-privatization median *VATA* value nearly reaches the industry median, declining on average (median) 19 percentage points (20 percentage points). This means that 19% of the post-privatization decline can be attributed to the privatization, whereas the remaining 11% may be attributed to the industrial trend. The post-privatization change in industry-adjusted *VATA* values is statistically significant at the 5% level again.

4.2. Changes in value added components

Declines in the *VATA* ratio may stem from the decreasing values of value added on sales (*VAS*) or asset turnover (*AT*) ratios. The product of these two variables equals the *VATA* ratio. My results in Table 4 and Table 5 suggest that both of the unadjusted and adjusted measures of the

Figure 2
Unadjusted Value Added on Assets Ratio of Privatized Firms
in the Turkish Cement Industry



Notes: Value added on assets is measured by wages plus earnings before interest, tax and depreciation (EBIT), indirect taxes and rent as a percentage of total assets. The median value added on assets is described by a square and interquartile range is represented by a line segment. The year of privatization is denoted as year 0.

VAS ratio do not experience significant changes. The unadjusted median of *VAS* decreases by 1%, while industry-adjusted median measure of *VAS* increases by 2%; both results are not statistically significant at conventional levels. Apparently, the decline in the *VATA* ratio stems from decreasing asset turnover. Unadjusted AT ratio decreases on average (median) 53 percentage points (44 percentage points) after privatization, and 86% of all firms experience declines in asset productivity. Both statistics are statistically significant at the 1% level. Industry-adjusted AT ratio shows similar trend, declining 54 percentage points (50 percentage points) on average (median) and 90% of all privatized firms experience declines in asset turnover. Both statistics are again statistically significant at the 1% level.

The *VATA* ratio can be alternatively decomposed into the sum of two variables; return on assets (*ROA*) and value-added less net income on assets (*XVATA*) ratios. The examination of unadjusted *XVATA* ratio

Table 4

Post-privatization Performance Analysis: Summary of Results using Unadjusted Measures

Variables	N	Pre-privatization Mean (Median)	Pre-privatization Standard Deviation	Post-privatization Mean (Median)	Post-privatization Standard Deviation	Mean Change (Median)	Z-Statistics for Difference in Medians (Pre- and post-privatization)	Percentage of Firms Experiencing Post- privatization Increase	Z-Statistics for Significance of Proportion Change
Value Added									
Value Added on Assets (VATA)	15	0.70 (0.73)	0.29	0.52 (0.43)	0.30	-0.18 (-0.30)	2.39**	0.20	2.32**
Value Added on Sales (VAS)	16	0.43 (0.42)	0.14	0.38 (0.43)	0.27	-0.05 (-0.01)	0.98	0.44	0.48
Value Added Components									
Value Added less Net Income on Assets (XVATA)	15	0.50 (0.43)	0.28	0.40 (0.32)	0.23	-0.10 (-0.11)	1.19	0.40	0.77
Return on Assets (ROA)	29	0.15 (0.11)	0.19	0.05 (0.03)	0.18	-0.10 (-0.08)	2.35**	0.31	2.04**
Pretax Return on Assets (PTROA)	29	0.23 (0.24)	0.24	0.09 (0.05)	0.21	-0.14 (-0.19)	2.52**	0.34	1.72*
ROE and Financial Leverage									
Return on Equity (ROE)	29	0.30 (0.30)	0.41	-0.06 (0.18)	1.08	-0.36 (-0.12)	1.70*	0.38	1.29
Pretax Return on Equity (PTROE)	29	0.46 (0.46)	0.50	0.02 (0.21)	1.15	-0.44 (-0.25)	2.02**	0.38	1.29
Financial Leverage (FL)	29	0.41 (0.37)	0.22	0.61 (0.61)	0.29	0.20 (0.24)	2.89***	0.79	3.12***
ROA Components									
Return on Sales (ROS)	29	0.09 (0.08)	0.15	0.10 (0.03)	1.46	0.01 (-0.05)	1.31	0.34	1.72*
Pretax Return on Sales (PTROS)	29	0.14 (0.15)	0.17	0.13 (0.05)	1.46	-0.01 (-0.10)	1.24	0.38	1.29
Asset Turnover (AT)	29	1.45 (1.38)	0.61	0.92 (0.94)	0.60	-0.53 (-0.44)	4.16***	0.14	3.88***

Notes: *, **, *** indicates significance at 10, 5, and 1% significance levels respectively using a two-tailed test.

Table 4 (Continued)

Post-privatization Performance Analysis: Summary of Results using Unadjusted Measures

Variables	N	Pre-privatization Mean (Median)	Pre-privatization Standard Deviation	Post-privatization Mean (Median)	Post-privatization Standard Deviation	Mean Change (Median)	Z-Statistics for Difference in Medians (Pre- and post-privatization)	Percentage of Firms Experiencing Post-privatization Increase	Z-Statistics for Significance of Proportion Change
Operating Efficiency									
Value Added Efficiency (VALEFF)	17	14.79	3.91	22.60	18.25	7.81	1.59	0.71	1.83*
x 100 million (in 1987 prices)		(15.10)		(20.33)		(5.23)			
Net Income Efficiency (NIEFF)	28	3.14	4.65	1.90	13.08	-1.24	0.64	0.39	1.16
x 100 million (in 1987 prices)		(2.09)		(0.79)		(-1.3)			
Pretax Income Efficiency (PTNIEFF)	28	4.82	5.62	3.59	15.20	-1.23	0.68	0.39	1.16
x 100 million (in 1987 prices)		(3.75)		(0.89)		(-2.86)			
Total Employment									
Number of Employee (*EMP*)	28	329	136	203	102	-126	4.62***	0.00	5.29***
		(315)		(190)		(-125)			
Capital Investment									
Net Fixed Asset Changes to Average	25	0.15	0.21	0.12	0.48	-0.03	0.69	0.60	1.00
Net Sales (FAS)		(0.13)		(0.12)		(-0.01)			
Net Fixed Assets Changes to Average	25	0.18	0.16	0.16	0.18	-0.02	0.49	0.48	0.20
Total Assets (FATA)		(0.20)		(0.15)		(-0.05)			

Notes: *, **, *** indicates significance at 10, 5, and 1% significance levels respectively using a two-tailed test.

This table presents empirical results for our full sample of privatizations. For each empirical proxy we give the number of usable observation, the mean and median values, standard deviation of the proxy for the three-year periods prior and subsequent to privatization, the mean and median change in the proxy's value for postprivatization versus preprivatization period, and a test of significance of the change in median values. The final two columns detail the percentage of firms whose proxy values increase postprivatization, as well as a test of significance of this change.

Table 5

Post-privatization Performance Analysis: Summary of Results using Industry-Adjusted Measures
(Industry Benchmark is based on Industrial Financial Statements Database of İstanbul Chamber of Industry)

Variables	N	Pre-privatization Mean (Median)	Pre-privatization Standard Deviation	Post-privatization Mean (Median)	Post-privatization Standard Deviation	Mean Change (Median)	Z-Statistics for Difference in Medians (Pre- and post-privatization)	Percentage of Firms Experiencing Post-privatization Increase	Z-Statistics for Significance of Proportion Change
Value Added									
Value Added on Assets (VATA)	15	0.25	0.27	0.06	0.29	-0.19	2.16**	0.27	1.78*
		(0.28)		(0.08)		(-0.20)			
Value Added on Sales (VAS)	16	0.03	0.11	-0.02	0.27	-0.05	0.16	0.63	1.04
		(0.00)		(0.02)		(0.02)			
Value Added Components									
Value Added less Pretax Income on Assets (PXVATA)	15	0.17	0.26	0.09	0.22	-0.08	1.08	0.40	0.77
		(0.11)		(0.03)		(-0.08)			
Pretax Return on Assets (PTROA)	29	0.08	0.24	-0.03	0.22	-0.11	1.96**	0.38	1.29
		(0.08)		(-0.06)		(-0.14)			
ROE and Financial Leverage									
Pretax Return on Equity (PTROE)	29	0.03	0.45	-0.26	1.13	-0.29	0.75	0.45	0.53
		(-0.01)		(-0.07)		(-0.06)			
Financial Leverage (FL)	29	-0.19	0.21	0.07	0.33	0.26	3.45***	0.76	2.80***
		(-0.21)		(0.03)		(0.24)			
ROA Components									
Pretax Return on Sales (PTROS)	29	0.00	0.17	0.01	1.46	0.01	1.22	0.38	1.29
		(0.00)		(-0.06)		(-0.06)			
Asset Turnover (AT)	29	0.36	0.61	-0.18	0.57	-0.54	4.14***	0.10	4.31***
		(0.31)		(-0.19)		(-0.50)			

Notes: *, **, *** indicates significance at 10, 5, and 1% significance levels respectively using two-tailed test.

Table 5 (continued)

Post-privatization Performance Analysis: Summary of Results using Industry-Adjusted Measures
(Industry Benchmark is based on Industrial Financial Statements Database of İstanbul Chamber of Industry)

Variables	N	Pre-privatization Mean (Median)	Pre-privatization Standard Deviation	Post-privatization Mean (Median)	Post-privatization Standard Deviation	Mean Change (Median)	Z-Statistics for Difference in Medians (Pre- and post-privatization)	Percentage of Firms Experiencing Post-privatization Increase	Z-Statistics for Significance of Proportion Change
Operating Efficiency									
Value Added Efficiency (VALEFF)	17	-3.00	8.04	-1.50	18.86	1.50	0.45	0.53	0.26
x 100 million (in 1987 prices)		(-1.25)		(-0.40)		(0.85)			
Pretax Income Efficiency (PTNIEFF)	28	-2.29	7.24	-3.89	15.70	-1.60	0.34	0.50	0.00
x 100 million (in 1987 prices)		(-2.02)		(-4.65)		(-2.63)			
Total Employment									
Number of Employee (*EMP*)	28	-424	151	-487	127	-63	2.19**	0.32	1.90*
		(-473)		(-494)		(-21)			
Capital Investment									
Net Fixed Asset Changes to Average Net Sales (FAS)	25	-0.30	0.21	-0.53	1.06	-0.23	0.66	0.44	0.60
		(-0.30)		(-0.30)		(0.00)			
Net Fixed Assets Changes to Average Total Assets (FATA)	25	-0.32	0.16	-0.49	0.62	-0.17	1.20	0.40	1.00
		(-0.32)		(-0.29)		(0.03)			

Notes: *, **, *** indicates significance at 10, 5, and 1% significance levels respectively using a two-tailed test.
This table presents empirical results for the full sample of privatizations. For each empirical proxy we give the number of usable observations, the mean and median values, standard deviation of the proxy for the three-year periods prior and subsequent to privatization, the mean and median change in the proxy's value for post-privatization versus pre-privatization period, and a test of significance of the change in median values. The final two columns detail the percentage of firms whose proxy values increase post-privatization, as well as a test of significance of this change.

shows that there are on average (median) 10 percentage points (11 percentage points) decline after privatization, and 60 percent of privatized companies experience declining variable values. However, these statistics are not statistically significant at conventional levels. It appears that a decline in the *VATA* ratio after privatization stems from the decline in the *ROA* ratio. Unadjusted *ROA* ratio decrease on average (median) 10 percentage points (8 percentage points) and the percentage of privatized companies with decreasing unadjusted *ROA* ratio is 69%. Both statistics are statistically significant at the 5% level.

Since net income data is not reported in the industrial dataset of the İstanbul Chamber of Industry, I calculate the *XVATA* and *ROA* ratios by replacing net income with pretax income, which renders similar results. The industry-adjusted *XVATA* ratio declines on average (median) 8 percentage points (8 percentage points), but these changes are not statistically significant at conventional levels. However, the decline in the industry-adjusted *ROA* ratio is statistically significant at the 5% level: it decreases on average (median) 11 percentage points (14 percentage points).

4.3. Changes in return on equity, financial leverage and return on sales

The most likely result of the privatization is an increase in the profitability to shareholders. However, it appears that privatization in the Turkish Cement industry has resulted in the deterioration of profitability to shareholders. The median decline in post-privatization unadjusted *ROE* is 12%; and 69% of all privatized companies experience deteriorating *ROE* values. This decline is statistically significant at the 5% significance level. Similarly, pre-tax return on equity (*PTROE*) has a median decline of 25 percentage points, which is also statistically significant at the 5% level. The median decline in post-privatization industry-adjusted pre-tax *ROE* of privatized companies is 6 percentage points, which is statistically significant at the 5% level. This shows that 6 percentage points of the post-privatization deterioration in pre-tax *ROE* is attributed to the privatization and 19 percentage points of post-privatization deterioration is attributed to the industrial trend.

The analysis of the question of whether financial leverage contributes to the decline in *ROE*, shows that in contrary, unadjusted financial leverage (*FL*) ratio increases on average (median) by 20 percentage points (24 percentage points) after the privatization, and 79% of all privatized companies experience increasing financial leverage. The change in the financial leverage ratio is statistically significant at the 1% level. Apparently, increased usage of the financial leverage implies the exploitation of redundant debt capacity, since industry-adjusted pre-

privatization median of financial leverage ratio is minus 21%, and it has increased to the 3% post-privatization. The Wilcoxon and (binomial) proportion test statistics for the changes in the industry-adjusted variable values are statistically significant at the 1% level, showing that privatized firms do not follow the industrial trend and that the increase in the financial leverage ratio is due to the privatization. Therefore, it can be concluded that the main reason for the declining return on equity ratio is the declining return on assets compensating for the effects of increasing financial leverage.

Besides the asset turnover ratio (*AT*), the second possible source of the deterioration in *ROA* variable could be declining return on sales (*ROS*) ratio. However, the analysis of unadjusted and industry-adjusted *ROS* values did not detect any significant patterns. Post-privatization unadjusted median *ROS* value decreases by 5 percentage points, while industry-adjusted median *ROS* value decreases by 6 percentage points. However, these statistics are not statistically significant at conventional levels.

4.4. Changes in employment and operating efficiency

One of the most expected consequences of privatization is a decline in employment. The average (median) number of employees over the pre-privatization window was 329 (315) employees; this declined to the average (median) level of 203 (190) employees in the post-privatization period. All of the privatized companies decreased their employment. The Wilcoxon and (binomial) proportion test statistics are significant at the 1% level. Industry-adjusted measures of the number of employees also show statistically significant changes during post-privatization. The median decrease in the number of employees after privatization is 21, and 68% of all privatized companies have experienced a decline in industry-adjusted employee numbers.

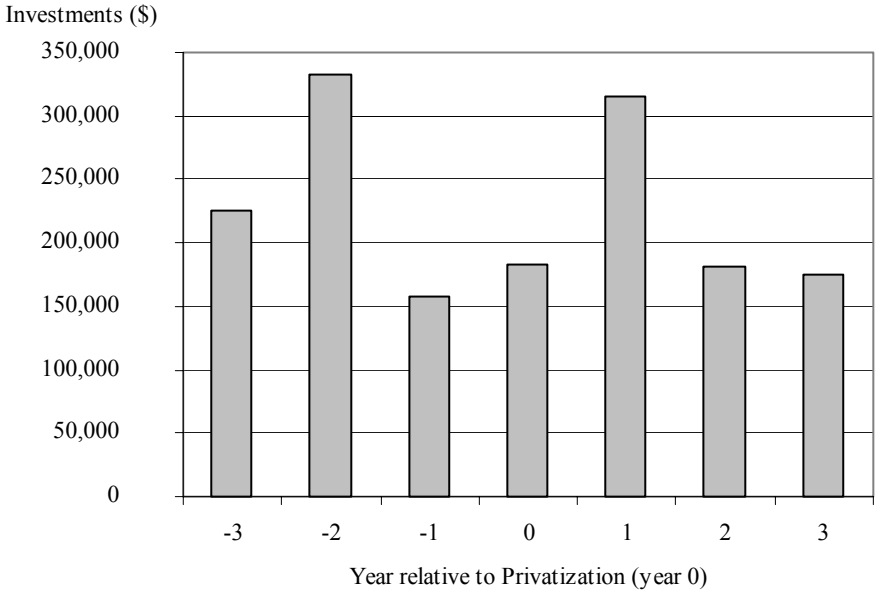
The operating efficiency of privatized enterprises is expected to increase after privatization because of an increase in output combined with employment contraction. My research findings do not confirm this prediction: value added and net income efficiency do not significantly increase during post-privatization. Unadjusted and industry-adjusted total value added per employee (*VAEFF*), net income per employee (*NIEFF*), and pre-tax net income per employee (*PTNIEFF*) do not show statistically significant changes during post-privatization. These results suggest contraction in the scale of operation of privatized firms following privatization, since operating efficiency has not changed, while total employment, value added and net income have decreased.

4.5. Changes in capital investment

Capital investment intensity is measured by net fixed asset changes to average net sales (*FAS*) and net fixed asset changes to average total assets (*FATA*). The unadjusted post-privatization *FAS* values of privatized firms decrease on average (median) by 3% (1%). At the same time, unadjusted *FATA* decreases on average (median) by 2 percentage (5 percentage) points. These changes are not statistically significant at conventional levels according to the Wilcoxon and binomial tests.

The analysis of the total investments (in millions US$) of privatized cement industry firms reported in Figure 3 also provide support for our research findings. Neither large investments nor investment curtails are observed before and after privatization. The value of pre-privatization median investments was 433086 US$, which has increased to the post-privatization median value of 501723 US$. These findings also confirm

Figure 3
Unadjusted Median Value of Total Investments (in US $) of Privatized Firms in Turkish Cement Industry



Notes: The median value of investments is described by bar. The year of privatization is denoted as year 0. Total investments value statistics for each firm and year are collected from the statistics of State Privatization Office. Due to the data unavailability, I report the data of 22 privatization companies here.

that post-privatization performance deteriorations were not caused by large capital investments.

5. Subsample analyses

In this section, I present and discuss my empirical results for the subsamples of privatizations defined by the privatization method (Table 6), government ownership degree prior to the privatization (Table 7) and ownership structure following privatization (Table 8)[7].

5.1. Privatization method subsamples

The research findings (Table 6) show that firms privatized by public offering and block sales show better industry-adjusted financial and operating performance than firms privatized by block sales only. The changes in all financial and operating performance variables measuring value added, profitability and operating efficiency are more favorable in the subset of firms privatized by public offering and block sales together. Comparatively, these privatized companies rely less on the financial leverage, realize higher capital investments and reduce their employment in higher rate than their counterparts privatized by block sales only.

Two different explanations could be provided for these findings. The first is that a stronger corporate governance context in the companies privatized through public offering stimulates their financial and operating performance. The second explanation is concerned with the pre-privatization characteristics of privatized firms. Since firms privatized through share offering have to be large and profitable enterprises, they have a higher potential in terms of performance improvements. Our empirical findings in favor of public offerings could simply be the result of the realization of this higher potential.

5.2. Government ownership degree prior to privatization subsamples

The analysis of subsamples based on the government ownership degree prior to privatization (Table 7) pinpoints differences among subsamples. Privatized companies in which the government holds 100% of shares prior to the privatization have shown worse industry-adjusted performance in terms of value added, operating efficiency and have curtailed their capital investments to a higher degree than the privatized companies belonging to the remaining two subsamples. This subsample has also achieved the lowest rate of employment contraction and the highest rate of financial leverage increase.

---

[7] Tables 6 through 8 are provided at the end of the article.

Privatized companies in which government hold less than 50% of shares prior to the privatization have improved their industry-adjusted performance in terms of profitability and operating efficiency following privatization. These companies increased their capital investments and all of them decreased their total employment. Another interesting finding is the lowest standard deviation of all research variables are in this subsample, which indicates more homogeneous performance changes. Privatized companies in which the government holds between 90 and 100% of shares have achieved the lowest rate of contraction in value added, though the highest rate of contraction in profitability.

The empirical findings show that gradual privatization offers a better perspective in terms of financial and operating performance. Companies used to operating under partial private ownership have been able to prevent significant performance deteriorations after privatization. However, companies in which government shares have dropped from 100% to zero had the difficulty of absorbing the shock of operating under a different ownership structure and experienced significant performance deterioration.

5.3. Ownership type subsamples

Subsample analyses based on foreign versus domestic ownership (Table 8) detect interesting patterns. Foreign-owned privatized firms show better industry-adjusted performance in terms of value added, but worse performance in terms of profitability and operating efficiency than domestic-owned firms. Foreign-owned privatized firms increased their financial leverage and curtailed total employment considerably. The post-privatization capital investments of foreign-owned privatized firms are higher than for domestic-owned privatized firms.

These findings are in contradiction with previous empirical studies (D'Souza, Megginson, and Nash, 2001; Boubakri, Cosset, and Guedhami, 2001), which report that foreign ownership is associated with greater efficiency gains. Perhaps, the existence of informational asymmetries harmed their post-privatization performance more than domestic-owned privatized firms.

6. Conclusion and discussion

The empirical analysis of post-privatization performance of privatized firms in the Turkish Cement industry does not provide support to the "higher internal efficiency of privately owned firms" hypothesis when the performance criteria for both state and private enterprises are considered, and suggest that privatization has not resulted in efficiency increases in the Turkish Cement industry. Privatization was associated

with a declining value added and shareholders' profitability. A decline in the value added and shareholders' profitability were mainly caused by the decrease in the return on assets. Financial leverage of the privatized firms increased significantly, but this increase did not offset the decrease in the return on assets. The decline in the return on assets was traced to declining asset productivity. Declining asset productivity was not caused by increased capital investment, since capital investment ratios did not increase after privatization. Privatization did not result in significant improvements in operating efficiency, whereas significant contraction in the employment was observed. These results are not consistent with previous cross-sectional privatization studies and a number of country studies that report significant performance improvements after privatization.

Subsample analysis has shown that companies privatized through public offering showed better financial and operating performance following privatization. This can be caused by either a stronger corporate governance context that existed for these firms or their better pre-privatization financial and operating performance characteristics. Moreover, the degree of government control is found to be an important factor affecting post-privatization performance. Privatized companies in which the government holds less than 50% of shares prior to the privatization experienced improved profitability and operating efficiency following privatization, which suggests that gradual privatization offers better perspectives. Contrary to the findings of the empirical studies in the literature, domestic-owned privatized companies had higher operating efficiency and profitability than foreign-owned privatized companies.

The results of this study complement the findings of Saygılı and Taymaz (1995, 2001) who find that privatization in the Turkish cement industry did not have a significant impact on the technical efficiency of privatized enterprises. Their study analyzed output, capacity, capital stock, energy, input, and employment variables using stochastic production frontier approach. My study examines the financial and operating performance variables of the privatized cement industry companies and reaches even more negative conclusions: the financial and operating performance of the privatized companies in Turkish Cement industry deteriorated after privatization.

A number of explanations could be provided as to why the outcome of privatization in the Turkish Cement Industry turned out to have negative outcomes. The first explanation could be based on the market competition structure arguments. Since cement companies in Turkey have local monopoly power and holding companies have bought out nearby cement companies, privatization in the cement industry have served to create private regional cement monopolies in Turkey. As shown in the

theoretical literature, private monopolies have incentives to cut down output and increase prices above the socially optimal level. The existence of market poor regulation practices in the case of the Turkish Cement Industry could have contributed to a reduction of welfare as a result of privatization.

The second explanation could be based on the corporate governance argument. The weak corporate governance structure in the Turkish Cement Industry may have distorted incentives in the private sector. As the results of the subsample studies has shown, under a stronger corporate governance context the financial and operating performance of privatized firms have improved. However, a weaker corporate governance structure prevalent for the majority of the firms in Turkish Cement Industry has led to deteriorations in performance.

Last but not least, I should mention some research constraints. There is no doubt that this study would be improved by using wider pre- and post-privatization windows. The use of unadjusted financial statement data, lack of the control for some of the variables and smaller sample size in the subsample studies should be considered to be the constraints of the present study.

Table 6

Post-privatization Performance Analysis: Summary of Results from Tests of Predictions for the Privatization Method Subsamples using Industry-Adjusted Measures

Variables	*N*	Pre-privatization Mean (Median)	Pre-privatization Standard Deviation	Post-privatization Mean (Median)	Post-privatization Standard Deviation	Mean Change (Median)	Z-Statistics for Difference in Medians (Pre- and post-privatization)	Percentage of Firms Experiencing Post-privatization Increase	Z-Statistics for Significance of Proportion Change
Value Added									
Value Added on Assets (VATA)									
Block Sales Only	9	0.21	0.31	-0.04	0.21	-0.25	2.07**	0.22	1.67**
		(0.22)		(-0.12)		(-0.34)			
Public Offering and Block Sales	6	0.31	0.20	0.21	0.33	-0.10	0.94	0.33	0.82
		(0.29)		(0.20)		(-0.09)			
Value Added on Sales (VAS)									
Block Sales Only	10	0.00	0.11	-0.14	0.27	-0.13	1.17	0.40	0.63
		(-0.02)		(-0.09)		(-0.07)			
Public Offering and Block Sales	6	0.07	0.10	0.17	0.11	0.10	2.20**	1.00	2.45***
		(0.05)		(0.16)		(0.11)			
Value Added Components									
Value Added less Pretax Income on Assets (PXVATA)									
Block Sales Only	9	0.21	0.27	0.09	0.14	-0.11	1.24	0.33	1.00
		(0.15)		(0.04)		(-0.11)			
Public Offering and Block Sales	6	0.10	0.27	0.08	0.32	-0.02	0.31	0.50	0.00
		(0.03)		(-0.02)		(-0.05)			
Pretax Return on Assets (PTROA)									
Block Sales Only	22	0.02	0.23	-0.12	0.17	-0.14	1.90*	0.36	1.28*
		(-0.01)		(-0.10)		(-0.09)			
Public Offering and Block Sales	7	0.28	0.11	0.23	0.15	-0.05	0.51	0.43	0.38
		(0.24)		(0.26)		(0.02)			

Notes: *, **, *** indicates significance at 10, 5, and 1% significance levels respectively using a two-tailed test.

Table 6 (continued)

Post-privatization Performance Analysis: Summary of Results from Tests of Predictions for the Privatization Method Subsamples using Industry-Adjusted Measures

Variables	N	Pre-privatization Mean (Median)	Pre-privatization Standard Deviation	Post-privatization Mean (Median)	Post-privatization Standard Deviation	Mean Change (Median)	Z-Statistics for Difference in Medians (Pre- and post-privatization)	Percentage of Firms Experiencing Post-privatization Increase	Z-Statistics for Significance of Proportion Change
ROE and Financial Leverage									
Pretax Return on Equity (PTROE)									
Block Sales Only	22	-0.03	0.48	-0.42	1.26	-0.39	0.96	0.45	0.43
		(-0.05)		(-0.15)		(-0.10)			
Public Offering and Block Sales	7	0.23	0.25	0.25	0.20	0.02	0.17	0.43	0.38
		(0.21)		(0.31)		(0.10)			
Financial Leverage (FL)									
Block Sales Only	22	-0.14	0.19	0.15	0.33	0.30	3.13***	0.82	2.98***
		(-0.21)		(0.12)		(0.33)			
Public Offering and Block Sales	7	-0.33	0.21	-0.19	0.16	0.14	1.35	0.57	0.38
		(-0.26)		(-0.23)		(0.02)			
ROA Components									
Pretax Return on Sales (PTROS)									
Block Sales Only	22	-0.04	0.17	-0.05	1.68	0.00	1.48	0.32	1.71**
		(-0.07)		(-0.11)		(-0.05)			
Public Offering and Block Sales	7	0.14	0.09	0.20	0.15	0.06	1.01	0.57	0.38
		(0.11)		(0.20)		(0.10)			
Asset Turnover (AT)									
Block Sales Only	22	0.31	0.64	-0.24	0.52	-0.55	3.49***	0.14	3.41***
		(0.29)		(-0.23)		(-0.52)			
Public Offering and Block Sales	7	0.52	0.50	0.03	0.71	-0.48	2.37**	0.00	2.65***
		(0.31)		(-0.09)		(-0.40)			
Operating Efficiency									
Value Added Efficiency (VALEFF) x 100 million (in 1987 prices)									
Block Sales Only	11	-5.71	8.57	-9.55	18.66	-3.84	0.71	0.27	1.51*
		(-5.21)		(-7.41)		(-2.20)			
Public Offering and Block Sales	6	1.98	3.74	13.26	6.19	11.28	2.20**	1.00	2.45**
		(1.51)		(11.60)		(10.09)			

Notes: *, **, *** indicates significance at 10, 5, and 1% significance levels respectively using two-tailed test.

Table 6 (continued)

Post-privatization Performance Analysis: Summary of Results from Tests of Predictions for the Privatization Method Subsamples using Industry-Adjusted Measures

Variables	N	Pre-privatization Mean (Median)	Pre-privatization Standard Deviation	Post-privatization Mean (Median)	Post-privatization Standard Deviation	Mean Change (Median)	Z-Statistics for Difference in Medians (Pre- and post-privatization)	Percentage of Firms Experiencing Post-privatization Increase	Z-Statistics for Significance of Proportion Change
Pretax Income Efficiency (PTNIEFF) x 100 million (in 1987 prices)									
Block Sales Only	22	-4.34 (-4.63)	6.64	-9.10 (-5.61)	12.51	-4.76 (-0.97)	1.44	0.41	(0.85)
Public Offering and Block Sales	6	5.24 (5.00)	3.43	15.21 (16.11)	10.77	9.96 (11.11)	1.78*	0.83	1.63*
Total Employment									
Number of Employee (EMP)									
Block Sales Only	22	-431 (-458)	125	-493 (-488)	87	-62 (-30)	1.90*	0.36	1.28
Public Offering and Block Sales	6	-396 (-478)	237	-466 (-553)	235	-70 (-75)	1.57	0.17	1.63*
Capital Investment									
Net Fixed Asset Changes to Average Net Sales (FAS)									
Block Sales Only	19	-0.29 (-0.29)	0.24	-0.67 (-0.43)	1.19	-0.38 (-0.14)	1.37	0.32	1.61*
Public Offering and Block Sales	6	-0.33 (-0.33)	0.05	-0.12 (-0.23)	0.31	0.21 (0.10)	1.99**	0.83	1.63*
Net Fixed Assets Changes to Average Total Assets (FATA)									
Block Sales Only	19	-0.32 (-0.32)	0.18	-0.58 (-0.50)	0.68	-0.26 (-0.19)	1.61*	0.26	2.06**
Public Offering and Block Sales	6	-0.32 (-0.31)	0.08	-0.21 (-0.27)	0.13	0.11 (0.05)	1.57	0.83	1.63

Notes: *, **, *** indicates significance at 10, 5, and 1% significance levels respectively using two-tailed test.

This table presents a comparison of empirical results for privatizations divided into two subsamples according to the privatization method. The first subset is the Block Sales category and includes companies that were privatized through block sales only. The second subset is called the Block Sales and Public Offering category and includes companies that were privatized through block sales and public offering in the İstanbul Stock Exchange. For each empirical proxy we give the number of usable observations, the mean and median values, standard deviation of the proxy for the three-year periods prior and subsequent to privatization, the mean and median change in the proxy's value for the post-privatization versus pre-privatization period, and a test of significance of the change in median values. The final two columns detail the percentage of firms whose proxy values increase post-privatization, as well as a test of significance of this change.

Table 7

Post-privatization Performance Analysis: Summary of Results from Tests of Predictions for the Government Ownership Degree Prior to Privatization Subsamples using Industry-Adjusted Measures

Variables	N	Pre-privatization Mean (Median)	Pre-privatization Standard Deviation	Post-privatization Mean (Median)	Post-privatization Standard Deviation	Mean Change (Median)	Z-Statistics for Difference in Medians (Pre- and post-privatization)	Percentage of Firms Experiencing Post-privatization Increase	Z-Statistics for Significance of Proportion Change
Value Added									
Value Added on Assets (VATA)									
100 percent	4	0.22	0.45	-0.22	0.45	-0.44	1.83*	0.00	2.00**
		(0.16)		(-0.18)		(-0.35)			
90 – 100 percent	7	0.28	0.22	0.22	0.22	-0.06	0.51	0.43	0.35
		(0.29)		(0.19)		(-0.10)			
Less than 50 percent	4	0.24	0.19	0.07	0.19	-0.17	1.46	0.25	1.00
		(0.22)		(0.07)		(-0.15)			
Value Added on Sales (VAS)									
100 percent	4	0.07	0.12	-0.08	0.12	-0.15	1.46	0.25	1.00
		(0.07)		(-0.08)		(-0.15)			
90 – 100 percent	8	-0.02	0.09	-0.11	0.09	-0.08	0.42	0.63	0.71
		(-0.04)		(-0.05)		(-0.01)			
Less than 50 percent	4	0.08	0.13	0.21	0.13	0.14	1.83*	1.00	2.00**
		(0.05)		(0.23)		(0.18)			
Value Added Components									
Value Added less Pretax Income on Assets (PXVATA)									
100 percent	4	0.24	0.40	0.02	0.40	-0.22	0.73	0.50	0.00
		(0.18)		(-0.03)		(-0.21)			
90 – 100 percent	7	0.25	0.18	0.21	0.18	-0.04	0.85	0.29	1.13
		(0.23)		(0.20)		(-0.03)			
Less than 50 percent	4	-0.05	0.09	-0.06	0.09	-0.01	0.00	0.50	0.00
		(-0.07)		(-0.11)		(-0.04)			

Notes: *, **, *** indicates significance at 10, 5, and 1% significance levels respectively using a two-tailed test.

Table 7 (continued)

Post-privatization Performance Analysis: Summary of Results from Tests of Predictions for the Government Ownership Degree Prior to Privatization Subsamples Using Industry-Adjusted Measures

Variables	N	Pre-privatization Mean (Median)	Pre-privatization Standard Deviation	Post-privatization Mean (Median)	Post-privatization Standard Deviation	Mean Change (Median)	Z-Statistics for Difference in Medians (Pre- and post-privatization)	Percentage of Firms Experiencing Post-privatization Increase	Z-Statistics for Significance of Proportion Change
Pretax Return on Assets (PTROA)									
100 percent	14	-0.03	0.22	-0.11	0.22	-0.08	0.85	0.43	0.53
		(-0.10)		(-0.10)		(0.00)			
90 – 100 percent	10	0.15	0.22	-0.07	0.22	-0.22	1.99**	0.30	1.26*
		(0.16)		(-0.07)		(-0.23)			
Less than 50 percent	5	0.28	0.11	0.27	0.11	-0.01	0.13	0.40	0.45
		(0.24)		(0.29)		(0.05)			
ROE and Financial Leverage									
Pretax Return on Equity (PTROE)									
100 percent	14	-0.21	0.37	-0.58	0.37	-0.37	0.22	0.57	0.53
		(-0.20)		(-0.15)		(0.05)			
90 – 100 percent	10	0.33	0.46	-0.07	0.46	-0.40	2.09**	0.20	1.90**
		(0.40)		(-0.02)		(-0.42)			
Less than 50 percent	5	0.11	0.19	0.26	0.19	0.15	1.21	0.60	0.45
		(0.04)		(0.31)		(0.27)			
Financial Leverage (FL)									
100 percent	14	-0.19	0.18	0.10	0.18	0.30	2.54**	0.86	2.67***
		(-0.22)		(0.11)		(0.32)			
90 – 100 percent	10	-0.07	0.16	0.18	0.16	0.25	2.09**	0.70	1.26*
		(-0.08)		(0.12)		(0.20)			
Less than 50 percent	5	-0.42	0.16	-0.25	0.16	0.17	1.21	0.60	0.45
		(-0.47)		(-0.24)		(0.23)			
ROA Components									
Pretax Return on Sales (PTROS)									
100 percent	14	-0.06	0.19	0.07	0.19	0.13	0.60	0.43	0.53
		(-0.10)		(-0.14)		(-0.04)			
90 – 100 percent	10	0.01	0.13	-0.19	0.13	-0.20	2.09**	0.20	1.90**
		(0.03)		(-0.08)		(-0.11)			
Less than 50 percent	5	0.17	0.10	0.27	0.10	0.10	1.21	0.60	0.45
		(0.16)		(0.25)		(0.09)			

Notes: *, **, *** indicates significance at 10, 5, and 1% significance levels respectively using a two-tailed test.

Table 7 (continued)

Post-privatization Performance Analysis: Summary of Results from Tests of Predictions for the Government Ownership Degree Prior to Privatization Subsamples Using Industry – Adjusted Measures

Variables	N	Pre-privatization Mean (Median)	Pre-privatization Standard Deviation	Post-privatization Mean (Median)	Post-privatization Standard Deviation	Mean Change (Median)	Z-Statistics for Difference in Medians (Pre- and post-privatization)	Percentage of Firms Experiencing Post-privatization Increase	Z-Statistics for Significance of Proportion Change
Asset Turnover (AT)									
100 percent	14	0.07	0.55	-0.41	0.55	-0.48	2.79***	0.14	2.67***
		(-0.10)		(-0.44)		(-0.34)			
90 – 100 percent	10	0.78	0.62	0.20	0.62	-0.58	2.40**	0.10	2.53***
		(0.56)		(0.10)		(-0.46)			
Less than 50 percent	5	0.34	0.15	-0.28	0.15	-0.62	2.02**	0.00	2.24**
		(0.28)		(-0.27)		(-0.55)			
Operating Efficiency									
Value Added Efficiency (VALEFF) x 100 million (in 1987 prices)									
100 percent	5	-7.77	7.58	-11.45	7.58	-3.68	0.40	0.40	0.45
		(-5.57)		(-17.70)		(-12.12)			
90 – 100 percent	8	-3.17	8.31	-3.87	8.31	-0.69	0.14	0.38	0.71
		(-0.71)		(-2.28)		(-1.57)			
Less than 50 percent	4	3.32	3.96	15.68	3.96	12.35	1.83*	1.00	2.00**
		(3.06)		(15.68)		(12.62)			
Pretax Income Efficiency (PTNIEFF) x 100 million (in 1987 prices)									
100 percent	14	-5.52	6.20	-9.58	6.20	-4.07	0.91	0.50	0.00
		(-6.78)		(-5.94)		(0.84)			
90 – 100 percent	10	-1.45	6.67	-5.69	6.67	-4.24	1.27	0.30	1.26
		(0.17)		(-3.88)		(-4.05)			
Less than 50 percent	4	6.91	2.89	20.50	2.89	13.59	1.83*	1.00	2.00**
		(6.86)		(22.25)		(15.39)			

Notes: *, **, *** indicates significance at 10, 5, and 1% significance levels respectively using two-tailed test.

Table 7 (continued)

Post-privatization Performance Analysis: Summary of Results from Tests of Predictions for the Government Ownership Degree Prior to Privatization Subsamples Using Industry – Adjusted Measures

Variables	*N*	*Pre-privatization Mean (Median)*	*Pre-privatization Standard Deviation*	*Post-privatization Mean (Median)*	*Post-privatization Standard Deviation*	*Mean Change (Median)*	*Z-Statistics for Difference in Medians (Pre- and post-privatization)*	*Percentage of Firms Experiencing Post-privatization Increase*	*Z-Statistics for Significance of Proportion Change*
Total Employment									
Number of Employee (EMP)									
100 percent	14	-411	143	-466	143	-55	1.16	0.43	0.53
		(-397)		(-437)		(-39)			
90 – 100 percent	10	-473	76	-543	76	-71	1.78*	0.30	1.26*
		(-473)		(-560)		(-87)			
Less than 50 percent	4	-347	289	-424	289	-78	1.83*	0.00	2.00**
		(-478)		(-553)		(-75)			
Capital Investment									
Net Fixed Asset Changes to Average Net Sales (FAS)									
100 percent	13	-0.29	0.29	-0.57	0.29	-0.28	1.08	0.31	1.39*
		(-0.29)		(-0.44)		(-0.15)			
90 – 100 percent	8	-0.31	0.10	-0.73	0.10	-0.42	0.42	0.50	0.00
		(-0.33)		(-0.37)		(-0.04)			
Less than 50 percent	4	-0.33	0.06	-0.04	0.06	0.29	1.46	0.75	-1.00
		(-0.33)		(-0.20)		(0.14)			
Net Fixed Assets Changes to Average Total Assets (FATA)									
100 percent	13	-0.33	0.20	-0.61	0.20	-0.28	1.57	0.23	1.94*
		(-0.32)		(-0.52)		(-0.20)			
90 – 100 percent	8	-0.30	0.11	-0.46	0.11	-0.16	0.42	0.50	0.00
		(-0.31)		(-0.37)		(-0.06)			
Less than 50 percent	4	-0.32	0.10	-0.18	0.10	0.14	1.46	0.75	-1.00
		(-0.34)		(-0.25)		(0.09)			

Notes: *, **, *** indicates significance at 10, 5, and 1% significance levels respectively using a two-tailed test.

This table presents a comparison of empirical results for the privatizations divided into three subsamples according to the government ownership degree prior to the privatization. The first subset is the 100 percent category and includes privatization cases where government owned 100% of the shares prior to the privatization. The second subset is the 90-100 percent category and includes privatization cases where government owned between 90 and 100 percent (lower than 100 percent) of shares prior to the privatization. The third subset is the less than 50 percent category and includes privatization cases where government owned less than 50% of shares prior to the privatization. For each empirical proxy, we give the number of usable observations, the mean and median values, standard deviation of the proxy for the three-year periods prior and subsequent to privatization, the mean and median change in the proxy's value for post-privatization versus pre-privatization period, and a test of significance of the change in median values. The final two columns give the percentage of firms whose proxy values increase after privatization, as well as a test of significance of this change.

Table 8

Post-privatization Performance Analysis: Summary of Results from Tests of Predictions for the Ownership Structure Subsamples Using Industry – Adjusted Measures

Variables	N	Pre-privatization Mean (Median)	Pre-privatization Standard Deviation	Post-privatization Mean (Median)	Post-privatization Standard Deviation	Mean Change (Median)	Z-Statistics for Difference in Medians (Pre- and post-privatization)	Percentage of Firms Experiencing Post-privatization Increase	Z-Statistics for Significance of Proportion Change
Value Added									
Value Added on Assets (VATA)									
Domestic Ownership	9	0.18	0.29	-0.07	0.20	-0.25	1.95*	0.22	1.67**
		(0.16)		(-0.12)		(-0.27)			
Foreign Ownership	6	0.36	0.20	0.26	0.29	-0.10	0.94	0.33	0.82
		(0.39)		(0.21)		(-0.18)			
Value Added on Sales (VAS)									
Domestic Ownership	10	0.04	0.10	-0.04	0.33	-0.07	0.25	0.60	0.63
		(0.02)		(0.08)		(0.06)			
Foreign Ownership	6	0.01	0.14	0.01	0.16	0.00	0.73	0.67	0.82
		(-0.04)		(-0.05)		(-0.01)			
Value Added Components									
Value Added less Pretax Income on Assets (PXVATA)									
Domestic Ownership	9	0.13	0.29	-0.03	0.11	-0.15	1.60	0.33	1.00
		(0.06)		(-0.06)		(-0.12)			
Foreign Ownership	6	0.22	0.22	0.26	0.23	0.04	0.52	0.50	0.00
		(0.17)		(0.22)		(0.05)			
Pretax Return on Assets (PTROA)									
Domestic Ownership	23	0.02	0.22	-0.05	0.23	-0.07	1.03	0.48	0.21
		(0.04)		(-0.07)		(-0.11)			
Foreign Ownership	6	0.32	0.16	0.04	0.19	-0.28	2.20**	0.00	2.45***
		(0.39)		(-0.03)		(-0.41)			

Notes: *, **, *** indicates significance at 10, 5, and 1% significance levels respectively using a two-tailed test.

Table 8 (continued)

Post-privatization Performance Analysis: Summary of Results from Tests of Predictions for the Ownership Structure Subsamples Using Industry – Adjusted Measures

Variables	N	Pre-privatization Mean (Median)	Pre-privatization Standard Deviation	Post-privatization Mean (Median)	Post-privatization Standard Deviation	Mean Change (Median)	Z-Statistics for Difference in Medians (Pre- and post-privatization)	Percentage of Firms Experiencing Post-privatization Increase	Z-Statistics for Significance of Proportion Change
ROE and Financial Leverage									
Pretax Return on Equity (PTROE)									
Domestic Ownership	23	-0.10	0.38	-0.35	1.25	-0.24	0.24	0.52	0.21
		(-0.06)		(-0.07)		(-0.01)			
Foreign Ownership	6	0.54	0.31	0.07	0.36	-0.47	1.78*	0.17	1.63*
		(0.59)		(0.04)		(-0.54)			
Financial Leverage (FL)									
Domestic Ownership	23	-0.18	0.20	0.08	0.36	0.26	2.83***	0.74	2.29**
		(-0.21)		(-0.06)		(0.15)			
Foreign Ownership	6	-0.22	0.24	0.04	0.14	0.27	1.99**	0.83	1.63
		(-0.21)		(0.06)		(0.26)			
ROA Components									
Pretax Return on Sales (PTROS)									
Domestic Ownership	23	-0.03	0.17	0.01	1.65	0.04	0.82	0.48	0.21
		(0.04)		(-0.04)		(-0.01)			
Foreign Ownership	6	0.11	0.14	0.00	0.17	-0.11	2.20**	0.00	2.45***
		(0.10)		(-0.06)		(-0.16)			
Asset Turnover (AT)									
Domestic Ownership	23	0.23	0.55	-0.36	0.40	-0.59	3.92***	0.09	3.96***
		(0.26)		(-0.28)		(-0.54)			
Foreign Ownership	6	0.86	0.60	0.53	0.63	-0.33	1.36	0.17	1.63*
		(0.73)		(0.41)		(-0.33)			
Operating Efficiency									
Value Added Efficiency (VALEFF) x 100 million (in 1987 prices)									
Domestic Ownership	11	-6.03	8.20	-3.64	22.11	2.40	0.27	0.64	0.90
		(-5.21)		(7.52)		(12.73)			
Foreign Ownership	6	2.57	3.87	2.42	11.49	-0.15	0.10	0.33	0.82
		(2.92)		(-2.28)		(-5.20)			

Notes: *, **, *** indicates significance at 10, 5, and 1% significance levels respectively using two-tailed test.

Table 8 (continued)

Post-privatization Performance Analysis: Summary of Results from Tests of Predictions for the Ownership Structure Subsamples Using Industry – Adjusted Measures

Variables	*N*	*Pre-privatization Mean (Median)*	*Pre-privatization Standard Deviation*	*Post-privatization Mean (Median)*	*Post-privatization Standard Deviation*	*Mean Change (Median)*	*Z-Statistics for Difference in Medians (Pre- and post-privatization)*	*Percentage of Firms Experiencing Post-privatization Increase*	*Z-Statistics for Significance of Proportion Change*
Pretax Income Efficiency (PTNIEFF) x 100 million (in 1987 prices)									
Domestic Ownership	22	-4.00	6.98	-5.25	16,65	-1.26	0.18	0.59	0.85
		(-4.63)		(-5.01)		(-0.38)			
Foreign Ownership	6	3.97	4.34	1,09	11,35	-2.88	0.94	0.17	1.63*
		(2.51)		(-2.88)		(-5.40)			
Total Employment									
Number of Employee (EMP)									
Domestic Ownership	22	-408	167	-459	128	-50	1.51	0.41	-0.85
		(-470)		(-446)		(24)			
Foreign Ownership	6	-480	38	-593	48	-113	2.21**	0.00	2.45
		(-473)		(-595)		(-122)			
Capital Investment									
Net Fixed Asset Changes to Average Net Sales (FAS)									
Domestic Ownership	20	-0.29	0.23	-0.60	1,18	-0.31	0.97	0.40	0.89
		(-0.30)		(-0.28)		(0.01)			
Foreign Ownership	5	-0.33	0.04	-0.27	0,18	0.07	0.67	0.60	0.45
		(-0.36)		(-0.33)		(0.03)			
Net Fixed Assets Changes to Average Total Assets (FATA)									
Domestic Ownership	20	-0.32	0.17	-0.54	0,67	-0.23	1.42	0.35	1.34
		(-0.31)		(-0.29)		(0.02)			
Foreign Ownership	5	-0.32	0.18	-0.29	0,21	0.03	0.40	0.60	0.45
		(-0.32)		(-0.29)		(0.04)			

Notes: *, **, *** indicates significance at 10, 5, and 1% significance levels respectively, using a two-tailed test.

This table presents a comparison of empirical results for privatizations divided into two subsamples according to the ownership structure. The first subset is the Domestic Ownership category and includes privatized companies that have been sold to domestic companies. The second subset is the Foreign Ownership category and includes privatized companies that were sold to foreign companies. For each empirical proxy we give the number of usable observations, the mean and median values, standard deviation of the proxy for the three-year periods prior and subsequent to privatization, the mean and median change in the proxy's value for post-privatization versus pre-privatization period, and a test of significance of the change in median values. The final two columns give the percentage of firms whose proxy values increase post-privatization, as well as a test of significance of this change.

References

ALCHIAN, A. A. (1965), "Some Economics of Property Rights", *Il Politico*, 30, 816-29.

ATKINSON, A. B., and STIGLITZ, J. E. (1980), *Lectures on Public Economics,* New York: McGraw-Hill.

BIRDSALL, N. and NELLIS, J. (2003), "Winners and Losers: Assessing the Distributional Impact of Privatization", *World Development*, 31 (10), 1617-33.

BOUBAKRI, N. and COSSET, J.C. (1998), "The Financial and Operating Performance of Newly Privatized Firms: Evidence from Developing Countries", *Journal of Finance,* 53, 1081-110.

BOUBAKRI, N., COSSET, J.C., and GUEDHAMI, O. (2004), "Privatization, Corporate Governance and Economic Environment: Firm-level Evidence from Asia", *Pacific-Basin Finance Journal*, 12, 65-90.

BOYCKO, M., SCHLEIFER, A., and VISHNY, R.W. (1996), "A Theory of Privatisation" *The Economic Journal*, 106, 309-19.

BUCHANAN, J.M. (1972), *Theory of Public Choice,* Ann Arbor, Michigan: University of Michigan Press.

CAMPBELL-WHITE, O. and BHATIA, A. (1998), *Privatisation in Africa,* Washington, DC, The World Bank.

CLAESSENS, S., and DJANKOV, S. (1999), "Ownership Concentration and Corporate Performance in the Czech Republic", *Journal of Comparative Economics*, 27(3), 498-513.

COASE, R. H. (1960), "The Problem of Social Cost", *Journal of Law and Economics*, 3, 1-44.

DE ALESSI, L. (1980), "The Economics of Property Rights: A Review of the Evidence", *Research in Law and Economics,* 2, 1-47.

DE FRAJA, G. (1993), "Productive Efficiency in Public and Private Firms", *Journal of Public Economics*, 50, 15-30.

DEMSETZ, H. (1988), *Ownership, Control, and the Firm: The Organization of Economic Activity* (I), Oxford: Blackwell.

DHARWADKAR, R., GEORGE, G., and BRANDES, P. (2000), "Privatization in Emerging Economies: An Agency Theory Perspective", *Academy of Management Review*, 25 (3), 650-69.

DJANKOV, S. and MURRELL, P. (2000), *The Determinants of Enterprise Restructuring in Transition: An Assessment of the Evidence*, Washington, DC: The World Bank.

D'SOUZA, J., and MEGGINSON, W. L. (1999), "The Financial and Operating Performance of Privatised Firms during the 1990s", *Journal of Finance*, 54, 1397-438.

D'SOUZA, J., MEGGINSON, W.L., and NASH, R. (2001), "Determinants of Performance Improvements in Privatized Firms: The Role of Restructuring and Corporate Governance", Working Paper, University of Oklohoma.

DYCK, A. (2001), "Privatization and Corporate Governance: Principles, Evidence, and Future Challenges", *The World Bank Research Observer*, 16 (1), 59-84.

ERTUNA, Ö. (1993), "Privatization of State-Owned Enterprises: A Tool for Improving Competitiveness", *Boğaziçi Journal: Review of Social, Economic and Administrative Studies* 7, 29-37.

ERTUNA, Ö. (1999), "Constraints of Privatization in Turkey", in Galal, A. and Fawz, S., (eds.) *Partners for Development: New Roles for Government and Private Sector in the Middle East and North Africa,* Washington, DC: The World Bank, Mediterranean Development Forum, 117-30.

FAMA, E. (1977), *Foundations of Finance: Portfolio Decisions and Security Prices,* Oxford: Blackwell.

GALAL, A., JONES, L., TANDON, P., and VOGELSANG, I. (1994), *Welfare Consequences of Selling Public Enterprises: An Empirical Analysis*, New York: Oxford University Press.

HAVRYLYSHYN, O., and MCGETTIGAN, D. (1999), "Privatisation in Transition Countries: A Sampling of the Literature", IMF Working Paper WP/99/6, Washington, DC: International Monetary Fund.

HİNGORANİ, A., LEHN K. and MAKHİJAC, A.K. (1997), "Investor Behavior in Mass Privatization: The Case of the Czech Voucher Scheme", *Journal of Financial Economics*, 44 (3), 349-96.

JENSEN, M. and RUBACK, R. (1983), "The Market for Corporate Control", *Journal of Financial Economics*, 11, 5-50.

KAY, J. A., and THOMPSON, D. J. (1986), "Privatization: A Policy in Search of a Rationale", *Economic Journal*, 96, 18-32.

LA PORTA, R., and LOPEZ-DE-SILANES, F. (1999), "The Benefits of Privatization: Evidence from Mexico", *Quarterly Journal of Economics,* 114 (4), 1193-1242.

LA PORTA, R., LOPEZ-DE-SILANES, F., SHLEIFER, A., and VISHNY, R.W. (1997), "Legal Determinants of External Finance", *Journal of Finance,* 52, 1131–150.

————(1998), "Law and Finance", *Journal of Political Economy*, 106, 1113-150.

————(1999), "Corporate Ownership Around the World", *Journal of Finance*, 54, 471–517.

————(2000), "Investor Protection and Corporate Governance", *Journal of Financial Economics*, 58, 3-27.

LAFFONT, J. J., and TIROLE, J. (1991), "Privatization and Incentives", *Journal of Law, Economics and Organization,* 7, 84-105.

MACEDO, R. (2000), "Privatisation and Distribution of Assets and Income in Brasil", *Working Papers,* Washington, DC: Carnegie Endowment for International Peace.

MEGGINSON, W.L., NASH, R. C., NETTER, J. M. and POULSEN, A. B. (2004), "The Choice of Private versus Public Capital Markets: Evidence from Privatizations", *Journal of Finance,* 59, 2835-870.

MEGGINSON, W.L. and NETTER, J. M. (2001), "From State to Market: A Survey of Empirical Studies on Privatisation", *Journal of Economic Literature*, 34, 321-89.

MEGGINSON, W.L., NASH, R. C. and VAN RANDENBORGH, M. (1994), "The Financial and Operating Performance of Newly Privatized Firms: An International Empirical Analysis", *Journal of Finance* 49, 403-52.

MISHKIN, F. S. (1997), "The Causes and Propagation of Financial Instability: Lessons for Policymakers", *Maintaining Financial Stability in a Global Economy*, Kansas City: Federal Reserve Bank of Kansas City: 55-96.

NISKANEN, W.A. (1971), *Bureaucracy and Representative Goverment,* Chicago, Aldine, Atherton.

OMRAN, M. (2004), "The Performance of State-Owned Enterprises and Newly Privatized Firms: Does Privatization Really Matter?" *World Development*, 32 (6), 1019-1041.

PINT, E. M. (1991), "Nationalization vs. Regulation of Monopolies: The Effects of Ownership on Efficiency", *Journal of Public Economics,* 44 (2), 131-64.

REDIKER, K. J., and SEETH, A. (1995), "Boards of Directors and Substitution Effects of Alternate Governance Mechanisms", *Strategic Management Journal,* 16, 85-99.

SAPPINGTON, D. E., and STIGLITZ, J. E. (1987), "Privatization, Information and Incentives", *Journal of Policy Analysis and Management*, 6 (4), 567-82.

SAYGILI, Ş., and TAYMAZ, E. (1995), "Türkiye Çimento Sanayiinde Özelleştirme ve Teknik Etkinlik", (Privatization and Technical Efficiency in Turkish Cement Industry) *METU Studies in Development,* 23, 405-26.

————(2001), "Privatization, Ownership and Technical Efficiency: A Study on the Turkish Cement Industry" *Annals of Public and Cooperative Economics*, 72, 581-605.

SHAPIRO, C., and WILLIG, R.D. (1990), "Economic Rationales for the Scope of Privatization" in E. N. Suleiman and J. Waterbury (eds.), *The Political Economy of Public Sector Reform and Privatization*, Chapter 3, Boulder CO: Westview Press, 55-87.

STIGLITZ, J. E. (1985), "Credit Markets and the Control of Capital", *Journal of Money, Credit and Banking*, 17 (2), 133-52.

SUN, Q., and TONG, W.H.S. (2002), "Malaysia Privatization: A Comprehensive Study", *Financial Management*, 31 (4), 79-106.

VICKERS, J.S. and YARROW, G.K. (1988), *Privatization*, Cambridge, MA: MIT Press.

————(1991), "Economic Perspectives on Privatization", *Journal of Economic Perspectives,* 5 (2), 111-32.

WILLNER, J. (1986), "A Comment on Bradburd", *Review of Industrial Organization,* 11, 869-82.

YARROW, G.K. (1986), "Privatization in Theory and Practise", *Economic Policy,* 2, 324-77.

Appendix

Detailed Prescription of Research Sample

Privatized Company	Buyer Company	Privatization Year	Government Holding before Privatization (%)	Block Sales Size (US$)	Public Offering Size (US$)	Total Privatization Size (US$)
Adana Çimento	Public Offering / Oyak Holding	1991	47,28		45.090.829	45.090.829
Adıyaman Çimento	Sanko Holding	1995	100,00	52.500.000		52.500.000
Afyon Çimento	Ciment Françaiz	1989	95,59	13.000.000	11.585.618	24.585.618
Ankara Çimento	Ciment Françaiz	1989	99,30	33.000.000		33.000.000
Aşkale Çimento	Erçimsan	1993	100,00	31.158.000		31.158.000
Balıkesir Çimento	Ciment Françaiz	1989	98,30	23.000.000		23.000.000
Bartın Çimento	Rumeli Holding	1993	99.78	20.568.669		20.568.669
Bolu Çimento	Public Offering / Oyak Holding	1990	35.33		41.839.459	41.839.459
Bozüyük Seramik	Ercan Madencilik	1997	100,00	12.000.000		12.000.000
Denizli Çimento	Modern Çimento	1992	100,00	70.100.000		70.100.000
Elazığ Çimento	Oyak Holding	1996	99,89	27.850.000		27.850.000
Ergani Çimento	Rumeli Holding	1997	100,00	46.700.000		46.700.000
Filyos Ateş Tuğla	Zonguldak Yatırım Makinaları A.Ş.	1997	100,00	18.150.000		18.150.000
Gaziantep Çimento	Rumeli Holding	1992	99,73	52.695.898		52.695.898
Gümüşhane Çimento	Prekon İnşaat San. A.Ş.	1996	95,46	3.500.000		3.500.000
İskenderun Çimento	Joint-Venture of Oyak & Sabancı Holding	1992	100,00	61.500.000		61.500.000
Kars Çimento	Çimentaş	1996	100,00	22.250.000		22.250.000
Konya Çimento	Public Offering / Oyak Holding	1990	39,87		27.182.205	27.182.205
Kurtalan Çimento	Canlar Oto İnş. A.Ş.	1998	100.00	28.100.000		28.100.000
Ladik Çimento	Rumeli Holding	1993	100,00	57.598.687		57.598.687
Lalapaşa Çimento	Rumeli Holding	1996	100.00	125.890.000		125.890.000
Mardin Çimento	Public Offering / Oyak Holding	1990			19.532.914	19.532.914
Niğde Çimento	Public Offering / Joint-Venture of Oyak & Sabancı Holding	1991	99,84	22.500.000	2.650.548	25.150.548
Şanlıurfa Çimento	Rumeli Holding	1993	100,00	57.405.988		57.405.988
Söke Çimento	Ciment Françaiz	1989	99,60	11.000.000		11.000.000
Trabzon Çimento	Rumeli Holding	1992	100,00	32.551.000		32.551.000
Trakya Çimento	Ciment Françaiz	1989	99,90	25.000.000		25.000.000
Ünye Çimento	Public Offering / Oyak Holding	1990			22.184.528	22.184.528
Van Çimento	Rumeli Holding	1996	100,00	24.500.000		24.500.000
Total:				875.518.242	170.066.101	1.042.584.343

Özet

Türk çimento sektöründe özelleştirilen işletmelerin finansal ve faaliyet performansı

Bu çalışmada Türk Çimento sektöründe özelleştirilen işletmelerin özelleştirme sonrası performansları analiz edilmiştir. Araştırma bulguları, özel ve kamu sektörü başarı ölçütleri esas alındığında, özelleştirmenin özelleştirilen işletmelerde performans kötüleşmesine neden olduğunu göstermektedir. Özelleştirme sonrasında işletmelerin toplam katma değer ve özsermaye getirisinde istatistiksel olarak anlamlı düşüş saptanmıştır. Bu düşüşün temel nedeni aktif dönüşüm hızındaki azalmadır. Toplam aktif dönüşüm hızındaki düşüş, yatırımlardaki artıştan kaynaklanmamaktadır. Özelleştirme sonrası toplam istihdamda düşüş, borçlanma oranında ise yükseliş gözlemlenmektedir. Halka açılma yoluyla özelleştirme, aşamalı özelleştirme ve yerli mülkiyetin özelleştirme sonrası finansal ve faaliyet performansını geliştirdiği de araştırma bulguları arasındadır.